E.C. No. 57

ESTIMATES COMMITTEE

1956-57

SIXTY-FIRST REPORT

MINISTRY OF TRANSPORT

INLAND WATER TRANSPORT

LOK SABHA SECRETARIAT
NEW DELHI
March, 1957

C O R R I G E N D A

Sixty-first Report of the Estimates Committee on the Ministry of Transport.

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* Resigned with effect from the 20th November, '56.
† Died on the 6th October, 1956.
‡ Ceased to be a member upon his election to Raiya Sabha on the 13th Decemt er: 1956.

INTRODUCTION

I, the Chairman, Estimates Committee having been authorised by the Committee to submit the Report on their behalf, present this Sixty-first Report on the Ministry of Transport on the subject 'Inland Water Transport'.

2. The Committee wish to express their thanks to the Secretary and other officers of the Ministry of Transport for placing before them the material and information that they wanted in connection with the examination of the estimates. They also wish to express their thanks to Sarvashri T. Subramanyam, M. P. and N. C. Ghosh, Director/Manager, Indian River Transport Company Ltd., Calcutta for giving their evidence and making valuable suggestions to the Committee.

BALVANTRAY G. MEHTA,
Chairman,
Estimates Committee.

NEW DELHI;
The 27th March, 1957.

I. INTRODUCTORY

A. Introduction

The history of the world shows that almost all the empires and dynasties have grown around the great rivers like the Danube, the Rhine, the Nile, the Sindhu, the Cauvery, the Ganga etc. We find mention in the Ramayana of Rama's crossing the river Ganga by means of a ferry. Alexander built a bridge of ferries and boats at the narrowest point of the Indus, when he invaded India to overcome Porus. India has been particularly fortunate in having great rivers which are almost perennial and which do not freeze like those in Europe like the Volga, the Danube, or the Don. They do not need any ice-breaking or fog-clearing equipment to make them navigable.

2. Road transport is said to be relatively cheaper than rail transport because the permanent way is much less costly than the corresponding item in rail transport. The cost of roads is not, however, borne in its entirety by road transport as the roads are constructed and maintained at public expense. In the case of water transport the rivers are all free gifts of nature. Only in respect of rivers canalised for navigation heavy initial cost has to be incurred. Mile to mile outlay on river transport is cheaper than road or rail transport. The cost of vehicle required for water transport is also smaller than that of rail vehicles. Ships for deep rivers or ocean voyage are no doubt costly but when the quantity of cargo and (or) passengers carried is taken into account they compare very favourably with rail engines, coaches and wagons. Vessels required for inland rivers are much smaller in size and are, therefore, much cheaper. The wooden hulks can be easily built (as they used to be hundreds of years ago) from wood out of the indigenous forests providing, incidentally, employment to thousands of the country's population. The only disadvantage of river transport is that its course is fixed by nature.

3. Human engineering skill has, however, rendered it possible to construct grand canals, to join rivers as well as oceans, like the Suez and the Panama canals. The Atlantic has been connected by canals in France with the Mediterranean, the Mediterranean with the Red Sea by the Suez canal and the North Sea is linked with the Black Sea by similar developments on the Rhine and the Danube. Russia is recently reported to have drawn up proposals for connecting the Caspian Sea with the Arctic by a unified waterways system.

B. Early History

4. Water transport has been an important adjunct of India's national economy from time immemorial. Wherever produce was abundant and trade between distant parts flourished on a large scale, wherever considerable distances had to be covered by heavy load, water transport was naturally more economical. In India, with a

long coastline of over 3000 miles, and with her principal rivers flowing through hundreds of miles all the year round, with imperceptible gradients in fertile regions and flourishing industry; and with a very considerable trade with all the neighbouring continents, water transport had developed and was utilised on a large scale from days before recorded history.

5. In 1828, Mr. H. T. Prinsep, Secretary to the East India Company, submitted a note on the introduction of steam navigation in the rivers of Bengal and an experimental voyage between Calcutta and Allahabad. The opening portion of this note which describes the state of river navigation in India at the close of the 18th and the beginning of the 19th century is reproduced below:—

> "There is no river in the world, unless those of China be exceptions, on which there is so large a navigation as on the Ganges and its tributary streams. Major Rennell writing in 1780 reckoned that no less than 30,000 boatmen found their livelihood from this source, and as that was a time when trade was far less flourishing than at present,.... it might not be too much perhaps to assume the number of boatmen in the present day to be double that estimate,..... Everybody that has lived on the banks of great Ganges has been struck by the constant succession of boats moving up or down, the river never appearing for a minute altogether clear, and as this is nearly the same at all seasons and in all places, it leaves an impression of the extent to which this magnificient stream ministers to the wants of commerce and of the traveller, such as defies the attempt at computation. It is not Ganges only as a single stream that confers these benefits; all the larger rivers that bring down the waters of the Northern hills are navigable more or less throughout the year and almost to the foot of the first range".

6. Sir Arthur Cotton, the great architect of the Cauveri and the Godavari Canal works, emphasised the imperative need of canals in India both for irrigation and transit. In his evidence before a Parliamentary Committee in 1872, he stated: "On every important line of country in India you can carry a canal, that is to say, on every line where there is great population". At a meeting at Manchester held in January, 1878, Mr. John Bright, supported the scheme of Sir Arthur Cotton to construct a number of navigable canals all over India at a cost of 30 millions sterling.

7. The British administration did not, however, appreciate the needs of India for cheap water transport. Romesh Dutt in his "Economic History of India" says, "They had not realised that securing crops in years of draught was of far more greater importance in India than means of quick transit. Having already constructed a vast system of railways along the main lines of communication, they hesitated to venture on navigable canals which would compete with railways as a means of transit, and would deduct from the profits which

the Government had guaranteed to Companies or were deriving on their State lines. Nature had provided India with great navigable rivers which had been the high roads of trade from ancient times. And a system of canals fed by these rivers would have suited the requirements of the people of cheaper if slower transit, and would at the same time have increased production, ensured harvests, and averted famines. But Englishmen made a geographical mistake. They needed few canals in their own country, and they therefore, neglected canals in India".

8. The history of navigational works in India thereafter and until independence is none too glittering. The following quotation of Dr. N. N. Sanyal (on 'Communications and Transport' appearing in "Economic Problems of Modern India" edited by Prof. Radha Kamal Mukherjee) is worth recording:—

> "For the development of inland water transport the State has played little or no part whatever in the past, and the bigger steamer companies have been mostly initiated by British enterprise with British capital. Of late some Indian companies have been floated, giving rise to various problems of competition, rate-cutting and undue discrimination. The interference of Government for preventing uneconomic rate war between different inland water carriers on the one hand and between these and other methods of transport on the other hand is urgently called for".

9. The Indian Industrial Commission (1916) in para 279 of their Report laid emphasis on the desirability of the improvement of many of the then existing waterways and the need for the creation of a Waterways Trust in the following terms:—

> "We feel justified, however, in urging that the Government of India should take up the question of improving the existing waterways as we cannot help thinking, that, in the absence of a representative specially charged with their interests the vested interests of railways have prevented waterways in India from receiving the attention that has been given to them in other large countries with such satisfactory results.
>
> "We consider it essential that Railway and Waterway administrations should work together harmoniously for the development of those parts of the country which are served by both, and we commend this question together with that of coastwise freights, to the attention of the future Department of Commerce".

C. Existing position

10. Inland Water Transport in India is at present mainly confined to the States of Assam, West Bengal, Bihar, Uttar Pradesh, Orissa-

Andhra, Madras and Kerala. Companies organised on a large scale operating mechanically propelled vessels have been mainly concentrated in the North-East India on the Ganga, Brahmaputra system of rivers. Navigation of mechanically propelled vessels, however, has never at any time amounted to more than a comparatively small part of the total navigation on these rivers, as a great bulk of traffic continues to be carried by country-boats.

11. Most of the irrigation canals were designed to cater for navigation as well. These canals on which navigation is still active by country-boats, although considerably declined, are the upper and lower Ganga canals, the Orissa canals, the Godavari and Krishna Delta canals and Kurnool-Cudappah canal. Some canals were also constructed exclusively for navigation purpose, *viz.*, Buckingham canal, Vedaraniyam canal and the West Coast canal in South India, Orissa Coast canal connecting West Bengal and Orissa and canals around Calcutta. A portion of the Orissa Coast canal, in the province of Orissa, was, however, abandoned since 1928. Navigation is also active on the back-waters of Kerala.

12. According to Mr. J. J. Surie, an U.N. inland water expert, who visited India in 1952, the length of navigable waters in India was 5,144 miles, comprising of 1,557 miles as navigable by large country boats. Appendix I shows the break-up as given by him. In their Report for 1955-56, the Ministry of Transport have given the length of navigable waters as 5,500 miles. However, in the 'Master Plan' for development of inland waterways in the country recently issued by the W.I.N. Directorate, Central Water and Power Commission, Ministry of Irrigation and Power, and referred to elsewhere in this report, the total mileage of navigable inland waterways in India at present is given as about 5,760 miles comprising of:—

(a) (i) Rivers navigable by steamers—about 1,537 miles.

(ii) Rivers navigable by large country boats—about 1,475 miles.

(b) Canal and backwaters navigable by country boats..... 2,748 miles.

This excludes the tidal creeks on the coast which are not connected with any inland water transport system.

13. These waterways, however, have deteriorated much owing to the neglect of water transport since the introduction of railways, and need considerable improvement as well as extension. River navigation is practically confined to the Ganga and the Brahmaputra rivers at present. There are other important rivers in India such as the Godavari and Krishna in South India, and the West flowing rivers, the Narbada and Tapti, which hold navigation potentialities similar to those of the Ganga. The only difference is that the beds of the Brahmaputra and the Ganga basins are sandy whereas the beds of the South Indian and West Indian rivers are rocky. The rivers of Southern and Western India have only meagre flow during the dry season.

These rivers have not so far been thoroughly explored and they are used for inland navigation by boats only for a short distance.

14. Regarding navigable canals, out of 2,748 miles in India, there are 1,648 miles of canals which are used both for navigation as well as irrigation and the rest 1,100 miles being tidal canals are used only for navigation. In Travancore-Cochin there are about 720 miles of navigable waterways including canals and backwaters. The motor boats and the country-craft which ply in this area cater for about 4 million tons of cargoes annually and play an important part in the trade of the State. Out of these 720 miles of waterways there are 560 miles of tidal canals. Improvement of these waterways for introduction of modern self-propelled tugs and barges, is necessary for quicker movement of cargoes, which will ultimately speed up traffic. For this, considerable enlargement of the canals and other improvements would be necessary. Similarly all the navigable canals of U.P., Bihar, West Bengal, Orissa, Andhra and Madras need to be improved, for introducing modern mechanically propelled craft.

15. In the past, Calcutta was connected with Cuttack by waterways through the Orissa Coast Canal, which has been abandoned since 1928 by the Orissa Government. This could be revived to have a continuous inland waterway, from Calcutta to Cuttack along the East Coast. Similarly, Cuttack could be linked with Madras by constructing a new canal from the Mahanadi to the Chilka lake and again from Chilka lake to the Godavari river. Already there are 400 miles of canals from the Godavari, down South along the east coast, where there is a fair amount of trade. These canals could be linked with Mangalore *via* the Vedaraniyam canal (35 miles); situated about 105 miles south of the Buckingham canal and the West-Coast canals and backwaters of the Kerala (*ex*-Travancore-Cochin) and Mysore by constructing additional canals along the Coast. If this could be achieved, it would provide a chain of coastal waterways along the coast from Calcutta to Mangalore *via* Cuttack, Visakhapatnam, Madras, Cuddalore Port, Tuticorin, Cape Comorin, Trivandrum, Cochin, Kozhikode and Hosdurg. For the development of these waterways, detailed survey and collection of data will be necessary.

16. The Committee understand from a recent press report that a proposal to have a canal skirting Delhi is under consideration of the Government. The Committee welcome the proposal and hope that the same will be finalised soon.

II. DEVELOPMENT OF INLAND WATER TRANSPORT

A. Introduction

17. Inland water transport, as stated earlier, used to play an important part in the communication system of the country upto the middle of the last century. With the development of the Railways, and withdrawal of large volume of water for irrigation in the upper reaches of the rivers water transport in certain sections of some navigable rivers declined in importance. But in the North East region and in the East and West Coasts of peninsular India, inland water transport is still making some contribution to India's transport capacity. The Government of India and the State Governments have been considering ways and means of restoring inland water navigation to its rightful place since 1949. Navigation on inland waterways which are declared by Parliament to be National Waterways are the concern of the Union Government in respect of mechanically propelled vessels. So far, however, no waterway has been declared as a National Waterway.

B. Role of the Ministry of Transport

18. The role of the Ministry of Transport at present is largely one of co-ordination of the problems affecting more than one State and of the problems involving relations with other forms of transport.

19. The representative of the Ministry informed the Committee that inland water transport was under the Ministry of Transport. Inland navigation was in the State List, and therefore the initial responsibility lay with the States. The Ministry of Transport was, however, concerned with the control of inland navigation, so far as mechanically propelled vehicles were concerned as this subject was on the Concurrent List. The question of finding out the technical potentialities with regard to waterways was dealt with by the Central Water and Power Commission who were under the Ministry of Irrigation and Power.

20. The representatives of the Ministry further added that the line of development followed at present was that technical officers of the Ministry during their tours had discussions with the State Governments, ascertained their difficulties and suggested ideas which were worth pursuing. The representative realised the lacuna in the existing charge and added that there must be a technical organisation at the Centre to deal with various aspects of development of inland waterways like the Roads Wing. He was of the opinion that the country should be divided into various regions and there should be technical officers in charge of each region.

21. To the question by the Committee that if the rivers like Mahanadi, Narbada, Tapti, Chambal etc., were to be made navigable whose responsibility it was to attend to it, the representative of the Ministry replied that the inland navigation was a subject for the Transport Ministry. The matter will have to be considered by the State Governments first as the local Governments had the initial responsibility. Further, such problems were dealt with by the navigation wing of the Central Water and Power Commission but so far no detailed investigations were carried out on rivers like Mahanadi, Narbada, Tapti, Chambal etc.

22. The Committee further pointed out that in certain cases it had been difficult to ascertain the responsibility of a particular Ministry in such matters with the result that one could not know if there was any machinery in the Government of India which could make itself responsible for doing some improvement in the existing state of river navigation which was desirable, important and had immense potentialities. This gave an impression that the Ministries were not clear about their functions and jurisdiction, and that was why for a long time not a single mile had been added to the river navigation. The representative of the Ministry replied that the Ministry of Transport will have to accept the responsibility (of coordinating and developing inland water transport).

23. The Committee are glad to note the undertaking given by the representative of the Ministry and hope that the Ministry will now function with this enlarged responsibility. The Committee further recommend that the suggestion to divide the entire country into different contiguous regions and to put each region under charge of a competent technical officer to attend to the development of river navigation should be examined carefully and that concrete schemes of development of river navigation in different regions should be drawn up after careful study and investigation in consultation with the Central Water and Power Commission and the State Governments for gradual implementation subject to the availability of resources.

C. Inland Water Transport in the First and Second Plan

(a) *First Five Year Plan*

24. The need to set up a common agency for examining problems of development and control and conservancy over inter-State rivers from source to mouth was recognised by the Central and State Governments of Uttar Pradesh, Bihar, West Bengal and Assam who, by voluntary agreement constituted a Board known as 'The Ganga Brahmaputra Water Transport Board' in 1952 for the purpose of tackling some of the urgent problems relating to navigation on the Ganga, the Brahmaputra and their tributaries. It was agreed that the working of the Board would be financed from contributions to be made by the Central Government and the State Governments concerned. A provision of Rs. 10 lakhs was, therefore, made in the First Five Year Plan for payment of contribution to the Board. As the State Governments began their contributions from 1952-53, the

contribution of the Central Government was also paid accordingly and only a provision of Rs. 8 lakhs could thus be utilised.

25. The Ganga Brahmaputra Board had on hand the following three pilot projects on the recommendation of Mr. J. J. Surie, a U.N. Expert:—

(i) A pilot project for shallow draft tugs and barges pusher type for the upper Ganga and the Gogra;

(ii) A pilot project for (small sized) tugs and barges on the feeder rivers of Brahmaputra; and

(iii) A pilot project for one diesel propelled passenger-*cum*-car ferry accross the Brahmaputra.

26. The first of these was financed as a part of the First Five Year Plan and the Planning Commission had agreed to make a special grant of Rs. 26 lakhs for the purchase of craft required for this project. A sum of Rs. 25,08,154 was actually spent out of this allotment.

(b) *Second Five Year Plan*

27. A provision of Rs. 340·22 lakhs has been made in the Second Five Year Plan for the development of inland water transport. A summary of the Plan is enclosed as Appendix II.

28. The items included in the Plan are shown below:

(Rs. in lakhs)

(*i*) Equipment required for the Assam Ferry Project and Assam River Project (carry-forward items)	12·00
(*ii*) Contribution to the Ganga-Brahmaputra Water Transport Board (for 5 years at Rs. 4 lakhs per annum)	20·00
TOTAL	32·00
(*iii*) Capital expenditure on the development works on the Ganga-Brahmaputra region as detailed below :	
A. *River control, and conservancy.*	
(*i*) Dredgers (4 medium sized)	68·00
(*ii*) Dredgers (2 small)	16·00
(*iii*) Snag-clearing boats (2)	1·00
(*iv*) Automatic beacons for night navigation	5·00
TOTAL	90·00
Introduction of a system of radio telephone communication on the Brahmaputra and Ganga rivers	2·40
TOTAL	2·40

C. *Development of Inland Port facilities.*

Gauhati	8·46
Pandu	17·89
Dhubri	8·75
Karimganj	8·22
Patna	2·65
Manihari	3·60
TOTAL	49·57
D. *Regular River Survey and Supply of Charts*	8·25
TOTAL	8·25
(*iv*) Development of Buckingham Canal (including the linking of the Canal with the Madras Harbour)	115·00
(*v*) Development of West Coast Canals	43·00
TOTAL	158·00
GRAND TOTAL	340·22

29. The provision of only Rs. 43 lakhs for the development of West Coast canals appears to be inadequate. Feasibility of increasing the same may be examined.

(c) *Budget estimates for* 1956-57

30. The following provision has been made in the Budget estimates of the Ministry for the development of inland water transport for the year 1956-57:

D1	Contribution to the Ganga Brahmaputra Water Transport Board	24,00,000
D2	Contributions to South Indian States for development of Inland Water transport	1,00,000

Actual Expenditure

31. The actual expenditure incurred under the various heads year by year for the last 3 years is as follows:—

57—*Miscellaneous expenditure under the Ministry of Transport*

(Figures in lakhs of rupees).

	1953-54	1954-55	1955-56	1956-57 (Budget Estimates)
Contribution to the Ganga-Brahmaputra Water Transport Board	2	2	27·08	24
Contribution to the South Indian States for development of Inland Water Transport	..	..	·42	1

32. The reasons for variations with regard to the contribution to the Ganga-Brahmaputra Water Transport Board are that a special contribution of Rs. 25:08 lakhs was made for the purchase of capital equipment required for the Upper Ganga Pilot Project and the estimates for 1956-57 included a provision of Rs. 12 lakhs for the pur-

chase of capital equipment for the other pilot projects and another Rs. 10 lakhs for projects included in the Second Five Year Plan. As regards the variations in contribution to the South Indian States, the provision made in the budget estimates for 1953-54 and 1954-55 had to be surrendered as the proposal to form a Water Transport Board for South India was dropped. In accordance with a subsequent decision that the Government of India would co-ordinate the activities with regard to the development of inter-State waterways a sum of Rs. 42,000 was given as grant to the Governments of Madras and Andhra to enable them to carry out survey and investigations in connection with the development of the Buckingham canal. A sum of Rs. 1 lakh has been proposed for the same purpose during 1956-57.

D. Declaration of Waterways as National Waterways

33. The representative of the Ministry stated that the Constitution definitely envisaged the declaration of certain inland waterways as national waterways by statute, but unless the Central Government were clear about the financial implications of such a declaration it would become very difficult to maintain the waterways, once they were declared as national waterways. By declaring certain waterways as national waterways, the Central Government will become liable for all the resultant responsibility, such as registration of crafts plying on the waterways, maintenance of the waterways etc. The representative further informed the Committee that there was no provision in the Second Five Year Plan for declaring the important waterways as national waterways but the question would be taken up as soon as the recommendations of the Inland Water Transport Committee, which was being set up at a high level were available.

34. The Committee are of the opinion that the Central Government should not shirk their responsibility in the matter. Inland water transport has been neglected for a long time past and it is high time that the matter is taken up seriously. The railways and some roadways have since been nationalised and brought under the Central Government. There is, therefore, no point in not declaring the important waterways as national waterways. The Committee, therefore, recommend that the question of declaring important waterways as national waterways should be taken up and that a beginning may be made with the Ganga and Brahmaputra Waterways. Further the proposed Inland Water Transport Committee may be asked to go into the question of expenditure involved in declaring other important waterways in the country as national waterways and to prepare a scheme for gradual increase in the mileage of waterways to be declared as national waterways.

E. Survey of Inland Water Transport

35. In July, 1949 the Ministry of Transport addressed the State Governments informing them that the Government of India proposed to undertake an All-India Survey of the possibilities of developing inland water transport in the country. They sent to the State Gov-

ernments a questionnaire on the subject. Some of the questions asked were as stated below:

(i) Whether any portion of rivers previously used by country craft or steamers had since been abandoned due to deterioration of the river channel etc., and if so, what were the causes?

(ii) What were the causes of the non-development of inland water borne traffic in the State?

(iii) What were the possibilities of the development of inland water borne traffic if the channel were improved?

36. Other questions asked solicited information as regards the places where steamers and boats were being built, registered companies operating, number of marine personnel etc. The replies from the State Governments were duly received by the Government of India but it appears that matter was not pursued further at that time.

37. The Committee note with regret that the information collected was not put to any useful purpose in that no perspective plan has so far been drawn up by the Ministry regarding the development of river navigation in India which no doubt is a difficult and vast task but holds possibilities of achievement at a time when it is most needed to supplement other means of transport which are strained to the utmost at the moment.

F. Conferences of representatives of the Centre and States

38. In August, 1949 the Ministry of Transport convened a conference in Delhi attended by the representatives of U.P., Bihar, West Bengal and of interested Ministries of the Government of India. At this Conference it was declared by the late Shri N. Gopalaswamy Ayyangar, the then Minister for Transport and Railways, that the Government were interested in co-ordinating all forms of transport, rail, road and river—that if the river services were found to be better suited to meet the needs of particular areas, Government would be prepared to consider their development even in preference to Railways or to make the railways co-ordinate their activities so as to enable the two to work in co-ordination. The Committee feel that it is high time that this promise is implemented.

39. Various other matters were discussed in the conference regarding inland water transport, one of which was the carrying out of a preliminary survey to ascertain the economic possibility of water transport in the stretch of Ganga between Buxar and Allahabad as an immediate proposition. The conference decided to appoint a small Committee to examine and make definite proposals in respect of items discussed to enable the Government to take a final decision in the matter.

40. As regards the examination of the possibility of developing navigational facilities on the stretch of Ganga, the question was

referred to a technical sub-Committee consisting of the representatives of the Ministry of Transport, Central Water-power, Irrigation and Navigation Commission and the Joint Steamer Companies. This sub-Committee which submitted its report in 1950-51 was of the opinion that as a result of the postponement of the post-war plans for industrial expansion in Uttar Pradesh and want of dependable statistics of traffic on the river, very little prospects of securing the minimum guaranteed return on the capital outlay involved in organising the steamer services on this stretch of the river were in sight. In consequence, any such enterprise would not be commercially justifiable. This conclusion was perhaps inevitable as the Ganga region was very well served by roads and railways, almost the best in India. That sub-Committee, however, felt that there might be scope for running the service either as far as Allahabad or Kanpur durmg the high and middle water season and had suggested the carrying out of a reliable census of country craft traffic at certain selected points.

41. Another Inland Water Transport Conference was held on the 26th April 1951, with Shri K. Santhanam, Minister of State for Transport and Railways, in the Chair. The Chairman remarked *inter alia*, that in past three years, Members of Parliament had expressed dissatisfaction with the slow development of water transport. He himself thought that these criticisms were not without some basis and it was in this context that the previous conference had been held but not much progress had been made even after that Conference. While the Centre was anxious to assist in the formulation of concrete steps for development, he noted with some regret that the State Governments concerned did not seem to evince equal enthusiasm and had been rather hesitant in the matter. It was possible that with the vast net work of railways, there might not be a great economic necessity for developing the Ganga immediately but looking to the future, it would be a waste of national resources if the waterways were to be neglected. He therefore, emphasised the need for developing the Ganga into a good navigable waterway at least from Allahabad to Calcutta so that it could be used as a major artery of communications:

42. At the suggestion of the Chairman, the Conference recommended the setting up of a Ganga-Brahmaputra Water Transport Board. The Board was to be a non-statutory body set up on the basis of agreement of participating States (Uttar Pradesh, West Bengal, Bihar, Assam and the Central Government) with the Secretary of the Transport Ministry as Chairman.

G. The Ganga-Brahmaputra Water Transport Board.

(a) *Constitution*

43. The resolution constituting the Ganga-Brahmaputra Board was issued on the 8th March, 1952 but although the Board was set up in March, 1952, no separate office of the Board was established to begin with. The nucleus of an office has recently been set up with a small staff.

44. The Board with a Secretary appointed by the Government of India, works under the administrative control of the Ministry of Transport. The Board has power to co-opt representatives of other interests concerned like the Railways, the Steamer Companies and the Calcutta Port Authorities. It co-ordinates the activities of the participating Governments and examines their proposals in regard to the development of traffic on particular stretches of rivers, maintenance and improvement of the navigational facilities of the channels, whenever necessary, co-ordination of administrative problems arising out of the registration of inland vessels, inter-state movement of goods by river, amenities for passengers, fixing the passenger and freight rates and other cognate matters. In the discharge of its executive responsibilities, the Board is intended to function through the agencies of the participating State Governments.

45. The Board still continues to be a non-statutory body. The representative of the Ministry expressed the opinion that after getting 5 to 10 years experience, it would be proper time for the Board to be made a Statutory body. The Committee feel that this question might as well be examined at this stage. At the suggestion of the Committee the representative agreed to include this question in the terms of reference of the Inland Water Transport Committee which is being set up.

(b) *Provision of funds and expenditure*

46. The Board is financed by a non-lapsing fund made up of contributions made by the Central and State Governments. It was decided that the Central Government would contribute a sum of Rs. 2 lakhs annually and the state Governments Rs. 1 lakh each annually. The contributions made by the Government of India during the years 1954-55 to 1956-57 are:—

1954-55	Rs. 2,00,000	
1955-56	Rs. 28,00,000	(Revised Estimates)
1956-57	Rs. 24,00,000	(Budget Estimates)

47. The break-up of the provision of Rs. 24,00,000 during 1956-57 is as shown below:—

(i) Contribution to the Board	Rs. 2,00,000
(ii) Special grant to the Board for purchase of capital equipment required for the Upper Ganga Pilot Project.	Rs. 12,00,000
(iii) Expenditure on other projects included in the Second Five Year Plan.	Rs. 10,00,000

48. A Statement showing the recepits and expenditure of the Board for the years 1951-52 to 1955-56 is given as Appendix III.

(c) *Functions of the Board and results achieved*

49. The Board held two meetings in each of the years 1952-53 to 1955-56. The Ministry informed the Committee that the Board was essentially concerned with the laying down of policy, indicating the schemes to be taken up and the lines on which they should be executed. As the representatives came from different State headquarters, the Board meetings were held only when there was a sufficient number of major items to be discussed.

50. The important matters discussed in these meetings were as shown below:—

(i) The need for remedial measures aimed at controlling and training Brahmputra at suitable points;

(ii) Consideration of the scheme for the Pilot Project on the Ganga-Brahmputra region;

(iii) Registration of country craft of 10 ton capacity;

(iv) Investigations into the complaints that the freight charges levied by the Steamer Companies operating the water transport services between Calcutta and Assam were excessive and other connected matters;

(v) Amendment of Inland Steam Vessels Act, 1917, so as to confer on the Central and State Governments the power to regulate the recruitment of crews on inland steam vessels;

(vi) Training of Indian nationals as masters and serangs; and

(vii) Preparation of schemes in connection with the development of inland water transport in the Second Five Year Plan.

51. The Committee desired to know how far the Ganga-Brahmputra Water Transport Board had fulfilled the objectives for which it was set up in the matter of

(a) development of traffic over stretches of rivers;

(b) co-ordination of administrative problems arising out of the registration of Indian vessels;

(c) amenities for passengers; and

(d) fixation of passenger and freight rates.

52. As a matter of interest a copy of the reply received from the Ministry is enclosed herewith as Appendix IV.

(d) *Rates of contribution by the Central and State Governments*

53. It is stated in the annual report of the Ministry of Transport for 1955-56 that to enable the Ganga-Brahmputra Water Transport

Board to meet its recurring expenditure amounting to about Rs. 50 lakhs during the five-year period, a proposal to augment its resources by doubling the rates of annual contribution by the Central and State Governments is under consideration. The Ministry have informed the Committee that the question was discussed at the 8th meeting of the Board held on 30-1-1956. The State Governments have been addressed on the subject and their replies are awaited.

(e) *Annual Reports of the Board*

54. The Committee find that no annual reports on its working are issued by the Board. The Ministry have informed the Committee that no separate report has so far been issued by the Board with regard to its working and that the annual Administration Report of the Ministry of Transport includes account of the working of the Board. The account given in the annual Report of the Ministry of Transport is very sketchy and barely covers a page. The Committee suggest that the Board should issue a regular report on its working and it might form an important appendix to the report of the Ministry of Transport. The salient features of the reports may be mentioned in the main report.

H. Buckingham Canal

55. One of the works to be undertaken in the Second Five Year Plan is the development of Buckingham Canal (including the linking of the Canal with the Madras harbour) with a contribution of Rs. 115 lakhs by the Central Government. This work has been considered necessary to conserve an existing asset which is serving as an inter-state water-way supplementing the railway capacity and providing a useful means of transport for large quantities of goods between the States of Andhra and Madras.

56. The Buckingham Canal which is a salt water canal runs through Madras, parallel and close to the Coromandel coast, at a distance of 3/4 to 1/¼ miles from the sea (high water mark) joining up a series of natural back waters, and fed by tidal waters from the sea through rivers and creeks. It runs for 196 miles north of Madras (of which 36 miles are in Madras State, and 160 miles in Andhra State) and 64 miles south of Madras. In Andhra it joins the Cammamar Canal at the Krishna delta, which in turn is connected with the canals of the Godavari delta. The complete inter-connected system presents a continuous 400 miles of navigable channel along the coast.

57. The canal, which has had a very chequered career, was constructed as far back as 1806 by a private individual Mr. Basil Cochrane, and is one of the earliest engineering feats of the Nineteenth century. A very interesting note, containing a brief history of the canal from 1806 to date, sent by the Ministry of Transport, is enclosed as Appendix V. It will be noticed that the canal,

which lost its importance for many years as a result of the competition of the railways, regained its importance since the Second World War.

58. As the war rolled on and the transport conditions became more and more difficult, large sums of money had to be spent in keeping the canal in proper condition. In 1945 several post-war reconstruction and development schemes were drawn up by the Madras Government, but none of these were carried out as the then Government of India did not accept any scheme for the improvement of the inland waterways.

59. Shri P. Basu, an Officer-in-charge of inland water transport projects who examined the matter in 1954 found that there were two main defects in this water-way as shown below:

(i) its section was too small for modern standards; and

(ii) it had no connection with the harbour.

60. Shri Basu was of the opinion that both these defects were possible of rectification. For this purpose he suggested that the section of the canal should be enlarged to cater for larger craft and that a small connecting link canal involving about ½ mile of excavation only should take off from the Cooum river on the eastern side of the island near the Victoria Memorial, run across and along the Beach road to fall into the proposed Wet Basin in the Harbour. Shri Basu also suggested dredging for the maintenance of the waterway.

61. The main traffic carried over the canal consists of rice and foodgrains, fish, salt, shells firewood and building material. The canal carried goods of the value of Rs. 43·81 lakhs during 1900-1901, and in 1938-39 *i.e.* just before the Second World War, it carried goods of the value of Rs. 134 lakhs, but in 1951-52 (before the separation of Andhra State it carried goods of the value of no less than Rs. 20·73 crores.

62. The representative of the Ministry informed the Committee that so far as the linking of the canal with Madras harbour was concerned, there were various technical difficulties like scarcity of space in Madras harbour to receive boats from Buckingham canal and for loading and unloading of the same, disruption of the existing road and rail communication by the excavation of the canal and pollution of the harbour waters as the canal carried a lot of sullage of Madras City. Shri H. P. Mathrani, I.S.E., consulting engineer, who had been investigating the matter, was able to evolve a solution acceptable to both the Port Chief Engineer and Madras Chief Engineer and a stage was now reached when further investigation could proceed.

63. The Committee feel that the canal offers great potentialities for the development of traffic and suggest that all the improvements needed together with the linking of the canal with the harbour

should be carried out within the Second Five Year Plan period to enable the canal to fulfil a long felt need.

I. River Valley and other multi-purpose projects

64. The Ministry have stated that the question of utilising the river valley projects for purposes of navigation is primarily for the Irrigation and Power Ministry to consider. Inland navigation was included as one of the objectives in 3 river valley projects *viz.* Hirakud, Tungbhadra and Damodar Valley Corporation Projects. The Central Water and Power Commission have examined only Hirakud Project while Tungbhadra and Damodar Valley Corporation were examined by the Project authorities. Details about the navigational possibility of these projects are given below:—

(a) *Hirakud Dam Project*

65. This project is a multi-purpose project costing about Rs. 70·78 crores, and comprising a dam across the Mahanadi river at Hirakud. After the construction of the dam, a constant discharge of 8,800 cusecs will be available in the Mahanadi river at Chiplima where the power channels join the river. It was thought desirable to utilise this constant flow for navigation from Chiplima to Cuttack, a distance of 194 miles, through the main river and from Chiplima to Hirakud reservoir a distance of 16½ miles *via* power channel. Necessary investigations and surveys were carried out till 1953-54 for the purpose of making the river Mahanadi navigable and for development of a port on the Mahanadi mouth.

66. A French Mission consisting of 5 engineers was invited by the Government of India in 1951. This mission was entrusted with the examination of the following technical problems:

1. Study of the most economical ways of making the Mahanadi River suitable for navigation from the Hirakud dam to the sea.
2. Determination of the most economical type of navigation locks for the upper and lower dams at Hirakud.
3. Programme of investigations which will have to be made to permit the solution of the problems mentioned in items 1 and 2 here above.
4. Choice of the most suitable site for a deep sea port at the mouth of the Mahanadi.
5. Eventual establishment of an experimental navigation tank for testing various types of ships.
6. Establishment of a workshop for the manufacture of transmission towers.
7. Establishment of a workshop for the manufacture of sluice and spillway gates.

67. The French Mission submitted a valuable Report consisting of over 200 pages, illustrated by charts, diagrams etc. After dealing with the various technical matters in detail, the mission made the following recommendations:

(i) A test should be carried out by a qualified laboratory on a model of the mouth of the Mahanadi as suggested in the Report and that such a model should be ordered without delay.

(ii) For the purpose of study on the model, the detailed studies listed in the report should be undertaken without delay, the necessary equipment be acquired and that staff, qualified to conduct the studies, should be designated as soon as possible.

(iii) Although it would mean a greater initial outlay a solution offering a high degree of safety to shipping and not requiring considerable up-keep and maintenance dredging is recommended and that from this point of view and subject to the outcome of studies on the model, the solution of a channel protected by break-waters is better for the mouth of the Mahanadi than an unprotected channel.

(iv) The study for the port of the State of Orissa should be continued in the mouth of Mahanadi river, and that the Dharma river, where the hope of improving the channel is poor and the Devi river, which is much too shallow, should be passed over.

68. Necessary investigations were taken in hand, as recommended by the Mission, but later the Control Board of the Hirakud Project issued instructions to discontinue the investigations and surveys in connection with the development of navigation on the Mahanadi river till the completion of the Hirakud Dam. The investigations were accordingly discontinued from 1-4-54. The representative of the Ministry who appeared before the Committee explained that the investigations were discontinued at the instance of the Planning Commission which decided that all expenditure, either on execution of works or on investigations, not bearing directly on food production should be postponed. No provision was accordingly made in the revised estimates of the Hirakud Dam Project. Investigations in connection with the development of port at the mouth of the Mahanadi river on the lines recommended by French Mission for conducting model studies at the Central Water & Power Research Station, Poona are, however, in progress. The Government of Orissa are bearing all the expenditure in connection with these investigations. The investigations are expected to be completed by the end of the year 1958.

69. The Committee regret to note that other urgent problems necessitated the postponement of investigation in connection with the development of navigation on the Mahanadi river. The Com-

mittee suggest that the scheme of navigation on the Mahanadi should be pursued as originally contemplated as early as possible. As regards investigations in connection with the development of a Port at the mouth of the Mahandi river which are expected to be completed by the end of 1958, the Committee suggest that efforts be made to complete the investigations earlier.

(b) *Tungbhadra Project*

70. It is poposed to construct the main canal (Hyderabad Side) as irrigation-*cum*-navigation canal. This main canal takes off from the combined irrigation and power sluices. The canal is 127 miles long upto Raichur, with a branch canal of 4 miles beyond. The canal in the first 19 miles cuts through three ranges of hills and is held up at three reservoirs at mile 8, 14 and 15. It negotiates the last ranges of hills by means of a tunnel 3557 feet long, 22 ft. wide and 19 ft. deep. It is from this place that navigation is proposed in the canal. The canal on the right side (Mysore and Andhra States) has not been designed for navigation, because the route through which it passes does not connect any market for transport of produce. The Ministry have explained that the Kurnool-Cuddappah canal, which was originally designed as a navigation canal also proved a failure as a navigation canal because there was no produce to be transported through the canal as it did not connect any outlet. The representative of the Ministry informed the Committee that 79 miles of canal has been constructed and it is not yet ready for navigation. The Committee suggest that the feasibility of connecting Kurnool-Cuddapah Canal with some commercial and industrial Centres to make it more useful may be examined.

(c) *Damodar Valley Corporation Project*

71. The Damodar Valley Corporation irrigation-*cum*-navigation canal is approximately 85 miles long and takes off from the river Damodar at Durgapur reservoir with a maximum head discharge of about 9,400 cusecs during the Kharif season and falls into the Hooghly river at Tribeni, 35 miles above Calcutta. The minimum depth of water will be 9 ft. and width of canal 92 ft. so as to enable navigation of two 300-ton barges of size 125 ft. X 16 ft. and draft of 6 ft. The maximum bed width of canal is 172 ft. and the minimum is 60 ft. with 2:1 side slopes. Three types of locks namely, Chamber, Basin and Combined types have been adopted in the design.

72. Shri N. C. Ghosh, Director/Manager, Indian River Transport Co. Ltd., Calcutta, who appeared before the Commitee, expressed the opinion that a special type of craft, as is found in other countries like Western Germany, France etc. will be necessary over 80 miles of the canal. The second necessity would be to have regular terminal points along the entire stretch of the canal system. The Committee recommend that the Government should give due consideration to these suggestions. The Committee further recommend that the Ministry of Transport should not escape its responsibility by saying that the utilisation of the river valley and other multipurpose projects for

the purpose of navigation is primarily for the Irrigation and Power Ministry to consider. It should fully associate itself with such schemes and co-operate in full with the Irrigation and Power Ministry from the very inception to see that where navigation is possible such schemes must provide for the same in the overall interests of the country. The Transport Ministry should cease to be a mere onlooker on such important projects and should work in close co-operation with other Ministries to safeguard the interests of inland navigation and its development in the country.

III. INVESTIGATION BY EXPERTS AND COMMITTEES

A. Introduction

73. According to an article by Mr. S. R. Sarna 'Forgotten Riverways in India' which appeared in the 'Hindustan Times' of 10-3-1957, the estimated total length of the waterways in the Indian subcontinent affording a perennial flow of water amounts to 25,000 miles. Out of this 10,000 miles are in rivers and 15,000 miles in canals. Of the rivers nearly 6,000 miles are navigable throughout the year. Of the canals 4,000 miles are navigable by steamers and the remaining 11,000 miles by country boats. This would indicate that against 5,760 miles of inland waterways which are said to be navigable at present by the Central Water and Power Commission as referred to elsewhere in this report, there is a possibility of increasing substantially the navigable mileage by developing the shallow stretches of rivers, by deepening the channels, by providing regulation works, canalization, dredging or by using crafts specially designed for use in shallow stretches.

B. Visit of Mr. Otto Popper

74. At the instance of the Indian delegation to the Singapore Session of the Economic Commission for Asia and Far East, the Commission agreed to arrange for an expert examination of the development of the traffic capacity of specific waterways. An inland navigation expert, Mr. Otto Popper, accordingly arrived in Delhi on the 9th February, 1950 and after detailed discussions with him and officers of the C.W.I.N.C., the following programme of investigations was indicated to him:—

(i) To investigate into the possibilities of developing traffic on waterways and stretches of waterways in the following order of priority:—

Ganga from Buxar to Allahabad;

Gogra up to Brahmghat;

Rapti up to Gorakhpur;

Bhagirathi;

Mahanadi and Orissa Coast canal;

Buckingham Canal;

Tapti up to Kakrapara and 50 miles above;

and prepare comprehensive plans. Each such plan should indicate the minimum volume of traffic necessary to make it economical.

(ii) To examine the possibilities of improving the traffic capacity of existing inland navigation routes with particular reference to efficient methods of operation, suitable types of craft, shore installations, etc.

75. It was suggested that Mr. Popper should cover the backwaters of Malabar and Cochin also when considering the second item of the terms of reference. After a tour of Uttar Pradesh, Bihar, West Bengal and Orissa for field investigations, Mr. Popper went back to Bangkok and submitted a report making certain general recommendations. These recommendations were considered by an *ad hoc* Committee of inland water transport experts, on which India was also represented and which met at Bangkok in October, 1950. This Committee's further recommendations were approved by the E.C.A.F.E. at its meeting held in Lahore in March, 1951. At this meeting, the E.C.A.F.E. resolved to set up an Inland Water Transport Committee for the region and also a sub-Committee of that Committee for dealing with inland navigation.

C. Study Tour of Experts

76. During the year 1951-52 the Economic Commission for Asia and the Far East arranged to depute a team of technical inland water transport experts drawn from Burma, India, Pakistan, Thailand and Viet-Nam on a tour of Europe and the U.S.A. for a period of about 3 months to study technological advances made in inland water transport methods abroad on the understanding that all the travel expenses of the group would be borne by the United Nations Technical Assistance Administration. It was felt that in the present neglected state of inland waterways, the association of Indian experts with the Study Group would enable them to gain valuable experience in the operation of inland water transport in foreign countries which could be utilised for the improvement of existing facilities in India in due course. A team of three experts from India was, accordingly, deputed on the study tour. Main recommendations of the Expert Working Group were the following:—

(1) Replacement of steam-engines by diesel engines, will in most cases be advisable;

(2) Attention should be paid to training of personnel, particularly for repair and maintenance of diesel engines;

(3) Possibility of adoption of shallow draught self-propelled craft with screws running in tunnels should be investigated;

(4) Application of Kort nozzels seems advisable;

(5) Feasibility of push and pull towing especially in Burma, Pakistan and India should be considered further;

(6) Increased use should be made of light alloys for shallow-draughted dumb craft;

(7) A modest start should be made with mechanisation of cargo handling operations; and

(8) Water conservancy work should be the responsibility of governments rather than of private companies.

77. The action taken by the Government on the above recommendations is shown below in *seriatim*:—

(1) The push-tow boats for the Upper Ganga Pilot project will be diesel operated.

(2) The International Labour Organisation have started a training centre in Burma for training personnel in diesel marine engines. Three Indian nominees were sent for such training (the course is for one year).

(3) & (4) The upper Ganga Pilot Project provides for operation by shallow draft craft. The screws are to be fitted with Kort nozzels and will run in tunnels.

(5) The Upper Ganga Pilot Project is designed to test both push and pull towing.

(6) The barges required for the Upper Ganga Pilot Project are being made of steel which has also been suggested in the Report.

(7) The second five year plan for inland water transport includes proposals for mechanisation of cargo handling operations at selected river stations in the Ganga-Brahmaputra region.

(8) This suggestion is under consideration at present with reference to its financial implications. The Joint Steamer Companies are at present carrying out certain measures of conservancy such as bandalling and marking of channels. The second five year plan provides for the purchase of a fleet of dredgers by the Ganga-Brahmaputra Water Transport Board to dredge key shoals and approaches to important river ghats on the Ganga Brahmaputra river system

78. It is also proposed to instal navigational aids such as automatic beacons in the Sunderbans and the Brahmaputra.

D. Third Session of the Inland Waterways Sub-Committee

79. At the third session of the Inland Waterways sub-Committee of the E.C.A.F.E. held in Dacca, (East Pakistan) from the 24th to 29th October, 1955, Captain T. B. Bose, Principal Officer, Mercantile Marine Department, Calcutta, and Shri P. Basu, Secretary, Ganga-Brahmaputra Water Transport Board, represented India at the session. Items discussed included uniform system of buoyage and shore marks for inland waterways, study of inland ports, a model organisation to deal with inland water transport and river and canal conservancy, the setting up of the regional training centre for diesel marine mechanics at Rangoon, demonstration pilot projects on the improved design and operation of craft, including the use of pusher craft and towing methods, and a convention regarding the measurement and registration of vessels employed in inland navigation.

E. Visit of Mr. J. J. Surie

80. The Government of India secured through the United Nations Technical Assistance Administration the services of an inland water transport expert, Mr. J. J. Surie of Holland to advise on the economic feasibility of operating modern crafts on shallow waterways. The Technical Assistance Administration entrusted Mr. Surie with the basic responsibility of preparing a comprehensive proposal for an inland water transport demonstration project for the consideration of the Government of India. Mr. Surie came to India in October, 1952, and after discussions with the Government of India proceeded to Patna which had been chosen as his headquarters. He was assisted by Officers of the Central Water and Power Commission and the State Governments concerned in conducting the necessary investigations in the matter. Mr. Surie attended the meeting of the Ganga-Brahmaputra Water Transport Board held in December, 1952, after an inspection of the Ganga and the Gogra rivers and study of relevant data in order to test the feasibility of towing barges and country boats by shallow draft tugs, on the shallow stretches of rivers.

81. Mr. Surie in his report has stated that water levels on the Ganga and the Gogra vary greatly throughout the year. At Allahabad it is 35 ft. and at Patna 28 ft. During the dry season, lasting approximately eight months great quantities of water are withdrawn for irrigation purposes thus leaving only a limited quantity in the river during a period when the channels are already restricted. Mr. Surie, however, has held that both the Ganga and the Gogra are navigable, the size of the craft being limited by the size of channels.

82. Mr. Surie also visited Assam in 1952 to examine the river conditions and the problems of maintaining a ferry across the Brahmaputra river in North-East Assam. He inspected a number of Brahmaputra ferries which form a link between Northern and Southern parts of the State.

83. Mr. Surie recommended two projects *viz.* a project for the development of shallow draught navigation with smaller craft on the feeder rivers of the Brahamputra and of a diesel operated ferry vessel on the Brahamputra. These are estimated to cost Rs. 8 lakhs and Rs. 4 lakhs respectively and have been included in the scheme of financial assistance agreed to by the Planning Commission during the Second Five Year Plan period. Surveys are now in progress for drawing up specifications of the craft required for the Assam feeder river project and the specifications for the diesel ferry vessel across the Brahamputra are being finalised.

84. The Committee regretfully observe that although nearly 4 years have elapsed since Mr. Surie submitted his report, the crafts recommended by him for the Ganga, Gogra and Brahamputra

rivers have not yet been received and put into operation and that surveys are still in progress for drawing up specifications for the diesel ferry vessel across the Brahamputra. The Committee feel that the need for operating modern craft on the shallow waterways of India is very urgent and that no time should be lost in carrying out necessary investigations and surveys, obtaining the craft and placing the same in service.

F. Study Group (Transport Planning)

85. The Government of India set up in December 1953, a study group consisting of the representatives of the Ministries of Transport, Production, Commerce & Industry, Food & Agriculture, Railways, Labour and Planning Commission to study *inter alia* the data regarding targets of additional production and demand on regional basis and work out the additional transport capacity required to be created for facilitating the movement of traffic arising therefrom.

86. The question of inland water transport was also examined by the study group in this connection and they made the following observations:—

> "Inland water transport has just been mentioned in the First Five Year Plan. We feel that the subject should obtain better consideration at least in the Second Plan. We note that several preliminary investigations have already been carried out in regard to inland water transport in co-operation with the ECAFE. We have also noted the activities of the recently set up Ganga-Brahmputra Water Transport Board. We welcome the fact that the Board has undertaken to run a pilot demonstration project for studying the feasibility of towing barges with specially designed shallow draft tugs on the shallow stretches of the Ganga. We are informed that the specifications for the craft have been finalised and that tenders have to be called for the craft. We also note that necessary staff has been sanctioned and are being recruited for carrying out the river surveys connected with the project. This project is a great and positive step forward and we have no doubt that on the success or failure of this project will depend the future of inland navigation in the country. We are also glad to hear that big institutions like Standard Vacuum Oil Company are proposing to use the water route for moving their products and are experimenting with push towing tugs."

87. The Study Group also referred to the claim of the Joint Steamer Companies that they have surplus capacity to the order of 150 million ton miles both in the upward and downward directions, between Calcutta, Assam, Cachar and Bihar. The upwards spare capacity is reported to be more or less constant throughout the year. The report states that the Steamer Companies have been contending that by making full use of the river route for such traffic, rail capacity could be freed for transfer to other areas and the railways

could save considerable expenditure. The steamer companies had also submitted to Government certain proposals intended to assist them in improving their own efficiency.

88. The Ministry, who were asked as to what proposals had been submitted by the Steamer Companies in this connection and what decision has been taken by the Government on these proposals have stated as follows:—

> "There are three alternative routes between Assam and West Bengal for the carriage of cargo: namely (1) the rail-link, (2) the Indo-Pakistan rail route and (3) the river route. The capacity of the rail-link is limited. The Indo-Pakistan rail route is used for special traffic. The river route has been carrying about 60 per cent of the traffic between Assam and West Bengal. The Joint Steamer Companies are the main carriers on the river route. They represented to the Government of India that there should be a clear policy regarding co-ordination of traffic between rail and river to enable them to adjust their programme of replacement of fleets and also to ensure financial stability for their services. In the absence of co-ordination, traffic movements by river and rail would be irregular varying in volumes depending on the circumstances and would not be in the interests of either the public or the carriers. Therefore, the Joint Steamer Companies suggested the setting up of a number of local co-ordination committees and a central co-ordination Committee between themselves and the Railways.
>
> "The Railway Ministry have made it clear that they stand for full co-ordination between the two forms of transport and that, subject to rates by rivers being reasonable, they would be prepared to consider measures for rationalisation of the traffic. They did not, however, consider it necessary to have a number of co-ordination committees and that the Director of Rail Movements, Calcutta, was already acting as a co-ordinating authority. The entire position was reviewed by the Director of Rail Movements, Calcutta, at the meeting held with the representatives of all interests concerned, in May 1956 when certain decisions to secure co-ordination of traffic by rail and steamers were taken. It was further decided to hold periodical meetings for this purpose".

89. In this connection it may not be out of place to quote from the Report of the Indian Delegation to the Soviet Railways and other European Railways:—

> "The tariff is not entirely based on the principle of 'what the traffic can bear' but it is also designed to provide comparatively cheaper transport for commodities, movements of which are considered more essential in the interest of national economy and to secure a rationalised use of all forms of transport even if this entails loss of traffic

to the Railways. Freight rates on Railways for certain commodities are higher during summer so that traffic may be diverted to waterways which operate only during that season. The tariff, however, aims at recovering on each commodity at least, what they call 'the self-cost' *i.e.* the actual cost, which includes the fixed cost of hauling the commodity over the required distance".

90. The Committee suggest that the feasibility of arriving at some such arrangements in India should also be examined so as to enable maximum use of the surplus capacity. River navigation in many places is bound to be seasonal and on those occasions, the traffic can be diverted from the Railways. Also, just like the Standard Vacuum Oil Company, other big firms and business establishments may be called upon by Government to move their raw materials and finished goods over the Ganga region by river. On the Rhine, and the Tennesse Rivers in Europe and the U.S.A. respectively, bulk of non-perishable goods constitute most of the traffic. It will be certainly advantageous if the oil companies avail of the services of river transport and build terminals and bulk storage plants on the banks of the rivers and selected places, distributing the products by truck and rail according to requirements. Sugarcane, coal, fertilizers and raw materials also can be moved in bulk quantities *via* waterways, in certain regions.

G. Inland Water Transport Committee

91. The Ministry of Transport have informed the Committee that although they have convened regional conferences from time to time and initiated certain measures for the development of inland water transport including investigation of certain aspects of the subject by Indian and foreign technical experts, there has been no comprehensive enquiry so far on the results of which a detailed plan for the future can be based. They have accordingly decided to set up a Committee consisting of the following:—

1. Shri B. K. Gokhale, I.C.S. (Retd.)—*Chairman.*
2. One Chief Engineer with experience of waterways.
3. Shri H. P. Mathrani, I.S.E., Consulting Engineer (Road Development).
4. One nominee of the Central Water & Power Commission.
5. Shri D. V. Joglekar. Director. Central Water and Power Research Station, Poona.
6. One representative of the Railway Ministry.
7. One representative of the Steamer Companies.
8. One representative of the Federation of Chambers of Commerce & Industry.
9. }
10. } Two M. Ps. and one other non-official.
11. }

92. The Committee are glad to note the association of the non-official element in the Inland Water Transport Committee.

93. The terms of reference of the Committee will be as shown below:—

1. To review the part played by inland water transport in the transport system of the country.
2. To advise on measures for the increased utilisation of inland water transport including movement of bulk commodities to ports for purposes of export, account being taken of what is already contemplated under the Second Five Year Plan for the development of inland water transport, and to give an estimate of (a) the time needed for the execution of the schemes recommended, and (b) their cost.
3. To examine the prospects of increasing and extending the river services, including a direct river service on the East coast as well as from some point in the North to the South and to suggest steps to be taken to achieve effective co-ordination between the railways and inland waterways, including financial participation, appropriate allocation of traffic as between the two modes of transport and arrangements for through-booking.
4. To consider the organisation of an efficient country boat service on a co-operative basis with an appreciable increase in the present number with a view to facilitating the carriage of more goods and the question of mechanising at least some of the boats, with particular reference to cost, time and other implications.
5. To suggest whether any special organisation is necessary to execute the schemes and how they are to be financed.

94. The Committee welcome the appointment of the Committee. They would suggest that the terms of reference of the Committee might be made more comprehensive by including subjects like the best form of the administration of the waterways, a direct river service between East and West Coasts, creation of national waterways and making the Ganga-Brahmputra Board a statutory board etc. The Committee also suggest that an Advisory Committee be constituted to advise the Ministry of Transport on matters pertaining to river navigation.

IV. MASTER PLAN FOR DEVELOPMENT OF INLAND WATERWAYS

A. Introduction

95. Almost all the big rivers of India pass through very fertile territory and some of the most industrially developed areas. The Ganga passes through three States of Uttar Pradesh, Bihar and West Bengal. It connects all these States with the port of Calcutta and can be a source of great help for the sugar, mica, iron and coal belts of these States if, along with its tributaries like the Sone, Gandak, Ghogra, Yamuna, Gomti etc., it is made thoroughly navigable and connected by navigable canals with the industrial centres (like Durgapur Canal). Thus it can relieve a great pressure on the railways and can easily become the Danube of India. Similarly the trans-continental inland water link between Calcutta and Cochin can be opend by linking West Bengal with Orissa *via* the Hooghly and Orissa Coastal Canal and thereafter with Mahanadi Canal, Vedarniyam Canal and West Coast Canal etc. This link has immense potentialities of not only relieving the pressure on the railways but also on the coastal shipping. Like-wise there are possibilities of connecting Narbada and Tapti rivers which pass through rich areas of Madhya Pradesh and Bombay States and Narbada with Godavari in the south and Yamuna in the north connecting the West Coast with the East Coast and North East India by inland waterways.

96. Sir Arthur Cotton, the architect of the Godavari anicut proposed the following net-work of water communication in India:—

"(a) The first line would be a very complete one round India, *viz.*, from Bombay, by Ahmedabad, up the valley of the Indus, across by the Sirhind Canal to the Ganges canal, down the valley of the Ganges to Calcutta, along the East Coast to Cape Comorin, and up the West Coast to the new Port of Carwar near Goa. The only impracticable piece of country is that from Goa to Bombay.

(b) Across the Peninsula by the valleys of the Godavari, Wardha and Tapti, to meet the former line at Baroda.

(c) A second line across the Peninsula from Nellore, 100 miles north of Madras, by the valleys of the Pennar, Tungha badra and Kala Nadi to Carwar in the West Coast.

(d) From Madras across the Carnatic, and by the valleys of the Amravati and Palghat river to Ponani, on the West Coast."

"The Wardha line of navigation may also be connected with the valley of the Mahanadi down to the east coast line at Cuttack. The Wardha may be connected by the Valley of the Weingunga with the Narbada, and with the valley of the Chambal down to the Ganges valley line near Allahabad. The Brahmaputra is a very fair line of navigation at present though no doubt it could be greatly improved".

B. Master Plan drawn up by the Ministry of Irrigation and Power

97. The W.I.N. Directorate of the Ministry of Irrigation and Power have drawn up a Master Plan for developing the important

waterways in the country. The Directorate appear to have at last recognised the need for the development of inland water transport as they have pointed out that there is ample scope for this development in the waterways of India and have offered following observations while presenting the Plan:—

> "In the wake of development of industries in the country adequate cheap transport will be essential. The development of all means of communications *viz.*, rail road and waterways is, therefore, necessary to cope with the future heavy increase in traffic. Extension of the railways in a planned way progressed gradually since its introduction. Attention has also been given in developing the national highways for road transport since independence but no attention worthy of mention has so far been paid to improve the depleted rivers and canals to afford navigation and to develop new waterways on the rivers and canals which hold *prima-facie* navigation potentialities, but at present are not navigable." "The potential of extension of navigation in the waterways of India is great.....it is possible to connect the Western and Eastern coasts through multipurpose works on the Narbada, Sone, Chambal and Ken, connecting the Narbada with the Ganga river system, and also in the Wainganga and Godavari connecting the Narbada with the Godavari system. These rivers are at present not navigable except at their lower reaches. A number of dams, weirs, locks and probably lateral canals will have to be constructed to make these waterways navigable. Other principal features of development will be flood control in the lower reaches of the rivers, extension of irrigation to millions of acres and generation of huge blocks of power."

98. The W.I.N. Directorate are of the opinion that the country's navigation schemes must be planned on a multipurpose basis as far as possible, and have suggested the following schemes in connection with the improvements and extension of waterways in India for study and exploration:—

"*SCHEME I*

Linking the Ganga river system with the West flowing rivers to provide a continuous waterway from West Coast (Arabian sea) to East Coast (Bay of Bengal).

The scheme would provide a continuous waterway from Western India to Northern and North-east India *via* Central India. The C.W. & P. C. have already studied this scheme from the topo-sheets and from the information received from States, and have prepared four proposals for preliminary investigations. These proposals are:

(a) Connecting the Narbada with Sone (a tributary of the Ganga) *via* the Johilla (a tributary of the Sone).

(b) Connecting the Narbada with the Sone (a tributary of the Ganga) *via* the Hiran and the Katni Nai (tributaries of the Narbada and the Sone respectively).

(c) Connecting the Narbada with the Chambal (a tributary of the Yamuna) *via* the Karam (tributary of the Narbada).

(d) Connecting the Narbada with the Yamuna *via* the Bearma and the Ken (tributaries of the Ken and the Yamuna).

SCHEME II

Connecting the Narbada with the Godavari river system.

This would provide a continuous waterway from the West Coast to the East Coast through the hinterlands of Bombay, Madhya Pradesh and Andhra. The C. W. & P. C. have already studied this scheme from the topo-sheets and proposed for the preliminary investigations of the same.

An estimate of Rs. 8,30,950 has been prepared for the investigation of the five proposals of linking the Narbada with the Ganga and Godavari system as mentioned in Schemes I and II above.

SCHEME III

Linking the Tapti with the Godavari system via *the Wardha, a tributary of the Godavari.*

This will provide an alternative waterway connecting the West Coast with the East Coast.

SCHEME IV

Linking the Ganga river with the Mahanadi via *the Sone and the Rihand (tributaries of the Ganga and the Sone respectively) and the Hasdo (the tributary of the Mahanadi).*

This will provide a continuous waterway between Northern and North-East India, and Orissa *via* Raipur district of Madhya Pradesh.

SCHEME V

Inland Coastal Waterway connecting Calcutta with Madras via *Cuttack along the East Coast connecting up to the existing canals and backwaters of Travancore-Cochin (Kerala) & to Mangalore* via *Back Waters and new canals.*

This line of waterway will pass through the existing Orissa Coast Canal, the tidal compartment of the Mahandi and the Delta Irrigation-*cum*-Navigation canals of Orissa until it reaches Cuttack, then from the Mahanadi to the Chilka lake by the proposed irrigation canal, of about 45 miles, which may be designed for navigation also. The Chilka lake has to be linked with the Godavari delta canal by constructing a new canal along the east coast for a length of about 250 miles. The Godavari and the Krishna canals are inter-connected at Ellora and the Commanur canal of the Krishna system continues Southward, as the Buckingham Canal, giving thus a continuous waterway of about 400 miles. Then the Buckingham canal has to be linked with the Vedaraniyam canal (35 miles) by a new canal of about 105 miles, and again the Vedaraniyam canal has to be linked round the Cape Commorin with the West Coast canals and backwaters upto Badagara by a new canal of about 300 miles. From Badagara a new canal of about 35 miles will connect Azhikkal from where navigable waterway for about 30 miles upto Hosdrug is already in existence. Again from Hosdrug a new canal of about 50 miles will give continuous navigation route upto Mangalore.

If a line of water communication as mentioned above could be achieved it will provide a chain of waterways along the whole length of the east coast of India and for about 435 miles of the West coast and this will connect all the rivers of Orissa, Andhra and Madras flowing into the Bay of Bengal. This will link all the waterways proposed to be developed in Schemes I—IV as mentioned in this report and this will afford a continuous waterway grid passing through all the important regions of the country."

99. An index map showing all these schemes of the Master Plan is enclosed as Appendix VI.

100. The Committee observe that some of the proposals made by the Central Water and Power Commission are common to the suggestions made by Sir Arthur Cotton and further understand that the other suggestions of Sir Arthur Cotton will also be considered by the Central Water and Power Commission in due course. The Committee hope that detailed investigations on these five schemes will be pursued with vigour.

V. RIVER NAVIGATION IN NORTH-EAST INDIA

A. Introduction

101. River navigation in North East India is mostly in the hands of the India General Navigation and Railway Co. Ltd., and the Rivers Steam Navigation Co. Ltd., the two Companies incorporated in England with sterling capital. The two Companies are commonly known as Joint Steamer Companies. Besides these, there are 10 Indian Companies registered in Calcutta for river navigation.

102. The Joint Steamer Companies are running the following services in India and are playing an important role in the transport system of the country:—

"Cargo Services.—Assam-Sunderbans Despatch Service, Cachar-Sunderbans Despatch Service, Ganges Despatch Service, Bordutti Feeder Service, Desang Feeder Service, Lakhipur Feeder Service, Gogra Feeder Service, Ganges Feeder Service.

Passenger Services.—Tezpur-Silghat Ferry Service."

103. The Joint Steamer Companies have been having a system of through booking with the Railways for many years *via* the following principal junctions :

"Shalimar, 'C' Shed, Dhubri, Pandu, Amigaon, Tezpur, Silghat, Neamati, Karimganj, Maniharighat, Paleza, Dibrugarh (temporarily closed) ".

104. The Volume of traffic handled by the Joint Steamer Companies both in local and through looking with the Railway is shown in Appendix VII.

105. The Indian Companies are operating between West Bengal, East Bengal and Assam. They do not operate any service on the Ganges and its feeder rivers. The entire fleet of all these companies combined is a small fraction of the fleet owned by the two English Companies. The Indian Companies combined carry about 10 per cent of the total cargo moved in this region. In other parts of the country, there is no organised transport by mechanically propelled vessels.

106. The statement at Appendix VIII shows the authorised capital, subscribed capital, paid-up capital, income, expenditure and dividends declared in each of the years since 1950-51 by foreign as well as Indian Companies. Appendix IX shows the number of Steamers etc. owned by each company, volume of cargo moved and the number of passengers carried in each of the years since 1950-51.

107. The Committee understand that some of the Indian Companies are carrying on their operations with old and obsolete crafts and are in financial difficulties. The legislative Act under which the Industrial Finance Corporation functions had left out inland water transport companies from the list of industrial concerns to whom financial aid could be granted. The Committee suggest tha the feasibility of including the inland water transport companies ii that list should be sympathetically examined by the Ministries o Transport and Finance.

B. Facilities suggested by Joint Steamer Companies

108. The Joint Steamer Companies have represented that the have been suffering under certain disabilities, as the progress in regard to the provision of certain facilities required by the river transport system under the existing conditions is slow. Some of the facilities mentioned by them are discussed below:—

(i) *Provision of 'Aga' automatic flashing beacons*

109. The Joint Steamer Companies have hitherto been using "hurricane" lanterns for night navigation. These lanterns though cheap depend upon the vigilance of an attendant to keep them alight, and the extinguishing of one or more lights, which frequently occurs during high winds, rain and sand storms means that vessels are unable to proceed further on their night voyage and have to anchor for the remainder of the night and await day light. This detention reflects adversely on the eventual transport capacity of the fleet. The Companies have recently been experimenting with "Aga" authomatic flashing beacons operated by gas contained in replenishable cylinders. These beacons are able to operate continuously for periods ranging between three to twelve months without being replenished, and with their introduction vessels are able to ply by night with ease safety and confidence. The Companies suggested to the Gang Brahmaputra Board that this system needs to be expanded through out all rivers resulting in a much needed increase in transport capa city estimated between 5 to 10 per cent.

110. The representative of the Ministry informed the Committe that the steamer companies had purchased certain automatic beacons on their own account but they were not prepared to go in for more. The Ganga Brahmaputra Board had, however, approved the proposal for the purchase of beacons for the Sundarbans and Brahmaputra areas. Of the 43 beacons, 12 would be installed on the former and 31 on the latter. The cost was expected to be Rs. 2·7 lakhs out of Rs. 5 lakhs provided in the Plan for this purpose. The representative further added that there was provision in the Second Five Year Plan for lighting all the 3 stretches, *viz.*, Brahmaputra, Sundarbans and Ganga but they were providing for the first two stretches first. The order for the purchase of beacons would be placed within a month's period after technical scrutiny.

111. In this connection the Committee would like to refer to para. 67 of their 47th Report wherein it has been pointed out that he Lighthouse Department of the Government of India has develop-:d an acetylene flasher. The Committee suggest that the feasibility of utilising these flashers in the automatic beacons for inland water navigation should be examined in consultation with the Lighthouse Department.

(ii) *Introduction of radio telephonic communications*

112. It is not possible for inland water transport stations to maintain easy and quick contact with each other and with the units of fleet and if vessels are detained in any ports of the rivers through grounding, accidents or other causes it is often a matter of days before assistance can be arranged. The only possible method of overcoming these difficulties is the installation of radio telephonic communication system as on rivers of United States of America and Africa where distances and conditions are similar to those experienced on Indian rivers.

113. The representative of the Ministry informed the Committee that the P. & T. Department had agreed to provide and maintain the wireless sets themselves on the payment of a yearly rental by the Ganga Brahmaputra Board. The Committee hope that the proposal will be implemented without undue delay.

(iii) *Provision of modern equipment of a permanent nature for berthing of vessels and for mechanical handling of cargo*

114. The Steamer Companies have explained that the necessity for these developments has become urgent, particularly in Assam where shipments of heavy machinery etc. are increasingly called for to meet the demands of the recent developments envisaged in oil and other projects planned and also for the expanding tea and jute industries in Assam.

115. The representative of the Ministry informed the Committee that the facilities contemplated were the provision of permanent transit sheds with railway and road approaches, jetties or landing stages and gangways for unloading goods, cranes, mechanically operated trolleys, tractors to haul up goods and fork-lift trucks. To begin with, the work had been taken up at Pandu Port which was the biggest riverine port. Other ports like Karimganj, Patna, Dhubri, Manihari were also in the programme. A sum of Rs. 49 lakhs had been provided for that purpose in the second five year plan for developing the other ports mentioned above. The representative further added that they had prepared tentative designs for other ports also but sufficient engineering staff for preparing designs for all ports was not available.

116. The Committee suggest that suitable steps should be taken to overcome this shortage and that designs for other riverine ports should be finalised without undue delay.

(iv) *River Surveys*

117. The steamship companies have represented that in order to make navigation easier and safer, supply of up-to-date river charts along with hydrographic data would be of considerable assistance to the I.W.T. operators.

118. The Ministry have stated that the present position as regards the survey of the depth of rivers with a view to ascertaining their suitability for navigation by craft of different sizes is as follows :—

"Preliminary river surveys of the Dehing and Subansiri rivers in Assam were carried out during the period September, 1955 to April, 1956. Preliminary and detailed surveys at shoal areas were also carried out on the Upper Ganga river from Allahabad to Ghazipur during the same period.

"Two small survey launches under construction at Bombay are expected to be delivered at Calcutta within a short time. With the arrival of these launches, it is proposed to carry out the detailed surveys of the Dehing and Subansiri rivers in Assam and the Upper Ganga river from Allahabad to Buxar.

"Under the Second Five Year Plan of the Ganga Brahmaputra Water Transport Board, it is proposed to carry out the following river surveys :

1. *Ganga River*

"Regular surveys of the Ganga river will be carried out from Allahabad to Patna and also of the feeder rivers Gogra and Gandak. Discharge observations, regular reading and setting up gauges, supervision of bandalling etc. will be carried out.

2. *Sunderban Area*

"Surveys of the various navigable creeks and feeder rivers, discharge observations, regular reading and setting up gauges etc. and bandalling when and where necessary.

Hooghly River

From Nabadwip to Konnagar.

Rupnarain River

From Raichawak to the confluence at Geonkhali.

3. *Assam*

"Survey of the Brahmaputra river at various places and the feeder rivers Dehing, Subansiri etc. and bandalling when and where necessary. Discharge observations, regular reading and setting up gauges."

119. The Committee are glad to note that provision has been made in the Board's Second Five Year Plan for recruitment of necessary staff and the purchase of survey vessels for carrying out the above surveys.

(v) *Provision of suitable floating or shore outposts with residential and office accommodation together with petrol launches*

120. The above proposal has been made by the steamship companies to increase the efficiency of the checking systems by reducing delays to vessels and thus increasing the transport potential of the

country. The representative of the Ministry explained that they had brought these proposals to the notice of the Home Ministry and the Central Board of Revenue for their consideration. A launch had also been provided at Bihari Kal which was an important border station on the Sundarbans. The Committee suggest that the provisions of similar facilities at other crossings should be expedited.

(vi) *Roads to Ghats*

121. The Steamship Companies have also suggested that good roads should be maintained connecting the various river ghats with main trunk roads or with industrial or crop and food producing areas through which the main and feeder rivers flow.

122. The Committee are of the opinion that the above mentioned facilities suggested by the Steamship Companies are the normal facilities required for the purpose of maintaining efficient system of inland water transport. They, therefore, suggest that provision of these facilities should be arranged on a systematic basis.

C. Conservancy measures

123. One of the items in the terms of reference of the enquiry entrusted to Shri N. S. Lokur, President, Railway Rates Tribunal, was in respect of the channel conservancy measures adopted by the Joint Steamer Companies and the extent of Government assistance in the matter. The Joint Steamer Companies had asked for an annual grant of Rs. 3,75,000 for river conservancy work. Shri Lokur, who examined the matter observed in his report that in Europe and the U.S.A. it was the duty of the Government to improve and maintain the waterways to make them suitable for navigational traffic as it is to construct and maintain roads and railways. Shri Lokur, therefore, recommended that the work should be taken over by the Government themselves and entrusted to Ganga Brahmaputra Water Transport Board on which the Governments of all the States through which the rivers pass are represented. The actual conservancy operations may, however, if considered necessary, be allowed to be carried out by the Joint Steamer Companies, under strict check by the Board, on re-imbursement of the actual costs, till such time as the Board was in a position to set up its technical organisation.

124. Shri Lokur recommended that pending taking over of conservancy works by the Ganga Brahmaputra Board, the grants made to the Joint Steamer Companies should be duly increased. He, however, added that the assumption of responsibility by the Board should not mean that the Joint Steamer Companies should enjoy complete immunity in this regard and that all important users of the waterways should pay adequate tax or toll. He suggested that the best course would be to levy a certain amount of fee to be collected at the time of the registration of the vessels.

125. The representative of the Ministry, who was asked as to what action the Government had taken on Shri Lokur's recommendations stated that they had not been implemented as the taking over of conservancy involved employment of staff and other expenditure. The Committee consider these recommendations as reasonable and fair, and suggest that the Government should reconsider the position and take steps to implement them.

D. Reduction in the frequency of steamer services of Joint Steamer Companies

126. The Ministry of Transport informed the Committee that the Joint Steamer Companies have repeatedly represented to Government that due to the availability of quick road and rail transport between Bihar and Calcutta, they have not found it profitable to continue to operate their services on the Ganga in Bihar. There are good roads on both sides of the Ganga and there are also good railways. In these circumstances, traders have been finding it more advantageous to transport their goods by road or by rail and it is only in special cases that they seem to be resorting to river transport. For example, when the Assam rail link is not functioning due to floods in the monsoon season, traders find it useful to send their goods to Assam by the river route *via* Pakistan. The river route from Bihar has to pass through Pakistan before reaching Calcutta and it is considerably longer (longer by 400 miles nearly) than the rail route. The direct river route *via* the Bhagirathi is open for only a few weeks every years. On the other hand there is considerable scope for carriage of cargo between Calcutta and Assam by river as the capacity of the rail route is limited and the Joint Steamer Companies have, therefore, diverted many of their vessels to this route to cope with the traffic.

127. The representative of the Ministry further informed the Committee that the matter was being carefully examined. Meetings were held with Steamer Companies and they were pursuaded to continue the operations for one year upto 1957. The Steamer Companies required at least 60,000 mds. of cargo per month to continue the service and the Bihar Government was considering the proposal.

128. The Committee are of the opinion that there is enough traffic at present for transport by rail, road as well as steamers. They, therefore, suggest that the matter of the rational organisation of transport in the region should be examined and efforts made to earmark certain amoumt of traffic for carriage by river navigation.

E. Amendment of Inland Steam Vessels Act

129. The Companies have represented that there is no provision in the Inland Steam Vessels Act in respect of the following problems and have suggested that the Act should be suitably amended to

empower the Government to take such action as it deems necessary to clear the navigable channel:

1. Blockage or obstruction to a navigable channel caused by a wreck or other obstruction; and
2. Blockage or obstruction to navigable channel caused by a vessel being overdrafted and grounded in a navigable channel.

130. The representative of the Ministry stated that Section 431 of the Indian Penal Code specially provided for such cases. However, he agreed that it did not cover all cases.

131. The Committee suggest that the matter may be examined, provisions in the laws of foreign countries studied and the Act may be suitably modified.

VI. MISCELLANEOUS

A. Development of Inland Navigation on the West Coast on the rivers such as Narbada and Tapti

132. According to navigation reports on the rivers Narbada and Tapti prepared by the Central Water and Power Commission, the Narbada river is navigable at present upto its tidal limit, a distance of about 40 miles from the sea. Beyond that, it is navigable by small boats only for another 45 miles, that is upto Chandod. About 100 miles above sea there is a gorge of 70 miles which is not navigable. This reach is full of rapids and falls. In its upper reaches passing through Jabalpur and Khandesh districts, some portion is navigable only during monsoon. As this report was prepared from information gathered from the Gazetteers etc., the Central Water and Power Commission consider it necessary to carry out investigation on the river before arriving at any final conclusion regarding the possibility of development of navigation on the Narbada river.

133. The existing navigation facilities on the Tapti are very poor, terminating at 20 miles from the sea, but with the construction of Ukai Dam, the Central Water and Power Commission consider that navigation would be made possible on the river for a total distance of about 200 miles from the sea, connecting the hinterland with Surat Port at the mouth and other ports on the coast. Above this point, navigation is not possible under the existing conditions and can only be thought of after some other projects to harness the river in the upper reaches are considered. As this report was prepared from information gathered from old publications and records, the Central Water and Power Commission consider it necessary to carry out detailed investigations to arrive at a definite conclusion about the possibility of development of navigation on this river.

134. The Committee feel that the rivers like Narbada and Tapti, on the Western Coast have long been neglected with the result that their waterways have been silted up and blocked and their ports have been made unsailable. So far nothing has been done to develop the potentialities of navigation on these rivers. The Committee recommend that the Ministry of Transport should arrange early for a survey of the navigation possibilities of these rivers as also of Chambal and Jamuna in consultation with the Central Water & Power Commission and the State Governments concerned. They also recommend that an inter-State River Board may be constituted for this purpose.

B. Craft Building

135. The representative of the Ministry informed the Committee that there were indigenous craft building firms in Vizagapatam, Calcutta, Bombay and Cochin. These firms were at present labouring under financial difficulties. The representative stated that before any financial assistance to these companies could be given it will have to be decided whether the commercial companies are to be operated entirely with private capital or by loans from the Government. The Committee suggest that the Ministry should carefully examine this matter and come to some decision regarding the encouragement to be given to such companies with a view to ensure that all the crafts of modern design which will be needed with the development of inland water transport are produced in India. The Committee are of the opinion that given encouragement by the Government there will be no difficulty in developing the existing capacity for constructing such craft to any extent required. There are private firms in Bombay and Calcutta who do construct such craft. The Committee also suggest that suitable steps should be taken to standardise country boats for local as well as inter-district communications.

C. Lack of Statistics

136. Proper appreciation of inland water transport problems in India is rendered difficult due to absence of reliable statistics and data showing the number of boats, country-crafts, tugs, barges, etc., which are plying in the various canals and rivers, the traffic carried (both passenger and freight), their respective incomes etc. These details are not available in any one place. The main reason for this is the fact that the executive responsibility for regulating inland water transport vests in the State Governments. There is no centralised authority to co-ordinate and compile the statistics as in the case of the Railways. The Ministry of Transport who were asked to state as to how in the absence of such statistics the Government determined the relative merits of the various forms of transport and the need for improving each one (and all) of them in a co-ordinated manner, have agreed that the compilation of these statistics was desirable and would be attempted. The Committee would suggest that the statistics which are of vital importance should be published regularly. The Transport Ministry should either bring out a journal at prescribed intervals giving the data in respect of those forms of transport which come within its purview, or publish these essential statistics for all the States in India in a consolidated manner along with their annual report.

D. Conclusion

137. The success of industrial developments, which is at present taking place in the country, depends to a great extent, on the existence of adequate, cheap and efficient transport. As stated previously, of the 3 modes of transport, *viz.*, rail, road and water, much

attention has hitherto been paid to rail transport. Road transport has also been given some attention since independence but no serious attention has been paid to water transport.

138. Against an area of 1,222,272 square miles and a population of 360 millions, India has got a railway route mileage of 34,705 and a road mileage of about 240,000 excluding municipal roads. The mileage of waterways is only about 5,760. This is too inadequate for a country like India which is endowed with vast natural resources and which is fast developing into an industrial nation. In the United States of America where rail and road transport are highly developed, the route mileage of navigable waterways developed for commercial purposes is about four times that of India and this form of transport is in a position to compete with other modes of transport owing to the adoption of improved techniques. A statement is enclosed as Appendix X, showing the mileage of various forms of transport in some of the countries as compared with that in India.

139. The Railways in India are not in a position to carry all the traffic offered and with the anticipated increase in traffic consequent on industrial development in the second and subsequent plans, the need for developing inland water transport to supplement the rail and road transport systems in the country is urgent. Unfortunately nothing was done during the first five year plan period and a small sum of Rs. 340·22 lakhs has been provided under this head in the Second Five Year Plan. This includes the cost of some equipment required for the Assam ferry and river projects, cost of a few dredgers and other equipment for river control and conservancy, expenditure on the development of inland port facilities and on the development of Buckingham canal and West Coast canals etc. The W.I.N. Directorate, Central Water and Power Commission, Ministry of Irrigation and Power, have also drawn up a Master Plan for inland navigation in the country on a broad basis for detailed studies and investigations with the aim of gradual development of the waterways.

140. The Committee would, therefore, like to make the following specific suggestions in regard to inland navigation :

(i) The drawing up of schemes with a view to study the navigation potentialities of the various rivers and canals throughout India and the carrying out of improvements and extensions thereto should be taken in hand without further delay and the work completed within a period of say 2-3 years.

(ii) Special efforts should be made to obtain expeditiously the craft and other equipment required for the Upper Ganga Pilot Project, and the Project put into operation as early as possible in order that the results of its working may be available for guidance in other places.

(iii) The problem of channel conservancy measures required at various places should be carefully examined and provision of funds obtained for non-recurring and recurring expenditure on this account.

(iv) The requirements of dredgers and other machinery required for deepening the canals and rivers which have silted up through neglect during the last many years, and of suitable craft and equipment required for service thereon should be estimated sufficiently in advance to enable adequate funds being obtained during the 3rd five year plan period.

(v) The requirements of various facilities such as beacons, radio-telephone communications, jetties, equipment for the berthing of vessels and mechanical handling of cargo, floating or shore out-posts with residential and office accommodation etc. should similarly be estimated well in advance so as to be included in the third five year plan.

(vi) Arrangements should be taken in hand for the training of crew and other personnel required for inland water transport.

(vii) Future construction of canals in the country should be designed with due regard to the provision of navigational facilities side by side, wherever the same are feasible and required in the wider interest of the country.

(viii) The West Coast should be explored early for providing river navigation facilities as in the case of north-east, east and south.

NEW DELHI ;
27th March, 1957.

BALVANTRAY G. MEHTA,
Chairman, Estimates Committee.

APPENDIX I

Statement showing the State-wise Break-up of Navigable Waterways in India, as given by Mr. J. J. Surie, an U. N. Inland Water-Transport Expert

S. No.	Name of State	Name of River or canal	Steamers	Navigability by large country boats and possibilities for power development	Total mileage
1	2	3	4	5	6
1	Uttar Pradesh	Ganga (Allahabad-Buxar)	..	231	
		Ghagra	20 (Behram Ghat-Barhaj)	180	
		Rapti		75 (Gorakhpur-Barhaj)	
		Ganga canals (Upper and Lower)		239	
			20	725	745
2	Bihar	Ganga	350 (Buxar-Rajmahal)		
		Ghagra	77 (Upto confluence with Ganga)		
		Gandak		154 (Bagaha-Patna)	
		Son Canals		134 (Patna-Buxar)	
			427	288	715
3	West Bengal	Ganga	85 (Rajmahal-Lalgola)		
		Bhagirathi (in rains)	180		
		Hoogly	150 (Calcutta-Pak Boundry)		

1	2	3	4	5	6
		Dharla	50 in Cooch-Bihar		
		Canals			
		Orissa coast		95	
		Midnapur		72	
		Canals near Calcutta		145	
			465	312	777
4	Assam	Brahmaputra	460 (Dhubri-Dibrugarh)		
		Tributaries	75	300	
		Surma Valley	85		
			620	300	920
5	Orissa	Mahanadi	—	14 (deep sea)	
		Baitarani	25 (Sea Chandbali)	8 (U/S of Chandbali)	
		Brahmini		30 (Alva-North Point)	
		Matai		25 (Dharma Char-batia Lock)	
		Kharsua		11	
		Hansua		11	
		Maipara		23	
		Mahanadi-Mansua		30	
		Mahanadi-Canals		101	
		Orissa coast canal		9	
			25	262	287
6	Madras	Godavari River		283	
		Krishana		52	
		Godavari Canals		562	
		Krishna		342	
		Kurnool-Kadapa Canal		78	
		Buckingham Canal		258	

1	2	3	4	5	6
		Vedaraniyam Canal		35	
		West Coast Canal		90	
				1,700	1,700
		By Steamers			
		1,557			
		By large country boats			
		3,587			
		GRAND TOTAL			5,144 miles

APPENDIX II

Summary of Second Five Year Plan for Development of Inland Water Transport

During the period of the first five year plan, an inter-State Board was set up for the purpose of developing inland water transport in the Ganga-Brahmaputra region. The funds of the Board are derived from contributions made by the participant State Governments and the Central Government. The present rate of contribution is Rs. two lakhs per annum for the Central Government and Rs. one lakh per annum for each of the State Governments. Contributions have been paid for 3 years so far by all member Governments and it is expected that they will pay on the present basis for the fifth year of the Plan (fourth year of the Board). In addition, the Central Government has also agreed to make a special grant of Rs. 26 lakhs to the Board for financing the purchase of capital equipment required by the Board for its pilot projects. In pursuance of the recommendations made by the I. W. T. expert, Mr. Surie, who was deputed by the U. N., the Board has now on hand the following pilot projects:

(1) A shallow-draft push tow pilot project on the Upper Ganga.

(2) A similar project with smaller craft on the Assam feeder rivers.

(3) A diesel-driven ferry for vehicles and passengers for the Brahmaputra.

The craft required for the first project are on order and are expected to cost Rs. 25 lakhs. This will be met out of the special grant of Rs. 26 lakhs agreed to by the Planning Commission. The projects relating to items (2) and (3) will cost in all Rs. 12 lakhs. These will have to be carried forward to the Second Plan.

2. The following fresh items are proposed for the development of inland water transport during the second five year plan.

Ganga-Brahmaputra.

	(*Rs. in lakhs*)
A. *River control and conservancy.*	
(i) Dredgers (4 medium-sized)	68
Dredgers (2 small)	16
(ii) Snag-clearing boats (2)	1
(iii) Automatic beacons for night navigation	5
B. Introduction of a system of radio-telephone communication on the Brahmaputra and Ganga Rivers.	2.4

C. *Development of inland port facilities.*

Gauhati	8.46
Pandu	17.89
Dhubri	8.75
Karimganj	8.22
Patna	2.65
Manihari	3.6
TOTAL	49.57
D. Regular river survey and supply of charts.	8.25
	150.22

The above mentioned proposals are briefly explained below:

A:

(i) Dredging is necessary for improving key shoals during low water and thus reducing fleet detentions, maintaining approach channels to major river ghats, minimising delays and expenditure involved in major ghat shifts.

Two of the medium-size dredgers will be employed on the Brahmaputra and two on the Ganga. The two small dredgers will be required for the Assam feeder rivers and the Bengal feeder rivers respectively.

(ii) The snag-clearing boats are required for the Assam Valley.

(iii) The automatic beacons will be of assistance in enabling vessels to run throughout the hours of darkness and during all seasons of the year.

B:

The introduction of radio-telephony will ensure efficient inland water transport operation by facilitating quick communication between river stations and between stations and units of the fleet when they are on the move. The capital cost is made up as follows:

Brahmaputra	1.3 lakhs.
Ganga	1.1 lakhs.
	2.4 lakhs.

C:

The proposals for development of inland ports relate only to selected ghats of a permanent or semi-permanent nature where it will be possible to provide essential modern facilities such as cargo sheds, jetties, pontoons and gantries, road and rail approaches etc.

D:

Accurate charts of river surveys of important areas such as ghat approaches, key shoals and feeder rivers essential for improved operations.

3. The Ganga Brahmaputra Board will have several items of expenditure of a recurring nature consequent on the undertaking of the pilot projects mentioned above and it may also take over some or all of the new capital projects mentioned above. (The pilot projects may bring some revenue. Charges may also be levied for the use of the port facilities. These cannot however be taken into account at present). Special items of recurring expenditure are the following:—

Recurring items

	(Rs. in lakhs)
Cost of dredging	21
Control of moving sands and bank erosion	1
Radio-telephonic communication	2.15
Regular surveys and supply of charts	10.98
	35.13

To enable the Board to meet its recurring expenditure it is proposed that the basis of contribution by the Central Government should be raised from Rs. 2 lakhs per annum to Rs. 4 lakhs per annum. For five years, this will amount to Rs. 20 lakhs.

4. *Madras and Andhra States.*

Development of Buckingham canal (including the linking of the canal with the Madras Harbour). 115 lakhs.

The work is necessary to conserve an existing asset which is serving as an inter-State waterway supplementing the railway's capacity and providing a useful means of transport in large quantities of goods between the States of Andhra and Madras.

5. *Madras and Travancore-Cochin States.*

Development of West Coast Canals (Trivandrum Division) 43 lakhs.

The Travancore-Cochin Government has proposed a plan of Rs. 70 lakhs for the development of their waterways. It may not be possible to cover all this in the Central Government's inland water transport plan. It is proposed to provide in the Central plan only for deepening and improving the Trivandrum-Quilon section of the canal, the capacity of which is restricted as compared with the canals north of Quilon.

6. To sum up, the following provision is proposed: (*Rs. in lakhs*)

Equipment required for the Assam Ferry Project and the Assam feeder river projects (carry-forward items) . . .	12
Contribution to the Ganga Brahmaputra Water Transport Board	20
Capital expenditure on development works in the Ganga-Brahmaputra region	150·22
Development of the Buckingham canal	115
Development of West Coast canals	43
TOTAL . . .	340·22

APPENDIX III

Statement showing the account of receipts and expenditure of the Ganga Brahmaputra Water Transport Board from the year 1951-52 to 1955-56.

Year	Receipts Amount Rs.	Expenditure Amount of actual expenditure Revenue Rs.	Capital Rs.
1951-52 . .	3,25,000	..	..
1952-53 . .	..	3,105 15 0	..
1953-54 . .	1,75,000	1,832 12 0	..
1954-55 . .	6,00,000	2,221 5 0	..
1955-56 . .	8,00,000	83,981 2 9	25,09,173 0 0
1955-56 (Special Grant)	25,08,154		
TOTAL	44,08,154	91,141 2 9	25,09,173 0 0
		GRAND TOTAL Rs.	26,00,314 2 9

SUMMARY

	Rs.
Total Receipts	44,08,154 0 0
Deduct Expenditure	26,00,314 0 0
Net amount to the credit of the Board's Fund on 31-3-1956	18,07,840 0 0*

* This figure does not include the following contributions still due to the Board up to the year ending 31-3-1956.

	Rs.
(*i*) U. P. Government for 1954-55 & 1955-56 . .	2,00,000
(*ii*) Bihar Government for 1955-56 . . .	1,00,000
(*iii*) West Bengal Government for 1955-56 . .	1,00,000
(*iv*) Assam Government for 1955-56 . . .	1,00,000
TOTAL .	5,00,000

Intimations regarding sanctions by respective Governments for items (*i*) and (*ii*) have been received but these amounts have not yet been credited by the A.G.C.R. As for items (*iii*) and (*iv*) no intimations have been received and the State Governments are being continuously reminded.

APPENDIX IV

Note indicating the extent to which the Ganga Brahmaputra Water Transport Board has fulfilled the objectives for which it was set up.

(a) Technically, the development of traffic over a stretch depends on adequate navigable depths being available in that stretch. If there is insufficient depth but the traffic justifies it, navigation can still be attempted by dredging the channel, by river training and by the use of shallow draught boats of special design. This matter has been engaging the attention of the Board since it was set up and the Upper Ganga and the Gogra have been selected for such development. In Assam, two feeder rivers, the Subansiri and Dehing, have also been selected for the same purpose. In both cases the first requisite was a careful survey of the river depths on the selected stretches. On the basis of such surveys and in the light of the examination of the problem by a Netherlands expert (Mr. J. J. Surie), a project known as the Upper Ganga Pilot Project has been drawn up. This project envisages the experimental operation of two units of shallow draught craft consisting of one tug each and four barges of 400-ton capacity. It had been hoped in the beginning that capital assistance would be forthcoming for this project from foreign resources but the United Nations Technical Assistance Administration, who were approached, were unable to advance the capital funds and it became necessary for the Government of India themselves to finance the project. The Planning Commission agreed to this request and last year an order was placed through the D.G.S. & D. for the manufacture of the special craft required for the purpose, the designs for which were specially prepared by an European expert. Manufacture of craft always takes time and until the craft are ready the actual operation of the project cannot be started.

As regards the Subansiri and Dehing, the preparation of the designs for the craft will be taken as soon the surveys are concluded.

(b) It may be recalled that the registration of Indian vessels was statutorily provided for in order that a fair number of the vessels owned by the British-owned Joint Steamer Companies and other companies operating in Indo-Pakistan riverways was brought on to Indian registry so that India can have statutory control over the disposition of such craft. This object has been achieved. No important administrative problems are at present pending.

(c) The Board included the question of the maintenance of passenger services and reasonableness of passenger fares as one of the points to be considered by Shri N. S. Lokur. The position has been carefully gone into by Shri Lokur. It would appear from a perusal of that report that at present the demand for passenger service is not appreciable, although there seems to be a case for some-

local passenger services on the Brahmaputra in view of the difficult nature of the country. Control of river services, as in the case of road transport, is a matter within the purview of the State Governments. It is upto them to collect adequate data about the justification for the introduction of river passenger transport in particular stretches. Mr. Lokur has pointed out that he asked for data on the subject in respect of certain routes but the Assam Government were not apparently in a position to furnish the data. Shri Lokur, therefore, was unable to make any recommendation on the question of passenger service on the Brahmaputra. As regards the question of improvement of amenities for passengers on existing passenger services on the Brahmaputra, Shri Lokur has drawn attention to the bad condition of bus arrangements connecting with Tezpur Ghat. This is a matter which should be looked into by the State Government. They have been addressed on the subject.

The Joint Steamer Companies have also been requested to make proper arrangements for the supply of fresh drinking water on the shore and on the steamers on the Tezpur-Silghat ferry. The Joint Steamer Companies have undertaken to make the necessary improvement.

(d) The Board appointed Shri Lokur to enquire into these matters. Shri Lokur's general finding is that passenger rates charged by Joint Steamer Companies are not excessive wherever passengers are still being carried. As regards freight rates, his conclusions are that generally no reduction can be insisted upon, as the Steamer Companies have stated that costs of operations have arisen considerably and they have been facing losses. Shri Lokur however made various recommendations as regards the Joint Steamer Companies' conditions of booking and carriage and these have been brought to the notice of the Companies for implementation.

APPENDIX V

A brief history of the Buckingham Canal from 1806 to date.

The Buckingham Canal is a navigation canal which runs through two States, the Madras and the Andhra Pradesh. It is almost parallel and close to the East Coast, and it joins up a series of natural backwaters and connects all the coastal districts from Guntur to South Arcot. It is 196 miles long north of Madras (City) and 62 miles south of Madras. At its northern end it connects with the Commamur Canal of the Krishna delta which is, in turn, connected to the Godavari canals running as far north as Cocanada. At its southern end it terminates in the Marakkanam backwater. The total mileage of the main line of the navigable waterway from Cocanada to the Marakkanam backwater is 451 miles.

The canal is one of the earliest engineering feats of the ninteenth century. At the dawn of that century the engineers found that all along the East Coast there was a sandy desert across which the whole drainage of that coast swept down. From the Eastern Ghat to the Bay of Bengal, the country was intersected at comparatively short intervals by numerous rivers varying in magnitude from the Penneru river with a drainage area of 20,000 square miles to the streams of the smallest size, many of these rivers, as they approached the coast, spread far and wide and poured their flood waters into the sea by numerous mouths, the coast, as a rule, being very flat near the sea, and that nearly all along the line of the coast, there was a succession of backwaters varying in area from the Pulicat Lake with a waterspread in floods of 178 square miles to insignificant salt water marshes. And they also saw that these backwaters were separated usually from each other by narrow strips of high land, and that in some cases they joined during floods making the whole country for miles together one continuous sheet of water. It was these factors that made them pitch upon the line on the coast as the course of the canal. They experienced much difficulty in determining how the flood waters of the upland drainages were to be passed across the canal since in many parts of the country a high line of sandy dunes were seen to border the coast line and, where this was the case, the disposal of the surplus water from the canal, unless the plan of forming high level grounds was adopted, was generally impossible, except by means of the main line of drainage to the sea. It was probably on this account that they decided in favour of an open canal discharging flood waters into the main drainages at the ends of each reach. They had no reliable information regarding the rise and fall of tides in the various backwaters and rivers along the coast. Nor had they any reliable information regarding the flow of tides or the action of numerous sea bars and other important matters. But they knew that the coast line was often liable to be visited by cyclones of exceptional severity, during the prevalence of which the rainfall was often

extraordinarily heavy. They also knew that the normal rainfall during the north-east monsoon was considerable and that the coast was subject to violent winds the effect of which was to cause constant movement and drift of the light sandy soil and a heavy wash of waves in backwaters and rivers.

It is on such data as this that a navigable canal for small craft was first cut through strips of sand and shallow backwater from Madras northwards to Ennore Lake, as long ago as 1806. It was constructed by a private individual, Mr. Basil Cochrane, and was therefore known as "Cochrane's Canal". The extension of this short length of 11 miles of the canal was soon afterwards made to the Pulicat Lake, thus opening up navigation to the small craft to a distance of 25 miles north of Madras. In the execution of this work the sole system of alignment and construction followed then and for some 80 years afterwards was merely that of joining backwaters together by navigable cuts made through the lowest ground available.

In 1837 this canal was taken over by the Government. It was then in a very bad condition, the bed being much silted up and navigation being only practicable even for very small craft by dint of frequent silt clearances. This unsatisfactory state of affairs continued till 1852 when the construction of a proper canal was first set about in earnest and extensive improvements to the existing line and further completion of the canal north-wards were first proposed and put in hand. In 1854 the Shadayankuppam Lock was built, 7 miles north of Madras. It was built with the object of keeping up the water level in the Canal and Cooum river high during the period of the year when the sea-bar at Ennore is open, and thus of covering with water, in the interests of the sanitation of Madras town, the offensive sewage-laden banks and shoals of the Cooum river. This lock no longer exists having been abandoned in 1895 in favour of a new lock built on the margin of Ennore lake, 3 miles further to the north and in close proximity to the sea-bar.

By 1857, the canal was extended to Dugarazapatam, 69 miles north of Madras, by means of excavated cuts joining backwaters together. It had by then acquired the name of 'East Coast Canal', a title which it retained till 1878 when it was finally named after the then Governor of Madras, the Duke of Buckingham and Chandos, as 'the Buckingham Canal'. By this time an entirely new canal had also been excavated on the same principle of joining backwaters together from the Adyar river in the town of Madras southwards to Sadras, a total length of 35 miles. By 1857, therefore, the canal came to consist of a line 69 miles north of the Cooum river in Madras and some 35 miles south of the Adyar river in the same town. There was, however, neither then nor for 20 years to come any junction through the watershed separating the rivers Cooum and Adyar in the town of Madras, a distance of 5 miles.

By 1876, the Canal was extended from Dugarazapatam to Krishnapatnam, 92 miles north of Madras, thereby placing Madras in communication with the important town of Nellore, a short length of road between Krishnapatnam and Nellore completing the connection. It may be stated here that, until the completion, many years afterwards,

of the railway to Nellore, the canal remained the only principal means of communication both for passengers and goods between Madras and Nellore. In 1877, a fresh impetus was given to the construction of the canal by the Great Famine of that year. The completion of the canal was then taken up as a famine work, thousands of persons were employed upon the excavation and, by the end of the year, the cutting of the canal was carried to the Penneru river, 114 miles north of Madras. By the end of 1878, the canal was extended to its existing northern limit, *i.e.*, the junction of Pedda Ganjam, 196 miles north of Madras, with the fresh water high level Commamur Canal of the Krishna delta system, the junction being effected by a lock with a lift to the Commamur Canal. This length of 196 miles of the canal, north of the Coum river, has since been known as the 'North Canal'.

About 1877, the connecting cut, now known as the 'Junction Canal' between the Cooum and the Adyar rivers in the town of Madras was completed; and by 1882, the canal south of Madras was cut right through from Sadras to its existing southern limit in the Marakkanam backwater and several bridges, particularly on the Junction Canal, were built. The canal south of Madras 66 miles in length now came to be called 'the South Canal'.

The whole canal thus completed by 1882 consisted of a length of 262 miles of open excavated channel, largely consisting of cuts joining backwaters, with only one regulating lock. It was partially embanked on both sides. It pounded up to a great extent the upland drainage and it had few outlets to sea for the discharge of cross drainage, except at open ends of each reach. Down it therefore land floods coursed freely and rushed out to sea by means of the main drainages. Though it had been cut throughout a considerable portion of the North Canal to a bed width of 30 feet and throughout the South Canal to a bed width of 20 feet, its condition was described as bad in the extreme. It was stated that several sections of it had greatly contracted, that the bed had silted up, that traffic blocks had become frequent, that continual silt clearance had become obligatory in order to keep open traffic, and that the whole line had become a most uncertain means of communication only fit to be navigated at high tide by small craft not exceeding 10 tons on the North Canal and 5 tons on the South Canal. And this state of affairs led to on entire reconstruction of the canal design.

A modified design of the canal was accordingly considered between 1883 and 1891. This design, called the design of 1883, provided for many things. It provided for throwing back the canal wherever it had been taken too near the sea and for removing it out of the backwaters. It provided for embanking the canal on its eastern side so as to keep out a storm wave from the sea, as well as on its western side so as to exclude backwater floods and turn off river spills and drainages into the main rivers. It provided for temporarily shutting off the canal from river and backwater floods by means of flood gates or single gates facing towards the river. These gates were to be constructed on the margin of rivers and backwaters and designed to be readily closed on the approach of land floods and opened as soon as the land floods had run out to the sea; they were also to serve as

self-acting outlets to discharge the cross drainage brought into the canal. And finally it provided for constructing, in the canal east embankment, high masonry sluiced outlets with swing shutters and low level sills, intended to act as sluices, supplementary to the flood gates for discharging cross drainage from the canal, and situated as a rule, in proximity to the flood gates.

The proposal to construct locks in the place of flood gates was then considered at length but eventually abandoned, and in accordance with the modified design, the construction of the canal was steadily proceeded with from 1883 to 1891. Several diversions of the canal line were carried out in order to remove it out of backwaters and further back from the sea. A high east bank was thrown up on the sea side and numerous flood gates and a few masonry sluiced outlets were built. During the same period, a lock was also constructed on the north bank of the Adyar river in Madras, but this lock, as in the case of the Shadayankuppam Lock, formed no part of the general design of the canal and was built for special reasons connected with the sanitation of Madras.

It will thus be seen that the modified designs of 1883 while making extensive provision by means of flood gates and embankments for exclusion of land floods and storm waves from the canal, in no way isolated the canal from tidal rivers and backwaters but left it, as before, in free communication with shallow rivers often tidal throughout the year and with shallow backwaters usually tidal for about half a year. The results of this policy proved futile, since it became increasingly evident in and after 1892 (1) that the flood gates had done but little to decrease the heavy silting of the canal bed; and (2) that the main cause of such heavy and constant silting was the tidal flow from the shallow beds of rivers and backwaters. It also now became clear that throughout the hot weather months, when tides are at their lowest and backwaters are usually tideless, the canal suffered from a chronic low surface water level and that the method till then pursued of attempting to cope with such evils by means of constant silt clearances was both futile and wasteful. It became equally clear that the true remedy was to build locks, so as both to prevent silting and to impound and retain high tide water as to prevent, when tidal conditions cease to prevail, the surface water level of the canal from falling in the hot weather to the same low water level as the backwaters themselves. It was also now realised that, in addition to the failure of the flood gates to keep down silting in the canal, those gates themselves could only be used to a limited extent since their closure caused delays to traffic; that outlet sluices with low level sills were inefficient means of reducing flood level in the canal since they usually failed to act when most required because of the combined tidal and flood water in the rear of them backing up considerably above the sills, and that it was essential to make ample provision for the discharge of cross drainage as well as drainage, as far as practicable, directly across the canal.

The final design was, therefore, hammered out in 1892, and carried out by 1897. It was now decided to provide long flush escapes by lowering the east bank at places not allowing of river

floods or tidal weter backing into the canal. As to the entry into the canal of a storm wave from the sea, this risk was accepted in making such ground escapes. The final design also provided a locked-in canal, to pass up-land drainage so as to retain a surface level in the canal approximately up to the level of the highest prevailing tide; to prevent the constant silting caused by daily tidal flow up and down the canal, to approximate the canal to a still-water canal, the lock gates only opening automatically to the inflow of high tide; and to obviate all risk, when tidal conditions ceased to prevail in backwaters, of draining of the canal caused by the evaporation of shallow backwaters. Between 1892 and 1897 a large number of old flood gates were, in accordance with the final design, converted into locks, several new locks were also built, the openings to the sea were made, and long surplus escapes were formed in the east bank of the canal.

In our own country until the outbreak of the Second World War, the canal suffered much from the competition of railway. The traffic on it became less and less, its receipts dwindled, while its charges of maintenance, even in an indifferent state of efficiency, became more and more and caused yearly losses to the Government. It was only when the Second World War broke out that its position improved when the railways and motor lorries found themselves unable to cope with the transport of ordinary goods, having been diverted mostly to the transport of war supplies. And this position does not seem to have been materially affected even by the conclusion of the war.

To describe briefly the history of the canal in this century, in 1910, a great deal of agitation was made in the Legislature about its silted condition and falling off in its volume of traffic. Several members attributed this fall to the increase in the licence fee and to the deliberate diversion of traffic from the canal to the railway for the benefit of the latter. The Government, however, took the view that there was no such deliberate diversion and that they were, in fact, spending large sums over the maintenance of the canal in spite of the falling revenue from it. They said that the principles upon which the canal was worked were (1) the maintenance of a waterway for small boats not drawing more than 3 feet of water and (2) the limiting of the expenditure over the canal, exclusive of the cost of establishment, to the actual receipts as far as possible. And they considered that it was both unnecessary and inexpedient to spend large sums for the improvement of the canal.

During the First World War in 1917, when there was acute shortage of railway and shipping facilities the Collector of Krishna took a different view. He urged that the canal should be urgently improved so that rice and other essential commodities might be transported without difficulty from the northern districts to Madras. He also urged that the canal fees which had been raised with the object of driving the traffic on the railway, should be reduced. But the Chief Engineer remarked that it was not possible to deepen the canal or to render it fit for heavier traffic without going in for dredgers, which were then not available, and that, if the merchants

were anxious to use the canal, they should provide themselves with lighter boats. The Government then dropped the matter.

But the Legislature took up the matter in the same year and moved a resolution for an increased grant for the improvement of the canal. The Government now gave an assurance that they would see to it that the canal was always kept fit for boats drawing 3 feet in the North Canal and 2 feet in the South Canal. They also agreed to deepen the canal south of the Adyar Lock to a distance of 3 miles. In the next year, in 1918, another resolution was brought forward in the Legislature advocating the transfer of the canal to private enterprise, if the Government were not willing to improve it. But this resolution was withdrawn on the assurance given by the Government that the standard depth would be maintained in the canal by the prompt clearance of silt.

The matter slept for a time, till 1923, when it was again roused into activity by the Retirement Committee. This Committee suggested that the question should be examined as to whether the canal could not be made self-supporting (a) by increasing the license fees and (b) by closing the most unremunerative reaches and retaining only such of the reaches as were likely to be self-supporting. But the Chief Engineer held that the closing of the canal or any parts of it was not at all desirable and that the enhancement of the license fees was bound to drive away what little traffic that still remained on it. He, however, considered that the license fee might be enhanced if certain improvements were made, if the South Canal were deepened by one foot and the North Canal were deepened in its bed reaches and its drainage improved. The Government asked him to proceed with the works suggested by him and in 1928 sanctioned another estimate of Rs. 1:92 lakhs for effecting improvements to the Junction Canal as well as the South Canal. They also ordered an enhancement of the license and wharfage fees by 150 per cent. in three instalments. But the whole thing fell through because the Chief Engineer shortly afterwards reported that no substantial improvements could actually be made since, owing to heavy springs and the light nature of the soil, the bed heaved up almost to its original level as soon as it was deepened.

About this time a proposal was made to the Government by a private individual for taking over the canal and for plying a motor launch service upon it. But, as he had no financial backing, and as he expected financial aid from the State amounting to Rs. 3½ lakhs every year and, furthermore, as it was considered that the motor launches were bound to damage the banks of the canal, especially where they were sandy, the Government turned down the proposal.

In 1935-36 a series of representations were made by the boatmen and boat owners, and the Southern India Chamber of Commerce and the Andhra Chamber of Commerce for the improvement of the canal. They pointed out several defects such as the failure to keep open sea bars, to maintain the locks in order, to close breaches and clear silt promptly, to appoint gangmen to patrol the canal and a full time Executive Engineer to look after it, and recommended, among other things, that the license fee should be reduced, that a

basin should be constructed at the Barber's Bridge, that more wharf stations should be provided and that an Advisory Committee should be appointed. The Government then promised to take steps to keep open the sea bars, to maintain the locks in order and to close the breaches and clear the silt promptly; and as regards, silt clearance, they issued specific instructions to see that the silt was carried to a sufficient distance from the canal and not dumped on its banks and allowed to be washed back into it by the very first rains. As to the appointment of the gangmen they promised to consider it and as to the appointment of a full time Executive Engineer they considered that it was unnecessary and that it would be enough if the Superintending Engineer were to inspect the important reaches of the canal and the Executive Engineers the whole length of the canal in their charges annually. They refused to reduce the canal fee as the canal was already working at a loss but agreed to construct the basin at the Barber's Bridge. And finally, they considered it unnecessary to increase the number of wharf stations or to appoint an Advisory Committee.

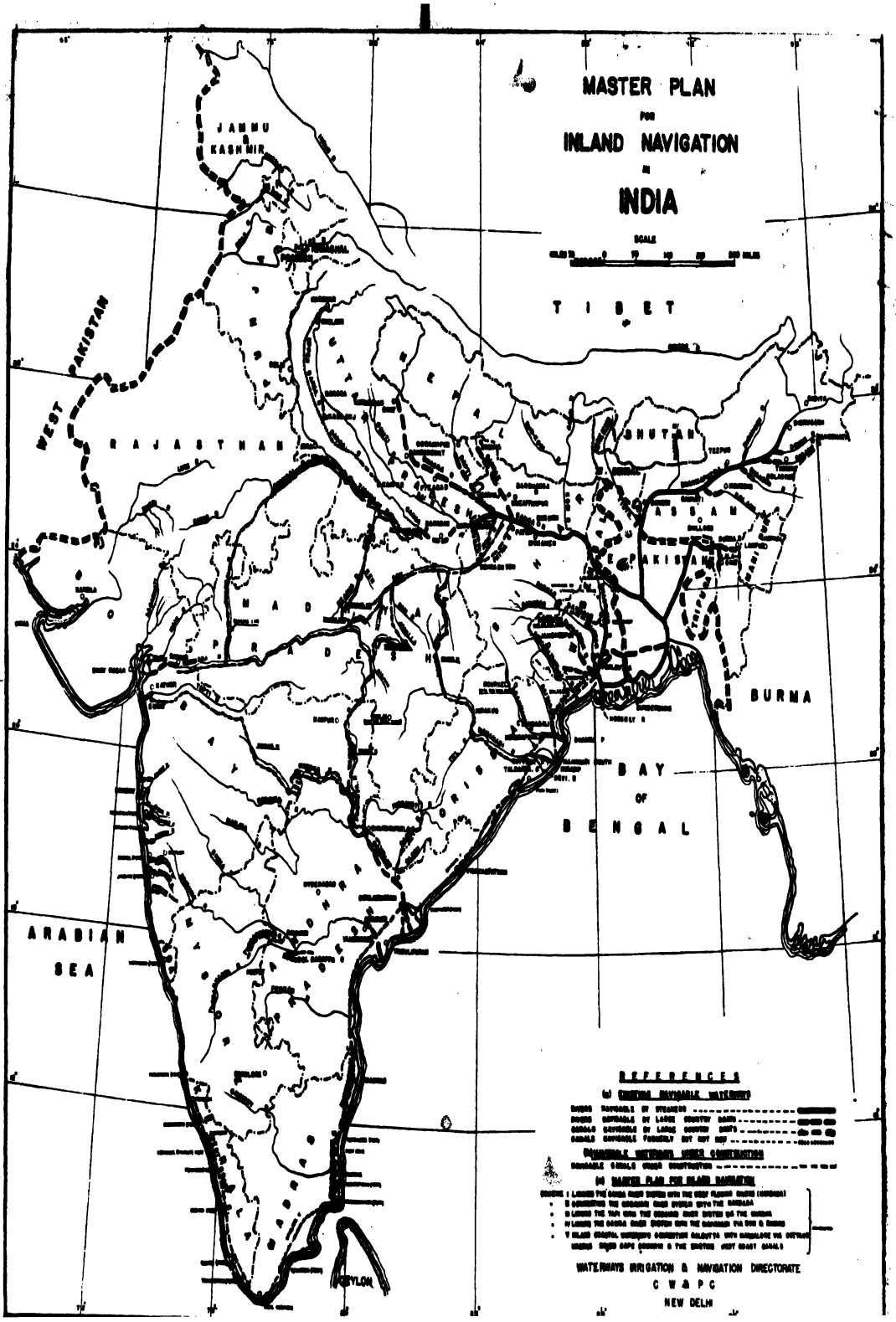
Then came the Second World War and an acute scarcity of rail and motor transport; and the Government themselves now took up actively the question of improvement of the canal. They ordered the Chief Engineer to deepen the canal, if necessary by means of dredgers, and sanctioned an estimate amounting to Rs. 2.8 lakhs for deepening the North Canal in its entire length of 196 miles. They also sanctioned a special staff for executing the work with expedition. They likewise sanctioned a sum of Rs. 3.63 lakhs for improving the existing wharfs and constructing new wharfs at Basin Bridge and other places so as to accommodate the additional traffic. As for the South Canal the Chief Engineer submitted proposals for deepening it to a depth of 3½ feet at a cost of Rs. 4.10 lakhs, but the Government turned down these proposals on the ground that the results were not likely to justify such large expenditure. They however, asked him to maintain the canal up to the prescribed standard and to do silt clearance at additional expense, if necessary.

As the war rolled on and the transport conditions became more and more difficult, large sums of money were spent in keeping the canal in proper condition. From 1940 to 1944 no less than Rs. 18.4 lakhs were spent on improvements. A masonry lock near the Pulicat Lake was constructed; 6 cargo boats were provided for hire; power tugs were employed for pulling boats, especially in malarial tracts where labour was not available; a Deputy Collector was appointed to encourage canal traffic; and the banks and berms of the Junction Canal in the City were revetted throughout. A proposal was also at this time made to connect the Buckingham Canal with the Vedaranyam Canal in the Tanjore District in order to provide direct communication from Cocanada to Point Calimere and thence to Ceylon, but the cost of it estimated at Rs. 13.6 lakhs was considered by the Government to be prohibitive and out of all proportion to the benefits anticipated. The proposal therefore had to be abandoned.

Meanwhile, the transport situation became worse and the Board of Revenue, Civil Supplies urged that it was absolutely necessary to keep the canal in an efficient condition, irrespective of the cost involved, as it was the life line which supplied Madras with rice and firewood. It suggested the appointment of a Special Executive Engineer with an adequate staff of supervisors, to look after the canal, and this was sanctioned by the Government.

Nor was this all. At this time (1945) several post-war reconstruction and development schemes for the improvement of the canal were drawn up by the Government. One of these schemes provided for the construction of wharfs and additional landing places between the Barber's Bridge and the Mylapore Bridge in Madras City at a cost of Rs. 4.57 lakhs. Another provided for the improvement of the existing inlets and outlets and the construction of new ones at a cost of Rs. 85,000. The third provided for the improvement of the existing quarters and amenities for the staff at a cost of Rs. 60,000. The fourth provided for the revetting of the slopes of the canal between the Adyar and the Coum rivers in Madras City at a cost of Rs. 3.01 lakhs. The fifth provided for the revetting of the slopes in other places, where the earth used to slip from the banks and silt up the canal, at a cost of Rs. 10.02 lakhs. The sixth provided for the putting up of quarters for the lock establishments at a cost of Rs. 1.27 lakhs. The seventh provided for raising and strengthening the canal banks to keep out river floods and for lowering high banks to prevent the heaving up of the bed, at a cost of Rs. 1.55 lakhs. The eighth provided for the purchase of 3 dredgers for the North Canal at a cost of Rs. 3.10 lakhs. And the ninth and the last provided for the linking up of the Buckingham Canal with the Vedaranyam Canal in the Tanjore district at a cost of Rs. 25 lakhs. But none of these plans appear to have been carried out as the Government of India did not accept any scheme for the improvement of the inland waterways.

A few words may be added to bring out the present importance of the canal. As has been already stated, the canal lost its importance for many years in this century as a result of the competition of the railways. But it has regained its importance, ever since the Second World War. In 1900-1901, for instance, it carried goods of the value of Rs. 43.81 lakhs only; and in 1938-39, *i.e.* just before the Second World War, it carried goods of the value of Rs. 134 lakhs, but in 1951-52 (before the separation of the Andhra State) it carried goods of the value of no less than Rs. 20.73 crores.


MASTER PLAN
FOR
INLAND NAVIGATION
IN
INDIA
SCALE
JAMMU & KASHMIR
TIBET
WEST PAKISTAN
RAJASTHAN
BHUTAN
ASSAM
EAST PAKISTAN
MADHYA PRADESH
BURMA
BAY OF BENGAL
ARABIAN SEA
CEYLON
REFERENCES
WATERWAYS IRRIGATION & NAVIGATION DIRECTORATE
C W & P C
NEW DELHI

APPENDIX VI

Map showing Master Plan for Inland Navigation in India.

APPENDIX VII

Statement showing the volume of traffic handled by the Joint Steamer Companies, both in local and through booking with the Railway.

Traffic to Calcutta

Years	From Assam (Tons)	From Cachar (Tons)	From Ganges (Tons)	Total (Tons)
1951	3,81,202	40,874	612	4,22,688
1952	3,10,444	35,825	6,509	3,52,778
1953	3,91,114	37,090	6,234	4,34,438
1954	3,12,142	43,225	3,011	3,58,378
1955 (Upto Oct.)	2,35,565	35,998	182	2,71,745

Traffic from Calcutta

Years	To Assam (Tons)	To Cachar (Tons)	To Ganges (Tons)	To Tripura (Tons)	Total (Tons)
1951	4,46,160	73,081	49,706	8,142	5,77,089
1952	3,92,071	72,496	36,395	10,328	5,11,290
1953	2,06,747	47,260	24,418	15,279	2,93,704
1954	3,07,622	54,165	42,600	17,512	4,21,959
1955 (Upto Oct.)	3,21,904	53,567	27,942	12,758	4,16,171

Intermediate Traffic

Years	Assam (Internal) (Tons)	Ganges (Internal) (Tons)	Ganges to Assam (Tons)	Assam to Ganges (Tons)	Total (Tons)
1951	1,29,539	6,914	29,843	598	1,66,894
1952	1,31,464	2,015	22,665	271	1,56,415
1953	1,26,959	7,060	18,625	523	1,53,167
1954	95,797	15,325	44,413	381	1,55,916
1955 (Upto Oct.)	42,133	25,965	34,965	115*	1,03,182

*This is upto the end of June 1955.

APPENDIX VIII

Statement showing the authorised capital, subscribed capital, income, expenditure and dividends declared in each of the years since 1950-51 by foreign as well as Indian Companies

Sl. No.	Name of Company	Capital	Income	Expenditure	Dividend or loss	Remarks
1	Calcutta Steamers Ltd. Calcutta, (1951)	Authorised Rs. 5 lakhs Subscribed Rs. 1·3 lakhs Paid up Rs. 1·3 lakhs	Company reports loss for these years.		1951 : Loss of Rs. 47,216. 1952 : Loss of Rs. 64,632. 1953 : Loss of Rs. 8,801.	
2	Bengal Assam Steamship Co. Ltd., Calcutta—1 (Andrew Yule & Co., Managing Agents.)	Authorised Rs. 25 lakhs Subscribed Rs. 23 lakhs. Paid up Rs. 23 lakhs.	1951 Rs. 86,91,360 1952 Rs. 69,24,424 1953 Rs. 53,91,022 1954 Rs. 40,91,131 1955 Rs. 61,53,628	Rs. 66,55,911 Rs. 52,11,688 Rs. 43,51,307 Rs. 35,88,837 Rs. 50,72,201	Rs. 2,71,000 Rs. 2,71,100 Rs. 2,21,000 Rs. 1,71,000 Rs. 1,71,000	
3	East Bengal River Steam Service Ltd., Calcutta-5. (Raja Sreenath Ray, Managing Agent)	Authorised Rs. 20 lakhs. Subscribed Rs. 9,57,211 Paid up Rs. 9,57,211	1950-51 Rs. 20,86,479 1951-52 Rs. 21,32,449 1952-53 Rs. 21,58,379 1953-54 Rs. 22,67,304 1954-55 Rs. 22,74,960	Rs. 22,18,844 Rs. 22,198,057 Rs. 23,32,524 Rs. 23,84,054 Rs. 23,15,881	Nil	
4	The Pioneer Shipping Co. Ltd., Calcutta.	Authorised Rs. 50 lakhs. Subscribed Rs. 50 lakhs. Paid up Rs. 7 lakhs.	Figures not ready.			

Sl. No.	Name of Company	Capital	Income	Expenditure	Dividend or loss	Remarks
5	Assam Bengal River Service Ltd., Calcutta—1. (M. P. Gangoly & Co., Managing Agents.).	Authorised Rs. 25 lakhs Subscribed Rs. 60,900/-- Paid up Rs. 44,825/-	1951 Rs. 45,661 1952 Rs. 34,619 1953 Rs. 60,238 1954 Rs. 54,992	Rs. 50,999 Rs. 28,316 Rs. 56,529 Rs. 52,574	Nil *Dividend 5% Pref. Do. Do.	*Paid on 5 per cent. Cumulative Preference Shares.
6	Indo-Swiss Trading Co. Ltd., Calcutta—13.	PARTICULARS NOT FURNISHED				
7	Indian River Transport Co. Ltd. Calcutta—1. (P. C. Ray & Co., Managing Agents).	Authorised Rs. 5 lakhs Subscribed Rs. 5 lakhs Paid up Rs. 5 lakhs	1954 Rs. 2,91,095 1955 Rs. 2,14,625	Rs. 5,21,438 Rs. 4,85,023	Loss Rs. 2,30,342 Loss Rs. 2,70,398	
8	India General Navigation and Railway Company Ltd., Calcutta—1.	Authorised £ 10 lakhs Subscribed and Paid up £ 8,99,610.	1950 £ 31,99,831 1951 £ 36,96,260 1952 £ 40,41,340 1953 £ 34,14,766 1954 £ 33,88,771 1955 £ 31,56,259	£ 31,91,961 £ 36,75,916 £ 39,45,158 £ 35,66,558 £ 33,16,465 £ 30,76,865	£ 3,843 £ 15,374 £ 26,081 £ 8,053 £ 27,267 £ 27,267	The expenditure includes depreciation, but not income-tax. *All these figures relate to the whole of the Company's business in India and Pakistan.*
9	Rivers Steam Navigation Co., Ltd., Calcutta—1.	Authorised £ 5 lakhs. Subscribed £ 5 lakhs Paid up £ 3,82,415	1950 £ 31,83,341 1951 £ 36,30,937 1952 £ 39,95,446 1953 £ 33,93,936 1954 £ 32,55,696 1955 £ 33,36,730	(after depreciation but before tax) 1950 £ 31,53,023 1951 £ 34,98,575 1952 £ 39,75,208 1953 £ 35,36,310 1954 £ 32,00,019 1955 £ 32,82,882	1950 Dividend £ 10038 1951 ,, £ 12,046 1952 ,, £ 10,516 1953 ,, £ 8,413 1954 ,, £ 13,194 1955 ,, £ 13,194	

10	Bengal River Service Co. Ltd., Calcutta.	Authorised Rs. 20 lakhs. Subscribed Rs. 12,57,400 Paid up Rs. 12,57,400/-	1950 Rs. 9,17,780 1951 Rs. 15,80,713 1952 Rs. 20,38,388 1953 Rs. 14,19,264 1954 Rs. 14,73,321	1950 Rs. 12,98,524 1951 Rs. 17,27,529 1952 Rs. 18,63,349 1953 Rs. 13,90,855 1954 Rs. 14,27,472	1950 1951 1952 1953 1954	No dividend declared.
11	The Indian Shipping Co. Ltd., India Exchange, Calcutta—1.	Authorised Rs. 20 lakhs Subscribed Rs. 4 lakhs Paid up Rs. 4 lakhs	1951-52 Rs. 23,64,698 1952-53 Rs. 19,70,378 1953-54 Rs. 26,04,993 1954-55 Rs. 26,19,274	Rs. 18,07,575 Rs. 14,20,007 Rs. 24,24,482 Rs. 23,59,419	No dividends were paid.	
12	Neptune Navigation Co. Ltd. Calcutta.	PARTICULARS NOT FURNISHED				

APPENDIX IX

Statement showing the number of steamers etc. owned, volume of cargo moved and the number of passengers carried by Indian and foreign companies in each of the years since 1950-51

Sl. No.	Name of Company	Number of vessels owned	Routes operated and number of steamers	Cargo Carried		Passengers carried	Remarks
1	2	3	4	5		6	7
1	Calcutta Steamer Ltd., (1951).	1 Vessel 1 Barge	Calcutta to Assam 1 steamer	Tonnage not furnished	1953- to 1956	189 each year	Vessel sank in 1955.
2	Bengal Assam Steamship Co. Ltd. Calcutta—1.	9 Steamers 24 Flats (15701·33 Gross tonnage).	Calcutta-Narayan Ganj-Calcutta.	1950-51 1951-52 1952-53 1953-54 1954-55	43,95,256 mds. 17,57,137 mds. 17,65,745 mds. 13,08,752 mds. 15,65,387 mds.	Not licenced to carry passengers.	They carry mostly jute.
3	The East Bengal River Steam Service Ltd Calcutta. (Raja Sreenath Roy & Bros. Managing Agents).	11 Steamers 28 Flats 2 Pontoons 52 Barges 19,000 tons approximately	Calcutta—East Pakistan *via* Sunderbans. Calcutta—Assam *via* East Pakistan.	1950-51 1951-52 1952-53 1953-54 1954-55 1955-56	14,45,000 mds. 13,38,000 mds. 9,32,000 mds. 8,80,000 mds. 13,35,000 mds. 13,82,000 mds.		
4	The Pioneer Shipping Co. Ltd., Calcutta—7.	5 Big Cargo carrying steamers (LCT) 3 Steam Launches and 45 Iron Built Barges	Calcutta to Assam 5 Big cargo carrying steamers (LCT) and 10 barges Rest are engaged at Calcutta Port.	9,20,119 mds. between Calcutta & Assam. 25,00,000 mds. within Calcutta area.		Nil	

5	Assam Bengal River Service Ltd., Calcutta (M. P. Gangoly & Co. Managing Agents)	6 Motor Launches Total tonnage 105	(*i*) Sunderban River Route —3 Motor Launches. (*ii*) Hooghly River Route— 3 Motor Launches.	No cargo was carried		12,75,000 every year approximately.	
6	Indo Swiss Trading Co. Ltd. Calcutta—13.	5 Steamers Total tonnage 808. 2 Flats—one of 183 tons and other not furnished.	Howrah Calcutta Ferry Service. Two steamers and one flat.	Data not furnished			2 Steamers used to tow barges loaded with cargo between Calcutta and Pakistan, also Calcutta and Assam prior to 1950, since then services discontinued. Now they are lying practically idle except for carrying pilgrims for Ganga Saugar Mela every year in January and having occasional pleasure journeys.
7	Indian River Transport Co. Ltd. Calcutta—1. (P. C. Ray & Co., Managing Agents).	6 Steamers & 1 Steel cargo Boat Total Tonnage 300 tons.	1 Armenian Ghat (Cal.) Banka (Midnapur Dt.) 2 Steamers and one as a stand by (40 miles)	1954 1955	75,401 mds. 69,662 mds.		
			2 Kolaghat S. E. Rly) Ranichak (W. Bengal)— 1 steamer (22 miles).	1954 1955	33,26,53 mds. 20,45,38 mds.		
			(*Combined service figures*)				
8	India General Navigation & Railway Co. Ltd., Calcutta.	41 Steamers 8 Feeder Steamers 15 Tugs & launches 2 Motor Boats 82 Running Flats 73 Cargo Boats 28 Feeder Barges 36 Miscellaneous Crafts. 28 Receiving Flats and Pontoons	(1) Ganga Despatch Service (Calcutta & Ganges) Service Stations—7 Despatch Steamers—2 Towing Steamers and 8 Flats.	1951 1952 1953 1954 1955	3,53,72,916 mds. 3,17,95,956 mds. 2,55,62,844 mds. 2,72,83,014 mds. 2,90,38,095 mds.	4,80,831 3,26,021 2,50,851 1,98,540 1,91,839	The Company state that the number of steamers and flats on each route varies with the traffic demand which fluctuates from month to month as well as seasonally.
			(2) Assam Sunderbans Despatch Service (Calcutta Desangmukh)—36 Despatch Steamers : 16				

1	2	3	4	5	6	7
			Towing Steamers and 112 Flats. (3) Cachar — Sunderbans despatch Service (Calcutta—Cachar)—13 Despatch Steamers and 14 Flats.			
9	Rivers Steam Navigation Co. Ltd., Calcutta 1.	40 Steamers 8 Feeder Steamers 13 Tugs & Launches 66 Flats 4 Oil Carrying Flats 3 Oil Carrying Barges. 5 Coal Flats . 37 Cargo Boats 16 Miscellaneous 44 Receiving Flats and Pontoons—1,64,800 tons (combined)	(4) Delta Despatch Service (Calcutta—Narayanganj)—1 Towing Steamer and 10 Flats. On the Assam-Sunderbans Despatch Service, the Companies operate also six bulk oil flats and five P. O. L. barges.			
10	Bengal River Service Co. Ltd., Calcutta.	22 Steamers 8 Flats 53 Barges 53 Wooden Boats Total tonnage 10,558 tons.	Between India and Pakistan.	1950 23,36,000 mds. 1951 26,41,000 mds. 1952 24,41,000 mds. 1953 25,85,000 mds. 1954 27,08,000 mds.	Nil	
11	The Indian Shipping Co. Ltd., India Exchange, Calcutta.	3 Cargo vessels 6 Towing launches 2 Flats 54 Barges	(1) Calcutta to East Pakistan—4 Towing Launches and 20 Barges.	1951-52 20,57,005 mds. 1952-53 17,22,890 mds. 1953-54 23,86,394 mds. 1954-55 24,50,912 mds.	Nil	

		(2) Calcutta to Assam *via* Pakistan—4 cargo vessels, 2 Flats and 14 Barges. (3) In the river Hooghly Bansberia to Budge Budge—2 Towing Launches and 30 Barges. Total Tonnage—7,523.
12	Neptune Navigation Company Ltd., Calcutta.	PARTICULARS NOT FURNISHED

Breakdown of main traffic movements over the Joint Steamer Companies Services

From Calcutta

Year	To Assam (India)	To Cachar (India)	To Ganges (India)	To East Bengal & Tripura State	Total
	Mds.	Mds.	Mds.	Mds.	Mds.
1951 . .	1,17,17,136	19,94,031	13,68,009	44,74,629	1,95,53,805
1952 . .	1,03,87,440	19,43,136	9,62,010	40,62,663	1,73,55,789
1953 . .	55,24,767	12,54,960	6,71,760	27,94,257	1,02,45,744
1954 . .	81,83,214	13,76,703	11,32,110	26,18,136	1,33,10,163
1955 . .	1,03,22,505	16,08,606	7,88,859	27,91,881	1,55,11,851

To Calcutta

Year	From Assam (India)	From Cachar (India)	From Ganges (India)	Total
	Mds.	Mds.	Mds.	Mds.
1951	1,04,29,371	10,42,740	86,103	1,15,58,214
1952	85,42,638	10,45,467	2,11,761	97,99,866
1953	1,00,37,763	10,04,076	1,57,383	1,11,99,222
1954	83,22,453	11,67,588	39,987	95,30,028
1955	81,18,225	11,65,563	4,833	92,88,621

APPENDIX X

Statement showing the Mileage of Various Forms of transport in some Foreign countries as compared with that in India.

(figures in miles)

Country	Rail	Road	Waterways
Austria	3,753	19,068	230
Belgium	3,108	57,500	970
France	25,888	450,000	8,268
Germany (Western Zone)	19,091	155,000	2,662
India	34,705 (All Rlys.)	239,801	5,500
Ireland	2,566	50,399	456
Italy	10,298	122,188	1,498
Netherlands	1,991	8,622	4,324
		(+7,500 —9,375)*	
Sweden	9,431	85,355	758
Switzerland	1,978	28,976	13
United Kingdom	19,334	187,348	2,396
Yugoslavia	7,288	57,788	1,271

*Unclassified.

APPENDIX XI

Statement showing the summary of conclusions/recommendations.

Serial No.	Reference to Para No.	Summary of Conclusions/Recommendations
1	2	3
1	16	The Committee understand from a recent press report that a proposal to have a a canal skirting Delhi is under consideration of the Government. The Committee welcome the proposal and hope that the same will be finalised soon.
2	23	The Committee are glad to note the undertaking given by the representative of the Ministry of Transport that they will have to accept the responsibility of co-ordinating and developing Inland Water Transport and hope that the Ministry will now function with this enlarged responsibility. The Committee further recommend that the suggestion to divide the entire country into different contiguous regions and to put each region under charge of a competent technical officer to attend to the development of river navigation in different regions should be drawn up after careful study and investigation in consultation with the Central Water and Power Commission and the State Governments for gradual implementation subject to the availability of resources.
3	29	The provision of only Rs. 43 lakhs for the development of west coast canals appears to be inadequate Feasibility of increasing the same may be examined.
4	34	The Committee are of the opinion that the Central Government should not shirk their responsibility in the matter of declaring certain inland waterways as national waterways by statute. Inland Water Transport has been neglected for a long time past and it is high time that the matter is taken up seriously. The Railways and some roadways have since been nationalised and brought under the Central Government. There is, therefore, no point in not declaring the important

1	2	3
		waterways as national waterways. The Committee, therefore, recommend that the question of declaring important waterways as national waterways should be taken up and that a beginning may be made with the Ganga and Brahmaputra Waterways. Further, the proposed Inland Water Transport Committee may be asked to go into the question of expenditure involved in declaring other important waterways in the country as national waterways and to prepare a scheme for gradual increase in the mileage of waterways to be declared as national waterways.
5	37	The Committee note with regret that the information collected by the Ministry of Transport in 1949 regarding an all-India survey of the possibilities of developing inland water transport in the country was not put to any useful purpose in that no perspective plan has so far been drawn up by the Ministry regarding the development of river navigation in India which no doubt is a difficult and vast task but holds possibilities of achievement at a time when it is most needed to supplement the other means of transport which are strained to the utmost at the moment.
6	38	The Committee feel that it is high time that the promise given by the late Shri N. Gopalaswamy Ayyangar, the then Minister for Transport & Railways at a Conference in 1949 that if river services were found to be better suited to meet the needs of particular areas, Government would be prepared to consider their development even in preference to Railways or to make the Railways coordinate their activities so as to enable the two to work in coordination, is implemented.
7	45	The representative of the Ministry expressed the opinion that after getting 5 to 10 years' experience, it would be proper time for the Ganga-Brahmaputra Water Transport Board to be made a Statutory body. The Committee feel that this question might as well be examined at this stage. At the suggestion of the Committee the representative agreed to include this question in the terms of reference of the Inland Water Transport Committee which is being set up.

1	2	3
8	54	The Committee find that no annual reports on its working are issued by the Ganga-Brahmaputra Water Transport Board. The Ministry have informed the Committee that no separate report has so far been issued by the Board with regard to its working and that the annual Administration Report of the Ministry of Transport includes account of the working of the Board. The account given in the annual report of the Ministry of Transport is very sketchy and barely covers a page. The Committee suggest that the Board should issue a regular report on its working and it might form an important appendix to the report of the Ministry of Transport. The salient features of the re. may be mentioned in the main report.
9	63	The Committee feel that the Buckingham Canal offers great potentialities for the development of traffic and suggest that all the improvements needed together with the linking of the canal with the Madras harbour should be carried out with in the second five year plan period to enable the canal to fulfil a long felt need.
10	69	The Committee regret to note that other urgent problems necessitated the postponement of investigation in connection with the development of navigation on the Mahanadi river. The Committee suggest that the scheme of navigation on the Mahanadi should be pursued as originally contemplated as early as possible. As regards investigations in connection with the development of a port at the mouth of the Mahanadi river, which are expected to be completed by the end of 1958, the Committee suggest that efforts be made to complete the investigations earlier.
11	70	The Committee suggest that the feasibility of connecting Kurnool-Cuddapah canal with some commercial and industrial centres to make it more useful may be examined.
12	72	The Committee recommend that the Government should give due consideration to the suggestions of Shri N. C. Ghosh, Director/Manager, India River Transport Company Ltd., Calcutta regarding the necessity of special type of craft to navigate on the Damodar Valley irrigation-*cum*-navigation canal and the need for having regular terminal

1	2	3
		points along the entire stretch of the canal system. The Committee further recommend that the Ministry of Transport should not escape its responsibility by saying that the utilisation of the river valley and other multipurpose projects for the purpose of navigation is primarily for the Irrigation and Power Ministry to consider. It should fully associate itself with such schemes and co-operate in full with the Irrigation and Power Ministry from the very inception to see that where navigation is possible such schemes must provide for the same in the overall interests of the country. The Transport Ministry should cease to be a mere onlooker on such important projects and should work in close co-operation with other Ministries to safeguard the interests of inland navigation and its development in the country.
13	84	The Committee regretfully observe that although nearly 4 years have elapsed since Mr. J. J. Surie, an inland water expert of the U. N., submitted his report, the crafts recommended by him for the Ganga, Gogra and Brahmaputra rivers have not yet been received and put into operation and that surveys are still in progress for drawing up specifications for the diesel ferry vessel across the Brahmaputra. The Committee feel that the need for operating modern craft on the shallow waterways of India is very urgent and that no time should be lost in carrying out necessary investigations and surveys, obtaining the craft and placing the same in service.
14	90	The Committee suggest that the feasibility of arriving at some such arrangements in India as those mentioned by the Indian delegation to the Soviet Railways and other European Railways in their report and as given in para 89 should also be examined so as to enable maximum use of the surplus capacity. River navigation in many places is bound to be seasonal and on those occasions, the traffic can be diverted from the Railways. Also, just like the Standard Vacuum Oil Company, other big firms, and business establishments may be called upon by Government to move their raw materials and finished goods over the Ganga region by river. On the Rhine and the Tennessee Rivers in Europe and the U. S. A. respectively, bulk of non-perishable goods constitute most of the traffic. It will be

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		certainly advantageous if the oil companies avail of the services of river transport and build terminals and bulk storage plants on the banks of the rivers at selected places, distributing the products by truck and rail according to requirements. Sugar-cane, coal, fertilizers and raw materials also can be moved in bulk quantities *via* waterways, in certain regions.
15	92	The Committee are glad to note the association of the non-official element in the Inland Water Transport Committee.
16	94	The Committee welcome the appointment of the Inland Water Transport Committee. They would suggest that the terms of reference of the Committee might be made more comprehensive by including subjects like the best form of the administration of the waterways, a direct river service between East and West coasts, creation of national waterways, and making the Ganga-Brahmaputra Board a Statutory Board etc. The Committee also suggest that an Advisory Committee be constituted to advise the Ministry of Transport on matters pertaining to river navigation.
17	100	The Committee observe that some of the proposals made by the Central Water and Power Commission in their Master Plan for development of Inland Waterways are common to the suggestions made by Sir Arthur Cotton and further understand that the other suggestions of Sir Arthur Cotton will also be considered by the Central Water and Power Commission in due course. The Committee hope that detailed investigations on the five schemes recommended by the Central Water and Power Commission will be pursued with vigour.
18	107	The Committee suggest that the feasibility of including the Inland Water Transport Companies in the list of industrial concerns to whom financial aid could be granted by the Industrial Finance Corporation, should be sympathetically examined by the Ministries of Transport and Finance.

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19	111	The Committee would like to refer to para 67 of their Forty-seventh Report wherein it has been pointed out that the Light house Department of the Government of India has developed an acetylene flasher. The Committee suggest that the feasibility of utilising these flashers in the automatic beacons for Inland Water Navigation should be examined in consultation with the Lighthouse Department.
21	113	The Committee hope that the proposal to provide and maintain the wireless sets by the Posts & Telegraphs Department on the payment of a yearly rental by the Ganga Brahmaputra Board will be implemented without delay.
21	116	The Committee suggest that suitable steps should be taken to overcome the shortage of engineering staff for preparing designs of modern equipment for berthing of vessels and for mechanical handling of cargo for all inland water ports and that designs for other riverine ports should be finalised without delay.
22	119	The Committee are glad to note that provision has been made in the Ganga-Brahmaputra Water Transport Board's second five year plan for recruitment of necessary staff and the purchase of vessels for carrying out the survey of Ganga River, Sunderban area, Hooghly River, Rupnarian River and Brahmaputra River at various places and the feeder rivers Dehing, Subansiri etc.
23	120	The Committee suggest that the provision of launches at other crossings as at Biharikal, a border station on the Sunderbans, should be expedited.
24	122	The Committee are of the opinion that the various facilities suggested by the Steamship Companies are the normal facilities required for the purpose of maintaining efficient system of inland water transport. They, therefore, suggest that provision of these facilities should be arranged on a systematic basis.
25	125	The Committee consider the recommendations made by Shri N. S. Lokur in respect of channel conservancy measures adopted by the Joint Steamer Companies as reasonable and fair and suggest that Government should reconsider the position and take steps to implement them.

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26	128	The Committee are of the opinion that there is enough traffic at present for transport by rail, road as well as steamers. They, therefore, suggest that the matter of the rational organisation of transport in the region should be examined and efforts made to earmark certain amount of traffic for carriage by river navigation.
27	131	The Committee suggest that the question of amending the Inland Steam Vessels Act on the lines suggested by the Steamship Companies should be examined, provision in the laws of foreign countries studied and the Act suitably modified.
28	134	The Committee feel that the rivers like Narbada and Tapti, on the Western Coast have long been neglected with the result that their waterways have been silted up and blocked and their Ports have been made unsailable. So far nothing has been done to develop the potentialities. of navigaton on these rivers. The Committee recommend that the Ministry of Transport should arrange early for a survey of the navigation possibilities of these rivers, as also of the Chambal and Jumna, in consultation with the Central Water and Power Commission and the State Governments concerned. They also recommend that an inter-State River Board may be constituted for this purpose.
29	135	The Committee suggest that the Ministry should carefully examine the position of the indigenous craft building firms in the country and come to some decision regarding the encouragement to be given to such companies with a view to ensure that all the crafts of modern design which will be needed with the development of inland water transport are produced in India. The Committee are of the opinion that given encouragement by the Government there will be no difficulty in developing the existing capacity for constructing such craft to any extent required. There are private firms in Bombay and Calcutta who do construct such craft. The Committee also suggest that suitable steps should be taken to standardise country boats for local as well as inter-district communications.

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30	136	The Committee would suggest that the statistics regarding the traffic carried, number of crafts, tugs, barges etc. plying which are of vital importance should be published regularly. The Transport Ministry should either bring out a journal at prescribed intervals giving the data in respect of those forms of transport which come within its purview, or publish these essential statistics for all the States in India in a consolidated manner along with their annual report.
31	140	The Committee would like to make the following specific suggestions in regard to inland navigation:— (*i*) The drawing up of schemes, with a view to study the navigation potentialities of the various rivers and canals throughout India and the carrying out of improvements and extensions thereto should be taken in hand without further delay and the work completed within a period of say, 2-3 years. (*ii*) Special efforts should be made to obtain expeditiously the craft and other equipment for the Upper Ganga Pilot Project, and the Project put into operation as early as possible in order that the results of its working may be available for guidance in other places. (*iii*) The problems of channel conservancy measures required at various places should be carefully examined and provision of funds obtained for non-recurring and recurring expenditure on this account. (*iv*) The requirements of dredgers, and other machinery required for deepening the canals and rivers which have silted up through neglect during the last many years, and of suitable craft and equipment required for service thereon should be estimated sufficiently in advance to enable adequate funds being obtained during the third five year plan period. (*v*) The requirements of various facilities such as beacons, radio-telephone communications, jetties, equipment for the berthing of vessels and mechanical handling of cargo, floating or shore out-posts with residential and office accommodation etc. should similarly be estimated well in advance so as to be included in the third five year plan.

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	(*vi*) Arrangements should be taken in hand for the training of crew and other personnel required for inland water transport.
	(*vii*) Future construction of canals in the country should be designed with due regard to the provision of navigational facilities side by side, wherever the same are feasible and required in the wider interest of the country
	(*viii*) The West Coast should be explored early for providing river navigation facilities as in the case of North-East, East, and South.

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