CHAPTER IX

TRANSPORT AND COMMUNICATIONS

I. State of Transport Prior to Railway Age

Information is rather scanty about the state of communications and transport in India prior to the Mauryan Era. A clearer picture of the conditions is available on coming down to the Mauryan times when political consolidation and more efficient administration promoted commerce and industry and greater use of communications and transport for internal and foreign trade. A Royal Road, 10,000 *stades* (about 2,400 km.) in length, ran from the North-West Frontier to Pataliputra, with milestones showing distances and by-roads and signposts at every tenth *stade*. Kautilya refers to the maintenance of the King's Highway (*Rajamarga*) at public expense and of State roads and paths for asses, camels, cart-tracks, foot-paths and others. The principal highway from Rajagriha through Sravasti connected Taxila and the frontiers and Central and Western Asia. Apart from these arterial routes, there was a network of other roads providing means for internal communication. The greater economic importance of the southern routes from the point of view of trade connections was stressed by Kautilya. Frequent travel by officials of a centralized and bureaucratic administration contributed to the maintenance of good communications. Land routes over which foreign trade was conducted also acquired a special importance and were naturally more frequently used.

There are many references to early maritime activity and foreign trade. The great activity during the reign of Asoka on colonial enterprises and cultural missions presumes the existence of an adequate sea-going fleet and of facilities for sea voyages. Kautilya refers to ships, both large and small, used for navigation and to the maintenance by the State of boats for hire and to the steps taken to destroy pirate ships. Ships sailed from Tamluk to various ports along the east coast. On the west coast, the sea route took ships to ports along the south-eastern coast of Arabia, in proximity to modern Aden, where Indian traders exchanged their goods for those from the Eastern Mediterranean region sent down the Red Sea.

The picture of internal and external trade and transport becomes fuller by about the early centuries of the Christian Era. The sea-ports and their importance in relation to foreign trade find frequent mention. The port of Berenice, built by Ptolemy Philadelphus (285-246 B.C.) on the Egyptian coast of the Red Sea, became the most important centre for Indian trade.

A brisk foreign trade between India and the West, particularly the Roman Empire, stimulated considerable amount of business activity in a number of ports on the west coast of India, namely, Barygaza (Brigukaccha, Bharugachha or Broach), Sopara, Kalyana, Naura, Tyndis, Muziris (Musiripattanam or Cranganore) and Nelcynda (Nilakantha). After Hippalus discovered the favourable monsoon winds, the Greek and Egyptian traders could make direct voyages from the Gulf of Aden to the Malabar Coast. The discovery of Roman coins over a wide area in South India attests to the spread of Roman trade with India.

The Tamils had taken to the sea quite early and found their way to South East Asia in the first century A.D. Foreign trade extended by the third decade of the sixth century A.D. to China through Indonesia on the east and to Ethiopia and the Homerite country (Arabia) on the west.

Glimpses of the conditions of trade and transport afforded in the accounts of travellers, such as Hiuen Tsang (A.D. 629-645) and Marco Polo (A.D. 1260), point to the attention given to roads and *rest houses.* About 1,700 *serais* were altogether built by Sher Shah with separate lodgings for Muslims and Hindus and with adequate supplies for the needs of travellers and their horses. Jean Baptiste Tavernier's travels in India during 1640-67, in a carriage drawn by bullocks from Kandahar-Multan to Dacca, Surat to Golconda, and thence to Masulipatam, were found by him to be as comfortable as in Europe. During the rains, transport was at a standstill, while during the hot weather when fodder and water were difficult to get, it was kept down to small limits.

The struggle among foreign powers to obtain control over the foreign trade with India shed an interesting sidelight on the significance of communications. The Portuguese opened the route *via* the Cape of Good Hope after Vasco da Gama landed in Calicut and later found ports or open roadsteads along the Malabar Coast where merchants from Sri Lanka or Malacca met those from the Persian Gulf or the Red Sea. Later the Dutch broke the Portuguese monopoly and were in turn ousted by the English.

With the arrival of these foreign powers, there is more information relating to the trade and economic conditions in India. Duarte Barbosa refers to the trade with Calicut and ship-building and ship-repairing activities at Cochin and Dharmapuram. The European merchants could only exploit the trade in the products of the coast and to articles of high value in comparatively small bulk. It was practically impossible to penetrate inland and to draw thence to the west coast the products of the interior. On the east coast there was no port on the surf-beaten line of shore until the Gangetic delta was reached at the head of the Bay of Bengal.

During the first half of the 19th century, roads were non-existent

except where they had been constructed for military purposes. With traffic generally having to be carried over narrow, unmetalled tracks, rendered impassable during the monsoon, the speed of movement was regulated by the capacity of the bullock carts struggling over the paths. Ten miles a day was a fair average. In many parts of the country where carts were unusable, pack-bullocks provided the only means of transport. Under these circumstances, a navigable river was a better means of transportation and trade could be carried on in boats. But, in the politically unsettled state of the country, roads and rivers alike were infested by bands of robbers and these conditions discouraged trade as well as travel.

The economic isolation of even neighbouring districts rendered the famine in one of them impossible to be alleviated by abundant harvests in another. Harvests in some parts of the country at times proved so plentiful that it would not pay to carry grain to markets. The ports were also ill-equipped for the reception and shipment of merchandise. The freight charges round the Cape of Good Hope from Calcutta, Madras and Bombay to London were so high and the duration of the voyage so long that, taking into consideration the charges for internal transit, trade was non-existent except in articles of special demand in which the country had more or less a monopoly and which could stand a long voyage.

It will not be incorrect to state that the conditions of internal trade and communications were mostly the same for centuries past till about the commencement of the railway age. Transporting foreign merchandise to the people at large and persuading the agriculturist to produce goods for overseas markets alike had to wait till the railway system was well advanced by about the decade 1860-70. Even then the Cape route kept the freights high and hampered trade, while the long voyage exposed the cargo of wheat and seeds to the damage caused by weevils. These difficulties were removed by the opening of the Suez Canal and the consequent reduction of the duration of the voyage from about a hundred days or more to about twenty-five days, or even three weeks with faster vessels. This change was of basic importance to Indian trade and it came about at a time when all the ports were connected to the interior by rail. The English merchant houses were now able to supply European manufactures at a cost within the means of the Indian consumer and, at the same time, export Indian products to Europe in good condition and at competitive prices, even as against countries more favourably situated, because of cheap labour of which India had an abundant supply. The result became manifest during the following decade, 1870-80, in a most striking development of trade.

Administrative needs and defence requirements for a power which was rapidly beginning to assume political control of the entire country

called for better communications. The changes connected with these developments are dealt with in the following sections. Although the advent of the railways has been only recent, the economic revolution they brought about in India, as in other countries, entitles them to be considered first. The other forms of transport, *viz.*, road, inland water, coast-wise and ocean shipping and airways are taken up in the same order.

II. Railways

The success which attended the early development of railways in Great Britain showed clearly the many advantages to be derived from the new form of transport in a country of considerable distances, politically still unconsolidated and requiring large scale movement of troops and military stores. It was not until 1845 that applications received by the Court of Directors from private parties for co-operation in opening railways on an extensive scale in different parts of India were sent to the Governor General for report. The Court preferred a cautious approach and a limited scale for the first attempts. Later the Court of Directors, realizing that, without a cheap means of communication, there could be no rapid progress in the country materially or in the efficiency of administration, desired that India should, without unnecessary loss of time, possess the immense advantage of a regular system of railway communication. Reviewing the question in an exhaustive minute in 1853, Lord Dalhousie urged the importance of a speedy and wide introduction of railway communications throughout India. He specially recommended that, in the first instance, a system of trunk lines should be formed, connecting the interior of each Presidency with each other.

The Court of Directors accepted the general plan proposed and, by the end of 1859, the following eight companies were formed for the construction of nearly 8,000 km. of line, with a capital under guarantee of £52,500,000 sterling, namely:

(1) the East Indian Railway;
(2) the Great Indian Peninsula Railway;
(3) the Madras Railway;
(4) the Bombay, Baroda and Central India Railway;
(5) the Eastern Bengal Railway;
(6) the Indian Branch (later the Oudh and Rohilkand) Railway;
(7) the Sind, Punjab and Delhi (later merged in the North-Western) Railway;
(8) the Great Southern of India (later the South Indian) Railway.

Thus was laid the foundation of the system of railways which, radiating from the ports of Calcutta, Bombay and Madras, literally extended throughout the length and breadth of India.

As companies could not be promoted without a minimum return on their capital guaranteed by the Government, a guarantee of 5 per cent was eventually agreed to, coupled with the free grant of all land needed; and the companies, in return, were required to share surplus profits half-yearly with the Government after the guaranteed interest for the half-year had been met, exchange for remittance of interest charges being reckoned at 22 *d* to the rupee, and permit the Government to exercise the closest control over all expenditure and over the management and working of the lines.

Unfortunately, all expectations in regard to profits came to naught because of the heavy outlay on construction built to a standard far in excess of the needs of the time. A committee of the House of Commons in 1857-58, enquiring into the delays, found that, apart from the standard of construction, far higher than required for the conditions of the country or for the actual work the railways were designed to perform, there were such other factors as the conveniences which, though desirable, were unnecessary for the safe or efficient operation of the railways; experimental lines built on double track, the necessity for which did not arise till a generation later; alteration in the routes after work had been actually commenced; and the outbreak of the Great Revolt of 1857 causing the suspension of all works for a time. Consequently, the earnings which might have been sufficient to pay interest charges on a reasonable expenditure proved inadequate to meet the guarantee on the outlay actually incurred. The Government had to make good the deficit.

When the railways failed to earn the guaranteed interest, the deficit to be met by Government became a recurring feature. In view of the increasing demands for guaranteed interest, the whole guarantee system fell into disrepute. Private enterprise still held aloof without a guarantee. The extension of railway communication was not keeping pace with the increasing requirements of the country, and the progress during the preceding ten years hardly averaged 560 km. of new line each year. The guaranteed railways had cost a great deal more than necessary in the absence of any incentive to keep down expenditure; and the Government believed that railways could be more cheaply constructed and more economically worked by direct agency of the State, while money could be borrowed at a lower rate than was paid under the guarantee. In 1869, the Government obtained sanction for the discontinuance of the guarantee system and for the construction of railways by the State.

The guaranteed companies had constructed on a gauge of 5' 6", costing about £10,560 a kilometre; a narrower gauge on 3' 3-3/8" metre gauge might be cheaper. The State Railways accordingly decided to build on the metre gauge. Even then progress was still not rapid enough and in 1875 the amount to be spent annually was raised to Rs. 4 crores. But war and famine reduced the funds available and a great

part of the expenditure was devoted to the conversion, for strategic reasons, of the recently begun lines on the North-West. The continued fall in the gold value of silver had also, by 1879, seriously disturbed the financial position of the Government. Resort had, therefore, again to be made to the companies to construct railways under a guarantee. The system now adopted was distinguished from the old guarantee in that the terms were easier for the Government. The lines thus promoted were: the Indian Midland (1882-85), later merged in the Great Indian Peninsula; the Bengal Nagpur (1883-87); the Southern Mahratta (1882); and the Assam Bengal Railways (1891). The total length of these lines exceeded 6,400 km.

The results of the Government's efforts to attract unaided private enterprise were not encouraging. Of the four companies promoted, the Nilgiri became bankrupt while the Delhi-Ambala-Kalka and the Bengal Central eventually received a guarantee; the fourth — the Bengal and North Western — had the Tirhut Railway leased to it.

In the Indian States, a beginning was made with the Nizam's State Railway, a length of 531.3 km.

Upto the year 1870, when the first change in policy took place, 6,848 km. had been opened for traffic, of which all but 72 km. were on the broad gauge. During the next ten years, that is, upto the end of 1879, 6,822 km. were added to the railway system, the total opened to traffic being 13,670 km., of which 10,560 km. were on the broad gauge, 3,000 km. on the metre gauge and about 108 km. on narrower gauges. The need for a more rapid extension of railways was stressed by the famines of Bihar (1874) and the Deccan (1876). The diversion of a portion of the Famine Insurance Grant for expenditure on railways of a protective or productive nature, being small, did not assist matters and the progress continued to be slow. By 1883, however, the finances of the country had considerably improved and raising the limit of borrowing from Rs. 2 crores to about Rs. 3 crores enabled quicker progress only for a time, as after the Panjdeh incident in 1885, funds had to be diverted to the construction of costly strategic and unremunerative railways on the North-West Frontier. In 1890, the whole available balance of the Famine Insurance Grant was devoted to railway construction and in 1892 half a crore was specially added to capital expenditure to finance new lines of railway and extensions.

In view of the adverse effects of the falling exchange, Government wanted to replace the gold liabilities involved in the guarantee by the introduction of rebate terms and resort again to the companies. Despite the attempts to make the terms as favourable as possible, short of a direct guarantee, one concession after another lapsed. The Indian States provided part or whole of the funds required for railways passing through their territory, in some cases from revenues of the States, in

others from loans to them by the Government or on the Government guaranteeing loans made to a State by a company. The total length constructed in this way amounted to 5,855 km., but these expedients could not be relied on for a steady supply of funds for the development of the railway system.

The easier and cheaper means of transport afforded by the railways, the opening of new lines and the construction of feeder roads added greatly to the business of the trunk lines. The need for the provision of improved facilities to cope with this increasing business had steadily grown. While the demand for new lines all over the country was urgent, little money could be made available for expenditure on open lines, with the result that the latter were starved. Famines, frontier wars and a falling exchange prevented funds being provided for a wider development of the railway system. The expenditure incurred on railways constructed by the agency of guaranteed companies had been kept apart from the Government allotments and was not affected by the exigencies of Government finances. But the continued fall in exchange, however, made it necessary for the Government to take cognizance of all capital liabilities; and since 1896 the expenditure not only by the railways owned by the State but also by those guaranteed by it was included in the railway programme. The capital budget programme necessarily required to be increased and an improvement in exchange as a consequence of closing mints to the free coinage of silver made this possible.

Growth of Railway Traffic, 1853-1900: During 1853-1900, the growth of the railway system and of the traffic carried by it presents, as far as they go, an impressive record. The capital outlay on the railway increased from Rs. 38 lakhs to Rs. 330 crores, and the kilometrage open from 32 to 39,835 km. The gross earnings rose from less than a lakh to over Rs. 31½ crores, and the working expenses from less than half a lakh to more than Rs. 15 crores. The net earnings increased from about half a lakh of rupees to about Rs. 16½ crores.

The volume of passenger and goods traffic registered a no less striking increase. The number of passengers went up from 19 millions in 1871 — figures for the previous years are not available — to 176 millions in 1900. Passenger earnings during this period advanced from Rs. 202 lakhs to Rs. 895 lakhs. As regards goods traffic, the tonnage moved during the period 1875-1900, increased from 3.5 millions to 42.90 millions. Goods earnings amounted by the year 1900 to Rs. 20 crores, as against Rs. 4.2 crores in 1871.

During the fifteen years 1885-1900, the tonne kilometrage had almost doubled to 10,696 million. Passenger kilometrage had gone up from 5,858 to 11,000 million.

The average freight rate per tonne per kilometre gradually decreased

from 6.75 pies (3.5 *paisa*) in 1875 to 3.65 pies (1.9 *paisa*) in 1900. The average fare per passenger per mile (1.60 km.) — available from 1885 only — remained almost constant in the neighbourhood of 2.50 pies (1.6 *paisa*).

TABLE 1

Railway Development During 1853-1900

	1853	1860	1870	1880	1890	1900
Route kilometrage	32	13,486	7,678	14,778	26,400	39,835
Capital outlay (Rs. lakhs)	38	2,666	9,001	12,857	21,367	32,953
Gross earnings (Rs. lakhs)	0.9	67	667	1,287	2,067	3,154
Working expenses (Rs. lakhs)	0.4	37	363	648	1,030	1,509
Net earnings (Rs. lakhs)	0.5	30	304	639	1,036	1,645
Passenger earnings (Rs. lakhs)	—	—	202 (1871)	457	626	895
Goods earnings (Rs. lakhs)	—	—	420 (1871)	923	1,300	2,038
No. of passengers (million)	—	—	19.28 (1871)	49.16	114.08	178.31
No. of tons (million)	—	—	3.54 (1871)	10.39	22.61	42.90
Passenger kilometres (million)	—	—	—	4,664 (1882)	7,691	11,008
Tonne kilometres (million)	—	—	—	4,006	5,739	10,867

Towards the close of the century, the kilometrage open was 22,370 under broad gauge, (5′ 6″) 16,270 under metre gauge (3′ 3-3/8″) and 1,122 under narrow gauges (2′ 6″ and 2′ 0″).

The development in both passenger and goods traffic required more rolling stock, larger stations and goods sheds, additional sidings and stations, and sometimes duplication of the permanent way. The increasing demand for a faster and better train service, if the safety of the travelling public was to receive due consideration, necessitated expenditure on interlocking plant and automatic brakes. The difficulties of the railways in properly conducting their business finally became so great that in 1901 it was decided to adopt the principle of regarding the needs of open lines to meet their growing traffic as the first charge upon the funds available; next, in order, provision was made for the steady prosecution and early completion of lines in progress, preference being given to companies' lines over those

under construction by the agency of the State. After these needs had been met, the claims of new lines were to be considered.

The complexion of the railway systems themselves had undergone by this time a substantial change. The old guaranteed lines had been purchased by the State: the East Indian in 1880; the Eastern Bengal in 1884; the Sind, Punjab and Delhi in 1886; the Oudh and Rohilkhand in 1889; and the Great Indian Peninsula in 1900. Of these, the East Indian and the Great Indian Peninsula were again leased to companies to work, while the others were taken over and worked as State railways. Of the original lines constructed under a guarantee, only two were worked under their old contracts, namely, the Bombay, Baroda and Central India Railway and the Madras Railway. The former was taken over by the State at the end of 1905 and the contract of the latter was terminated in 1907. Many of the railways constructed and for some time worked by the State had been leased to companies or to lines owned and worked by the Indian States.

In purchasing these old guaranteed lines, payment was usually made in the form of terminable annuities which became a charge against the revenues of the railways. As these annuities represented not only interest charges but also the amount payable in redemption of capital, the railway returns appeared worse than they actually were. The great development in traffic, however, counteracted this effect of the annuity charges and annuity payments, and every other liability, and the Government started making a handsome profit from its railway property since 1900-1901. The construction of canals in the Punjab, and the colonization of districts served by them, added so enormously to the traffic of the North-Western Railway as to convert it from an unremunerative line to one yielding large profits. The new kilometrage added from year to year opened up new country and the improvement in the means of communication developed resources and brought new business to the old lines.

Metre Gauge Lines: Although originally the metre gauge lines were built as light railways, the traffic which they were called upon to carry proved so much heavier and developed so much more rapidly than had been anticipated that it was soon found that something more substantial must be provided if they were to fulfil their purpose. To increase the capacity of the metre gauge was a great deal less costly than to convert it to the broad gauge; and, as funds continued scarce, the former course was adopted. These two factors, the cheapness of construction and the expense of conversion to broad gauge, exercised so great an influence on the policy of the Government that it had seldom been found possible to adopt the original idea of converting the metre gauge as soon as the traffic justified the change.

For thinly populated areas, and for short lines of purely local importance, a gauge narrower than the metre gauge was adopted as the most suitable means for developing the resources of the country.

A break of gauge, always a drawback, could, during periods of pressure, such as in the export season, at times of famine, and during extensive military movements, be extremely inconvenient. But the evil had reached such dimensions — at the end of 1900 there were open for traffic 16,270 km. of metre gauge railway as compared with 22,370 km. on the broad gauge — that the remedy was far from simple.

Report by Special Commissioner for Indian Railways: It had by now become necessary to examine the adequacy of the existing administrative machinery for dealing with the railways. In October 1901, a Special Commissioner for Indian Railways, Mr. (later Sir) Thomas Robertson, was appointed to enquire into, and report on, the general administration and working of Indian Railways. His studies and recommendations emphasized the need for a more effective form of Central organization for Government control of the Indian Railways. In pursuance of his recommendation, the Railway Board was formally constituted in March 1905, and placed outside of, but subordinate to, the Government of India and represented in the Viceroy's Council by the Member in-charge of the Department of Commerce and Industry. The duties assigned to the Railway Board were of two kinds. Its deliberative functions included the preparation of the railway programme of expenditure and the discussion of the larger questions of railway policy and economy affecting all lines, the final authority for decisions in regard to which was still retained by the Government of India. Its administrative duties included the construction of new lines by State agency, the carrying out of new works on open lines, the improvement of railway management with regard to both economy and public convenience, the arrangements for through traffic, settlement of disputes between lines, the control and promotion of staff on State lines and the general supervision over the working and expenditure of companies' lines. The final authority in regard to these administrative duties was delegated, subject to certain restrictions, to the Railway Board.

The change thus inaugurated was the most important that had been made in regard to policy and administration since railways were first introduced into India. The principle of consolidating several railway undertakings under one management, which had been so largely adopted in England and America, was followed in India also; and this added to the great development of business and showed the need for some change in the system of administering the Traffic Department. On the larger railways, the department was split up into 'Commercial' (the procuring of traffic) and 'Transportation' (the handling and haulage of traffic).

Committee on Railway Finance and Organization, 1907: The demand for railway expansion continued, but the expenditure on new constructions fell far short of popular expectations. The Secretary of State for India appointed in 1907 a Committee on Railway Finance and Administration, with Sir John Mackay as Chairman, to examine the country's requirements of new railways and explore means for financing such new constructions. Since 1900 the annual losses on railway account had disappeared and the gain to the State from its railway investment had become a regular feature. The fact of Indian railways being a paying proposition was commented upon by the Mackay Committee which, referring to the inadequacy of rail transport and the urgency of large scale constructions, expressed the view that even a total route mileage of 100,000 (1,61,000 km.) was short of that which would ultimately be found to be necessary in India and 'the steady and even rapid development of the railway system of India should be regarded by Government as one of its important duties.' A sum of £100 million was accordingly recommended to be spent on new constructions and development in the next eight years.

New constructions, however, continued to progress at a much more modest pace, as only about 16,100 km. were added to the railway system during the period 1900-14. This was a good deal less than the increase in the route mileage during the preceding fifteen years. The progress of new construction was nevertheless fairly steady till the developments during the First World War slowed it down.

World War I and After: Indian railways made an important contribution to World War I by diverting as much of their resources as possible to meet the military requirements. The transportation of troops, materials and supplies at short notice cast a heavy burden on the railways. Many sections of railway workshops were also set apart for the production of war equipment. As overseas supplies of railway materials and components from the United Kingdom, the principal supplier, were cut off, arrears of maintenance and renewals accumulated and the railway assets were reduced to a serious state of attrition. At the end of the war, the transport situation had become so grave that all interests concerned with agriculture, trade and industry were unanimous in demanding drastic and emergent steps to rehabilitate the Indian railway system to meet the economic requirements of the country.

At about the same time certain important matters of future railway policy were awaiting early consideration. The contract with the East Indian Railway was due to expire in 1919. Public opinion had consistently declared its preference for State management and was not satisfied with railways in India being managed any longer by the English-domiciled companies with Boards of Directors in London. For one

thing, there appeared no reason why these companies should continue to obtain recruits from overseas for almost all the higher posts when good material was already available in the country. Then there was the question of industrialization of the country and the contribution that the railways could make towards accelerating its pace. Government management, it was held, would tend towards a more positive policy for effective domestic industrial development than the continuation of company management with its natural bias towards its vested interests and maximization of dividends to its shareholders. Also, procurement of railway stores afforded a valuable opportunity for encouraging domestic industries by giving them a degree of preference. It was felt that the company-managed railways, with their Boards of Directors in England, could not be expected to respond readily to such developmental policies, whereas State management would be more sympathetic towards economic advancement in the country. Finally, Government would recognize more readily than the companies the need for improving the conditions and amenities for the third class passengers. The force of public opinion in favour of State-managed railways had gained strength and this, coupled with the impending constitutional changes, led to a decision to postpone any far-reaching changes until a comprehensive enquiry was undertaken into all aspects of the question.

Railway Working Results, 1901-1920: The results of working of Indian railways for select years during 1900-1920 are shown in the Table below:

TABLE II

Results of Working of Indian Railways, 1901-20
(Select Years)

(Rs. in lakh, other figures in million)

		1901	1905	1910	1915-16	1919-20
Route kilometrage		40,768	45,537	51,659	57,668	57,119
Capital outlay	Rs.	33,517	33,852	43,905	53,298	56,633
Gross earnings	Rs.	3,360	4,170	5,114	6,466	8,915
Working expenses	Rs.	1,572	1,995	2,116	3,292	5,066
Net earnings	Rs.	1,788	2,175	2,399	3,174	3,849
No. of passengers		195	248	372	464	520
Passenger kilometres		12,548	15,933	21,617	26,601	33,177
No. tonnes of goods		43.7	56	66	83.3	89.4
Tonnes kilometres		11,548	14,784	19,774	28,056	33,631
Passenger earnings	Rs.	1,007	1,274	1,712	2,099	3,361
Goods earnings	Rs.	2,123	2,021	3,043	3,876	4,712

East India Committee 1920-1921: In 1920 the East India Railway Committee was appointed, with Sir Williams M. Acworth as Chairman, to undertake a comprehensive enquiry into questions relating to the management, finance and future control and organization of the railways. The Committee, after a detailed enquiry, recommended by a majority the termination of the contracts with the companies as they fell due. The financial policy of the Government of India, which made no provision either for reserves or for ensuring a steady flow of funds for financing railway construction, improvements, etc., came in for criticism, and, in order to ensure a sound financial policy, keeping in view the developmental needs of the country, and to free the railways from the effects of fluctuations in the general finances of the country, the Committee recommended the separation of the Railway budget from the Central budget of the country. The need for making adequate provision for depreciation and limiting the demands of the State on railway surpluses was also stressed. On a number of other subjects of topical interest, such as Indianization of the higher cadres of the railway services, stores purchases, rating policy, etc., the Committee were generally in agreement with informed public opinion.

The East India Railway Committee's recommendations were accepted by the Government and, by a Resolution passed on September 20, 1924, in the Central Legislative Assembly, Railway finance was separated from the General finances. The Railway Board was reorganized, with a Chief Commissioner and a Financial Commissioner, besides the technical Members. The technical Directorates were also strengthened and expanded. As regards the policy of State management, the Government was already operating three railway systems, namely, the North-Western Railway, the Oudh and Rohilkhand Railway and the Eastern Bengal Railway. On January 1, 1925, the East Indian Railway was taken over by the State and merged with the Oudh and Rohilkhand Railway. On May 1, 1925, on the expiry of the contract, the Great Indian Peninsula Railway Company was also taken over under State management. Thus, by 1929, five major systems — including the Burma Railways taken over in the same year by the Government — were operated under direct State management.

The first six years after the adoption of the convention instituting a separate budget for the Railways witnessed the introduction of a series of important changes in finance and organization. A proper depreciation fund was set up on the basis of the recommendations of a Depreciation Fund Committee. The system of accounts and statistics was examined by Sir Arthur Lowes Dickinson, and a beginning was made towards the separation of accounts from audit. The administrative organization of the individual railways was also overhauled, and in the

case of the larger systems, namely, the North-Western and the East Indian Railways, the divisional system of working replaced the former district system. A more progressive policy designed to improve the conditions of railway labour was adopted. In order to provide a proper machinery for the adjudication of rates disputes, a Rates Advisory Committee was established. Amenities to the travelling public, specially the third class passengers, were steadily extended and improved.

Railway Development during 1924-30: The requirements of railway development received detailed consideration. Programmes of open-line improvements and of new construction were drawn up and large additions were made each year to the route mileage. The capacity of certain intensively worked lines was increased by doubling and quadrupling, and by improved signalling. The plans of rehabilitation and modernization included the improvement of the permanent way, strengthening of bridges, remodelling of yards, new station buildings, more staff quarters, etc. Several of the workshops were extended and their equipment improved. The electrification of the suburban services in Bombay and Madras City areas was undertaken during this period. The total capital outlay incurred on all these items on the State-owned lines during 1924-1932 amounted to Rs. 122.89 crores. The construction of new lines alone amounted to an addition of 8,630 km. at a capital expenditure of about Rs. 44.90 crores.

Railway revenues tended to be bouyant. Gross traffic receipts of the State-owned railways (excluding worked lines) rose from Rs. 100.13 crores in 1924-25 to Rs. 103.73 crores in 1928-29. After meeting the operating expenses and providing for depreciation, the net traffic receipts plus the miscellaneous receipts were sufficient to meet the interest charges in full and the payment of the contribution to the general revenues. As on March 31, 1930, the balances in the Depreciation Fund and the Reserve Fund amounted, respectively, to Rs. 12.24 crores and Rs. 16.35 crores.

Impact of World Depression: The years of prosperity came to an unexpected and abrupt end with the world crisis, the impact of which was felt in 1931. Railway receipts, following the general depression in agriculture, industry and trade, declined steeply, from Rs. 102.70 crores in 1929-30 to Rs. 86.63 crores in 1931-32 and to Rs. 84.43 crores in 1932-33. Retrenchment of expenditure and staff had to be enforced in order to keep down the losses in working. The accumulations in the Reserve Fund were almost wiped out within two years and, besides suspending the payment of the contributions to the General Revenues, the Depreciation Fund had to be raised to the extent of Rs. 30.28 crores since 1931-32 in order to meet the interest charges on capital. It was only in 1937-38 that the situation improved slightly. The deterioration in the

financial results of the railways and the volume of traffic may be seen from the figures given in the following Table.

TABLE III

Results of Working of Indian Government Railways, 1924-1937

(Rs. in crores, other figures in million)

	1924-30 *Average*	1930-35 *Average*	1935-36	1936-37
Financial results	Rs.	Rs.	Rs.	Rs.
Gross traffic receipts	101.22	88.69	90.65	95.49
Total working expenses	64.71	64.03	64.12	63.38
Net receipts	36.51	24.57	25.53	32.11
Profit (+) /Loss (—)	—8.77	—7.53	+3.99	+1.21

	1924-25	1929-30	1930-31	1931-32	1932-33	1936-37
No. of passengers	576	634	576	502	490	510
Passenger kilometres	32,042	37,100	32,972	28,334	27,600	29,404
Goods tonne,	79	88	84	72	78	87
Tonne kilometres	34,778	35,197	33,367	28,130	30,589	35,050

Effects of World War II and Partition: These depressing financial trends were reversed when, towards the end of the decade, the traffic demands of World War II brought in increased earnings from 1939-40 onwards. These produced in the succeeding years surpluses which more than made up for the loans previously taken from the Depreciation Fund to meet the deficit in the thirties as well as to pay off the contributions then suspended. From 1940-41 onwards all past records of traffic receipts, net earnings and surpluses were broken. These were the results of the equally striking increases in passenger traffic and goods traffic, as shown in Table IV. After payment of the interest charges and the contributions to the General Revenues, the surpluses were quite substantial as evidenced by the balances, as on March 31, 1947, of Rs. 23 crores in the Revenue Reserve Fund and Rs. 14.83 crores in the Betterment Fund. These were in addition to the Rs. 108.29 crores of the balance in the Depreciation Fund.

World War II, more protracted than its predecessor, inflicted on the railways for greater wear and tear. The attrition of assets due to intensive use and postponement of renewals, and even of essential maintenance, due in many cases to lack of resources, left Indian Railways in an even more serious state of disrepair than in 1918. When they emerged from the depression by 1937, the railways had before them the problem of overtaking the arrears of maintenance and replacements since 1931. But the outbreak of the Second World War in 1939 interrupted the natural course of achieving this as overseas sources of supply had diverted their production to meet the exigencies of war.

During the first phase of the war, Indian Railways, despite their accumulated deficiencies and difficulties, were called upon to release locomotives, wagons and track material for the Middle East for which the Indian command had the defence responsibility. Over 8 per cent of the metre gauge locomotives and 15 per cent of the metre gauge wagons of the Indian Railways, as well as 6,440 km. of track and 4 million sleepers, were released for military purposes. This necessitated the dismantling of 26 branch lines as well as the curtailment of services on many others. Later, when India had become the base for mounting a major offensive against Japan, the load on the railways increased still further. A large number of railway workshops were diverted to the manufacture of munitions while the maintenance and renewal of railway equipment received little attention. The continuous strain imposed on the railways by demands for heavy military movements brought them almost to breaking point. Considerable arrears of renewals and replacements accumulated and indigenous facilities for rehabilitation were appreciably reduced, or incapacitated by the mobilization of workshop equipment for the war effort.

The results of railway working during 1938-39 to 1946-47 may be seen from the figures for select years in the following Table:

TABLE IV

Financial Results of Working of Class I/Government Railways 1937-38 to 1946-47 (Select years)

(Rupees in crores, other figures in millions)

	1937-38	1938-39	1939-40	1940-41	1944-45	1945-46	1946-47
Gross earnings	Rs. 103.5	103.5	107.8	122.4	226.0	237.3	215.4
Total working expenses	Rs. 66.8	66.8	69.8	70.7	145.6	165.9	175.1
Net earnings	Rs. 34.7	34.7	38.0	51.7	80.5	71.4	40.4
Volume of traffic:							
No. of passengers	499	499	499	542	872	986	1,078
Passenger kilometres		28,917	28,635	30,784	58,526	64,448	65,389
Goods, tonne		85	89	90	99	99	89
Tonne kilometres		35,776	37,923	40,858	45,889	47,163	43,625

A redeeming feature of rail transportation during World War II from the financial point of view was that both the Depreciation and the Reserve Funds were well stocked with large balances to meet future expenditure, as little could be purchased during the war. Another important development during the period covered by the war was that the remaining company-managed railways, about the taking over of which by the State the decision had been postponed during the thirties, were all brought under State management. The acquisition of these British companies' lines afforded an opportunity to use some of the rapidly accumulating sterling balances to good purpose. The Assam Bengal Railway was taken over on January 1, 1942 and merged with

the Eastern Bengal Railway to form the Bengal Assam Railway. The Bombay, Baroda and Central India Railway was acquired by the State on January 1, 1942. The Bengal and North-Western Railway and the Rohilkhand and Kumaon Railways were taken over and brought under State management as the Oudh and Tirhut Railway, as from January 1, 1943. The acquisition of the Madras and Southern Mahratta Railway and the South Indian Railway took place on January 1, 1944. The Bengal Nagpur Railway was also acquired by the State as from October 1, 1944. In regard to both the South Indian and the Bengal Nagpur Railways, the taking over was well ahead of the due dates of the expiry of the contracts, namely, 1945 and 1950.

When the hostilities ceased the railways were faced with major problems not susceptible of immediate solution. Plans for post-war rehabilitation and development were necessarily long-term, but most of these were stultified by the effects of the partition of the country which led to the dismemberment of the North-Western Railway and the Assam Bengal Railway, and the transfer of 11,166 km. and the corresponding equipment to the newly constituted State of Pakistan. In addition to the problems of reorganizing the parts of these systems which fell in Indian territory into self-sufficient units and complicated staff changes, there were the formidable difficulties caused by the mass migration from one Dominion to the other.

The termination of the war in 1945 faced the Indian Railways with problems of large scale rehabilitation, which were aggravated by the enormous increase in the volume of traffic referred to earlier. The railways were handicapped by the fact that a considerable proportion of the locomotives, coaching vehicles and wagons were overage and obsolete. The tract had deteriorated to an extent that necessitated severe speed restrictions. All these factors had their inevitable repercussions on the general efficiency of the transport system: restricting capacity, slowing down of the movement of trains, frequency of engine failures, and making the imposition of priorities essential.

The partition also affected the railway network. The parts of the North-Western Railway and the Bengal Assam Railway which were left on Indian territory had to be integrated into workable units connected with the main system. Some of the lines, as those in Assam, were completely cut off from the rest of the country. The pattern of traffic was also altered by the loss of the port of Karachi and this added to the burden on the Delhi-Bombay route, which consequently stood in need of augmentation of line capacity, improvement of yard facilities, and readjustment of many other essential operational arrangements.

Developments since 1948: The shock of the partition was, however, mostly absorbed by the middle of 1948, but other factors continued to

strain the transport system to the utmost and created several bottlenecks. The traction position called for urgent attention. Large orders were placed with early delivery dates for locomotives, and the timely arrival of these contributed to a noticeable improvement. Simultaneously, efforts were made to set up in the country a modern locomotive manufacturing industry for the Indian Railways designed for an output of 120 locomotives per annum plus spares, boilers and other components. The erection of the factory, the Chittaranjan Locomotive Manufacturing Works, was completed within two years of commencement and it started production in 1951. The Tata Engineering and Locomotive Company, a private company in which Government acquired shares, produced metre gauge locomotives and boilers.

The shortage of coaching vehicles was the main obstacle to affording relief to overcrowded trains. Railway workshops and the unused capacity of the Hindustan Aircraft Factory at Bangalore were utilized to produce more coaching vehicles. A new coach-building factory was built at Perambur, near Madras, to manufacture an improved type of passenger coaches.

Following the attainment of independence, a number of far-reaching changes in railway organization and policy were carried out. The basis of rates and shares was revised thoroughly and the new system was brought into force in January 1948. Passenger fares which used to vary in the past from railway to railway were standardized throughout the country. The revision of freight rates was more difficult, but the necessity for rating reforms had been recognized for some time past. A Post-War Rating Committee had been set up to undertake a detailed examination of existing rates and make recommendations regarding the changes to be introduced. The revised rates which incorporated many of these recommendations on comprehensive lines came into force with effect from October 1, 1948. As a result of these changes, the highly individualistic character of some rates was modified and a telescopic bias was imparted to the class rates — a reform long pressed for by the commercial community. The difference between the rates on railway risk and owner's risk conditions, which was rather wide under the previous classification, was now narrowed down to about the difference between two successive classes. The large number of special rates was considerably reduced and the terminal charges were standardized.

The machinery for the adjudication of rates disputes was also overhauled at the same time. The former Railway Rates Advisory Committee could only recommend; it had no power to enforce its decisions on the railway administrations. Its intervention was not, therefore, invoked by the trading community as frequently as it might have been owing to this limitation. In 1948, the Indian Railways Act was amended

and provision was made for the setting up of a Railway Rates Tribunal with mandatory powers.

It was logical that the political independence of the country should create an urge for self-sufficiency on the part of the railways in the technical field. After a careful assessment of the talent available, it was decided in 1949 to form Design and Consultant Wings from the engineering cadres of railways in India to replace a well-known firm of British consulting engineers, who had given technical guidance for the past three quarters of a century. Indian railways were fortunate in having with them civil and mechanical engineers of high calibre, with aptitude and experience in this line of work. A proper organization of Locomotive, Carriage and Wagon, and Structural and Permanent Way Design and Consultant Wings, manned by Indian officers, was thus set up.

Another important event was the revision in 1949 of the convention separating railway finance from general finance. The original convention of 1924 was intended to be reviewed after three years, but this review had been postponed from time to time for various reasons. The only change brought about during the 25 years since its adoption was the amendment in 1943 of one of the clauses relating to the contribution under which, instead of a specified formula, Government was empowered to fix it from year to year from 1944-45 onwards. There were some other features of the old convention which had become out of step with post-war conditions and requirements of the country. A Committee of Parliament went into the whole question and made a number of important recommendations which were generally accepted. According to the revised convention of 1949, contributions to the General Revenues were abolished. Instead, a dividend of 4 per cent per annum on the loan capital invested, as computed annually, was payable to General Revenues. The contribution to the Depreciation Reserve Fund was increased to a minimum of Rs. 15 crores a year in recognition of the high costs of replacement at post-war levels of prices. The financial limit for charging to Revenue the cost of minor additions and improvements was raised from Rs. 10,000 to Rs. 20,000 for each individual item. A special provision was also made to cover expenditure on unremunerative projects for improving operational efficiency in excess of Rs. 3 lakhs, such costs being charged to a Railway Development Fund intended to finance passenger amenities, staff welfare works and projects which were necessary but were financially unremunerative att he time of construction. Finally, the scope of the Reserve Fund was limited to securing payment of prescribed dividends and to bridging the gap, should any occur during the period of the convention, namely, five years. The revised convention was an advance on the original convention and provided correctives to any tendency to over-capitalization.

The regrouping of Indian Railways on a rational and geographical basis, which had been the subject of consideration for more than a quarter century, had by 1949 reached a stage where it could no longer be postponed. The cutting up of the North-Western Railway and the Bengal Assam Railway, as a result of the partition of the country, had left certain sections within India, which were, relatively, too small and poorly equipped with workshops and other resources for economical working. After the Federal Financial Integration of the Indian States on April 1, 1950, the railways belonging to these States, varying from 6.44 km. of the Sangli State to 2,254 km. of the Nizam's State, had become parts of the Indian Government Railway System. The reorganization of all these lines to form a smaller number of larger and more resourceful systems was thus imperative in order to bring about improved standards of working, uniformity in operational arrangements and procedures, extension of facilities and reasonable amenities for the travelling and trading public. As the result of detailed and expert consideration of the question and after taking into account the views of the public and the Parliamentary Committee, the Railway Board carried out its plan of reorganizing the integrated Indian Railway system into six administrative and operating zones.

The first regrouped railway to be formed was the Southern Railway on April 14, 1951, comprising the Madras and Southern Mahratta Railway, the South Indian Railway and the Mysore Railway with headquarters at Madras. On November 6, 1951, the Central Railway and the Western Railway were formed with separate headquarters, but both located at Bombay. The former absorbed the Dholpur and the Scindia State Railways as well as the Nizam's State Railway into the Great India Peninsula Railway; and the latter the Saurashtra Railway, the Jaipur Railway, the Rajasthan Railway and the Kutch State Railway into the Bombay, Baroda and Central India Railway. The final phase of the programme of regrouping was completed on April 14, 1952, when the Northern Railway, the North-Eastern Railway and the Eastern Railway were formed. The Northern Railway represented the fusion of the Eastern Punjab Railway, the Bikaner Railway and the Jodhpur Railway within the Allahabad, Lucknow and Moradabad divisions of the East Indian Railway with headquarters at Delhi. The North-Eastern Railway was a case of simple amalgamation of the Oudh and Tirhut Railway and the Assam Railway, with headquarters at Gorakhpur. The remaining divisions of the East Indian Railway were combined with the Bengal Nagpur Railway to form the Eastern Railway with headquarters at Calcutta. The route kilometrage of each regrouped railway is given in Table V.

The executive and administrative organization of the constituent units was left largely undisturbed. In the case of the Southern, Western

TABLE V

Railway	*Route Kilometrage*
Central	8,736
Eastern	9,120
North-Eastern	7,704
Northern	9,667
Southern	9,684
Western	9.062

and North-Eastern Railways, based on the district system of working, three regional headquarters were established for each zone under the control of regional Deputy Heads of Departments for intermediate co-ordination and supervision. On the other railways the constituent units were moulded to the predominating divisional pattern. Only on the Eastern Railway was there a combination of the two, the old East Indian Divisions being retained as such along with the district organization of the Bengal Nagpur Railway controlled through a region at Bilaspur. This policy had the advantage of avoiding any dislocation in the actual working.

Indian railways have had to plan their programmes of rehabilitation, improvement and new construction within the limitations of finance and indigenous resources. New constructions have been few in spite of many demands in the country. The Assam Rail Link and the connection from Deesa to the new port of Kandla, each about 290 km. in length but traversing widely different country, were about the only larger lines to be taken up. Rehabilitation of the major assets and the improvements necessary to obtain optimum performance from the existing resources were given the highest priority in the capital programmes. Most of the lines dismantled during the war were restored and many proposals for new construction intended to provide additional carrying capacity were considered. With effect from 1950-52 the railway programmes were gradually dovetailed into the Five Year Plans referred to later in this section.

Among other developments should be mentioned the celebration by the Indian Railways in 1953 of the completion of 100 years of working. A Centenary Railway Exhibition was organized displaying the old and the new stock, the products of the post-independence enterprise, such as the domestically manufactured locomotives, passenger coaches and wagons, additional passenger amenities, and the contribution of Indian industry towards national self-sufficiency in railway requirements. A commemoration volume entitled "Indian Railway — One hundred Years" was brought out on the occasion.

Representation of interest groups in the Railway Local Advisory Committees had for many years past afforded railway administrations a means of ascertaining public opinion regarding the services rendered

by them to the users. With a view to bringing the machinery more in line with current requirements by providing increased opportunities of associating the public with the railways, the Railway Users Consultative bodies were established during 1953-54 on a federalized pattern at divisional/regional, zonal and national levels representing all important interests.

In view of the prospective developments under the Second Five Year Plan, the division of the Eastern Railway was considered desirable and, accordingly on August 1, 1955, the Railway was bifurcated, the Bengal Nagpur Railway portion with slight adjustments in the Adra District jurisdiction forming the South-Eastern Railway, and the rest of the system upto Mughal Sarai and the Sealdah Division becoming the new Eastern Railway. On January 15, 1958, the North-Eastern Railway was also bifurcated. With a view to providing the eastern-most part of India with a suitable administrative machinery competent to deal promptly and effectively with the immediate as well as the long-term railway problems, it was felt that a full-fledged and viable railway administration with headquarters at Pandu was necessary. The lines comprising the Pandu Region (with the exception of a few branch lines), 2,778 route kilometres in length, was formed into the North-East Frontier Railway. The remaining lines, 6,397 route kilometres in length constituted the North-Eastern Railway. On October 2, 1966, the South Central Railway was formed from out of parts of the Southern Railway and the Central Railway with a route kilometrage of 6,088. There are thus nine railway systems as from 1966.

The freight structure underwent important changes as the result of the recommendations of the Freight Structure Enquiry Committee 1955-57. The risk rates differentiation was abolished and the class rates were placed on a new basis. The Rates Tribunal was reconstituted on the lines of the recommendations of the Committee.

Railway Plans: Indian Railways, which since 1930 had been seen little beyond a shrinkage in their network, entered into a period of dynamism and active development under the impact of the Five Year Plans. The projects included in these Plans involved a steadily increasing demand for rail transport therefor and new facilities, improvements and additional lines for the capacity to be planned and provided in advance so as to be available when required. The expenditure incurred on the three Railway Plans have shown a steady increase as in Table VI.

As the First Five Year Plan for the Railways was more one of rehabilitation after the war, the next two plans afford a better picture of the effect of the national plans on railway development and improvements as will be seen from Table VII.

TABLE VI

Railway Plan Outlay on the Three Plans and During 1966-69

(In Rs. crores)

First Plan, 1951-52 to 1955-56	423.23
Second Plan, 1956-57 to 1960-61	1,043.69
Third Plan, 1961-62 to 1965-66	1,763.65
Annual Plans, 1966-69	734.30

TABLE VII

Second and Third Plan Outlays on Railways

(In crores of Rs.)

	Second Plan	*Third Plan*
Rolling stock	372.62	531.00
Machinery and plant	17.00	30.00
Track renewals	188.84	170.00
Bridge works	24.83	25.00
Ganga Bridge	7.23	—
Traffic facilities	173.44	249.00
Signalling, interlocking, etc.	17.31	30.00
Workshops	28.10	32.00
Electrification	53.77	106.00
Staff quarters	37.86	35.00
Staff amenities	11.32	15.00
Passenger and other users, amenities	14.71	15.00
New lines and restoration of dismantled lines	77.83	147.00
Investment in road services	5.34	10.00
Other specified works	30.39	15.00
Miscellaneous	16.90	35.00

The striking increase in the volume of traffic during the period covered by the decade 1956-57 to 1965-66 may be seen from the statistics given below:

TABLE VIII

(Figures in millions)

	Passengers Originating	*Passenger km.*	*Tonnes Originating*	*Tonne km.*
1950-51 (Pre-Plan Year)	1,284	66,517	93.0	44,117
1955-56 (Last year of 1st Plan)	1,527	62,400	115.9	59,576
1960-61 (Last year of 2nd Plan)	1,594	77,665	156.2	87,680
1965-66 (Last year of 3rd Plan)	2,082	96,294	203.1	116,936
1968-69	2,213	106,940	204.0	125,140

In view of the difficulties of coping with anticipated increases in traffic with steam traction in the regions where the coal-fields and the new steel plants are situated, it was recognized that electrification and dieselization had become an operational necessity. Provision was accordingly made for the electrification of a number of sections on the Eastern, South-Eastern, Central and Southern Railways. Apart from the suburban electrification at Calcutta, extension to main line brought the total route kilometrage electrified by the end of 1962-63 to 1,228 (150 km. on the D.C. and 1,078 km. on the 25 kv A.C.) against a total of 2,845 programmed by the end of the Third Plan. The electri-

fication on the Eastern Railway completed in 1962 upto Mughal Sarai and further extended to Allahabad and Kanpur, in addition to a number of sections adjacent to Calcutta. On the South-Eastern Railway electrification of Howrah-Tatanagar, Rourkela-Birmitrapur and other sections in the coal-fields and iron belt has been completed at different stages. The Igatpuri-Bhusaval on the Central Railway and Egmore-Tambaram-Villupuram are the other main projects in the electrification programme.

The extent of diesel traction by the end of 1962-63 is shown by the number of diesel locomotives. These amounted to 219 on the broad gauge and 60 on the metre gauge. In anticipation of the increasing dependence on diesel traction, it has been decided to undertake domestic manufacture of broad gauge main line locomotives at the diesel locomotive manufacturing works which is being set up at Varanasi with a capacity of 150 locomotives per annum. Capacity for the manufacture of electric locomotives is also being created at the Chittaranjan Locomotive Workshops. When these are completed, Indian railways will be more self-sufficient than before in regard to motive power equipment.

The Fourth Five Year Plan, 1969-74, was formulated under conditions which anticipated improvement after the recession in the economy during 1966-69, for which Annual Plans had been drawn up. The basic objectives of the Fourth Plan for the railways are to provide in full for the increase in the traffic expected, to modernize the railway equipment and practices within the limits of the funds available and to convert 1,676 km. of metre gauge to broad gauge in areas of rapid economic development and high traffic potential. Including Rs. 525 crores from the railways' own resources, the total railway outlay for the Fourth Plan has been placed at Rs. 1,525 crores.

The extent of increase in traffic and earnings during 1951-52 to 1968-69 as compared with the pre-plan year 1950-51, may be seen from the following Table.

TABLE IX

Principal Statistics of Government Railways, 1950-51 and 1968-69

		(Figures in million/Rs. in crores) 1950-51	1968-69
Capital-at-charge	Rs.	827.0	3,101.3
Gross traffic receipts	Rs.	263.3	899.11
Working expenses	Rs.	215.7	756.2
Net revenue receipts	Rs.	47.6	142.8
Operating ratio	%	80.0	82.5
Percentage of net revenue receipts % to capital-at-charge		5.75	4.60
No. of passengers originating		1,284	2,213
Passenger kilometres		66,517	106,940
Tonnes originating		93	204
Tonne kilometres		44,117	125,140
No. of stations		5,976	7,032
No. of employees (thousands)		914	1,354

III. Roads And Road Transport

Road Development: Before the commencement of British rule, roadways in the modern sense were practically unknown; and even after its establishment there were few to be found, except within urban limits until 1839 when it was decided to make a strenuous effort to connect Calcutta with Delhi by means of a good metalled road suitable for wheeled vehicles, with bridges over small streams and ferries over the larger rivers. The level plains of India, scoured by streams which for eight months or more in each year were passable without difficulty by the conveyance normally used in the country, offered so small an obstacle to movement between different localities that upto the end of the 18th century there was no demand for prepared tracks. Transport was chiefly effected by pack animals, travelling along village pathways, while travellers could ride or be conveyed in palanquins. As regards the Indian armies, the whole system of military transport and supplies being necessarily adapted to a roadless country, the ordinary requirements under this head during peace differed in no material degree from the requirements of a time of war. This explains the extraordinary promptitude with which the wars of the Indian army had been so frequently entered upon.

The necessity, however, of maintaining a right of way and providing security to life and property on frequented routes was recognized. The Mughal emperors, in particular, concerned themselves to mark out and guard these. Among the routes most used by the caravans which carried traders and goods from one end of India to another were important tracks from Mirzapur to the South (known as the Great Deccan Road), from Agra to Ajmer, and from Allahabad to Jabalpur, which were kept open by the British until after the Great Revolt of 1857. There were also two or three established trade routes from Delhi: one passing through Mathura to Agra and thence *via* Etawah to Allahabad; another running *via* Garhmuktesar, Moradabad, Bareilly, Sandi and Rai Bareilly to Varanasi and on to Patna; a third following the alignment of the present Grand Trunk Road from Delhi to Aligarh.

The roads were generally guarded at intervals by posts (*chaukis*); between *chaukis*, the tracks were marked out by stones, pillars or avenues of trees. The zamindars through whose lands the roads ran provided watchmen (*chaukidars*) and were allowed to levy a small toll on the passing traffic. The *Amalguzars* or magistrates were responsible for all goods stolen within their jurisdiction. The security thus given was probably fairly efficient.

In the early period of British rule, the improvement of roads was undertaken chiefly with a view to facilitate postal communication; and until the various sections which afterwards formed the Grand Trunk

Road from Calcutta to Delhi were commenced, the idea of providing for wheeled traction was hardly entertained.

The backwardness of the state of affairs and the lack of proper organization was referred to by Sir John Shore in May 1833 as follows: 'As to roads, except for those within the limits of the civil stations, the 16 miles between Calcutta and Barrackpore is all that we have to boast of'. The main roads were at that time under Military Boards, one for each Presidency, without sufficient powers, either financial or administrative. In October 1839, the Military Board in Calcutta received orders to join up the various roads between Calcutta to Delhi, and to bring them into good order.

The conditions under which the provision and maintenance of roads were then carried out were chaotic. The actual work was effected through their own officers by the provincial authorities; and funds were supplied, sometimes directly by the Supreme Government, and partly by the zamindars and traders directly interested, sometimes by donations from the great nobles and rajas whose territories were traversed by the roads in question. A properly constituted department for carrying out civil public works was formed in the newly annexed Punjab by Captain Napier (afterwards Lord Napier). This was so successful that, in 1854-55, the Military Boards were abolished and the Public Works Departments were organized in all the provinces, under the general control of the Supreme Government exercised through its newly constituted Public Works Secretariat. After this reform, progress in road-making became much more methodical, and the upkeep more satisfactory than had previously been the case.

About the same time the construction of railways began to exercise considerable influence on the function and character of new roads. The extension of the railway system emphasized the need for roads built in a direction which would enable them to feed rather than compete with the newer means of communication; it also aroused greater demand for metalled roads. In 1823, according to Malony, 'the actual amount of local produce was in excess of local consumption', and 'for the prosperity of the country cheap and easy communication for the exportation of the produce was indispensable'. This remark sums up in brief the chief object with which roads were generally constructed in the first half of the 19th century. As the harvest season coincided with the drying up of the rivers, there was not much need for bridges except on the great trunk roads. On many of these, permanent bridges have not until recently been provided, ferried or floating bridges doing duty in their place. The majority of the early roads were merely embankments across low-lying places with easily graded approaches to river banks, and cleared and level surfaces elsewhere.

With the introduction of the railways, the conditions changed and there

arose a demand for bridged and metalled communications which would give access to the railway line at all times of the year. In some cases no doubt old routes were to a certain extent superceded by railways as a means of through communication; but on the whole, the influence of railways had been in the direction of stimulating progress in road construction and developing the traffic to be carried.

Another factor in stimulating the construction and upkeep of the roads was the extension of Local Self-Government. Just as the substitution of the provincial Public Works Departments for the old Military Boards, and the financial decentralization effected by Lord Mayo and Lord Lytton, enabled the Government to transfer most of the responsibility for road work to Local Governments, so the extension of Local Self-Government carried the process of decentralization a step further and enabled the Provincial Governments to delegate a large portion of their functions in this respect to District Boards. The extension of local control in each case was accompanied by considerable improvement to local communications. The agency to carry out the work was not the same in all provinces, as in Madras (Tamil Nadu) and Bengal where the District Boards employed independent staff, while elsewhere the road work sanctioned by the local Boards was generally carried out by the Public Works Department.

Most Indian roads used to be metalled with broken brick (*khoa*) or with nodular limestone (*kankar*) in the absence of stone and gravel not procurable over vast areas. The expense of maintenance, somewhat high, increased greatly by the effects of grinding wheels of carts. The cost of building roads varied from place to place according to the nature of the terrain. Costs were high in Bengal owing to the embankments, large amount of drainage to be crossed and inferior road metalling; in Bombay and parts of Madras the hilly character of the country increased the cost of construction. The expenditure on maintenance varied according to the funds available with local bodies and other agencies.

With the constitution of a suitable organization to look after the business of roads building and maintenance, a methodical classification of roads became necessary. The classification adopted lasted till 1943 and was as follows:

Class I metalled:

(a) With bridges or ferries and drained throughout.

(b) Partially bridged and drained.

Class II unmetalled:

(a) With bridges or ferries and drained throughout.

(b) Partially bridged and drained.

Class III banked and surfaced, but not drained.

Class IV banked but not surfaced: partially bridged and drained.

Class V cleared and partially bridged and drained.
Class VI cleared only.

The road meterage in British India in 1901-1902 under regular maintenance was as follows: total length of metalled roads about 5,955 km., the upkeep of which being divided pretty equally between Government and local authorities; total length of unmetalled roads, about 218,872 km. about five-sevenths of which being maintained by local bodies. In addition to these were a number of roads repaired or reconstructed at irregular intervals, such as during famines, and certain others maintained by the Forest Department or by the owners of large private estates.

Roads and railways together have revolutionized the methods of transport, causing pack animals to be almost entirely displaced by wheeled vehicles throughout the greater part of the country. Tavernier referred to heavy wagons drawn by six pairs of oxen in the plateau and elevated tracks of Central and Southern India, but these had to be steadied with cords at the river banks and other bad places where too often they had to be unloaded. Light springless carts, drawn by a pair of oxen carried travellers 48 km. or 56 km. a day under most favourable circumstances. The commerce of the country, which used to be chiefly dependent on pack animals for transport and on enormous caravans traversing the Peninsula, carrying merchandise from one point to another, was to be taken over by railways, pack transport being limited to regions where railways had not come in, such as in sandy and hilly tracts. In several instances well built roads have been wholly or partly utilized for the purpose of light railways and tramways.

As roads came to be looked upon as a subject of local interest and importance only, the Government of India Act 1919 deemed roads to be purely a provincial subject and the Central Government ceased to be concerned with road development except for roads of strategic importance and for certain arterial roads, in the then existing princely States, such as the Bombay-Indore-Agra Road. The result was that little attention was paid to inter-State roads or roads required for developed areas.

Indian Road Development Committee 1927: The end of World War I saw the advent and development of motor transport in India and the need was felt for better roads capable of withstanding the centuries old bullock cart traffic and the new form of transport as the existing roads could ill resist the combined disintegrating action of such traffic. On a resolution passed by both chambers of the Indian Central Legislature in 1927, a committee was appointed to examine and report on the question of road development in India with M. R. Jayakar as Chairman. The committee observed in its report that "until recently, there had been a lack of system and continuity in road programmes" which had

to be corrected in view of the "demand for an extended range of movement and for a coherent system" which would make "the broken and disconnected lengths into a continuous whole".

The lack of bridges and crossings was a serious obstacle to traffic of all kinds and, apart from the inconvenience, waste of time and possible damage to bullocks, by seriously reducing even in the dry season the load the bullock cart could carry without difficulty, tended to diminish the economic value of the road as a whole. As for motor transport, regular services would not be satisfactorily established on an unbridged road. The deterioration of the road surfaces was being aggravated by the operation of motor transport. The condition of the subsidiary roads connecting villages also called for special consideration and relief.

The Committee concluded that the development of the road system was desirable, especially so because it would "make for the economic, social and political advancement of the rural population, on which the future of the nation so much depends." As road development was passing beyond the capacity of Provincial Governments and local bodies, and was becoming a national interest, the Committee recommended that it might to some extent be a proper charge on Central revenues. The most important recommendation affecting road development was that an additional duty of 2 annas per gallon (12.5 *paisa* per 4.5 litre) should be levied by the Centre on motor spirit for the specific purpose of road development and that the proceeds should be credited to a separate Road Development Fund. The Committee considered that the balances in the Fund should not be allowed to lapse at the end of each year as a road programme was required to be planned and executed for a number of years and for this purpose continuance of funds was to be assured.

This recommendation was accepted by the Government and the Central Road Fund came into existence on March 1, 1929. The additional petrol duty of 2 annas (12.5 *paisa*) was raised to $2\frac{1}{2}$ annas per gallon (15.6 *paisa* per 4.5 litre) in 1931. The setting up of this Fund represents the first important step taken by the Central Government to promote road development in India.

The procedure for financing road development from the Central Road Fund required that 20 per cent of the annual revenue of the Fund should be retained as a Central Reserve in the Fund from which grants were given by the Government of India for meeting expenditure on the administration of the Fund, road experiments and research, and suitable road and bridge schemes in States (provinces), such as inter-State roads and bridges on the borders of States. The balance of 80 per cent was allocated to the various States on the basis of the actual petrol consumption in the respective States. A third division was instituted in the Fund in April 1950, called the Special Reserve, to which contributions

were to be made from outside the Central Road Fund proper for the financing of specified road projects.

With the commencement of the world-wide depression in 1930-31, the financial resources of the Central and Provincial Governments were adversely affected and funds for road development almost dried up. Indeed there was a time when the Road Fund became the main source of finance for road development. The deterioration of the roads became so serious that, even for normal maintenance needs in some instances, the balances in the Road Fund had to be drawn upon.

Nagpur Plan: In the meantime, the importance of a National Trunk Road system was coming to be recognized and discussions between the Provincial and Central Governments on making a start on a skeleton system led to the Government of India proposing a provision in the Constitution Act then under contemplation to permit national trunk roads being treated in some measure as a federal charge. Actually, however, because of the emphasis on provincial autonomy, no provision was made in the Government of India Act 1935, with reference to the Central interest in the development of arterial roads.

With the outbreak of World War II, the existing short-comings of the road system were brought home forcibly on the Governments. Intensive efforts were made to develop roads of military importance not merely in the operational areas but generally all over India, financed largely by substantial grants from the Defence Service Estimates. Defence requirements and the strategic importance of an efficient arterial road system during the emergency emphasized the need for this more than ever. It was also realized that the roads could be maintained satisfactorily only if the Centre took them over for development and maintenance.

In view of these considerations, the Government of India convened a Conference of Provincial and State Chief Engineers at Nagpur in December 1943, to consider the problem of post-war road development in India. The most important recommendations reached by the Conference were:

(1) roads should be divided into four classes, namely, National Highways, Provincial or State Highways, District Roads and Village Roads; the National Highways, which were defined as highways running through the length and breadth of India connecting major ports, foreign highways, and capitals of provinces and of large States, being the framework of the country's road system;

(2) the Centre should assume financial responsibility for the construction, development and maintenance of National Highways and have an effective say in the use and control of these highways;

(3) there should be uniform "classification" standards throughout India; and

(4) as lack of bridges was a handicap to through road communications, it was desirable to overcome this short-coming as early as possible, the Centre so phasing the bridge construction programmes that major bridges which lie on the boundaries between Provinces or States were not neglected.

The estimated road kilometrage to be reached during the succeeding twenty years was placed at 644,000.

After consultation with the Provincial Governments and discussions at meetings of the Transport Advisory Council, the Government of India accepted, with effect from April 1, 1947, complete financial liability for the development and maintenance of certain roads provisionally approved by them as suitable for inclusion in a system of National Highways. In the Constitution, the subject "Highways" declared by or under law made by Parliament to be National Highway is a Central subject (entry 23, list 1 in the seventh schedule). On April 15, 1957, the National Highways Act 1956 was brought into force. Under this Act, all highways in respect of which the Central Government accepted complete financial liability for development and maintenance as national highways were declared to be National Highways. The Act also empowers the Union Government to declare any other highway to be a National Highway or omit any highway from the list of highways to be declared as National Highways. Thirty-nine routes were declared under the Act as National Highways to be developed, constructed and maintained. The Constitution also conferred powers on the Government of India to give directions to a State as to the construction and maintenance of the means of communication declared to be of national or military importance. After the States' financial integration and the States' reorganization, road policy acquired a more uniform acceptance and application over the whole country than before.

Meanwhile, the Roads Wing of the Department of Transport was created as a result of the recommendation of the Nagpur Conference to provide a strong administrative and technical organization to administer the Road Fund and other funds approved by the Central Government for the development and maintenance of the National and State Highways and co-ordinate the road policies at the Centre and in the States. On the technical side, it functioned as a Central Designs Office besides acting as a repository of technical information on roads and bridges. From 1950 onwards, the Roads Wing also had the overall responsibility for the development and maintenance of certain selected roads, namely, those in the Centrally-administered areas (Union Territories), roads under the charge of the Central Public Works Department (C.P.W.D.) in Sikkim and the roads in the North-East Frontier

Agency, the west coast roads in Tamil Nadu and Maharashtra States, the Passi-Badarpur Road in Assam and the Dhar-Udhampur Road in Jammu and Kashmir State. The head of the Roads Wing is the Consulting Engineer (Road Development) who is also ex-officio Joint Secretary to the Government of India.

During the period 1951-1968 the increase in the surfaced and unsurfaced kilometrage of roads has been substantial, which may be seen from the Table below:

TABLE X

Length of Roads in India by Surface, 1951-1968, Select Years

(In thousand kilometres)

	As on March 31					
	1951	1956	1961	1966	1967	1968
1. P.W.Ds. and Local Bodies						
Black top	21	55	98	151	158	166
Cement concrete	2	4	5	6	5	6
Water bound Macadam	135	124	132	126	137	144
Total surfaced	157	183	236	283	301	316
Unsurfaced, motorable	243	256	269	271	276	286
Total	400	439	505	555	577	602
II. *Kutcha*, unsurfaced*	—	60	204	280	307	323
Total unsurfaced	243	315	473	551	583	609
Grand total	400	498	709	835	884	925

*Constructed in C.D. and N.E.S. Blocks.

The rapid increase in the kilometres of roads since 1951 has been made possible largely by the outlays on development, improvement and new construction under the three Five Year Plans. The total length of roads on March 31, 1968 in the different States is shown in the Table below:

TABLE XI

Length of Roads in India by States as on March 31, 1968

(Figures in kilometres)

State/Union Territory	*Surfaced roads*	*Unsurfaced roads*	*Total*
Andhra Pradesh	33,375	54,973	88,348
Assam	5,190	36,736	41,926
Bihar	13,525	43,295	56,820
Gujarat	15,063	23,233	38,286
Jammu and Kashmir	3,558	15,625	19,183
Kerala	19,480	36,355	55,835
Madhya Pradesh	26,684	38,308	65,002
Maharashtra	31,217	25,328	56,545
Karnataka	36,663	27,131	63,794
Nagaland	273	4,166	4,439
Orissa	9,190	43,941	53,131
Punjab (including Haryana)	12,964	46,759	59,723
Rajasthan	18,107	29,909	48,016
Tamil Nadu	41,776	21,182	62,958
Uttar Pradesh	26,976	98,545	125,521
West Bengal	15,150	37,990	53,140
Union Territories*	5,795	26,668	32,463
Total	315,996	609,134	925,130

*Includes 62 km. of National Highway length in Sikkim.

Border Roads: The Border Roads Development Board was formed in 1960 to accelerate the economic development of the North and North-Eastern Border areas. Construction of more than 7,300 km. of new roads and the improvement of about 4,970 km. of existing roads have been included in the immediate programme of the Board.

By the end of 1960-61, the Nagpur Plan targets had been realized, taking the country as a whole despite shortfalls in individual States and regions. The Chief Engineers from the Centre and the States met together some four years earlier and formulated a new twenty-year Road Development Plan for 1961-81 which was presented to the Department of Transport, Union Ministry of Transport. The bases assumed for the Plan were that in developing agricultural areas, no village should remain more than 6.44 km. from a metalled road or more than 2.4 km. from any type of road. In working out specific proposals such economic factors as area, population, regional levels of development and development needs and possibilities were to be taken into consideration. This Road Plan would provide the country with 32 km. of road per 100 sq. km. of area by 1981, as compared with half the ratio of this length of road at the end of the Second Plan. The cost estimated was Rs. 5,200 crores, of which Rs. 630 crores were to be on village roads.

There can be no doubt that, with the clearer appreciation of local needs as a result of economic planning and better estimation of the demands of new industries and increased agricultural production, plans for road improvement and construction have received more detailed and critical appraisal as part of the overall programme of road development. Special attention is also being paid to the roads for development projects in rural areas as well as backward and hilly regions. More recently, the complex problems of metropolitan areas have also been studied from the point of view of passenger and goods transport and of removal of obstructions to traffic movement such as level crossings.

The progress of expenditure on roads during the successive Plan periods may be seen from the following figures:

	Expenditure (Rs. Crores)
First Plan	134.47
Second Plan	245.80
Third Plan	459.00
Annual Plans (1966-69)	307.00
Fourth Plan	876.00

In June 1961, the International Development Association, an affiliate of the World Bank, extended a Development Credit of $60 million (Rs. 28.57 crores) to meet about 55 per cent of the cost of certain selected road and bridge works on National Highways in the States of Bihar, West Bengal, Orissa and Maharashtra as well as on the Eastern Express Highway in Bombay City. The loan is interest-free and repayable over a period of 50 years.

The road kilometrage during the successive Plan periods is summarized below:

TABLE XII

Road Kilometrage at the end of Each Plan

	Surfaced	*Unsurfaced*	*Total*
1951	157,019	242,923	399,942
First Plan	183,023	315,321	498,344
Second Plan	235,790	473,330	709,120
Third Plan	283,385	551,380	834,765
Annual Plan 1968	315,996	609,134	925,130

The Fourth Plan, under both the Central and State sectors, places special emphasis in the road development programmes on the removal of deficiencies, such as missing links and unbridged river crossings on metropolitan roads, and on the development of rural roads.

Road Transport: Road transport as an important factor of large scale transportation in the country developed only with the advent of the motor vehicle. Other forms of road transport, such as bullock carts, horse-drawn carriages, *palkies*, etc., had only a limited range of operation in regard to both the area covered and the number of persons and volume of goods carried. The new form of transport came into increased use for public transport only in the second decade of the present century, and with it surface transport in India entered a new phase.

Prior to 1914, the operation of motor vehicles in the provinces of Madras, Bombay, Bengal, the United Provinces and the Punjab, was regulated by their respective provincial acts. It was only in 1914 that the first All India enactment relating to motor vehicles — Indian Motor Vehicles Act 1914 — was passed. The Act, however, did not make any distinction between different types of motor vehicles. Nor was any attempt made to restrict their free movement.

Conditions radically changed after World War I, 1914-18, when the surplus military vehicles were put on the roads in large numbers. The pace at which goods and passengers came to be transported by road took even the Provincial Governments by surprise. Fare cutting and poorly maintained vehicles created serious problems of competition and safety on roads. The Act of 1914 had to be supplemented in the post-war years by provincial legislation in an effort to introduce some form of regulation and control. The remarkable ease with which motor vehicles reached parts of the country which had seldom seen even bullock carts from outside except at infrequent intervals of fairs, festivals or market days, helped to accelerate the pace of the change. Within a decade the ubiquity of the motor vehicle had transformed the scene.

The increasing diversion of traffic to the road and the consequent financial losses to the railways, particularly against the background of

steeply declining revenues with the onset of the world-wide depression, drew attention to the importance and urgency of developing a sound policy on the question of regulating road-rail competition. The problems to be dealt with related to the diversion of railway III class passengers to the bus, the long-distance passengers to the private automobile and the goods traffic to the lorries. It was not all a question of more diversion of traffic: motor transport did indeed develop a considerable amount of new traffic in areas not served by the railways or where the facilities provided by the railways were less attractive from the point of view of frequency of service, convenience and/or cost. Road conferences with representatives of the Central and Provincial Governments and other interests affected, held at irregular intervals since 1929, did not lead to any improvement in the situation. The Indian Railway Enquiry Committee 1937, discussing the question of road-rail competition, made a large number of recommendations in regard to general policy, legislation and detailed measures to be taken in regard thereto. As a result of these, the Transport Advisory Council was set up as a policy-making body at the Centre, with the Central Minister (then called Member) dealing with motor transport as Chairman and the State Ministers of Transport as Members.

The Government of India Act 1935 made provision for Central legislation by including "mechanically propelled vehicles" in the concurrent list. Uniformity in dealing with motor vehicles was sought to be achieved by passing the Motor Vehicles Act of 1939 in accordance with which rules were framed thereunder by the State (Provincial) Governments. Modelled on the English Acts, the Act provided for the creation of Regional and Provincial Transport Authorities with full powers to grant permits to "stage carriages" (buses), "public carriers" (public goods vehicle owners), and "private carriers" (owners of goods vehicles carrying their own goods), etc., and to lay down conditions (routes, timings, specifications of vehicles, standards of maintenance, etc.) under which the permit holders must operate. An important provision gave independent powers for all practical purposes to Provincial and Regional Transport Authorities who were not subject to the direction of the State Governments in regard to their decisions on the issue of permit. Under the Act, State Governments were empowered to prohibit or restrict conditionally, by notification in the State Gazette, the conveying of long distance goods traffic by road or of specific classes of goods by private or public carriers with the object of promoting co-ordination of road and rail transport. The regulatory restrictions under the Motor Vehicles Act were later to be embodied in the "Code of Principles and Practices in the Regulation of Motor Transport," and circulated to State Governments for adoption in 1950.

Motor transportation suffered a setback during World War II. The

private operators were faced with numerous difficulties, such as stoppage practically of the imports of spare parts as a result of which their prices rose to abnormal levels and the restrictions imposed on the amount of petrol that could be consumed. The available trucks were practically requisitioned by Government and they were driven by producer-gas to the maximum extent possible.

The proper index of progress of motor transportation is the number of motor vehicles operating in the country from year to year. Unfortunately, there is no information prior to 1925 and, in respect of the number of vehicles operating in later years upto 1947, the statistics available for the country do not include the former princely States. The figures relating to imports however, are available and apply possibly to the whole country (Table XIII).

TABLE XIII

No. of Motor Vehicles Imported Each Year and the Total Number of Motor Vehicles 1913-1947, Select Years

March 31	*Import of Motor Vehicles*	*No. of Motor Vehicles*
1913	3,089	—
1915	3,356	—
1920	13,486	—
1925	12,998	48,797
1930	34,661	117,900
1935	25,201	127,878
1940	25,528	136,985
1945	7,811	142,172
1947	22,407	168,368

Policy for Road Transport: In September 1954 the Planning Commission, in consultation with the Ministry of Transport, issued a communication to State Governments with reference to the basic policy for the development of road transport under the Five Year Plan. Where Government participation was contemplated it was stated that the setting up of a tripartite organization with the State Governments, railways and private operators should be promoted. In formulating the Second Five Year Plan, the Planning Commission approved of the schemes of various State Governments for the expansion of road transport services on the strict understanding that they would set up Road Transport Corporations under the Road Transport Corporations Act 1950. Some of the State Governments, like Kerala and Uttar Pradesh, desired to continue the operation of nationalized transport services departmentally on the ground that they would otherwise lose a substantial amount of revenue. The corporations would have to pay income-tax and incur more expenditure on amenities and road development from the balance of profits. The Planning Commission did not agree and, in December 1957, the State Governments were informed by the Ministry of Finance (Department of Economic Affairs) that,

with effect from April 1, 1958, assistance from the Centre, whether by way of loans or grants, would not be available to transport undertakings owned and/or managed departmentally unless they were incorporated under one or the other of the special enactments or as a company under the Indian Companies' Act. In spite of these instructions, some State Governments did not agree to constitute Road Transport Corporations or joint stock companies to take over management of the departmentally operated road transport services. As the National Development Council did not reach any final decision, it was referred to the Committee on Transport Policy and Co-ordination, which unanimously supported the policy of forming statutory road transport corporations with the participation of the railways and the undertakings to ensure a degree of co-ordination of rail and road transport. The Planning Commission, therefore, decided to adhere to this policy.

The Transport Development Council (set up in 1958) advises the Government on all matters relating to roads, road transport, inland water transport and internal air transport, and on such problems relating to co-ordination between different forms of transport as may be referred to it. The Road and Inland Water Transport Advisory Committee, with the Minister of Shipping as Chairman, was set up in 1958 to discuss problems relating to roads, road transport and inland water transport, and make recommendations to the Transport Development Council for final decision.

Inter-State Transport Commission: With the rapid extension of motor transportation from one State to another, the need was felt for an Inter-State Transport Commission to deal with matters affecting inter-State road transport. Legislation to this effect was completed in December 1956 in the Motor Vehicles (Amendment) Act 1956, by which an Inter-State Transport Commission was constituted "for the purpose of developing, co-ordinating and regulating the operation of transport vehicles in respect of any area or route common to two or more States". The functions which the Commission may be authorized to do under the Act are:

(a) to prepare schemes for the development, co-ordination or regulation of the operation of transport vehicles, and in particular goods vehicles in an inter-state region;
(b) to settle all disputes and decide all matters on which differences of opinion arise in connection therewith; and for the regulation of the operation of transport vehicle in an inter-State region;
(c) to issue directives to State/Regional Transport Authorities interested, regarding the grant, revocation and suspension of permits, or countersign permits for operation in any route or area common to two or more States;

(d) to grant, revoke or suspend any permit or countersign permits for operation of any transport vehicle in respect of such route or area common to two or more States as may be specified by the Central Government;

(e) to perform such other functions as may be prescribed by the Central Government under Section 63-C of the Act.

Since its establishment in 1958, the Inter-State Transport Commission has brought about a number of reciprocal agreements between all contiguous States for the regulation of inter-State traffic, including some long distance inter-State routes, covering more than two States. Among the several steps taken to improve inter-State transport may be mentioned the issue of composite permits under the South Zone, affording an option to permit holders to choose any four States other than the home State for the purpose of operation. The Commission has been making efforts to improve missing links and remove bottlenecks to facilitate smooth flow of long distance traffic.

The Central Road Transport Corporation was set up for maintaining essential supplies in the North-Eastern region following the Chinese aggression.

Progress under Plans: The progress of road transport under the stimulus of planned programme of development has indeed been striking. From the statitics relating to it since 1950-51, it will be seen that the number of motor vehicles registered in India had more than doubled by 1960-61, and increased to 470 per cent by 1968-69. A large proportion of the increase, however, was under motor-cycles and auto-rickshaws (Table XIV).

TABLE XIV

No. of Motor Vehicles Registered In India

	1950-51	1960-61	1968-69*
Passenger cars and jeeps	147,712	287,913	512,037
Taxis	11,551	21,663	44,804
Buses	34,411	56,792	85,490
Trucks	81,888	167,649	300,922
Motor cycles and auto rickshaws	26,860	94,595	392,154
Others	3,891	35,863	104,418
Total			1,439,825

*Provisional figures

The development and maintenance expenditure on roads has recorded an increase of about 150 per cent by 1960-61 as compared with 1950-51, as shown in Table XV.

TABLE XV

Expenditure on Road Development and Maintenance

(In lakhs of Rs.)

	1950-51	1960-61
Development:		
National highways	338	1,001
Central Road Fund	283	379
Roads of economic or inter-State importance	—	486
Roads in Union Territories	35	470
State roads	1,170	4,194
Urban roads	—	410
Maintenance:		
National highways	357	540
Roads in Union Territories	30	96
State roads	1,827	2,802
Urban roads	—	500
Total:	4,040	10,878

The total figures of expenditure on development and maintenance in 1967-68 are given below:

(In crores of Rs.)

	1967-68
Development	96.58
Maintenance	81.15
Total:	177.73

Public revenues from road transport have also recorded a considerable increase. The comparative receipts, Central and State are shown in the Table below:

TABLE XVI

Public Revenues from Road Transport

(In lakhs of Rs.)

	1950-51	1960-61	1967-68
Centre			
Motor vehicles and accessories:			
Import duty	9,44	14,80	21,04
Excise duty	—	10,50	20,86
Tyres and tubes:			
Import duty	7	90	63
Excise duty	3,95	13,34	37,88
Motor Fuel:			
Import duty	19,41	7,50	3,39
Excise duty	1,95	64,65	229,94
States			
Motor vehicle taxes and fees	12,44	30,40	77,57
Sales tax on motor fuel	—	16,91	44,91
Passenger and goods tax	11	8,45	45,50
Total:	47,37	167,45	481,72

IV. Inland Water Transport

As in other countries naturally endowed with navigable river systems, water transport has been an important adjunct of India's economy from time immemorial. It was more economical, and with the long coastline of over 4,800 km. and main rivers flowing down hundreds of kilometres all the year round, these waterways provided the means of conducting trade with the neighbouring countries from earliest times.

In 1829, H. T. Prinsep, Secretary to the East India Company, referred to the state of inland navigation in these terms: "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 the 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 magnificent 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 but all the larger rivers that bring down the water of the Northern hills are navigable more or less throughout the year and almost to the foot of the first range."

Although the main river systems of the country, principally Ganga, Brahmaputra, Indus, Bhagirathi, Hooghly, Mahanadi, Godavari, Krishna, Kaveri, Narmada and Tapti, had figured prominently as carriers of goods and passengers for centuries past, water transport thrives today only in the States of West Bengal, Assam, Andhra Pradesh and Kerala and, to a limited extent, in the other States. During the 19th century, the canals and waterways provided some of the main arteries of the transport system of the country. The introduction of steam vessels in north-east India during the early part of the last century completely revolutionized inland water transport. This assisted the growth and development of the indigo industry in Bihar, the jute industry in Bengal and the tea industry in Assam, Sylhet and Cachar valleys. Inland water transport facilitated the movement of the produce of these areas to Calcutta for export by sea to the world markets.

The importance of waterways was stressed by Sir Arthur Cotton, the pioneer of irrigation works and canals in India. According to him, "Water is incomparably India's greatest treasure and, were this generally turned to account, she would be in the highest state of temporal prosperity." In the Master Plan for Navigation, he proposed a network

of navigable canals and rivers for the entire country, a greater part of which could have been executed at the time as the withdrawals for irrigation were low and would have succeeded in attracting industries to the close proximity of waterways. The reluctance of the Government, apprehending the effects of competition of navigable canals on the vast system of the railways along the main lines of communication and possible inroads into the profits of the railway companies which they had guaranteed or were deriving on the State lines, stood in the way of an active policy of development of inland water transport. Some of the irrigation canals, such as the Ganga and the Yamuna canals, also proved inadequate to serve at the same time the interests of irrigation and navigation. The withdrawals of water from the Ganga resulted in the rapid decline of navigation in the upper reaches in the dry season.

With the active encouragement given to the railways at the cost of water transport, important towns, trading centres and industries developed along areas in close proximity to the railway lines, and the loading and unloading stations along the canals and other waterways, ceased to attract trade and declined rapidly in importance. The end of the last century saw that, while the railways prospered, the less organized water transport was steadily driven out of business, except in regions such as north-east India where, by virtue of the natural advantages of a network of waterways and the difficulty of bridging mighty rivers like the Ganga and the Brahmaputra and numerous deltaic off-shoots in the Sunderbans, steamer companies organized on sound commercial lines continued to flourish. The other regions where inland water transport operated successfully were on the Kıishna and the Godavari, where similar advantages stood them in good stead. The backwaters of the west coast also supported an active water transport system.

The total length of navigable waterways in the different parts of the country in 1890-91 was 2,882.5 miles (4,737 km.), as may be seen from the Table below:

TABLE XVII

Length of Navigable Waterways 1890-91

(*N.B.*: Figures in brackets include the non-navigable portions).

	Miles	
Punjab Canals		
Western Jamuna	243	(280)
Sirhind British	143	(319)
Ind. State	46	(223)
	432	
North-West Frontier Provinces Canals		
Upper Ganga	213	(456)
Lower Ganga	199	(557)
Agra Canal	123	(134)
	535	

TABLE XVII (Contd.)

Bengal Canals	177	
Orissa Canals	72	(252)
Midnapur Canal		(72)
Hijli Tidal Canal	29	(29)
Sone Canals	218½	(367¼)
Minor Works	144½	(163¾)
	641	
Madras Canals		
Godavari Delta	496	(506)
Krishna Delta	284	(325)
Kurnool-Cuddappah Canal	190	(190)
Minor Works	304½	(1,158)
	1275½	
Total: All India	2,882½	(16,026)

Both inland navigation and irrigation depend for their fullest development on the construction of canals. The construction of a canal for transport would be justified only if there were a certainty that it would be extensively used for navigation and on the new line of communication a material saving would be effected in the cost of transport. Apart, however, from all questions of cost, the exigencies of irrigation and navigation are not always compatible. Traffic is not attracted to a navigable canal which does not pass through large cities or important trade centres, or which is not in uninterrupted connection either with the seaboard or with the waterways which form the most convenient outlet for the produce of the tract which the canal traverses. It happens, therefore, that irrigation canals are not always suitable for navigation and, on the other hand, many canals constructed for purposes of navigation only do not irrigate a single hectare.

Inland Waterways in North-East India: Of the various waterways in India, the rivers of the north-east India have, by virtue of the largest meterage and volume of tonnage carried, constitute the most important inland water transport system. The rivers concerned are the Brahmaputra and the Ganga with their tributaries forming about 6,400 km. of waterways through a network of delta rivers and creeks in the Sunderbans. These rivers which impede the operation and development of overland transport are thus a great natural gift to north-east India, as they provide the main channels over which the bulk of the produce of the region is transported.

Assam has a vast internal waterways system. The Brahmaputra, the main artery, flows down the centre of the Assam valley, over a length of 724 km. A number of tributaries, mainly the Subansiri, the Dehing, the Burhi Dehing and the Dehand, are also navigable for varying distances from their mouths. There is a considerable variation in the levels of the main river between the monsoon and dry seasons,

amounting to about 9 metres and current velocities average 8.5 to 9.7 km. per hour during monsoon and 4 to 6 km. per hour in the remaining season. The State is almost entirely dependent on water transport during the monsoon season when the road and rail communications are seriously disrupted. Navigation during this period has its hazards, because of the large volume of silt carried, debris, snags, etc. which are, however, contended with by the operators who have considerable experience of the region. These conditions have influenced the choice of paddle in preference to screw propulsion.

Regular steam services used to operate upto Dibrugarh throughout the year at draft of 1.6 metres. After the earthquake of 1950 which caused the deterioration of the river channels in the upper reaches, the mainline services terminated at Deshangmukh, 76 km. downstream of Dibrugarh, with a feeder service at a draft of 1.21 metres (4'.0") connecting upto Dibrugarh. The protection works at Dibrugarh having induced siltation along the town bank, leaving no suitable berthing sites, even down to 1.93 km. at Bogi Bheel, the feeder services have had to be withdrawn since 1956. The main products of Assam are oil, jute. timber products and tea. About 90 per cent of Assam's tea crop and jute used to be transported to Calcutta by river transport. Despite the little higher rates for carriage by water of tea from Assam tea gardens to Calcutta, as compared with the rail, water transport was preferred because of the advantage of transit time, about 7 days by river against 15 to 20 days by rail. Furthermore, the tea transit sheds and other warehousing establishments at Calcutta have been set up for operation in conjunction with water transport.

Shoals at certain places cause difficulties to navigation. During April 8 to 20, 1958, 70 vessels with nearly 30,481 tonnes of cargo were held up. According to the Joint Steamer Companies, a loss of 12 per cent of annual capacity or of 91,444 tonnes of traffic were lost because of the Noonkhowa Shoal. Better co-ordination among the operators and river training measures have effected great improvement.

The rivers of the Suema Valley have been deteriorating progressively for some years, caused by the rapid run off during the monsoon season and diminished conservation of water supply due to the excessive deforestation of the surrounding Cachar Hills and increased grazing in the lower catchment areas. The low level during the dry season and the shoals between Silchar and Karimganj have restricted feeder services. Lack of terminal facilities and proper approach road connections to the Ghats have been other difficulties experienced by water transport.

The river navigation was mostly in the hands of the Joint Steamer Companies comprising the Indian General Navigation and Railway Company Ltd. and the River Steam Navigation Company Ltd., both incorporated in England with sterling capital. The assets and liabilities

of the Indian branch of the Indian General Steam Navigation Company were taken over by the River Steam Navigation Company. As their craft became uneconomical, Government of India entered into an agreement for the rehabilitation of these crafts by grant of loans amounting to Rs. 2 crores. There were also, besides these, ten Indian companies registered at Calcutta for river navigation.

The Joint Steamer Companies maintained a system of through booking with the railways for many years *via* certain junctions, namely, Shalimar "C" Shed, Dhubri, Pandu, Amingaon, Tezpur, Silghat, Neamati, Karimganj, Manihari Ghat, Paleza and Dibrugarh (temporarily closed). The Indian companies operated between West Bengal, East Bengal (Bangla Desh) and Assam. They do not operate any service on the Ganga and its feeder rivers. The entire fleet of all these companies combined was but a small fraction of the fleet owned by the two English companies, and carried about 10 per cent of the total cargo moved in this region. Their difficulties were old and obsolete craft and inadequate financial resources.

Ganga Water Transport Board: At the instance of the Inland Water Transport Conference 1951, the Ganga Water Transport Board was constituted on March 8, 1952. With representatives from the participating States and functioning under the Ministry of Transport, the efforts of the Board were directed to improving facilities, equipment and transportation in the waterways under its control.

The Ganga, with its important tributaries, the Gomati, Ghagra, Gandak Burhi Gandak and Kosi in the north and the Yamuna, Sone, and Damodar in the south, is the most important waterways system in the States of Uttar Pradesh, Bihar and West Bengal. Emerging as a fair-sized river from Hardwar, the Ganga gets depleted by the Upper and Lower Ganga canals, but augmented by the waters of the Ramganga and the Yamuna at Allahabad, the Ghagra, Sone and Gandak near Patna. From here the river flows in a solid stream, receiving in its course the waters of the Kosi before it turns south past the Rajmahal Hills and towards the east joining the Brahamaputra at Goalando and later spilling into various distributory streams before falling into the sea. The Ganga *via* the Hooghly and the Bhagirathi has a total length of about 2,600 km.

The Ganga and its tributaries had long formed the main trade routes and carried a considerable volume of traffic. Steamers from Calcutta used to ply upto Garhmuktesar, about 644 km. above Allahabad. Till about fifty years ago, steamers used to proceed to Allahabad from Calcutta. Country boats plied above this point with a great bulk of cargo. On the Yamuna large quanities of cotton grown in Bundelkhand used to be sent down from Kalpi.

With the coming of the railways and of industries along their routes and the more recent development of roads and road transport, navigation on the Ganga and the canals dwindled greatly in importance. Navigation on the Yamuna is at present confined to a stretch of about 64 km. above its confluence at Allahabad. The snow-fed Ghagra has adequate discharge during the dry season and has considerable navigation potential. Till the time of the partition of India, a daily service used to operate upto Burhej. The steamer services run by the Joint Steamer Companies from Patna to Burhej were terminated on January 1, 1958. Country boats, however, operate for regular trade as far as Kartanian Ghat near Nepal border. The Sone is navigable for big country boats only during monsoon upto Dehri-on-Sone. On the Gandak, there is considerable boat traffic upto Tribeni Ghat on the Indo-Nepal border. Despite its vagaries, the Kosi is navigable by big country boats from its confluence with the Ganga upto Hanumannagar, a distance of about 670 km. and by smaller boats to a further 56 km. upto Chapra in Nepal from which large quantities of stone are transported down the river for the Kosi barrage.

The Upper Ganga canal, built as an irrigation-cum-navigation canal, was navigable throughout its length of 343 km. till 1933-34, after which navigability decreased to only about 6 km. from the off-take because of power houses blocking the canal. The Lower Ganga canal, also designed for navigation throughout, now permits boats to ply between the headworks and 56 km. and from km. 112 to km. 209.

On the Sone canal system, country boats ply all the year round on the Main Western canal and for a short length of about 7 km. only on the Eastern canal. Country boats ply over 127 km. on the Patna canal and small steamers over 100 km. of this canal. The Arrah and Buxar canals are throughout navigable for country boats and for some 85 km. on the former for small steamers.

The Ganga is navigable from Patna downstream throughout the year. The prospects of the river and canal system in Uttar Pradesh and Bihar have been adversely affected by withdrawals of water for irrigation, the development of railways on both banks of the river and the recent development of mechanized road transport. The lack of location of major industries on the banks of the river has affected the scope for water transport. The partition of the country has also affected the activities previously carried on by water transport in the Ganga network. The movement of traffic between Calcutta and Upper India used to be triangular, namely, Bihar to Assam *via* East Bengal (Bangla Desh), Assam to Calcutta and Calcutta to Bihar; the inland water transport operators maintained water transport through the Ganga, making Goalando the transhipment point for craft plying on the Ganga and

the Brahmaputra. With the partition of the country and the decline of trade with the then East Pakistan (Bangla Desh), the steamer companies completely closed their services on the Ganga.

During 1948-53, the navigation potential of the river Ganga, particularly between Mokameh and Kanpur, a distance of 885 km. was examined by the Central Water and Power Commission. Otto Popper and J. J. Surie, United Nations experts, who undertook a study of the problem of inland navigation in this region, recommended the starting of a pilot project consisting of shallow draft tugs and barges in the reach between Buxar and Allahabad, a distance of 373 km. and the conducting of towing trials of the country boats by power craft. The Ganga Brahmaputra Water Transport Board, which had been appointed in 1952, started on towing trials by tugs around Patna. The programme of starting a pilot project above Buxar, however, received a setback owing to the sudden closure of the steamer services on the Ganga River system by the Joint Steamer Companies, the only concern which had been running steamer services on the Ganga for about 100 years. The Board was merged with the Inland Water Transport Directorate in March 1967.

The Hooghly: The river Hooghly, formed by the confluence of the two Nadia rivers, spill channels of the Ganga about 129 km. above the port of Calcutta is one of the most important waterways in the country. The port itself, situated on the left bank of the Hooghly, is the principal outlet for such products of the country as coal, jute, tea and ores, as well as the products of the States of Uttar Pradesh, Bihar, Orissa, Assam and West Bengal. More than one-tenth of the large volume of traffic handled at the port is carried by inland water transport. Owing to inadequate upland water supply, the conservancy and maintenance of the approaches to the port has presented serious problems. The urgent need for ensuring perennial head water supply which will be necessary to cope with further increase in traffic generated by the development of steel mills and engineering industries has led to the construction of the Farakka Barrage, on the completion of which the navigability of the river is expected to improve considerably.

The Sunderbans: The Sunderbans, representing the intersection of numerous streams and large rivers, has provided navigable cross channels connecting the estuaries of the rivers. Inland water transport is the sole means of communications in this area. The Do-Agra-Khal creek running east to west connecting with the Saptamukhi provides the only link for Calcutta with Assam and Upper India.

Older Canals Connecting Calcutta: The remaining waterways have

declined in importance. The Roopnarayan river with its outfall into the Hooghly at Geonkhali has now a ferry service only up the river for a few miles. The Circular and Eastern canals taking from the Chitpur Lock on the Hooghly and extending upto Hansabad and the Yamuna river provided, prior to the partition, a convenient and safe navigation route for country boats plying between East Bengal and Calcutta, as it avoided the dangerous outer passage through the Sunderbans. The Tolly's Nallah, which once extended to 28 km. from the Kidderpur Docks, has, in consequence of the silting up of the Bidyadhari, navigation facilities only for a short distance in the urban and rural areas. The Midnapur canal, 116 km. in length constructed towards the end of the last century, was of considerable economic importance at the time. The extension of the railway, the resultant competition and the diversion of traffic brought about a rapid decline of the canal, and parts of the canal, between the Roopnarayan and the Damodar, were closed. The traffic between Damodar and Uluberia on the Hooghly is stated to have dropped from 39,626 tonnes to 9,144 tonnes between 1952-53 and 1955-56. The Hijli Tidal canal (also called the Orissa Coast canal) from Geonkhali on the Hooghly upto the Rasul river and the Orissa Coast canal further south has a total length of 89 km. in West Bengal. Although the railway has spelt ruin in this case as in some others, the Hijli Tidal canal appears to be active.

The Damodar Canal: The Damodar-Tribeni canal, part of the Damodar Valley Corporation's project, 137 km. long, is intended to be an irrigation-cum-navigation canal, navigation being in the tail portion. The canal is expected to enable crafts and barges upto 1.83 metres draft to ply throughout the year. The canal is expected to attract trade and industry on both banks. The traffic planned is about 2 million tonnes, made up largely of coal from the Raniganj and Ondel coal-fields.

The Mahanadi and Orissa Canals: The Mahanadi river system and canals provide the State of Orissa with important facilities of inland water transport, particularly in a region having sparse rail communications and inadequate road facilities. The river has a length of about 480 km. in the State and navigation is active on it throughout the year.

Below Cuttack is the Delta canal system. The Kendrapara, the Taldanda and the High Level canals connect the Paradip port with Cuttack; they also supply water for irrigation purposes. The Kendrapara takes off from the pool upstream of Birupa anicut and has its outfall into the Jumbo river, connecting Cuttack with Paradip and False Point. The Taldanda canal on the right bank of the Mahanadi takes off near Cuttack and has its outfall on the Mahanadi about 14.5 km. from Paradip port. It has got narrowed in the lower reaches where

the depths are considerably reduced. The High Level Canal Range I runs from its offtake off Birupa river to its outfall into the Brahmani at Jenapur, a distance of 53 km.

Before railways came to Orissa, the Kendrapara canal was the principal artery of communication, bi-weekly steamer services operating from Cuttack to Chandbali port through the Gobri canal and the Brahmani and Baitarani rivers. These services were connected to regular services to Calcutta through the Matai Nallah and the Orissa Coast canal. The development of the railways proved fatal to water transportation and the Orissa Coast canal itself was abandoned in 1928.

Waterways provide the chief mode of transport in the deltaic districts of Cuttack, Balasore and Puri. The network of navigable waterways and connecting cross channels in this area is comparable to the Sunderbans.

The Mahanadi plays an important part in bringing the rich forest and mineral resources in the upper reaches of the river. When the minimum regulated discharge of water from the Hirakud becomes available, the navigable potentialities in the middle and upper reaches are expected to improve.

The Government of Orissa has been taking steps to rehabilitate, improve and develop the waterways and these have acquired a special significance in connection with the traffic to be handled by the Paradip port. These canals and the Mahanadi may acquire greater importance when the major port of Paradip begins to handle the full traffic potential of its hinterland.

The Godavari and Krishna River Systems: The navigable waterways of the Godavari comprise the main river with the tributary Sabari, the delta arms of the Gautami, Vasistha and Vynatheyam and a network of irrigation-cum-navigation canals in the delta. The Godavari, the second largest river in the Union, with a total length of about 1,500 km., descends through the Western Ghats from near Nasik and flows in a south-easterly direction, falling into the Bay of Bengal in the form of a delta below Rajahmundry. From anicut at Dowlaiswaram, below Rajahmundry, a network of irrigation-cum-navigation canals takes out on either bank.

The Godavari is navigable by country boats of upto 40 tonnes to a distance of about 300 km. and by small steamers upto Bhadrachalam, a distance of 161 km. upstream from Dowlaiswaram, throughout the year. The delta canal system extending to about 790 km. comprises (1) the Godavari Eastern Delta canals to the north of the Gautami, (2) the Godavari Central Delta canals between the Gautami and the Vasistha, and (3) the Godavari Western Delta canals to the south of Vasistha. The activities connected with tapping the rich mineral and forest pro-

duce of the regions traversed by the river have given special importance to the extension of navigation facilities of the Godavari network.

The Krishna, rising in Mahabaleshwar, traverses through a hilly region in a south-easterly direction till it falls in the Bay of Bengal, below Vijayawada. The Krishna River system comprises, besides the river, the delta canal system, Kurnool-Cuddappah canal and the Tungabhadra canal in Karnataka. There is a weir across the river at Vijayawada from which irrigation-cum-navigation canals have been taken out. The canal system has a total length of 644 km. The river is navigable by country boats and small steamers (upto 30 tonnes capacity) in the tidal reach for about 66 km. to a point 37 km. below Vijayawada anicut, whence navigation is routed through the delta canals connected above the weir by suitable locks. From the anicut upstream country boats and small steamers ply for about 37 km. throughout the year, and during the monsoon for a further 64 km.

The Krishna Delta canals form the connecting link between the Godavari canals in the north and the Buckingham canal in the south. Through communication is therefore possible between these canal systems, thus providing a continuous waterway over a distance of about 730 km. from Kakinada in the north to the Mercanum (Marakkanum) backwaters in the south. Several industrial conerns, which have sprung up close to the Krishna Delta canal system, can, it is stated, utilize water transport for bulk movement of commodities when improvement has been effected in the facilities.

The Tungabhadra canal, 227 km. in length, takes off from the Tungabhadra Dam and is expected to permit navigation upto 166 km.

Buckingham Canal : The Buckingham canal, one of the longest in the world with a total length of 415 km., runs through the two States of Andhra Pradesh and Tamil Nadu almost parallel and close to the east coast. It is a tidal canal, exclusively constructed for navigation by joining a series of natural backwaters and connecting all the coastal districts from Guntur to South Arcot. It is 315 km. long, north of the city of Madras, and 100 km. south of it. The northern part connects with the Commumur canal of the Krishna Delta which, in turn, is connected to the Godavari canal as far north as Kakinada. At the southern end, it terminates in the Mercanum (Marakkanum) backwaters.

The history of the canal, one of the earliest feats of engineering in the last century, runs back to 1801. From a 17.7 km. long canal from the Madras city to the southern end of the Ennore backwater, it was later extended to Pulicat lake and called 'Cochrana Canal' after Basil Cochrane who owned it and levied tolls for 45 years till 1847. It was then acquired by Government and gradually extended to 111 km. to

the north at Dugarazapatnam and 64 km. south to the Palar river. The northern part, called the East Coast canal, was extended by 1876 to Krishnapatnam, 148 km. north of Madras, thereby bringing the important town of Nellore within reach of a short length of road to connect the town. In 1878 it was named Buckingham canal after the then Governor of the State (Duke of Buckingham and Chandos).

Until the construction of the railway connection to Nellore, the canal was the principal means of transportation for passengers and goods between Madras and Nellore. In 1877 the canal was extended to 183 km. north, when thousands of persons affected by the Great Famine were employed for excavation work on the Pennuru river. By the end of the following year, the canal was extended to its existing northern limit, the junction of Pedda Ganjam by means of a lock with a lift to the fresh water high level Commomore canal of the Krishna Delta system. The length of the canal north of the Cooum river, 316 km. has since been known as the North canal.

As regards the southern part, the connecting cut, called the Junction canal, between the Cooum and Adyar rivers in the town of Madras was constructed by 1877. By 1882 the entire length of 106 km. to the Mercanum (Marakkanum) backwater, called the South canal, and the several bridges, including the Junction canal, were built. Thus the year witnessed the completion of 421 km. of open excavated channels consisting largely of cuts joining backwaters with but one regulating lock. The silting of the canals and the need to avoid risks of river floods or storm wave backing into the canal led to changes in design and between 1892 and 1897, the flood gates were converted into locks and openings to the sea and long surplus escapes were formed in the eastern bank of the canal.

The economic importance of the canal in the last century to the districts traversed by it was indicated by the fact that, until the advent of the railway, the canal was the only means of transport of passengers and goods between Nellore and Madras. In the early eighties, the cost of transport by the Buckingham canal varied from 2 to 3 pies per ton per mile as against 3 annas 2 pies by road. The volume of traffic on the canal in 1882-83 consisted of 24,982 trips of laden boats, 2,817 trips of empty boats, 7,970 trips of passenger boats; 337,992 tons; 4,961,087 ton goods valued at Rs. 100.35 lakhs; number of passengers 98,802; and tolls and licence fees Rs. 99,758.

After the completion of the entire length, the canal placed the city of Madras in cheap and easy communication with the important towns of Kakinada, Vijayawada, Masulipatanam, Nellore and numerous small trade centres.

The canal is ordinarily fit for navigation all the year round for traffic to be carried by boats from 5 to 30 tonnes. With the coming in of the

railways, the diversion of traffic, sometimes even deliberately, led gradually to the neglect of the canal and the silted-up condition, in the absence of proper maintenance, contributed to still further deterioration. Nothing was done despite public agitation in 1910 and even the acute shortage of rail and shipping facilities during World War I failed to spur action towards improving the canal. It was only during the Second World War under the stress of exceptional strain on rail and road transport that Government took steps to keep the canal in working condition. From 1940 to 1944 the amount spent on improvements was Rs. 18.4 lakhs. These included a masonry lock near Pulicat lake, six cargo boats, power tugs for pulling boats, rivetting of banks and berms of the Junction Canal in Madras connecting the Northern and Southern canals. There was also a proposal to connect the Buckingham canal with the Vedaraniyam canal in the Tanjore district whch would provide direct communication from Kakinada to Point Calimere and thence to Ceylon (Sri Lanka).

From 238,772 tonnes carried during the pre-war year 1938-39, the traffic rose to 487,700 tonnes in 1943-44. It declined in the following years, touching 120,321 tonnes in 1953-54. There was, however, an improvement to 291,506 tonnes during 1957-58. The Inland Water Transport Committee 1959 drew attention to some of the disabilities from which the canal suffered, such as inadequate maintenance, lack of head room in the two railway bridges in the Madras City area, the lack of terminal facilities, inadequate road connection with important railheads and towns, absence of regular two paths, difficulties in obtaining fresh water supplies and lack of proper warehouses to avoid detentions to craft.

Vedaranniyam Canal: The Vedaranniyam canal, taking off from the Kudavayyar river, connects the Vedaranniyam town, a large salt manufacturing centre, with the port of Nagapattinam. It has silted up in a number of reaches and the construction of the railway line, Tirutturaipundi-Agastyampalli, has deprived the canal of its importance. It was originally built to meet the transport needs for moving such commodities as salt, fuel and rice. About 1,000 boats used to ply on this canal, but the number has dwindled to 110 licensed boats carrying about 7,112 tonnes of cargo, made up of local produce, such as fodder, firewood and dry fish. A proposal to connect the southern arm of the Buckingham canal with the Vedaranniyam canal was under consideration, and this, if given effect to, will extend the waterway right from Kakinada to Vedaranniyam, over a distance of 966 km.

Kerala Waterways: A large number of westward flowing rivers, marshy submersible lands, lakes and backwaters and link canals along the coast have combined to provide one of the most important networks of water

transport in the State of Kerala. The system of waterways extends from Hosdurg in the north to Trivandrum in the south. The continuous chain of backwaters and lagoons is separated from the coast by a narrow strip of land, varying from about 11 km. to less than half a km. The extension to Trivandrum was effected by tunnels through the Varkala barrier enabling the canal to get through. The nine sections into which these waterways are divided are as follows:

	Km.
Hosdurg — Azhikkal	55
Azhikkal-Badagara	49
Badagara-Kadalundi	72
Kadalundi-Ponnani	61
Ponnani-Ala	80
Ala-Cochin	35
Cochin-Aleppey	71
Aleppey-Quilon	75
Quilon-Trivandrum	62

The Kerala waterways have attracted a number of industries and products close to them, such as timber, plywood manufacture, coconut, coir products, arecanuts, shell, lime, tiles, bricks and clay, pepper, ginger, vegetables, rice, fish and other products of the region, besides coal and petrol. The ease of access to a number of minor ports and the major port of Cochin affords special advantages to the trade and commerce in the State.

Of the 41 rivers, seven are important for navigation, connecting the interior parts of the State to the backwaters. The total volume of traffic carried on the waterways, according to a recent Traffic Survey Kerala Waterways was placed at 2.3 million tonnes. Thousands of *valloms* (country boats) give employment to a large number of people in plying them, and in ancillary services, such as loading and unloading, and serve the needs of cottage industries established all along the coast. These depend mostly on water transport. Most of the industrial and commercial centres like Trivandrum, Quilon, Kottayam, Changanessery, Alwaye, Trichur, Feroke and Calicut, have either directly or through link canals access to the west coast canal system which itself passes near or through the main ports of the State, namely, Trivandrum, Aleppey, Cochin, Calicut, and Cannanore.

The Inland Water Transport Committee drew attention to some of the improvements required to develop the water transport facilities, such as the deepening and widening of the channels, more adequate terminal facilities, navigational aid, new locks between Ponnai and Chetwai, raising the headroom of road bridges, replacement of existing locks by larger ones, maintenance of minimum width of about 15 metres and depth of 1.82 metres at low water, except in part of the northern section of the canal, new tunnels at Varkala, if the traffic potential justified, and the extension of the canal from Badagara to Mahe.

These recommendations have been gone into in greater detail by the State Government and action on some of them has been taken by it.

As the coastal strip of the Karnataka State north of Mangalore is without any through lines of communication either by railway, road or waterways, and as the swift-flowing rivers with a drop of 600 to 900 metres to sea level within a distance of 64 km. are not navigable in the monsoon months, it has been suggested that, if the lagoons and backwaters formed in the lower reaches by these rivers are connected by a canal, it may prove to be a useful waterway between the two ports of Malpe and Mangalore.

Inland Navigation in Maharashtra and Gujarat: The two States of Maharashtra and Gujarat between them have the longest coastline of about 2,400 km. In the State of Maharashtra, there are, besides the major ports of Bombay and Marmagao, numerous minor ports having a considerable amount of traffic carried by powered vessels and sailing craft. A large number of rivers, creeks and tidal inlets of estuaries navigable from about 6 to 64 km. from their mouths, have combined to develop a closely inter-connected coastal and inland navigation system.

Among the navigable rivers may be mentioned the Vasishti and the Sabitri, both of which have potentialities of further development.

The Bombay Steam Navigation Company used to operate a regular passenger service between Bombay, Rewas Port, and Dharamatar Port on the Amba river and this was preferred for the reason that it is a much shorter route than that by road.

The Narmada river, 1,300 km. long and draining the large watershed of Central India, is navigable in its tidal compartment upto Broach, 48 km. from the mouth, by vessels of 70-80 tonne capacity and small country craft to Chandoo, about 64 km. upstream.

The Tapti river, which once nourished the port of Surat, has deteriorated considerably and sailing vessels can come upto Surat, 29 km. from the mouth only with great difficulty. Small country craft and bamboo rafts, however, can come upto Kathor. In view of the siltation of the river, there is a proposal to shift the port down the estuary to Magdalla. The new industrial estate at Udhana, near Surat, is expected to provide adequate traffic potential for both coastal shipping and inland water transport.

Certain improvements effected after a hydrographic survey of the rivers and creeks, such as dredging to maintain adequate depth, navigational aids for marking shoals, rocks, etc., provision of tugs to assist country boats in tidal stretches to secure better turn-round, have been suggested to extend the scope for inland water transport in this part of the country. Long-term measures for extensive afforestation on the foothills of the catchment area have also been recommended.

The development of water transport on the Thana and Bassein creeks and the Ulhas river is expected to afford relief to the present bottleneck in transport in Bombay.

Rajasthan Canal: The Rajasthan canal, the construction of which has been recently undertaken, can well combine irrigation potentialities with facilities for inland water transport. The navigational requirements, however, have not been taken into account in the present plans for the canal, but new railway facilities have been provided to meet the needs of the areas adjacent to the canal.

Present State of Inland Water Transport: Inland water transport has suffered from neglect for over a century. The real weakness of the situation, according to the Inland Water Transport Committee, lies in "the almost complete absence of expert technical organization conversant with, and having practical experience of, various complexities of the inland water transport, both in the Government of India and in the State Governments mainly interested, *e.g.*, Assam, Bengal, Orissa, Andhra Pradesh, Kerala and Bombay." Despite the revival of interest since independence in developing inland water transport, there has been even during recent years a decline in the activities connected with it. On the Calcutta-Assam river route the cargo carried up and down between 1958 and 1962 decreased from 755,122 to 406,420 and from 525,096 to 406,420, respectively. The factors which have stood in the way of the progress of inland water transport have been (a) the railways and roads running parallel to the canals; (b) the priority generally given to the claims of irrigation as against those of navigation; (c) the absence of any industrial site in the proximity of any natural waterway; and (d) the low operational efficiency of inland water transport because of obsolete craft which have outlived their normal life and the near-primitive methods of handling cargo.

The country boats, the design of which varies from State to State, being adapted to the limitations of particular waterways and the traffic handled, are still the mainstay of inland water transport. The propulsion is by oar, sail or towing lines, and the use of power is almost non-existent on grounds of cost. These boats use waterways where powered craft cannot be used. Except in port areas, they are seldom registered or subjected to periodical surveys, and their operations are restricted by excessive tolls at ferry *ghats* in many places. More efficient utilization of country boats depends on better organization, improvement in design standardization and suitability to powered propulsion.

The Transport Development Council makes a periodical review of the condition of inland water transport. The working of a Directorate of Inland Water Transport in the Ministry of Transport since 1967 is

intended to maintain an overall watch on matters connected with the revival and sustained expansion of water transport in the country.

The subject "Shipping & Navigation on Inland Waterways as regards mechanically propelled vessels" is included in List III (Concurrent List) of the Seventh Schedule of the Constitution. The executive responsibility for the development of inland waterways and navigation thereon rests with the State Governments, unless any waterway is declared as "National Waterway" by law by Parliament. No waterway has so far been declared as a National Waterway. The river conservancy and any other measure for the improvement of any waterway are, therefore, the concern of the State Governments.

Plan Outlays: The expenditure on the development of Inland Water Transport during the Third Plan period and the succeeding three years and the outlay proposed under the Fourth Plan are shown below:

Public Sector Outlay on Inland Water Transport

(Rs. Crores)

1961-66	Third Plan	4.00
1966-69	Annual Plans	6,00
1969-74	Fourth Plan	13.00

The proposed expenditure during the Fourth Plan includes provision for Central schemes, namely, the Rajabagan Dockyard at Calcutta for the Central Inland Water Transport Corporation, technical organization, training schemes, and the development of the Pandu and Jogigopa ports. The Centrally-sponsored schemes are expected to cost Rs. 4 crores.

V. Shipping

The finds of Egyptian, Assyrian and Indian archaeologists have confirmed the sea faring activities of Indian traders long before the Christian Era. India's maritime activity appears to have attained considerable expansion in the East during the latter days of the Gupta Empire and the period of the Chalukyas and Cholas, taking within its sweep the Indian Archipelago, the China Sea and even Japan.

Coming to later times, the testimony of Ibn Batuta points to the concentration of foreign commerce in Gujarat, Malabar and the Konkan and the participation of Indian and Arab ships in this trade. Niccolo Conti in the 15th century makes mention of India-built ships — "some ships longer than ours, capable of containing 2,000 butts and with five sails, and as many masts." He added: "The lower part is constructed with triple planks to withstand the force of tempests, to which they are much exposed." Some were "so built in compartments that, should one part be shattered, the other remaining entire may accomplish the

voyage." Calicut was regarded as one of the greatest ship building centres in India, executing orders from even foreign countries.

During the Mughal Empire, the development of shipping and inland navigation was under the care of a specialized branch of administration. A special admiralty was created during Akbar's reign with special specific functions assigned to it, namely, supplying big ships and boats, supervising construction of big ships, supplying trained personnel of various grades running into 12 main categories, superintendence of boats, ships and their operations, and collection and remission of port dues.

With the coming in of European powers to engage in the East Indies trade, the existence of Indian shipping was threatened and it came to be gradually eliminated. The policy followed by them was clearly enunciated by Francisco Almeida, the first European Viceroy of the Indies to his Sovereign: "Let it be known to your Majesty that, if you are strong in ships, the commerce of the Indies is yours; and if you are not strong in ships, little will avail of any fortress on land." This policy has been sedulously followed in later years by the Dutch and finally by the British power to the detriment of Indian shipping and its final disappearance from foreign waters and later even from her own coastal trade.

Ship building, however, persisted, flourishing under the East India Company right upto the middle of the 19th century. In 1800, Lord Wellesley referred to "the state of perfection which the art of shipbuilding has already attained in Bengal, promising still more rapid progress and supported by abundant and increasing supplies of timber" and to the ability of the port "to furnish tonnage to whatever extent it may be required for conveying to the port of London on the trade of the British merchants of Bengal".

The art of ship building was in so excellent a condition that ships built in India sailed the Thames in company with British-built ships under the convoy of British frigates. The teakwood vessels of Bombay were greatly superior to the "Oaken Walls of Old England" and for this reason, Lt. Col. A. Walker, argued for a policy of drawing on Indian resources and skill for supplying the needs of British Navy and merchnt fleet. The teakwood built ships lasted fifty years against the ships of the British having to be renewed every twelve years. While no Europe-built ship was capable of doing more than six voyages in safety, Bombay-built ships, after running for fourteen or fifteen years, were bought by the Navy. The authority just quoted assessed the difference in favour of India-built ships at 325 per cent. In view of the greater durability and economy of Indian ships, British ship building interests scented danger. According to Taylor, "The arrival in the Port of London of Indian produce in Indian-built ships created a sensation

among the monopolists which could not have been exceeded if a hostile fleet had appeared on the Thames. The shipbuilders of the Port of London took the lead in raising the cry of alarm; they declared that their business was on the point of being ruined and that the families of all shipwrights in England were certain to be reduced to starvation."

Discrimination Against Indian Ships: The cry prevailed and stirred acts of hostility on the part of the British Government, such as the banning of Indian ships from British waters and the Government of India imposing discriminatory and crushing duties on goods imported on Indian bottoms. H.H. Wilson observed: "The foreign manufacturer employed the arm of political injustice to keep down and ultimately strangle a competitor with whom he could not have contended on equal terms." Indian shipbuilding had to perish so that British shipbuilding industry could flourish. These, and not the advent of steamships and iron and steel replacing wood, as often alleged, led to the decline of the Indian ship building industry.

Between 1857 and 1898-99, the Indian vessels entered and cleared, declined from 34,286 to 2,302, and the tonnage from 1,219,958 to 133,033. Over the same period, while the British vessels dropped from 59,441 to 6,219, the tonnage rose from 2,475,472 to 7,685,009. Foreign ships, which had by this time entered the picture, accounted for 1,165 vessels and 1,297,604 tons.

It was during the period of World War I that it came to be realized that the difficulties connected with the shortage of shipping would have been substantially less had an Indian shipping industry been in existence. The Indian Industrial Commission, 1916-18, recognized the need for developing Indian shipping and for training officers and engineers in connection therewith. The progressive disappearance of a large part of world shipping and an evident shortage of tonnage caused by the submarine menace during 1914-18 pointed to the importance of India having her own merchant fleet in any replacement programme. Beyond the creation of a shipbuilding branch in the Indian Munitions Board and getting an officer on loan from the British Admiralty, nothing further was done. Government held that it was not possible to make any progress during the war towards the building of steel ships and that encouragement of wooden ships alone was possible.

Indian Shipping during Inter-war Period: The Scindia Steam Navigation Company Ltd. was started in 1919 with a passenger steamer and six cargo boats. Its history has been for the national shipping companies a sad story of ceaseless struggle and sacrifice; a painful chapter of bitter disappointment at the lack of response from the then Government of India to their demand for stability and expansion.

The inter-war period, 1919-1939, is important. During these twenty-one years, most maritime countries of the world tried to build up their merchant fleets. Every maritime country of any importance had for reasons of national security and economic needs, increased its own fleet. What was happening in other parts of the world was, however, of no concern to the Government of India. India continued to be a glaring exception to the recognition of the duty of the State to develop a national merchant marine. The patronage of the Government and all that went with it were enjoyed by the British Indian Steam Navigation Company (B.I.S.N.). It received subsidies for the carriage of mails and had first admission to the docks. Government servants proceeding abroad travelled by the P & O (The Peninsular & Oriental Navigation Company) of the same group. During the thirties, Government servants were even compelled to travel by these services at the risk of being penalized.

During the twenties and thirties, all the Indian companies, newly started, found themselves opposed by the British interests. They were faced with ruthless rate cutting and severe competition from the British Indian Steam Navigation Company. Some of the Indian companies, financially sound and well-managed, had to be closed down. The Scindia Steam also had to experience the hostility of the B.I.S.N. in 1920 itself. This was by no means a new experience. When the freights on Indian yarn were so high as to make it impossible to retain the Chinese market for the Indian yarn, the late J. N. Tata chartered a few boats to carry the yarn at reasonable rates. The P & O would not tolerate the entry of any Indian enterprise into overseas trade which it held to be its monopoly; it slashed the rates from Rs. 16/- to Re. 1/- per maund. When the Indian company withdrew from so relentless a competition, the rate was raised from Re. 1/- to Rs. 17/-. The Bengal Steam Navigation Company, which went into liquidation in 1910, had, when it came into existence, to face a rate war in 1905 on the Chittagong — Rangoon run, when the B.I.S.N. cut the fare from Rs. 12/- to Rs. 6/- per deck passenger and the rates from Rs. 14/- to Rs. 4/- per maund, adding free distribution of sweets and handkerchiefs to its patrons. When the Indian company was driven to the wall, the B.I.S.N. raised the fares to Rs. 14/- to make up for the loss from the rate war.

In the early thirties, four small Indian companies, the Eastern Navigation Company, the Malabar Steamship Company, the Merchant Steamship Navigation Company and the National Steamship Company had to face cutthroat competition from the B.I.S.N. and the National Steamship Company even ceased to exist. No company was secure till it found a place in one of the Shipping Conferences and even after being admitted, it had to submit to the decisions of the predominant partner, the B.I.S.N.

Indian Mercantile Marine Committee: Following the adoption of a resolution in the Council of State in March 1922, the Indian Mercantile Marine Committee was appointed to consider measures to be taken for the development of shipping and shipbuilding.

The Committee, reporting in 1924, recommended:

I. Reservation of coasting trade by a system of licences which should be issued on the following conditions:
   (1) To no foreign ship except in so far as protected by treaty rights.
   (2) To any ship flying the British flag provided that (a) it has been regularly engaged in the coasting trade during the preceding twelve months and is not more than 25 years old, (b) the owner undertakes to take Indian apprentices and Indian Executive Engineer Officers on scales recommended, and (c) the licence shall continue only until the ship has reached the age of 25 years.
   (3) Any ship hereafter seeking to enter the coasting trade shall comply with the conditions that the ownership and controlling interest shall be predominantly Indian, *viz.*, (i) registered in India and (ii) owned and managed by an individual Indian, or by a company registered in India with rupee capital, with a majority of Indians on its Dirctorate and majority of its shares held by Indians.

II. Purchase by Government of one of the existing British lines operating on the coast and its eventual transfer by sale to Indian owners.

The Committee also recommended that, if the Law Officers of the Crown held that the licensing proposals conflicted with Section 736 of the English Merchant Shipping Act 1924, either the Act should be amended or Indian-owned and Indian-managed ships should be assisted by (i) bounties; (ii) mail contracts; (iii) carriage of Government stores, whether in the coasting or in the overseas trade.

Several attempts were made to reserve coastal traffic to Indian ships. The bill introduced by S. N. Haji in 1928 lapsed on the dissolution of the Central Assembly. A conference convened by the Government of India in 1930 with the representatives of all interests concerned with a view to contributing to a solution for the adequate participation of Indian shipping in the coastal and overseas trades of India and to securing, if possible, an agreed settlement, broke up without any agreement. The breakdown was attributed to the complete apathy of Government in protecting Indian shipping interests and the powerful opposition of the foreign lines. On April 1, 1934, a Tripartite Agreement between the B. I. S. N. Scindia and the Asiatic Companies provided for (a) the cargo carried by the vessels of the three companies in the coasting trade of

India, Burma and Ceylon, being regulated and apportioned according to specified percentages; (b) the Scindia Company being permitted to carry passengers on the Rangoon-Coromandel coast and the Rangoon-Chittagong run; (c) the total gross tonnage of the Scindias being raised to 100,000 gross tonnes; (d) the rates of freight and fares for passengers being jointly fixed in writing by the parties after mutual consultation and consent, and strictly adhered to; and (e) any dispute or difference to be decided by arbitration. In addition, the Scindias agreed to respect the P & O Company's and B.I.S.N. Company's foreign (Overseas) trade and not to compete with them in these services. The agreement was to have expired in 1939, but the efforts to revise it did not receive any Government support and this agreement controlled the situation even after World War II.

The case of smaller companies operating in the west coast was the subject of intervention by Sir Joseph Bhore, the then Commerce Member, and a reservation of 85 per cent of the trades in these areas was secured for them by Government.

The Indian Mercantile Marine Training ship "Dufferin" was established at Bombay on December 1, 1927, initially for three years and continued thereafter as a permanent institution. Starting first on training executive officers, the Institution under-took training of Marine Engineers as from 1937. The "Dufferin" has over the years made an important contribution to the needs of Indian shipping. At the end of the first twenty-five years of its establishment, 575 officers trained by it were found serving in the Indian Navy and the merchant ships. By 1966-67, 2,026 had been trained at the " T. S. Dufferin". It has also in recent years extended its facilities to the neighbouring countries. The "Dufferin" has now been replaced by a new training ship Rajendra.

Post-War Shipping Policy: A change in policy was indicated in the Post-War Shipping Policy laid down in the Second Report on Reconstruction and Planning, issued in 1945, as follows:—

"For a country of its size, length of coastline and strategic position athwart one of the world's main sea routes, India possesses a distressingly small number of deep sea ships which, at the outbreak of war, stood at no more than 30 with a total of less than 150,000 tons gross. India's weakness in this respect has long been recognized, and the Government of India are pledged to a policy of assisting in the development of an Indian Mercantile Marine. So far, however, the action taken to implement this undertaking has been limited to the establishment of the "Dufferin" for the training of executive officers, the provision of special facilities for the training of marine engineers and to using Government's good offices to promote a settlement between the Indian and British

Companies operating on the coast with regard to the division of the available trade between them.

"The vulnerability of India's position has been revealed by the stress of wartime conditions, but by no circumstances more glaringly than by her inability to find adequate shipping from her own resources to provide for the transport of the food supplies required by her. The rectification of this state of affairs should be one of the immediate post-war objectives, not only for commercial reasons but also because the development of the Royal Indian Navy necessarily implies the concurrent development of the merchant navy.

"The acquisition of an adequate share in the world's carrying trade should be the aim of our post-war shipping policy, and to this end steps should be taken to secure for Indian shipping — (i) an increased share of the coastal trade, including trade with Ceylon and Burma (the present share is estimated at between 20-30 per cent); (ii) a substantial share in the near trades, *e.g.*, Persian Gulf, East Africa, Malay and the Dutch East Indies; (iii) a fair share in the Eastern trades, especially those trades of which Japanese shipping will have been dispossessed; and (iv) a fair share also in the trade between India, on the one hand, and the U.K., and the Continent of Europe and North America, on the other."

The Reconstruction Policy Sub-committee on Shipping was appointed on November 10, 1945 to recommend a suitable tonnage target for Indian shipping to be attained within a period of five to ten years and the percentage share of the maritime trade of India — both coastal and overseas, cargo and steamer — to be secured for Indian shipping.

The sub-committee submitted its report on January, 20, 1947. Defining Indian shipping as "shipping owned, controlled and managed by the nationals of India", the sub-committee recommended 100 per cent reservation of coastal trade, 75 per cent of adjacent trade, and 50 per cent of overseas trade. It also set a target of 2 million gross tonnes of shipping to be acquired within a period of five to seven years. Further, it recommended financial aid to Indian shipping companies engaged in overseas trade. As regards shipping organization, it recommended the setting up of a Shipping Board which would be "the spear-point of policy locally and internationally" with power to license coastal vessels and to suggest proposals for the removal of all evils of monopolistic exploitation. The Government of India generally endorsed the dynamic policy on shipping stressed by the sub-committee and its implications.

In accordance with the decision of the Government that the public sector should participate in the shipping industry, the Eastern Shipping Corporation was incorporated on March 24, 1950 with its Head Office at Bombay, as a public company under the Companies Act as a joint venture with the Scindia Steam Navigation Company, the latter holding 26 per cent of the shares and acting as Managing Agents. On August 15,

1956, the management was taken over by the Central Government and the shares owned by the Scindias were acquired in 1957. The Western Shipping Corporation, wholly owned and managed by Government was incorporated under the Indian Companies Act on June 22, 1956. In view of the practical difficulties in the day-to-day management of two separate companies and, as the merger of the two would eliminate duplication and lead to economy in the long run, the undertaking of the Western Shipping Corporation was transferred to, and stood vested in the Eastern Shipping Corporation, with effect from October 2, 1961, which was renamed "The Shipping Corporation of India Ltd." wholly owned by the Government. The authorized capital was Rs. 35 crores (combined authorized capital of the two companies) and the paid-up capital Rs. 23 crores. The trading activity of the Corporation — transport of goods and passengers by sea — was carried on with its own fleet, as of February 1970, of 70 vessels which included cargo ships, passenger-cum-cargo ships and tankers to a total dead weight tonnage of 1,056,000.

The Western Shipping Corporation had acquired during 1960 the shareholding of 80 per cent (80, 180 shares) of the "Mogul Line", making it a subsidiary. As of 1970, the Line had a fleet of three passenger-cum-cargo vessels, a collier and a tanker aggregating to a Gross Registered Tonnage (G.R.T.) of 42,500 and catering mainly to the pilgrim traffic on the India/Red Sea route. It is the oldest Indian registered shipping company, having been registered in Bombay on August 2, 1877 as the Bombay and Persia Steam Navigation Company. In 1939, the name was changed to the Mogul Line Ltd. With the amalgamation of the Western Shipping Corporation and the Eastern Shipping Corporation, it became a subsidiary of the Shipping Corporation of India. On March 30, 1952, the shares were transferred to the President of India and it ceased to be the subsidiary of the Shipping Corporation as from that date. The policy of Government has been to extend and diversify the existing trade. It has resumed the shuttle services on the Madras/Rangoon route and is expected to operate colliers.

Terms of Financial Aid to Shipping: The expansion of Indian shipping since 1950-51 has been assisted by State financial aid to shipping. This has varied, in the case of overseas vessels, from 85 to 95 per cent for vessels built new and upto 75 per cent for second-hand purchases, the interest charged being $2\frac{1}{2}$ per cent per annum and the rate being raised to 8 per cent in the event of default. The repayment of the loan is spread over a period of (not exceeding) 12 to 15 years in respect of new vessels and not exceeding two-thirds of the unexpired life in the case of second-hand vessels. The loans carry backing by adequate security acceptable to Government covering the amounts outstanding plus 33.33 per cent by mortgaging the vessels concerned and such other assets as

may be necessary. As regards coastal vessels, the loans, the quantum of which not exceeding 85 to 90 per cent for vessels built new and 66.66 to 75 per cent for purchases of second-hand vessels, are at 4 to 4.5 per cent per annum, subject to penal rate at 8 per cent per annum in the event of default. The loan will be spread over a period not exceeding 12 to 15 years for new construction and not exceeding two-thirds of the unexpired life of the second-hand vessels. The interest charged will be 4 per cent only if the loan is repaid within four years. The security for the loan is governed by the same provisions as for overseas vessels.

Government has a whole time officer as Government Director on the Board of each shipping company to which Government loans have been advanced for the acquisition of ships. He is charged with watching the interests of Government and sending periodical reports to it. In the case of smaller shipping companies, they are required in addition to implement any suggestion made by Government for better management of the company. The vessels subject to the loans are also required to be made available for periodical inspection by Government surveyors in regard to their maintenance and upkeep. In regard to all the vessels subject to Government loans, insurance against all risks (including war risk) for an amount 25 per cent in excess of the sums owing to Government is compulsory and the policies should be assigned to Government.

Progress of Shipping under Five Year Plans : The progress of Indian shipping is indicated in the Table below:

TABLE XVIII

Progress of Indian Shipping, 1947-1969, (select years)

Year	*Coastal*		*Overseas*		*Total*	
	No.	*G.R.T.*	*No.*	*G.R.T.*	*No.*	*G.R.T.*
1947 (Aug. 15)	48	119,000	11	73,000	59	192,000
1951 (Apr. 1)	71	205,699	23	166,679	94	372,378
1955 (Dec. 31)	92	220,960	33	255,347	125	478,307
1960 (Dec. 31)	98	315,397	74	528,619	172	844,016
1965 (Dec. 31)	110	337,895	116	1,122,086	217	1,459,981
1969 (Dec. 31)	80	304,532	174	1,948,238	254	2,252,770

The number of passengers carried on coastal and overseas trades by the Indian shipping companies, shown in Table XIX, indicates a considerable decrease in 1963 under Coastal Services as compared with 1951.

The freight and passenger earnings of Indian shipping companies since 1947 may be seen from Table XX. Taking the total earnings, there has been an increase of 557 per cent as compared with 1947-48.

TABLE XIX

Number of Passengers Carried by Indian Shipping Companies, Select Years (1951-1968)

(In thousands)

Year	*Coastal*	*Overseas*
1951	1,336	66
1956	941	86
1961	903	131
1962	978	128
1963	806	119
1964	964	122
1965	895	113
1966	924	113
1967	810	97
1968	740	103

TABLE XX

Freight and Passenger Earnings of Indian Shipping Companies, for Select Years (1947-1969)

(In crores of Rs.)

Year	*Coastal*	*Overseas*	*Total*
1947-48	6.22	2.59	8.81
1950-51	9.19	7.29	16.48
1955-56	10.77	13.42	24.19
1960-61	13.74	30.29	44.03
1961-62	12.85	31.66	44.51
1962-63	16.31	34.29	50.60
1963-64	14.78	43.13	57.91
1964-65	13.35	31.36	64.71
1965-66	12.43	55.66	68.09
1966-67	14.60	92.91	107.51
1967-68	12.80	108.50	121.30
1968-69*	10.83	121.29	132.12

*Approximate

Sailing Vessels Industry: During the latter part of World War II, the sailing vessels traffic on the west coast was organized under the Defence of India Rules, with a view to affording relief to the railways and coastal shipping in the movement of essential items. During 1944-48, the sailing vessels had assisted in the movement of approximately 1.7 million tonnes of cargo. As, with the termination of control, the cargo as well as freight declined, the Government appointed, on representations from the industry, the Sailing Vessels Traffic Development Committee on May 24, 1948, to examine and report on the steps necessary to ensure the fullest utilization of country craft (sailing vessels), to sustain and develop the economy of the country and *inter alia* to prevent wasteful competition between country craft and steamers, due regard being paid to the differing needs served by the two classes of transport.

The committee submitted its report in May 1949. Its findings were

that the sailing vessel had to be a considerably much more safe, expeditious and efficient unit of transport than it was, that the personnel afloat had to be considerably much more trained, competent and reliable and that the trade had to be reorganized, preferably by voluntary action. A number of detailed recommendations were made by the committee, such as bringing sailing ships within the scope of the Merchant Shipping Act, registry of such vessels etc. The recommendations were broadly accepted by Government and a special organization was set up in the Directorate-General of Shipping to implement Government policy in regard to the development of the sailing vessels indusry.

A scheme has been prepared for the grant of loans for the mechanization of existing sailing vessels and for the construction of new sailing vessels, and it has been decided to place the funds at the disposal of State Governments which will disperse the loans to owners of vessels through co-operative societies. A Central Advisory Committee for Sailing Vessels has also been constituted to advise Government on major problems of an all-India character. In order to deal with local problems and to assist in the organization for the development of the industry region-wise, four Regional Advisory Committees have also been appointed at the ports of Bombay, Jamnagar, Tuticorin and Masulipatam.

There were, as on January 1, 1967, 3739 sailing vessels, including 103 mechanized with a carrying capacity of about 240,000 Dead Weight Tonnage (D.W.T.).

Merchant Shipping Act 1958: The Merchant Shipping Act enacted by Parliament came into effect on October 30, 1958. The Act is intended to foster development, and ensure the efficient maintenance, of the Indian mercantile marine in a manner best suited to serve the national interests. It provides for the establishment of a National Shipping Board, a Shipping Development Fund and the registration of Indian Ships. All the statutory rules, regulations, orders, etc., under the Act have been brought into force on January 1, 1961.

Shipping Development Fund: Among the statutory bodies created under the Merchant Shipping Act 1958, is the Shipping Development Fund Committee. This committee has been set up to provide financial assistance to Indian shipping companies for the acquisition of tonnage. The Merchant Shipping Act, 1958, provided for the establishment of a non-lapsing fund on a statutory basis. The fund, which was established in March 1959, is intended to serve as a continuous source of finance from which loans can be granted to Indian shipping companies.

The Government of India has been giving financial assistance to the shipping industry since the beginning of the First Five Year Plan in the

form of loans to the shipping companies in the public and private sectors for the acquisition of ships and for investment in the public sector shipping companies. During the period of the First Five Year Plan, a total amount of about Rs. 18.7 crores was spent. The total provision for the Second Five Year Plan was Rs. 54.25 crores for the expansion of tonnage. Of this, a sum of Rs. 18.83 crores was invested in the public sector shipping companies and a total sum of Rs. 23.44 crores was advanced as loans to the shipping companies. The balance of Rs. 11.9 crores was advanced to the Shipping Development Fund. The Third Plan expenditure was Rs. 40 crores. The expenditure during the annual plan periods of 1966-69 was Rs. 25.4 crores.

The outlay for the Fourth Plan is Rs. 140 crores, of which Rs. 135 crores are for the acquisition of ships. By the end of the Fourth Plan a target of 3.5 million G.R.T. is expected to be reached.

Shipbuilding: The construction of a shipyard at Visakhapatnam was the first major enterprise of its kind in the country. Although the progress of construction was interrupted since the beginning in June 1941 owing to the war, it was completed by stages by 1946 on 21.85 hectare with two berths, the total provision being for eight berths and necessary workshops. To start with, it was financed entirely by private enterprise, namely, the Scindias who got four 8,000 tonners built for their own use. Owing to high costs of construction and the inability of the Scindias to keep the yard going, Government assistance was given by placing orders for three ships. Government, however, decided to take over the yard and, on January 21, 1952, a private company called the Hindustan Shipyard Ltd., was formed and on March 1, 1952, the yard was taken over by it at a valuation of Rs. 2.72 crores. Two-thirds of the shares, valued at Rs. 2.09 crores were taken by Government, the remaining third being retained by the Scindias. A debenture loan of Rs. 60 lakhs given during 1952-54 was later converted into share capital, the Government holding thus being raised to Rs. 2.69 crores. On March 31, 1961, Government acquired the shares of the Scindias also, namely, Rs. 104.25 lakhs, for Rs. 80.38 lakhs.

Government has been bearing the difference between the actual cost of construction in the yard and the cost of similar ships in the U.K. which is the price at which these ships were sold by the Hindustan Shipyard to the shipping companies. Soon after the formation of the company, an agreement was entered into in July 1952 with the French firm of shipbuilders "La Societe Annonyme Des Ateliers et Chantiers de La Loire" (The "A C L") for technical aid in management and operation of the yard.

The yard has been developed to enable it to construct ships of various sizes. In recent years it has been building overseas liner vessels of

about 10,000 to 12,000 D.W.T. From being able to build three ships a year, its capacity is being increased to building six ships a year.

A second shipyard is to be constructed at Cochin and 25.6 hectare of land have already been acquired, leaving an area of 13.6 hectare to be handed over by the Kerala State Government. The shipyard is to be constructed in collaboration with Messrs Mitsubishi Heavy Industries, Japan.

VI. Ports

Although the geographical position of India is favourable for international trade in view of the projection of the great peninsula into the Indian Ocean and the long coastline presented to the navigator facing west, there is a singular paucity of large natural harbours. On the west coast, during the monsoon months, navigation practically ceases when the rocky shores are furiously beaten by wind and waves. During this period, at only a few ports on that coast is an intermittent activity permitted. On the east coast of India, the absence of natural harbours is even more striking. However, the natural deficiency has been overcome by human effort, as typified by the case of the Madras Port.

Extensive maritime trade with countries to the east and west of India more than two thousand years ago, as referred to earlier, had made many of the ports of call on the coast of the sub-continent well-known to sailors and merchants of antiquity, such as Bharugachha (Broach), Naura (Cannanore), Comari (Cape Comorin), Postuea (Pondicherry) and Camara (Kaveripatnam). The importance attached to ports and harbours during the Mauryan times is seen in the details relating to their maintenance and administration in Kautilya's *Arthasastra*, such as the references to the department responsible for controlling ports and harbours and the functions of the State officer who helped boat fleets which had lost their courses in unfavourable winds, collected taxes on boats and ships, etc. Many of the ports and harbours must have maintained their activities in connection with foreign trade in the following centuries.

The advent of European powers and their settlements for trade led to the beginnings of those large ports which have now come to handle the bulk of the country's international trade. Till the supremacy of the East India Company was established, the struggle for power between the Portuguese, Dutch, French and English led to the setting up of a number of settlements on both Malabar and Coromandel coasts as well as to the north of these coasts. The ports which were developed by the East India Company, namely, Madras, Bombay and Calcutta, emerged later as the most important ports. To these were later added Karachi, Cochin and Visakhapatnam. Prior to independence these six constituted

the principal ports. The great bulk of India's foreign trade prior to the partition used to be concentrated at Karachi and Bombay, these being the principal channels for the trade of north-western and western India. There were, however, a large number of smaller ports used by smaller vessels and other craft.

Beginnings of Calcutta, Bombay and Madras Ports: The East India Company established a factory in 1690 at the site of Calcutta, about 129 km. up the river Hooghly. Until the opening of the Suez canal and the linking of the interior with Bombay and Karachi, the trade of India with foreign countries was largely conducted from Calcutta. By 1864, railways extended from Calcutta to Delhi, the line being laid through the most productive tracts of northern India and following, in the main, the course of the Ganga, which was formerly the easiest highway of commerce, and the Grand Trunk Road. The extension of the railway system in north-eastern India added year by year to the sphere of influence of Calcutta as a port and a distributing centre. To meet the requirements of its increasing trade, it became necessary to improve the conditions of the port. The primitive system of mooring in the stream and loading and discharging the cargo by lighters was superseded by the construction of jetties and wharves along the Calcutta foreshore of the river, and later by the construction of docks at Kidderpore to which railway wagons could bring merchandise alongside the steamers. At the same time, the service of steamers on the river highways between Calcutta and Assam was greatly improved and developed to meet the rapidly increasing needs and output of the tea estates. The reduction of rates between Calcutta and Rangoon stimulated the trade of the former with Burma. Still greater came to be its importance with the rise of industrial enterprise and the exportation of jute and jute manufactures from the port to all parts of the world. From small beginnings, the port has grown to the size of a major port of international importance.

The East India Company, which had, after defeating the Portuguese, established itself at Surat, foresaw the future of Bombay. In 1668, the island was transferred by Royal Charter to the Company for an annual rent of £10 by Charles II who had obtained it from Portugal as part of his marriage contract. The East India Company thereafter promulgated measures for the encouragement of trade to and from Bombay. The construction of a Custom House, a warehouse and a mole capable of berthing small ships was taken in hand and a shipwright was sent out from England to supervise the Company's shipbuilding operations. Gerald Aungier, President of the Surat Council and Governor of Bombay, thus summed up the natural advantages of Bombay: "The great bay or port is certainly the fairest, largest and securest in all these parts of India, where a hundred sails of tall ships may ride all the year

safe with good anchorage." Development of communications with Bombay, though it started earlier than in eastern India, was not completed till a later date owing to the difficulties of the approaches to the island from the interior. The absence of docks also prevented trade during the monsoon months. The cotton famine, caused by the American Civil War, 1861-66, gave an enormous impetus to the trade and prosperity of the city. Although this was followed by the most severe commercial crisis recorded, recovery was rapid, aided by the completion of the extension of railways to Jabalpur and Nagpur, and to Delhi and Agra. The opening of the Suez canal in 1869 also contributed to the great impetus given to the trade of western India with the West in the period following 1870 and this raised Bombay to the level of Calcutta as a commercial centre. The construction of the docks enabled the export business to be carried on all the year round without interruption by the elements.

The first Madras harbour was the Fort St. George, founded by Francis Day in 1639 on a sandbank at the mouth of the Cooum River to provide a safe place for the ships and the trade of the East India Company. There was no harbour at all in the usual sense, no pier or jetty even, nothing but a beach and very little of that. There was no trade in stormy weather and ships avoided the monsoon months. It was only in 1875 that attempts were made to construct a harbour by creating an artificial breakwater bounded by walls running into the sea, enclosing a space 0.91 km. (1,000 yards) long and 0.76 km. (830 yards) broad at a maximum depth of 7.5 fathoms. The harbour walls and piers were completed in 1881 and the harbour was fully opened to shipping. The area was calculated to afford shelter to 13 ships of various sizes, from 4,000 to 700 tonnes. A severe cyclone in November 1881 caused considerable damage to the works and, besides minor damages, two Titan cranes were thrown over and destroyed. It was not until Sir Francis Spring took up the matter in 1904 that the proper construction of the Madras harbour did actually begin. A new north entrance was opened in 1910, giving for the first time calm water inside the harbour. With the addition of a boat basin on the south side of the harbour, a timber pond and a slipway, as well as the construction of warehouses and provision of railway lines together with cranes and other facilities, the port had most of the improvements required to attract more trade to it.

Ports during Second World War: The working of the ports was affected by Japan's entry into the war. With the Japanese occupation of Burma, the Bay of Bengal was closed to shipping and the ships on the east coast were evacuated and the country's seaborne trade was diverted to Bombay, Karachi and Cochin. The situation was aggravated by the large influx into Indian ports of 'frustrated' cargo from Malaya and the

Netherlands East Indies and the arrival of military reinforcements on a large scale resulting in acute congestion on the west coast ports and serious delays to shipping.

On the recommendations of an Anglo-American Shipping and Ports Commission which visited India in November 1942, steps were taken to provide additional lighterage and lighter frontage to receive traffic in Bombay, new port equipment, especially cranes, in Bombay and Cochin, improvements to water facilities and oil discharge arrangements in Bombay and Madras, new barges at Cochin and lighterage at Visakhapatnam.

There was a swing of traffic in 1942-43, the brunt of which fell on Calcutta, and to cope with this a new modernized berth in Kidderpore Dock, two new ships berths and three flat-loading berths in King George's Dock were provided. Certain development works were also executed by the Army at Visakhapatnam.

In 1945, the Bombay Port experienced a major disaster from two large explosions in ships berthed in the Victoria Dock, resulting in heavy loss of life, damage to port installations and property.

Ports Technical Committee 1946: In 1945, an Inter Departmental Committee expressed the view that, although the existing capacity was adequate to meet the traffic offering, it was necessary to look ahead and keep ready plans for extending the port facilities. The Ports Technical Committee 1946 also supported this view and observed:

"If Government are resolved that the sea path round the coast of India is to be put to its best possible use, it is not only necessary that ports, major and minor, should be fitted to pass the trade but also that steps should be taken to rationalize the means of transport both by sea and land and discourage, in the national interests of the country, any unfair and uneconomic competition on the part of either."

"Finally, ports are vital links in the effective and efficient working of transport both by sea and land. And, while the establishment and expansion of ports will have to be related to the general development of trade and transport in the country, the Committee is convinced that the planning of ports and their construction and the service which they have to provide should, in the national economy of the country, precede the anticipated developments and needs of transport."

Recommending the development of Visakhapatnam Port as a deep sea port capable of accommodating ships upto 25.5 metre in length and draughts upto 9.1 metre with improvement of the entrance and the building of a dry dock and provision of other facilities, the committee stated that this should be taken up immediately, the entire finance for the project being found by the Government of India.

The policy recommended by the Ports (Technical) Committee was to

be based on the following broad considerations:

(a) the economic indivisibility of British India and Indian States;
(b) the increasing requirements of India's rapidly expanding agriculture and industries, as also the desirability of the dispersal of industries;
(c) the integration and implementation of a comprehensive, well-balanced and efficient policy of transport and its effective development in all its forms;
(d) the routing of trade through ports not to be influenced by customs policy;
(e) the need for a long view in the siting of new ports and the development of existing ones;
(f) the evolution of a sound policy of defence for the whole country;
(g) the geographical position and importance of India in the Indian Ocean; and
(h) the strategic importance of India in the development of a World Order in the Far East.

Effects of Partition: As a result of the partition of the country, two major ports, Karachi and Chittagong, went to Pakistan. In view of this, the trade formerly handled by Karachi had to be diverted to Bombay. The need for another major port on the west coast was felt and the West Coast Major Port Development Committee 1948, was appointed to investigate the location of a deep sea port on the stretch of coast covering Kathiawar and Kutch. The committee recommended the establishment of a port at Kandla in the Gulf of Kutch, the location of another port at Malpe and the development of the Bhavnagar Port. The Government of India, accepting the recommendation relating to Kandla, proceeded with the development of the port. The scheme also included the establishment of a township, Gandhi Dham, adjacent to the port.

Characteristics of Major Ports and Minor Ports: Under the Constitution major ports continue to be a Central subject, while minor ports appear in the Concurrent List. As from February 1, 1951, major ports have been placed under the administrative control of the Ministry of Transport, which is responsible for the general transport co-ordination and administration of major ports, marine shipping, lighthouses and inland water transport. A port is declared a "Major Port" if, by reason of the size and importance, it is taken under administrative control of the Central Government. According to the Ports (Technical) Committee, "the sheltered nature of a port, the well laid out approach channels, the provision of docks, jetties and moorings, the well laid out transit sheds, the effective rail connections, the ability to serve a very large portion of the hinterland lying behind the port, the facilities for meeting

the requirements of defence and strategy, the comparatively large volume of traffic and possibilities of work for shipping all the year round, usually distinguish a major from a minor port." The West Coast Major Port Development Committee added to these another criterion also, namely the ability to turn round the ship quickly. All major ports are capable of taking in ocean going steamers with a registered tonnage of 4,000 or more and berth them along their wharves.

Ports other than "Major" are classed as "Minor' and these present an amazing variety in size and functions, volume of traffic handled, financial position and administrative set up. The facilities provided may vary from nothing in some of the roadstead ports on the seaboard to fine elaborate harbours with dredgers and equipment, as in Saurashtra, from ports handling a few hundred tonnes to as much as half a million tonnes a year, from ports having an income of a few hundred rupees to those having a revenue of Rs. 6 to 8 lakhs a year, from ports well and efficiently administered to those which "also run". "Minor" ports are subject to the administrative control of State Governments which have complete responsibility for the running of these ports.

Intermediate Ports Development Committee 1958: The Government of India appointed the Intermediate Ports Development Committee in October 1958 to make recommendations regarding development of 'Intermediate' ports, ports which should be classed as coming between the "Minor" and the "Major" ports.

The committee submitted its report on April 30, 1960. The main recommendations of the committee were:

(i) **First Priority Works (Rs. 621 lakhs):** for the ports of Paradeep, Kakinada, Masulipatam, Cuddalore, Nagapattinam, Tuticorin, Neendakara, Beypore, Calicut, Mangalore, Karwar, Redi, Ratnagiri, Surat, Broach, Bhavnagar, Veraval, Porbandar, Okha, Sika and Bedi.

(ii) **Second Priority Works (Rs. 422 lakhs):** for the ports of Paradeep, Kakinada, Masulipatam, Cuddalore, Nagapattinam, Tuticorin, Beypore, Calicut, Karwar, Ratnagiri, Bhavnagar, Veraval, Porbandar, Okha and Bedi.

(iii) **Third Priority Works (Rs. 42.5 lakhs):** for the ports of Cuddalore, Nagapattinam and Bhavnagar.

(iv) **Development of All-Weather Deep Draft Ports:** at Tuticorin, (first priority, Rs. 1,027.00 lakhs); Mangalore, (first priority, Rs. 1,270.00 lakhs); Paradeep (second priority, Rs. 954.00 lakhs); Porbandar (second priority, Rs. 525.00 lakhs).

(v) **Enlargement of the Dredging Pool for External Dredging:**

It was recognized that there was great scope for the improvement and utilization of many of the "Intermediate" and "Minor" ports at a

comparatively small capital outlay. A hydrographic survey of these ports and their approaches, a planned scheme of dredging, provision of modern cargo handling appliances, such as jetties, cranes and tugs or launches, amenities for passengers, etc. would go a long way to satisfy immediate needs.

Ports and Harbours under the Plans: The basis of classification of the ports other than "Major" is that those handling not less than 101,600 tonnes (100,000 tons) a year and considered otherwise important are "Intermediate" ports; those handling less than 101,600 tonnes (100,000 tons) but more than 5,080 tonnes (5,000 tons) a year are "Minor" ports; and the rest handling less than 5,080 tonnes (5,000 tons) a year are "Sub Ports".

The large scale programme of economic development of the country initiated with the commencement of the Plans imparted a fresh stimulus to the improvement and expansion of port facilities in the country. Owing to late start, the provision of Rs. 36.91 crores made for ports and harbours during the First Plan could not be utilized fully and only Rs. 27.57 crores were spent. Nevertheless, the programme undertaken was of great importance. The main objectives were to rehabilitate and modernize the facilities in all existing ports, to provide a certain amount of additional capacity at Cochin and Madras by constructing additional wharves and berths, to develop a new major port at Kandla, to construct a new marine oil terminal at Bombay, and to carry out some of the more urgent improvement measures at the important ports. The total capacity of the major ports during the First Plan increased from 20 million tonnes to 25 million tonnes. The developmental programmes, apart from the Kandla port and the township of Gandhi Dham, inluded the development of the Sonai yard into a central storage depot for ores, a Spur at Akra for training the river Hooghly, and the improvement of the railway yard at Kidderpore; these related to the port at Calcutta. At the Bombay Port, the more important projects were the Marine Oil Terminal Project, the electrification of cranes in the Alexandra Dock, the reconstruction of transit sheds in the Princes and Victoria Docks and the labour-housing scheme.

The Second Five Year Plan aimed at the completion of the projects commenced during the First Plan and the provision of additional berthing capacity at the ports of Calcutta, Madras, Visakhapatnam and Cochin. During the first two years of the Second Plan, there was severe congestion in the ports owing to large scale imports of heavy cargo.

In the Third Plan, along with the completion of the projects already under way in the previous plan, provision was made for the modernization and expansion of the docks in the Bombay Port. The capacity at the end of the Plan was expected to go up from 37 million tonnes to

49 million tonnes. With a view to ensuring the maintenance and preservation of the Calcutta port, two important schemes were later included, namely, (a) the construction of an ancillary port at Haldia, and (b) the construction of a barrage on the river Ganga at Farrakka.

Ports in the Fourth Five Year Plan: According to the estimates for the Fourth Plan, the proposal is to expand the capacity of the "Major" ports from about 55 million tonnes in 1968-69 to 77 million tonnes at the end of the Fourth Plan. The total cost of the programme for the development of "Major" ports included in the Central Sector is about Rs. 280 crores.

Principal Ports and their Plans — (i) **Calcutta:** The port of Calcutta is located on the left bank of the river Hooghly 129 km. downstream from the confluence of the Bhagirathi and Bhaireb Jalengi, the two spill channels of the parent river Ganga. The seaward approach to the port is at Sandheads, about 198 km. from Calcutta. Depths of water in the various bars and crossings in the navigable channel from the Sandheads to the port vary continuously, thereby necessitating maintenance dredging throughout the year on an extensive scale. These features, as well as the peculiar tidal conditions obtaining in the river, make pilotage compulsory and impose restrictions on the day-to-day drafts upto which ships entering and leaving the port are permitted to load. Dredging was first undertaken in 1907 and confined at the time to a few bars in the upper reaches. Now it has to be done from the main port area to the mouth of the river. The quantity of silt dredged every year has ranged from 10 to 12 million tonnes. The cost of dredging the Hooghly (including depreciation) has risen from Rs. 57.95 lakhs in 1948-49 to Rs. 350.00 lakhs in 1963-64 and Rs. 381.00 lakhs in 1964-65.

Calcutta port has two dock systems namely, the Kidderpore Docks and King Georges Docks, provided with a number of berths and facilities, such as transit shed, cranes for handling cargoes, including heavy lifts and rail facilities. There are a number of warehouses for storage of goods, dry docks for carrying out repairs to vessels and salvage craft to assist vessels in distress, which are provided by the Calcutta Port Commissioner.

Although the advisability of a subsidiary port nearer the sea than the port of Calcutta had been considered from time to time during the past ninety years, the need for it was felt with a degree of urgency only within the last few years. The deterioration of the river Hooghly, particularly above the Diamond Harbour, and the impracticability of meeting the situation by any modernization or extension of the existing port facilities at Calcutta made it imperative to provide for an alternative dock permitting deeper draft throughout the year and adequate to cope with the

present day tendency towards larger and deeper draft ships, particularly for bulk cargo. The question was examined by a committee appointed by the Government in 1954. Experts selected Haldia in the estuary as the best site for the purpose. About 90 km. downstream from Calcutta, Haldia, under development, is expected to be a supplementary port to Calcutta.

There are two major projects under way; one, the River Training Scheme, undertaken by the Calcutta Port for improving the navigability of the Hooghly, and the other, the Farakka Barrage Project, now in an advanced stage, for obtaining a perennial headwater supply to the Hooghly to remove the siltation of the river.

The traffic of the Calcutta port has declined from 11 million tonnes in 1964-65 to 7.86 million tonnes in 1968-69.

(ii) **Bombay** — The first enclosed dry dock at Bombay was constructed in 1875; the Princes Dock and the Victoria Dock were constructed in 1880 and 1888, respectively. In 1891 the Merewether Dry Dock was added. In 1914 the Alexandra Dock and the Hughes Dry Dock were constructed. Other facilities kept pace with these developments, such as the provision of transit sheds, warehouses, installation of cranes, bulk oil depots, the establishment of a Port Trust Railway and large depots for cotton, grain and other products.

Along the harbour front, there are a number of bunders or open wharves and basins, where the traffic carried by the coasting and country draft and oversea cargo from the Docks and the stream are handled. The bunders provide an aggregate total quay length of 8150 metres and are equipped with cranes. Transit sheds and warehouses at the port aggregate 308,000 sq. metres of port area. The Ballard Pier with 457 metres of extension of the harbour wall is used for large passenger liners. The marine oil terminal with three berths constructed during the First Five Year Plan was designed to take in large tankers of 30,000 G.R.T. and to handle about 9 million tonnes.

In the Fourth Five Year Plan, it is proposed to start work on two berths at Navah — Shera islands on the eastern side of the harbour as the first phase of development of a satellite port.

(iii) **Madras** — Madras Port is an artificial harbour of about 81 hectares encroaching into sea upto 9 metres contour from low waterline, enclosed with breakwaters and quays on all sides. The ships stay alongside the berths inside this basin or at moorings. The present capacity of the harbour, including moorings and oil berths, is 18 vessels. Owing to heavy swells during monsoon, oil berths outside the harbour are unusable for four months in the year. All the quays are served by a mixed gauge railway.

The first stage of the Wet Dcok scheme for new berths and works

designed to counteract the sand menace and facilities for handling an increased volume of cargo taken up during the First Five Year Plan was continued in the Second Plan. During the Third Plan, apart from the the completion of the projects already under way, provision was made for additional ore and coal yards and mechanical equipment for handling iron ore.

During the Annual Plans of 1966-69, a new project, the Madras Outer Harbour Scheme was taken up, which included provision for an ore-cum-oil dock. This will also cater to deep draft tankers, and ore carriers.

(iv) **Cochin** — Built in a fine natural harbour, giving access to about 201 sq. km. of navigable breakwaters, Cochin port affords even in the worst monsoon weather accommodation for vessels which can lie comfortably in the harbour and carry on landing and shipping operations without interruption. The main wharf of the port is in the Willingdon Island, 316 hectares created by reclamation. It has 16 stream berths, one being a swinging berth, capable of taking vessels upto 198 metres in length and 9.14 metres in draft. There are also three tanker berths. Cargo is landed and shipped into stream moorings by lighters, oil being handled by barges. The deep water wharf, 671 metres long, could accommodate four 137 metres vessels at a time. A small dry dock, 73 metres by 13.4 metres, is used to dock dredgers and other craft belonging to the port.

During the First Plan a new coal berth and an oil jetty were completed while construction of four additional wharf berths was in progress. During the Second Plan, provision was made for a coal berth, a berth at Fort Cochin, and the completion of four additional wharves. The programme during the Third Plan was mainly one of completion of the projects in progress and additional ore and coal yards and mechanical equipment for handling iron ore.

During the Fourth Plan, the development schemes relate to the construction of an open berth and the acquisition of equipment, such as *grab* dredger, tugs, water sarge, cranes, fork lifts and tractors.

(v) **Visakhapatnam** — There being no major port on the 1,449 km. long stretch between Madras and Calcutta, the need was felt even as early as the beginning of the century for providing another major port at Visakhapatnam, 784 km. north of Madras, which had the best natural facilities for development. Although sanctioned by the Secretary of State in 1909, it was postponed owing to difficulties of funds and the First World War. Construction was actually started in 1925 and after considerable dredging and reclamation work, a comparatively unimportant calling place was eventually converted into a major harbour with quay

berths, sheds and port facilities in 1933. The port was open to ocean going vessels in 1933; the Raipur — Vizianagaram Railway had also been opened by then.

The hinterland of the port comprises Andhra Pradesh, Madhya Pradesh, and Orissa—a region rich in agricultural produce, such as rice, tobacco, sugar, molasses, jute and ground-nut, and mineral ores like manganese and iron. Industries have also come up fast. Besides the shipyard and the oil refinery in the port area, there are several jute mills, sugar mills, paper mills as well as ferro-manganese, chemical and fertilizer factories in the adjacent area. The port also serves the Bhilai and Rourkela steel mills and other industries in their neighbourhood.

The port can accommodate 17 vessels at a time. There are four quay berths on the eastern side of the northern arm for accommodating four ocean going vessels at a time; two oil refinery berths for berthing two oil tankers on the northern side of the western arm, and three jetty berths which can accommodate three ships. There are also two deep dredged berths of 480 metres for ore-carriers with a mechanical iron-ore handling plant capable of loading 2,666 tonnes per hour.

A final investment decision taken on the Visakhapatnam Outer Harbour Project, estimated to cost Rs. 37 crores, has led to action being taken. The Outer Harbour is scheduled to be ready for receiving ships by 1974.

(vi) **Tuticorin** — As a port with maritime trade, Tuticorin Port is much older than Madras, having been in existence with a flourishing trade in pearl fisheries from the time of the Pandyan Kings. It is the largest commercial town on the west side of the Gulf of Mannar. The port is an open roadstead, the anchorage being roughly 8 km. off shore, which renders loading and unloading operations extremely difficult at times of high seas and gales. The port is open throughout the year.

A project called Sethusamudram Project has been proposed, connecting the Gulf of Mannar and the Palk Bay by cutting a channel at the approaches of the Adam's Bridge enabling deep sea ships to navigate entirely in Indian territorial waters in safety from the west to the east of India. This will also result in saving shipping mileage equivalent to a day's sailing. It has been decided to carry out a complete and comprehensive investigation under the supervision of an experienced harbour expert to prepare a realistic estimate and a proper economic assessment of this project.

The conversion of Tuticorin into a "Major Port" has been taken in hand by the Government of India at a cost estimated at Rs. 24.50 crores. The project, with two break waters, 4,000 metres and 1,275 metres, to form a basin to accommodate six berths, is expected to be completed by the end of the Fourth Five Year Plan.

(vii) **Marmagao** — Prior to the liberation of Goa in 1962, the port of Marmagao was part of the Portuguese possessions in India.

Marmagao has great natural advantages. It is capable of berthing large steamers. The port has a quay, 925 metres long, protected by the breakwater (515 metres) and a mole (265 metres). To the north and east of the harbour shore is a large roadstead which can accommodate 50 or more ships in fair weather. During the monsoon, there are sheltered anchorages for 15 ships only. The principal commodity handled by the port is low grade iron ore, which accounts for 95 per cent of the traffic.

There is a mechanical ore handling plant with an annual turnover of about 1.5 million tonnes. The installation of modern handling facilities has been started. The development plans include the increase of capacity of the port to 10/12 million tons of iron ore, made up of the local as well as Ballary-Hospet ore, about 2 million tonnes of general (dry) cargo, and possibly some more additional capacity to take in coal for a steel plant, if it materializes.

(viii) **Mangalore** — The development of Mangalore from a lighterage into a "Major Port" was included in the Third Five Year Plan. The cost, as at present estimated, is about Rs. 22 crores.

The new harbour will be located at Panambur, north of the Gurpur river. The construction of the railway link from Mangalore railway station to the harbour is in progress. The entire project is expected to be completed during the Fourth Plan period.

(ix) **Paradeep** — The port of Paradeep, declared a "Major Port" on April 18, 1966, was developed at first by the State Government of Orissa in November 1962. The first stage of the construction consisted of dredging the lagoon with an approach channel from waves and siltation and an iron ore berth which can accommodate 61,000-tonne ore carriers. The project was taken over by the Central Government with effect from June 1, 1965. The first stage of development of the port to enable it to handle two million tonnes of iron ore was completed and export of iron ore was commenced on November 20, 1966.

The ore-berth is equipped with an ore handling plant designed to load 2,500 tonnes of iron ore per hour. The express way from Daitari to Paradeep has been completed. The only means of communication to the Port is road transport which can move 250,000 tonnes a month. The Cuttack — Paradeep rail link is expected to be ready by 1971-72. This will facilitate the handling of increased general cargo. Paradeep is the nearest deep sea port for the export of iron ore and other minerals from the mineral belt in the Bengal — Bihar — Orissa area. Its main problem has been the maintenance of the dredged depth of 12.8 metres.

The traffic of the major ports for select years during 1950-51 to 1968-69 is shown in the Table below:

TABLE XXI

Traffic of Major Ports, 1950-69 (select years)

(Tonnes in Millions)

Year	*Imports Tonnes*	*Exports Tonnes*	*Total Tonnes*	*No. of Ships Entered*	*Gross Tonnage*
(1) **Bombay**					
1950-51	5.27	1.73	7.00	..	..
1951-52	5.90	1.70	7.60	..	..
1956-57	8.37	3.80	12.17	2,640	14.04
1961-62	10.41	4.13	14.54	3,156	20.29
1963-64	11.19	5.46	17.35	3,276	22.56
1964-65	12.13	5.21	17.34	3,135	22.04
1965-66	12.98	5.14	18.12	2,958	21.72
1966-67	13.23	5.04	18.27	3,062	22.00
1967-68	12.44	4.52	16.96	2,768	19.71
1968-69	12.10	4.31	16.41	2,769	18.63
(2) **Calcutta**					
1950-51	3.09	4.53	7.62	..	..
1951-52	4.16	5.58	9.74	..	..
1956-57	4.42	4.59	9.01	1,383	8.56
1961-62	4.88	4.72	9.30	1,806	12.35
1963-64	6.03	4.91	10.94	1,828	13.00
1964-65	6.08	4.98	11.06	1,807	12.80
1965-66	5.28	4.57	9.85	1,623	11.38
1966-67	5.79	4.31	10.10	1,678	12.39
1967-68	4.89	4.10	8.99	1,461	10.83
1968-69	4.00	4.00	8.00	1,409	10.32
(3) **Madras**					
1951-52	1.88	0.30	2.18	1,091	..
1952-53	2.06	0.64	2.70	873	5.44
1961-62	2.27	1.20	3.47	1,230	8.53
1963-64	2.59	1.58	4.17	1,280	9.20
1964-65	2.99	1.41	4.40	1,345	9.58
1965-66	3.30	1.57	4.87	1,406	10.04
1966-67	3,87	1.99	5.86	1,447	11.32
1967-68	3.79	2.07	5.86	1,233	10.69
1968-69	3.02	2.36	5.38	1,114	9.43
(4) **Visakhapatnam**					
1950-51	0.07	0.89	0.96	443	..
1951-52	0.29	0.96	1.25	607	..
1956-57	0.50	1.02	2.52	497	..
1961-62	1.40	1.45	2.85	613	4.38
1963-64	1.85	1.67	3.52	681	5.30
1964-65	1.91	1.96	3.87	703	5.50
1965-66	1.89	2.57	4.46	626	5.22
1966-67	2.23	3.71	5.44	646	6.17
1967-68	2.41	4.09	6.50	590	6.19
1968-69	2.69	5.43	8.12	626	7.06

TABLE XXI (contd.)

(5) **Cochin**					
1950-51	1.12	0.25	1.37	..	..
1951-52	1.28	0.33	1.61	..	..
1956-57	1.33	0.43	1.76	965	2.88
1961-62	1.88	0.49	2.37	1,342	7.27
1963-64	2.03	0.42	2.45	1,356	8.09
1964-65	2.26	0.45	2.71	1.358	8.40
1965-66	2.41	0.46	2.87	1,178	7.22
1966-67	3.07	0.67	3.74	1,204	8.08
1967-68	3.73	1.69	5.42	1,209	9.07
1968-69	3,78	1.40	5.18	1,083	8.45
(6) **Kandla**					
1950-51	0.06	0.06	0.12	..	..
1951-52	0.07	0.06	0.13	..	..
1956-57	0.33	0.15	0.48	74	..
1961-62	1.11	0.27	1.38	230	1.73
1963-64	1.49	0.29	1.78	297	2.43
1964-65	2.05	0.26	2.31	346	2.89
1965-66	2.34	0.17	2.51	279	2.60
1966-67	2.42	0.24	2.66	293	2.69
(7) **Marmagao**					
1961-62	0.16	6.35	6.51	677	4.91
1963-64	0.12	5.84	5.96	594	4.73
1964-65	0.22	6.40	6.62	731	5.74
1965-66	0.24	7.62	7.86	834	6.49
1966-67	0.40	7.69	8.09	776	6.61
1967-68	0.42	7.71	8.13	676	6.50
1968-69	0.37	8.41	8.78	622	6.62

VII. Air Transport

The first aeroplane flight in India was in January 1911. In February of that year the first ever carriage of mails in the annals of world aviation history was done by a French pilot who flew across the Yamuna, from Allahabad to Naini, a distance of 9.66 km. and delivered official mail.

The earliest references to civil aviation in India are contained in the Indian Aircraft Act 1911 and the Indian Airship Rules 1913. The first proposal to use aviation for commercial purposes was made by G. R. Clark, Director-General of Posts and Telegraphs, in August 1919, suggesting the starting of a service for the carriage of mails. In the same year the Indian Aircraft Rules were framed which were to come into effect in 1921. On September 21, 1919, the constitution of an advisory body, the Air Board, was approved and, on March 5, 1920, a Chief Inspector to the Air Board was appointed. On January 22, 1920 a weekly air mail service between Karachi and Bombay was operated by the R.A.F., but this was discontinued after five weeks.

There were hardly any developments in the succeeding years. In

May 1926, the Air Board called attention to the fact that India was admirably suited for the development of aerial transport, the meterological conditions being excellent for many months of the year and there being no reason to believe that the difficulties occasioned by the monsoon, although serious, were insurmountable. Apart from the question of internal services, India's geographical position marked her out as an all important link in any air route between Europe and the Far East.

Scheduled civil air transport first came to India in the international field when, in 1929-30 the British, the French and the Dutch extended their respective Empire air services to and across India. The plans for an Indian State-operated service between Karachi and Calcutta had to be shelved because of the adverse financial position of the Government, resulting from the effects of the economic depression, and instead a charter agreement was made with the Imperial Airways Ltd. to operate a service between Karachi and Delhi. As this arrangement was found unsatisfactory from the point of view of the Government of India, it was given up in the middle of 1932, the Delhi Flying Club continuing the services to the end of the year for the carriage of mails only.

When the British Government extended their Empire services to Singapore, arrangements were made for Indian participation through the medium of an Indian company, the Indian Transcontinental Airways, in which the Government took a shareholding of 24 per cent. Not only was this arrangement financially unprofitable because of the fact that all managerial and operational responsibilities were with the Imperial Airways, but it afforded hardly any scope for Indian initiative or experience.

The credit of taking the first really effective step in the operation of internal air services in India goes to the Tata Sons Ltd. who, with two light-engined craft, organized, in October 1932, an air service from Karachi to Madras, on a frequency of one service a week with calls at Ahmadabad, Bombay and Bellary (later changed to Hyderabad). In May 1933, another company, the Indian National Airways, was formed with headquarters at Delhi and, in December 1934, it established an air service between Karachi and Lahore, linking with the Imperial Airways Service at Karachi. The main source of revenue for these services was the air mail contract with the Government for the carriage of mails by air, the rate of remuneration being covered by the air surcharge collected by the Posts and Telegraphs Department. The surcharged air mail revenue was not insubstantial as it included also the incoming overseas airmails to destinations in India. These airlines were given free air route organization and they operated with almost exiguous ground organization with little or no communications or navigational facilities.

By 1934, the Tata Sons doubled their weekly frequency on the Karachi-Madras route, and in 1935 they started a weekly service between Bombay

and Trivandrum with halts at Goa and Cannanore. In 1937 a bi-weekly service was run between Bombay and Delhi via Indore, Bhopal, and Gwalior. All these services were operated during the fair season only as the ground organization was unsuitable during the monsoon.

The Empire Mail Scheme, 1938: In connection with the introduction of the Empire Mail Scheme in 1938 it was decided to carry by air the whole of the letter mail between the Empire countries on the U.K.-Australia and the U.K.-Africa routes. The Government of India, in agreement with the Government of Ceylon (Sri Lanka) agreed to participate in the scheme, which, among other things, involved the provision of facilities for distribution within India of the Empire mail carried by the Imperial Airways to Karachi and taking in the reverse direction to Karachi all Indian mail destined for the Empire countries. The Government utilized for this purpose the existing services of the Tata Sons and the Indian National Airways, and entered into 15-year contracts with them for the carriage of mail on their routes under the Empire Mail Scheme.

The main points in the contracts were that (a) the Karachi-Madras route was to be extended to Colombo under arrangements with the Government of Ceylon (b) the services were to be operated with the same frequency as the Imperial Airways Service to Karachi, which was expected to be five times a week and connecting with it; and (c) the remuneration would be: (i) in regard to the Tata Sons a guaranteed payment of Rs. 15 lakhs a year for the carriage of mails on the Karachi-Colombo route upto 500,000 lbs. (2,26,800 kg.) plus Re. 1/- for each lb. (0.45 kg.) of mail extra, and (ii) in regard to the Indian National Airways a guaranteed payment of Rs. 3.25 lakhs a year for the carriage of mail on the Karachi-Lahore route upto 130,000 lbs. (58,970 kg.) plus Re. 1/- for each lb. (0.45 kg.) of mail extra. The Government of Ceylon agreed to share the payment to Tata Sons to the extent of Rs. 4.5 lakhs per annum in regard to the conveyance of the mails on their acconut. These mail contracts included an element of financial assistance by Government intended to put companies on such a basis as to place their development on a reasonably secure position.

The operations on the two services commenced in February 1938. Quite apart from their helping to bring about a shift to larger aircraft and greater frequency, the services afforded the opportunity for the proper development of passenger and freight traffic by air in the country. Tiruchchirappali was added to the halts on the Karachi-Colombo route and, by October, the frequency was raised to five times a week by both the companies. The Indian National Airways also opened service, with a frequency of three times a week between Lahore and Delhi.

An experiment of cheap fare and high frequency was attempted, during 1937-39, by a third company, the Air Services of India, which,

during the fair weather season, operated air services from Bombay to a number of Kathiawar States and to Kolhapur six times a week. The high loads of passengers in these services demonstrated the convenience and advantage of air travel. The low fares, slightly above the second class rail fare, were less than the minimum costs of operation; these services had consequently to be closed down in 1939.

Progress of Air Traffic upto 1938: The progress of air transportation by 1938 is indicated by a few figures. In that year 8,353 km. of route were operated, the total kilometres flown exceeded 2.14 million, and the percentage regularity was 99.8. The volume of traffic carried on the different routes was as follows:

TABLE XXII

Volume of Traffic Carried by the Airlines, 1918

	Passengers carried	*Mails carried* (lbs.)	*Freight carried* (lbs.)
Karachi-Colombo	514	430,000	11,845
Karachi-Lahore	93	117,270	68
Bombay-Kathiawar	2,175	1,330	89,196

The development of air transport since 1932 proved that Indian airlines could organize and operate services efficiently on long and difficult routes and maintain a very high standard of regularity and safety as compared with most of the advanced countries. In the meantime, the Government extended and strengthened the ground organization, providing aerodromes, hangars, workshops, technical and administrative buildings, air route lighting, the training of "B" Licence pilots, etc. The pioneering companies had helped to lay firm foundations of scheduled air transport in the country.

War-Time Developments: The steady progress of civil aviation in India was suddenly interrupted by the outbreak of World War II. The Empire Mails Scheme had to be suspended, as the resources of the Empire air services had to be diverted to the requirements of defence. Likewise, the air transport services in India were put on a war footing and run for the Government and the Defence Services. Although initially curtailed, the two companies, in collaboration with the Royal Air Force Transport Command, operated services for the Government in different areas with increasing intensities for the carriage of freight, military personnel, mails and civil priority passengers. In the later stages, these companies obtained Lease-Lend aircraft consisting of Expediters, D.C. 2's and D.C. 3's.

The routes operated during war-time were as follows:

Karachi-Colombo

Bombay-Delhi
Bombay-Calcutta
Bombay-Coimbatore
Bombay-Karachi
Bombay-Colombo
Delhi-Karachi
Calcutta-Dinjan
Calcutta-Jorhat
Calcutta-Gaya-Allahabad-Kanpur-Delhi
Delhi-Bhopal-Hyderabad-Bangalore-Tiruchchirappalli-Colombo
Delhi-Ahmadabad-Bombay
Delhi-Karachi
Lahore-Multan-Jacobabad-Karachi
Lahore-Gujarat-Rawalpindi-Peshawar
Lahore-Jacobabad-Quetta

War-time activities afforded the Indian airlines valuable experience in important items of special work, such as the survey of the Southern Arabian air route for the R.A.F., carriage of ammunition and supplies to Iraq, evacuation of civilian refugees from Burma, servicing, overhaul and maintenance of R.A.F. aircraft in their workshops, and opportunities to handle more modern aircraft and train and employ a good number of technical personnel. When the war ended, the companies equipped themselves with Dakotas purchased from the U.S. Foreign Liquidation Commission prior to the Government of India taking over the disposal stocks.

The striking increase in the volume of air traffic since 1939 may be seen from the Table below:

TABLE XXIII

Volume of Air Traffic during 1939-1945

Year	*Km. flown* (00s)	*Passengers*	*Freight in lbs.*	*Mail in lbs.*
1939	2,714	3,518	98,449	456,883
1940	2,181	3,646	48,852	118,101
1941	2,080	3,747	39,511	142,132
1942	2,606	4,659	163,242	342,921
1943	3,100	7,574	642,885	412,580
1944	3,413	13,433	1,163,725	370,659
1945	3,343	24,090	852,068	480,616

Post-War Developments: Before the war ended, the Government of India sought to lay down the future policy towards the development of air transport in the country. The policy outlined prior to the war was too limited in perspective and actual needs. India had adhered to the International Convention for the Regulation of Air Navigation signed in Paris in 1919, according to which she undertook, along with the other countries, to give certain general privileges to the aircraft of

the ratifying States and to secure uniform practice in such matters as traffic rules and standards for licensing pilots and aircraft.

In 1926, the Indian Air Board recommended, among others, that (a) all landing grounds in India and their necessary equipment should be the property of the Government of India who should be responsible for the provision of wireless and meteorological facilities; (b) the Government should claim in future to be consulted at all stages on the terms of any contract for an external air service touching India and to participate as a principal in any such contract for an external air service touching India; and, (c) as far as internal air services are concerned, Government should accept the principle of subsidizing such services in the earlier years. The Government of India accepted these recommendations. The really important and comprehensive statement of policy on the subject was made in the papers considered and approved by the Reconstruction (Policy) Committee for Posts and Aviation, in 1944:

> "The policy of the Government of India is to permit the development and operation of air transport services, internal and external, by a limited number of sound and reliable private commercial organizations with their own capital and operated under normal commercial principles of risk of losses and prospects of gain. The operation of air transport services would be subjected to licences granted by Government. Without such licence no air transport service can operate. The grant of State assistance in specific cases will be entirely at the discretion of Government and on conditions to be laid down in each case. In specific cases, Government should take a financial interest in the Companies operating air services and appoint a Director on the Board. The Government should not, however, take a controlling share in such cases."

The Indian Aircraft Act and Rules were amended in March 1944 to license air transport undertakings and to prohibit all operations of air transport without a licence. The rules framed thereunder provided that, after October 1, 1946, no air transport service should be established in India except under the authority of, and in accordance with, the licence issued by an Air Transport Licensing Board. In granting the licence the Board was to take into account (a) the proper development of air transport services in accordance with the needs of the public, (b) the potential traffic on particular routes, and (c) the adequacy or otherwise of the financial and technical resources of the applicant for satisfactory operation of air transport. The Board was given power to prescribe the limits within which the passenger fares, freight rates and mail carriage rates could be fixed. The rules also required the submission to the Board by the operating companies of operational and financial returns showing their operational costs and traffic carried.

Before the new arrangements could come into effect, two more companies for the operation of air services came into existence, namely, the Air Services of India, acquired and resuscitated by the Scindia Steam Navigation Company, and the Deccan Airways Ltd., in which the Hyderabad Government held a majority interest. Meanwhile, the Tata Sons converted its Aviation Department into a public limited company, the Air India, on July, 29, 1946. There were thus four companies which, on July, 1, 1946, operated the following routes:

(1) Tata Sons Ltd.,/Air India:
  (i) Karachi-Ahmadabad-Bombay-Hyderabad-Madras-Colombo.
  (ii) Bombay-Ahmadabad-Delhi
  (iii) Bombay-Nagpur-Calcutta
(2) Indian National Airways:
  (i) Calcutta-Allahabad-Kanpur-Delhi-Lahore-Rawalpindi-Peshawar
  (ii) Lahore-Bikaner-Jodhpur-Ahmadabad
  (iii) Delhi-Jodhpur-Karachi
  (iv) Delhi-Lucknow
  (v) Karachi-Quetta-Lahore
  (vi) Delhi-Gwalior-Nagpur-Hyderabad-Madras (operation of service discontinued July, 29, 1946)
(3) Air Services of India:
  (i) Bombay-Jamnagar-Bhuj-Karachi
  (ii) Bombay-Bhopal-Kanpur-Lucknow
(4) Deccan Airways:
  (i) Madras-Hyderabad-Nagpur-Bhopal-Gwalior-Delhi
  (ii) Hyderabad-Bangalore.

Soon after October 1, 1946, some more companies were floated for the operation of air services. By the beginning of 1947, there were 21 companies registered with an authorized capital of Rs. 42 crores, of which Government had permitted the issue of Rs. 9 crores. Only seven of these new companies eventually obtained licences, namely,

(1) Mistri Airways (later Indian Overseas Airlines January 1946/ September 1946).
(2) Bharat Airways, August 1945/June 1947.
(3) Airways (India), September 1945/April 1947.
(4) Orient Airways, June 1947 (Chittagong-Rangoon).
(5) Ambika Airlines (Kathiawar Area).
(6) Jupiter Airways (Madras-Delhi via Bezwada).
(7) Dalmia Jain Airways (Delhi-Srinagar).

These companies had acquired 115 Dakotas as against the requirements of only 40 such machines to operate the air services mentioned in

the post-war Plan. There ensued severe competition among the companies for the extremely limited number of technical personnel available in the country, thereby raising their wages and salaries to very high levels. A comparatively large number of aircraft and too little business, however, came in quite handy for meeting emergency situations which came in quick succession.

The traffic and finances of the airlines were adversely affected by certain other developments. The abandonment of the Empire Air Mail Scheme and the partition, as a result of which both the Air India and the Indian National Airways lost the mails traffic originating in Pakistan, and the desire of the Government of Sri Lanka to contract out of the agreement necessitated a revision of the Government's financial arrangements with the two companies. It was decided to let the Government of Sri Lanka to discontinue the payment of Rs. 4.5 lakhs per annum and to reduce the minimum guarantee of remuneration to the Air India to Rs. 10 lakhs and to the Indian National Airways to Rs. 1 lakh per annum.

Air transport played an important part in the situation created by the refugee migrations which arose in East and West Bengal in 1949 and the carriage of an unprecedented volume of traffic between West Bengal and Assam/Tripura owing to the cutting off of the surface routes between these areas. The three regular operators in the area — the Airways (India), the Bharat Airways and the Kalinga Airlines — stepped up the frequency of their scheduled services and, as these did not meet the actual demands, scheduled operators based at other centres and a large number of non-scheduled operators also came into the field. The situation gave rise to such undesirable practices as rate-cutting to uneconomically low levels, drift of operating personnel and other technical staff from company to company, crews working for excessive hours, overloading of aircraft, influx of middlemen as touts for canvassing traffic, etc. The Director-General of Civil Aviation tried to bring some sort of order in the situation and the acceptance of an agreed code of operating practices. The pressure of traffic continued till March 1949 after which the position eased. With the onset of the monsoon and the washing away of the Assam Rail Link, the demand for air transport again revived. It was quite clear that air transport would always have an important part to play in the system of communications in this part of India.

To the financial difficulties of the airlines already referred to were added in 1949 the increase in expenditure on account of the rise in the price of aviation fuel and in staff costs. The Government afforded relief to the companies by the grant of a rebate of import duty, on petrol used in civil aviation, of 6 annas per gallon (37.5 paisa per 4.5 litres) as

from mails was fixed at March 1, 1949, later increased to 9 annas (56 paisas.) The payment for the carriage of mails was fixed at freight rate plus 25 per cent instead of the Rs. 1-8-0 per lb. (Rs. 1.5 per 0.45 kg.) before the "All-Up" Mail Scheme, without the air mail surcharge, was also introduced with a view to affording the air companies the benefits of increased mails traffic and consequently of increased revenues.

During the latter part of 1948, the Government of India had under consideration the possibility of a scheme of carrying by night all the mails passing between the four main cities of India, namely, Calcutta, Bombay, Delhi and Madras. The operation envisaged night services on the Delhi-Nagpur-Madras and Bombay-Nagpur-Calcutta routes with four aircraft starting more or less simultaneously from Delhi, Madras, Bombay and Calcutta, in the early part of the night, meeting at Nagpur for exchanging the mails and returning to their respective starting stations the next morning. The mails posted at each of the stations till the evening would reach the destinations the following morning. Only the Indian Overseas Airlines, among the several air companies, offered to work the scheme without a guarantee of minimum payment or load or any higher rate of remuneration for carriage of mails than that already in force. The scheme was initially restricted to the carriage of mail and freight only, as night air mail operation was considered to be on an experimental basis and as the routes were not fully equipped from the point of view of passenger safety. The licence which was granted for one month from January 31, 1949, was later extended to the end of June 1949. The air mail carried upto March 31, 1949, was surcharged mail, and amounted to 48,000 lbs. (21,772 kg.) per month. With the introduction of the "All-Up" Mail Scheme, the volume of mails carried by the Indian Overseas Airlines more than trebled itself.

The day air mail services continued to carry mail posted after the departure of the night services. The scheme was unfortunately brought to an unexpected termination by the middle of 1949, as the Indian Overseas Airlines got into serious financial difficulties and had to discontinue its Madras-Delhi service on May 19, 1949 and the Calcutta-Bombay service on June 8, 1949. The night services were, however, kept in operation by the Deccan Airways between Madras and Nagpur and the Indian National Airways between Delhi and Nagpur under special terms. With the onset of the monsoon, the night services were terminated as the organization in existence was considered inadequate for operation during monsoon.

The Government's intention was to resume the night air mail services in October but practically none of the scheduled airlines was prepared to operate the services without a guarantee. The Himalayan Aviation then a non-scheduled operator which offered to operate without a

guarantee, was given the licence by the Director-General of Civil Aviation for a period of three months as from October 31, 1949. As by then the ground facilities, the communications organization and the navigational aids on the Delhi-Nagpur-Madras and Bombay-Nagpur-Calcutta routes had been brought to such standards that carriage of passengers by night was considered safe, the Himalayan Aviation was also permitted to carry passengers on the night services.

Air Transport Enquiry Committee: The wisdom of admitting an additional operator into the field of scheduled air transport and giving it the bulk of the mail traffic was questioned by the existing scheduled airlines whose financial difficulties were aggravated by rising expenditure and want of adequate traffic. The fact that the Himalayan Airways was allowed to carry passengers on the night services at lower rates (112 per cent of First class rail fares) was also cited as another factor operating adversely on their own passenger revenues, and the situation called for a detailed enquiry into the air transport industry. As the Government felt that all was not well with the air transport industry, it appointed on February 8, 1950, the Air Transport Enquiry Committee with Justice G. S. Rajadhyaksha as Chairman. The committee examined the conditions of the various airline companies and found that there was a good case for air transport service being owned and operated by the State on the ground that a unit incharge of all operations could use the available resources to maximum advantage; that operations by a State organization would be an advantage from the point of view of Defence; that State management would tend to give better and cheaper service to the public; that a unified organization could take full advantage of technical development in air transport equipment and operational technique; and that, as the private airlines would require financial assistance from the Government to be placed on their feet, it would be preferable for the Government itself to run it in its own way. But in view of the complete changeover that nationalization would involve and the difficulties in getting the personnel with business and administrative experience, the committe recommended a scheme of reorganization with a view to rationalization. An ideal pattern would be to have four operators with bases at Bombay, Delhi, Calcutta and Hyderabad. As this was not feasible, the committee suggested the merger of the airline companies operating in the same area, such as the Bharat Airways, Airways (India) and Kalinga Airways and the Air Services of India and the Deccan Airways. As regards the subsidy to the industry, the recommendation was that it should be based on a 'quality standard cost' announced by the Government according to which any airline having revenues less than the standard would get a subsidy amounting to this deficit, while in the event of the cost of operation being less than the standard costs, 50 per

cent of the difference would be paid to the airline as bonus. The ceiling of the subsidy was 8 annas per gallon (50 *paisa* per 4.5 litres) of fuel consumed by the company. On representations from the Air Transport Association of India, Government decided to postpone the introduction of the new scheme of subsidy from October 1, 1950 to January 1, 1952.

Nationalization: The conditions in the air transport industry were disclosed to be such that, if it was to remain privately managed, substantial financial assistance from Government would be required for the replacement of the fleet, which had become long overdue. The industry was largely dependent on the Dakotas which had been released to operators after the war at very low prices. Their replacement would, therefore, mean a considerable financial outlay with no comparison whatever to the earlier investment. The Government, therefore, decided that, as considerable State assistance was inevitable, it was better to nationalize air transport. Following this decision, the Air Corporation Act was passed and received the President's assent on May 28, 1953.

In accordance with the Act, the undertakings of the Indian Air Companies operating scheduled services were taken over by two State Corporations, namely, the Air India International and the Indian Airlines, after payment of compensation as provided for in the Act. The Air India International took over the undertakings of the Air India International Ltd. The Indian Airlines Corporation acquired the following companies:

(1) Air India Ltd.
(2) Air Services of India Ltd.
(3) Airways (India) Ltd.
(4) Bharat Airways Ltd.
(5) Deccan Airways Ltd.
(6) Himalayan Aviation Ltd.
(7) Indian National Airways Ltd.
(8) Kalinga Airlines.

The Air India International was intended to operate a long distance international service, while the Indian Airlines Corporation was to operate the internal scheduled services and the air services to the neighbouring countries. The two corporations came into formal existence on June 15, 1953. On August 1, 1953 the Air India International took over, as a going concern, the assets and business of the Air India International Ltd. All the other air transport companies operating scheduled services in India were vested in the Indian Airlines Corporation. In accordance with the Act the companies were to be paid compensation partly in cash but mostly in the form of 5-year Bonds, bearing interest at 3.5 per cent per annum and guaranteed by the Government of India.

Indian Airlines Corporation: The Indian Airlines inherited a fleet of 99. The effective strength of the fleet on March 31, 1954, was 87, namely, 3 Skymasters, 12 Vikings and 72 Dakotas. The first year following nationalization was one of exceptional difficulty owing to pressing problems of integration. The route pattern inherited by the corporation was revised with a view to eliminating wastage and meeting public convenience. This resulted in slightly higher utilization, specially in the case of the Dakotas. There was all-round improvement under every head of operation during 1954-55.

During the following years, the Indian Airlines Corporation followed a policy of a changing over to larger and faster aircraft. Dakota operation in India was not economical owing to its limited capacity, slow speed, scarcity of spare parts and high fuel costs. The replacement of the Dakotas by more efficient and modern aircraft had thus become necessary on grounds of both economy and efficient operation. In 1955, three more Skymasters were acquired for operating the night air mail services and orders were placed for eight Herons, which, however, were found later to be unsuitable. During 1957-58, the Viscounts — turbo-prop aircraft — were introduced on the trunk routes, offering greater comfort and convenience to the public. By 1958-59, 10 Viscounts had been placed in service. During 1961-62 five Friendship aircraft were added to the fleet and, in the following year, another five were also obtained in order to replace Dakota operation on the regional routes. The progress towards modernization reached a further stage with the introduction of the Caravelle Jets to take over important trunk routes from the Viscounts. The Caravelles are expected to do better than the Viscounts because of their passenger appeal and productivity. The Air India International has also loaned its surplus Boeing capacity on a regular and continuous arrangement. The remarkable change in the composition of the fleet of the Indian Airlines since nationalization is shown in Table XXIV. A gradual reduction in the number of aircraft has come about as a result of the switch-over to larger aircraft.

There has been steady progress in both the earnings and the volume of traffic carried in domestic air transportation. Taking the figures of the first complete year after the corporation took over, the capacity provided in terms of available tonne-kilometres increased from 76 million to 208 million in 1968-69. During this period, revenue tonne-kilometres rose from 52.96 million to 153 million. The number of passengers increased from 478,000 to 1.89 million. The weight of mails carried advanced from 4,732 tonnes to 10,206 tonnes. The cargo traffic, however, recorded a drop from 51,014 tonnes to 23,102 tonnes.

The financial figures are even more striking. The capital increased from Rs. 5.07 crores, standing at Rs. 25.95 crores at the end of 1968-69 The capital employed during 1959-60 to 1968-69 went up from Rs. 13

TABLE XXIV

Composition of the I.A.C. Fleet (1954-69)

Year March	*Dako-tas*	*Viking*	*Heron*	*T.B.*	*Sky-master*	*Vis-count*	*Friend-ship*	*Cara-velle*	*H.S. 748's*	*Total*
1954	72	12	—	1	3	—	—	—	—	88
1955	69	12	—	1	3	—	—	—	—	85
1956	66	12	8	—	6	—	—	—	—	92
1957	64	12	8	—	6	—	—	—	—	90
1958	62	12	7	—	6	7	—	—	—	94
1959	58	(12)*	3(4)*	—	5	10	—	—	—	76
1960	55	(12)*	3(4)*	—	5	10	—	—	—	73
1961	54	—	(7)*	—	5	10	—	—	—	69
1962	45	—	—	—	5	13	5	—	—	68
1963	43	—	—	—	3	13	10	—	—	69
1964	38	—	—	—	5	12	5	3	—	66
1965	36	—	—	—	3	12	10	4	—	65
1966	34	—	—	—	3	12	10	5	—	64
1967	32	—	—	—	3**	12	13	6	—	66
1968	29	—	—	—	3	14	15	7	4	72
1969	24	—	—	—	3	14	15	7	8	71

*Grounded Fleet **Operating Nil

crores to Rs. 46 crores. The operating revenues stood at Rs. 40.12 crores, as against Rs. 6.92 crores in 1954-55. Operating expenses also increased correspondingly from Rs. 7.73 crores to Rs. 36.55 crores.

The working results of the Indian Airlines Corporation closed with deficits in the first five years, aggregating Rs. 4.75 crores. During the next five years the total surpluses amounted to Rs. 1.49 crores only. Although this covers only about a third of the earlier losses, the gains have been progressive, increasing from Rs. 3 lakhs in 1959-60 to Rs. 3.57 lakhs in 1968-69.

The number of employees of the corporation went up from 9.324 to 15,597 in 1965-66.

On September 19, 1955, the Air Transport Council, constituted under the Air Corporations Act 1953, was requested by the Government "to study the general problem of fares and freight rates to be charged on the air services operated by the Indian Airlines Corporation and to draw up for consideration of the Government a set of principles on the basis of which such fares and freight rates should be determined." The council undertook a comprehensive study of all aspects of the problem. It submitted its report on May 1957. In line with the reemmendations of the council, the rationalization of the corporation's out-moded air fares was carried out.

The cost structure of the Indian Airlines Corporation was the subject of another enquiry in 1959 by a committee with Sir Stephen Wheatcroft as Chairman to see whether the corporation's system of planning, operation and cost control were as efficient as could be and to determine a formula for working out "standard costs" of operation

on the basis of which the losses of the corporation might be subsidized. While the committee found that the work of the Indian Airlines Corporation was generally that of an airline which operated an efficient network of air services, it had not yet adequately developed systems of commercial control which were essential for a large-scale business. The basis for ascertaining "standard costs" was also indicated.

Air India Internationals: The credit for taking the first effective step towards operating external air services goes to Air India, which proposed in 1947 to form a new company called Air India International for the establishment of an air service between India and the U.K. Air India International was registered on March 8, 1948, with an authorized capital of Rs. 7 crores and a paid-up capital of Rs. 2 crores. The Government subscribed 49 per cent, Air India 10 per cent and the public the balance. The company's service from Bombay to London *via* Paris and Geneva was inaugurated on June 8, 1948, with an initial frequency of one service a week, which was later increased to three services a week. A weekly service was started in 1950 between Bombay and Nairobi *via* Aden.

Since nationalization, the Air India has maintained a steady rate of growth in capacity and the number of places served. From a toal of three stations served in June 1948, Air India International has increased the number to 30 cities covering five continents over an unduplicated route system of 927,400 km.

In January 1954, Lockhead Super Constellations were introduced for the first time on Air India's route. In 1956, Air India decided to replace its fleet of Super Constellations with jets. It was the first Airline in the world to have an all jet fleet. The Boeing engine base was located at Santa Cruz, Bombay.

The financial and operating statistics of Indian Airlines and Air India since nationalization are shown in the Tables XXV—XXX.

Non-Scheduled Operators: In addition to the scheduled operators, there are non-scheduled operators as well as charters permitted by the rules under a permit given by the Director-General of Civil Aviation. As the non-scheduled operators tend to have only the minimum number of aircraft, crew and engineering personnel, the grant of permits is subject to the Director-General satisfying himself as to the minimum requirements from the point of view of safety, operations and maintenance. There were on March 31, 1950 eight non-scheduled operators; ten scheduled operators also held permits to engage in non-scheduled operations. As at the end of 1969-70, the private airlines engaged in non-scheduled operations were: (1) The Air Survey Company of India, (2) Bharat Commerce and Industries Ltd., Bombay, (3) Airways India Ltd.,

Calcutta, (4) Jamair Company (P) Ltd., Calcutta, (5) Kalinga Airlines (P) Ltd., Calcutta, (6) Kasturi & Sons, (7) Cambata Aviation (P) Ltd., (8) Balaji Agencies, and (9) H. S. Sobha Singh and Sons.

Civil Aviation Department: The Civil Aviation Department under the Director-General is responsible for the provision and development of civil aviation facilities in the country. In particular, it is responsible for providing the following facilities: (a) aerodromes, aeronautical communication and visual and radio aids to navigation and other facilities required by the civil aircraft; (b) inspection and registration of licensing of aircraft and aircraft personnel; (c) training in flying, air traffic control, aeronautical communications, etc.; (d) promotion of aeronautical research and development; (e) formulation and enforcement of civil aviation regulations; and (f) type certification of civil aviation aircraft and aeronautical equipment, aircraft design, and airworthiness requirements.

Aerodromes: Prior to partition, there were under the Diector-General of Civil Aviation 61 aerodromes, four of which were International, seven Intermediate and 32 Minor. The only airport of entry to India from the West prior to August 15, 1947, was Karachi. After partition, Bombay was developed to be the main airport from the West, together with Palam, in Delhi. Safdarjang, in Delhi was however, used only for smaller aircraft. At the end of December 1969, 85 aerodromes were being maintained by the Civil Aviation Department. Of these, four, namely, Santa Cruz (Bombay), Dum Dum (Calcutta), Palam (Delhi) and Meenambakkam (Madras) airports are international aerodromes. There are 11 major aerodromes, namely, Agartala, Ahmadabad, Amritsar' Begumpet, Delhi (Safdarjang), Gauhati, Jaipur, Lucknow, Nagpur, Patna and Tiruchchirapalli. The Intermediate airports number 38 and the Minor 32.

In order to cope with the rapidly growing requirements of air transport, considerable progress has been made in the progressive extension of runways, improvements to the terminal buildings at Delhi and Calcutta, turning pad for Boeing 747 at Delhi Airport; and navigational aids, communications facilities, tele-communication services, runway lighting, visual beacons, equipment for ground safety services, radio beacons including the initial development of radar stations, flying control, meteorological services, aeronautical information service, etc.

Aircraft Manufacture: Under the pressure of World War II, a beginning was made towards the creation of an aircraft manufacturing industry. The Hindustan Aircraft Ltd., subsidized by the Government, built a modern aircraft factory at Bangalore fully equipped for quantity production of aircraft. It was started in December 1940 by Walchand Hira-

chand in collaboration with the Government of Karnataka. The Government of India shortly thereafter became a member of the company; a year later it took over completely the private holdings. During the first three years, the Hindustan Aircraft built a few Curtiss Hawk fighters, Vuktee bombers and Harlow trainers. The manufacturing programme was suspended with the onset of World War II and the factory turned its attention to overhauling and repairing aircraft to meet the requirements of defence. By the time the war ended, the Hindustan Aircraft had overhauled hundreds of aircraft of different types like cargo planes, light bombers, heavy bombers, flying boats as well as Hero engines.

The manufacturing programme was revived after the war and, in 1946, the Hindustan Aircraft began erecting Tiger Moth Aircraft for the Air Force and the manufacture of Percival Prentice trainer aircraft. It also produced, out of what was left after the war, a number of serviceable aircraft, mostly Dakotas, for the newly formed Indian air transport companies. Its activities in the following years have been in connection with the developmental side of aircraft production and more closely associated with the defence requirements. Of the value of its sales, about two-thirds are under aircraft assembly manufacture and overhaul and servicing; the balance is under rail coaches and, until a few years ago, bus body kits and other jobs.

In August 1963, a new public sector company designated as Aeronautics India Ltd., was formed to manage the three separate factories concerned in the manufacture of the Mig-21 aircraft. In March 1964, it was decided to form a public sector organization by the merger of the Hindustan Aircraft Ltd., Bangalore, with the Aeronautics India Ltd. The merger was completed on October, 1, 1964, and the company was redesignated as Hindustan Aeronautics Ltd. To this was transferred the Aircraft Manufacturing Depot, Kanpur, which was set up in 1959 to undertake manufacture of transport aircraft. Eight of the aircrafts produced by it, namely, HS-748s were already in service with the Indian Airlines in 1968-69.

Five Year Plans for Civil Aviation: Between 1947 and the commencement of the First Plan, about Rs. 6.6 crores were spent on works relating to Civil Aviation. During the period of the first two Plans, the expenditure incurred amounted to Rs. 24 crores. The programme in the First Plan aimed at making good the deficiencies in aerodromes, communication facilities, equipment, etc. The Second Plan provided for the development of facilities to meet the growing requirements of domestic and international traffic and the new demand arising from technical advances and from India's obligations under the Convention on International Civil Aviation. In the Third Plan, the outlay on civil air trans-

port was Rs. 49 crores. During 1966-69, the three annual plan periods, the outlay was Rs. 66 crores. With the arrival of the jets, the ground organization and equipment called for new facilities.

The Fourth Five Year Plan provided a total outlay of Rs. 202 crores. This envisaged the improvement of runway terminal and communications facilities at the four international airports of Bombay, Calcutta, Delhi and Madras so as to make them suitable for operation of heavier and larger capacity aircraft like the Boeing 747 (Jumbo) Jets. The development of various airports for domestic services was also contemplated besides the replacement of the Dakotas by larger aircraft.

TABLE XXV

Financial Statistics of Indian Airlines

(Rs. in lakhs)

Year	*Capital*	*Reserve and Surplus*	*Total Capital Employed*	*Gross Block Fixed assets*	*Net Block*
1954-55	5,07.02	67.16	5,74.18	2,33.71	..
1955-56	7,58.68	124.00	8,82.68	4,47.75	..
1956-57	9,66.50	31.18	9.97.68	4,81.84	..
1957-58	14,19.46	14.04	14,33.50	9,04.69	..
1958-59	14,85.41	1.16	14,86.57	10,62.72	7,44.78
1959-60	15,27.81	1,92.82	17,20.63	10,72.77	6,67.93
1960-61	16,95.52	12.49	17,08.01	10,86.54	5,91.06
1961-62	19,21.99	0.28	20,37.81	14,13.63	8,32.15
1962-63	21,47.99	71.11	22,19.10	16,35.64	10,05.31
1963-64	21,94.16	1,65.94	23,60.10	21,23.14	14.01.26
1964-65	21,94.16	3,20.95	25,15.11	23,66.03	14,42.94
1965-66	21,94.16	3,03.14	24,97.30	26,14.92	15,31.86
1966-67	21,94.16	4,64.51	26,58.67	36,66.47	23,37.26
1967-68	21,94.16	4,82.08	26,76.24	46,57.91	30,12.57
1968-69	25,94.16	6,53.59	32,47.75	51,18.56	30,96.57

TABLE XXVI

Operating Results of Indian Airlines

(Rs. in lakhs)

Year	*Operating Revenue*	*Operating Expenses*	*Operating Profit*	*Net Surplus*	*No. of Employees**
1954-55	6,92.47	7,72.51	— 80.04	— 90.15	..
1955-56	8,08.60	9,21.67	— 1,13.04	— 1,19.40	9,324
1956-57	8,61.35	9,61.78	— 1,00.43	— 1,08.79	9,254
1957-58	9,26.07	10,24.29	— 98.22	— 1,03.07	9,328
1958-59	10,82.49	11,70.15	— 87.66	— 91.19	9,263
1959-60	11,90.22	11,87.17	3.05	7.81	9,281
1960-61	13,06.27	12,98.95	7.31	4.68	9,390
1961-62	14,87.57	14,45.14	42.42	71.08	9,562
1962-63	16,97.19	16,64.70	32.49	60.91	10,075
1963-64	19,37.82	18,63.75	74.07	1,04.42	10,463
1964-65	22,80.96	21,17.09	1,63.87	1,33.01	11,039
1965-66	23,32.70	23,31.03	1.67	32.33	11,862
1966-67	27,00.53	29,78.83	— 2,78.30	— 2,83.50	12,349
1967-68	34,73.65	33,41.09	1,32.56	— 26.20	12,819
1968-69	40,12.38	36,55.31	3,5707	1,56.74	13,178

*Figures exclude the daily-rated and part time.

TABLE XXVII

Traffic and Operating Statistics of Indian Airlines

Year	*Revenue Passengers*	*Mails Carried (Tonnes)*	*Revenue Cargo (Tonnes)*	*Unduplicated Route kms. (Year end)*
1954-55	477,583	4,732	51,064	..
1955-56	500,363	5,074	54,722	22,872
1956-57	571,106	5,306	50,999	22,867
1957-58	599,573	5,249	44,917	23,948
1958-59	653,494	5,554	50,778	26,689
1959-60	703,013	5,950	46,781	29,566
1960-61	787,187	6,107	43,157	28,083
1961-62	880,882	6,708	36,688	30,098
1962-63	906,546	7,106	36,888	30,428
1963-64	1,047,592	8,169	30,715	30,451
7964-65	1,235,310	8,869	24,532	14,219
1965-66	1,205,110	9,526	15,071	30,381
1966-67	1,419,503	9,100	19,454	31,557
1967-68	1,657,671	9,931	21,289	32,617
1968-69	1,959,417	10,206	23,102	33,631

Year	*Revenue Passenger (km.) (Million)*	*Revenue Tonne km. performed (Million)*	*Available Tonne km. (Million)*
1954-55	..	..	..
1955-56	338	60	84
1956-57	386	62	90
1957-58	434	65	93
1958-59	499	74	105
1959-60	551	78	111
1960-61	614	83	113
1961-62	676	87	121
1962-63	692	98	136
1963-64	809	94	135
1964-65	938	109	157
1965-66	986	108	155
1966-67	1,101	119	165
1967-68	1,263	136	206
1968-69	1,445	153	208

TABLE XXVIII

Financial Statistics of Air India International

(In lakhs of Rs.)

Year	*Capital*	*Reserve and Surplus*	*Total Capital Employed*	*Gross Block Fixed Assets*	*Net Block*
1954-55	9,66.82	41.28	10,08.10	7,20.92	6,64.19
1955-56	9,93.93	42.57	10,36.50	7,60.43	..
1956-57	12,68.93	80.57	13,49.50	11,35.90	..
1957-58	13,23.51	2,39.22	15,62.73	10,54.00	7,18.50
1958-59	13,66.79	2,58.63	16,15.42	14,21.30	9,71.70
1959-60	16,54.78	2,73.79	19,28.58	23,42.15	18,01.57
1960-61	18,25.79	3,12.62	21,38.41	25,01.54	17,50.04
1961-62	25,20.46	2,72.77	27,93.23	25,75.14	19,75.44
1962-63	26,81.63	4,71.85	31,53.48	25,12.64	19,75.44
1963-64	26,81.63	7,16.13	33,97.77	25,61.63	18,01.43
1964-65	26,81.63	9,35.24	36,16.87	34,29.07	24,11.77
1965-66	26,81.63	10,35.47	37,17.11	32,89.20	20,96.00

Year	*Operating Revenue*	*Operating Expenses*	*Operating Profit*	*Net Surplus*
1954-55	..	..	..	..
1955-56	6,76.58	6,69.99	6.54	3.78
1956-57	9,64.88	8,76.98	87.90	34.42
1957-58	10,82.49	10,10.82	71.67	1,26.10
1958-59	11,55.77	11,39.92	15.85	18.28
1959-60	12,58.48	12,40.22	18.26	26.98
1960-61	19,17.41	18,00.00	1,17.41	67.97
1961-62	21,56.99	20.80.00	76.99	38.86
1962-63	24,52.69	21,07.25	3,45.44	2,34.78
1963-64	26,81.97	22,96.72	3,84.25	3,04.18
1964-65	30,03.08	26,41.05	3,62.03	3,04.15
1965-66	29,77.24	28,60.99	1,16.65	1,63.56

TABLE XXIX

Traffic and Operating Statistics of Air India

Year	*Revenue Passengers*	*Mails Carried (tonnes)*	*Revenue Cargo (tonnes)*	*Unduplicated route km.*
1954-55	40,287	303	892	23,330
1955-56	56,445	442	1,038	27,972
1956-57	79,825	614	1,477	33,015
1957-58	88,312	669	1,498	33,345
1958-59	83,868	814	1,884	38,757
1959-60	89,385	875	2,801	38,424
1960-61	123,270	842	3,627	48,187
1961-62	156,535	1,045	5,431	45,473
1962-63	165,736	1,274	5,118	51,192
1963-64	190,969	1,143	6,574	47,713
1964-65	237,996	1,099	7,670	53,729
1965-66	218,458	1,152	7,956	52,369
1966-67	254,736	1,411	9,657	51,263
1967-68	285,459	1,516	10,494	57,603
1968-69	331,051	..	..	..

	Revenue Passenger km. (Million)	*Revenue tonne km. (Million)*	*Available tonne km. (Million)*	*Average No. of staff*
1954-55	180	22	31	2,102
1955-56	248	31	56	3,121
1956-57	349	44	69	3,661
1957-58	386	47	80	4,070
1958-59	391	60	88	4,442
1959-60	400	54	93	4,596
1960-61	583	76	161	5,259
1961-62	692	95	217	5,703
1962-63	822	112	252	5,873
1963-64	946	132	292	6,090
1964-65	1,140	157	329	6,543
1965-66	1,057	149	324	7,110
1966-67	1,192	173	353	7,560
1967-68	1,404	199	434	8,265
1968-69	..	..	..	8,821

TABLE XXX

Composition of Aircraft, Air India

Year	*Dakota freighter*	*Constellation 749s*	*Super Constelliation, 1049s*	*Boeing*	*Total*
1954-55	1	4	3	—	8
1955-56	1	3	5	—	9
1956-57	1	3	8	—	12
1957-58	1	—	8	—	9
1958-59	1	—	10	—	11
1959-60	1	—	9	—	10
1960-61	1	—	9	3	13
1961-62	1	—	5	5	11
1962-63	—	—	—	6	6
1963-64	—	—	—	6	6
1964-65	—	—	—	8	8
1965-66	—	—	—	—	9
1966-67	—	—	—	—	9
1967-68	—	—	—	—	9
1968-69	—	—	—	—	10

VIII. Postal Services and Teleocmmunications

Postal Services: The history of postal communications in India is, as in most other countries, a process of gradual evolution from the rudimentary system of couriers employed by kings and emperors to keep in touch with their far-flung territories into the present immense network and organization. The earliest evidence of a systematic postal service relates to the time of Chandragupta Maurya (*C.* 321-297 B.C.), when a system of communications was established between Patliputra, *capital*, and the outlying provinces of the vast empire for despatch of information and confidential reports to the emperor. Pigeons were also used as message carriers. Bankers had their own system for sending *hundis* (bills of exchange) between important centres, which probably was the fore-runner of the *Mahajan Dawk* of the 17th and 18th centuries.

Coming down to the middle of the 14th century, Ibn Batuta found an organized system of couriers established throughout the country, consisting partly of those on horse and partly of those on foot. The former were stationed at a distance of four miles (6.43 km.) from each other and the latter at every mile (1.6 km.). The couriers sat inside sentry boxes at every stage of three miles (4.82 km.). Every courier carried a whip, about two cubits long with small bells suspended at the head. With the mails in one hand and the whip shaking continuously on the other, the ring of the bells would announce the arrival and warn the next courier resting in the sentry box. The arrangement provided an efficient relay system which ensured the speedy despatch of mails. Two centuries later, Sher Shah Suri, during his short reign, 1540-45, improved the system by placing two horse couriers on the road every two miles (3.2 km.) to facilitate the rapid conveyance of Government despatches and for promoting trade and

correspondence. An idea of the extent of the service is afforded by the 2,000-mile (3,219 km.) highway he had constructed from Sonarang in Bengal to the banks of the Indus in the Sind. Akbar is said to have placed on the principal roads two swift horses and some *mewias* (runners) at a distance of every *kos* (16 km.) for the carriage of Government letters and some private correspondence. The couriers covered about 161 km. in a day and night, and a letter from Agra to reach Ahmadabad took five days. Chikka Devaraja Urs of Karnataka, who came to the throne in 1672, introduced a more efficient system, providing a regular post throughout his dominions enabling intelligence to be obtained as well as mails to be carried. This later developed into the Mysore *Anche*, which was found to be "the cheapest postal system in the British Empire — probably in the whole world."

Postal Services under the East India Company and in the later British Period: During the regime of the East India Company, the prevailing dak system was used for almost a century, with its own paid postal runners. It was only towards the end of the 18th century that the East India Company established its own system which connected the principal towns. The zamindars and landholders along the various routes were required to supply runners against a reduction in rents. Some services were operated under the Postmaster-General since 1774 between Madras and Bombay, Machilipatnam and Madras, Bombay and Calcutta.

It was in 1837 under the provisions of Act XVII of that year that a public post was established and the Government reserved to itself the exclusive right to convey letters on payment in the territories of the East India Company. The Postmasters of the Presidency towns supervised the working of a certain number of provincial post-offices and provided for the conveyance of communications and mails over a few main lines of communications, while Collectors had charge of District Post-Offices and local mail lines. The charges for the conveyance of letters levied in cash and paid in advance varied according to weight and distance. The charge for sending a letter from Calcutta to Bombay was Re. 1 and that from Calcutta to Agra 12 annas per tola (11.66 g.)

On the recommendations of a commission appointed in 1850 to report on the working of the Post-Office, Act XVIII of 1837 was repealed and Act XVII of 1854 was enacted. This Act marks the commencement of the organization of the Indian Post-Office as it had come to function. Under its provisions, the whole department was placed under the control of a Director-General. Postage stamps were now first introduced and rates were fixed for the conveyance of letters irrespective of distance. Act XIV of 1856, replacing the earlier one, was again superseded by Act VI of 1898. This Act conferred extended protection and powers and pro-

vided increased facilities for postal insurance, value payable post and the money order system.

From 1854 to 1869, the lowest rate of inland letter postage was ½ anna for ¼ tola; the next charge was 1 anna for ½ tola; and for weights above ½ tola the scale progressed by 2 annas per tola, and thereafter by ½ anna per tola. In 1869, the weight allowed for each rate of postage was doubled, the initial charge becoming half anna for ½ tola. This rate continued in force until April 1904, when the weight allowed for ½ anna was raised to ¾ tola. The charge for heavier letter was 1 anna for 1½ tolas.

The minimum postage on newspapers was originally 1 anna for 6 tolas of weight; but the rates were from time to time reduced. In October 1898, ¼ anna was made the inland rate for a newspaper not exceeding 4 tolas in weight, and ½ anna the rate for a registered newspaper, exceeding four but not exceeding 20 tolas. While an additional ½ anna was charged on every additional 20 tolas or part of that weight, the weight allowed for ⅛ anna was raised to 6 tolas in January 1904. The postage on packets other than newspapers was 1 anna for 10 tolas until 1878, when it was lowered to ½ anna.

The Post-Office first carried parcels at rates varying with weight and distance. In 1870, a uniform rate of 3 annas for 10 tolas was adopted. In 1873, the minimum charge was fixed at 4 annas for 20 tolas, but four years later it was altered to 8 annas for 40 tolas. The rates of inland parcel postage which came into force in July 1901 were: (1) in the case of parcels not exceeding 440 tolas in weight, 2 annas for the first 20 tolas, 4 annas for any weight exceeding 20 but not exceeding 40 tolas, and 2 annas for every additional 40 tolas; and (2) in the case of parcels exceeding 440 tolas in weight, Rs. 3 for a parcel not exceeding 480 tolas in weight and 4 annas for every additional 40 tolas. As the limit of weight, which was 2,000 tolas, was found to be interfering with the railway parcels traffic, it was reduced to 800 tolas in 1907.

The Postal Act 1854, superseding the previous practice of giving receipts for all letters at the time of posting, added registration of postal articles as a new facility for the public, the fee being 2 annas for all classes of articles.

The insurance of postal articles was introduced in 1878, mainly in order to separate valuable articles from the rest of the mail. There was at first no restriction on the amount for which the article might be insured; but in 1890 a limit of Rs. 1,000 was fixed which was raised in 1898 to Rs. 2,000. The limit has since been raised several times. The insurance fee was reduced in 1905 from ¼ to ⅛ per cent on the value, subject to the minimum of one anna.

The value payable, or, cash on delivery system, was introduced into

India in December 1877 and, under this system, the Post-Office undertakes to collect from the addressee the price specified for payment on certain classes of articles sent for sale and transmit the money to the sender. It was extended in 1891 to the postal exchange between India and Ceylon/Sri Lanka.

In 1875, the Universal Postal Union was established. In the following year, India became a member and party to the Convention which regulated the carriage of letters, postcards and packets between all countries of the Union. In 1892, India applied the standard Union rates to correspondence for all parts of the world, whether within or outside the Postal Union; and in 1898 she joined in the scheme for the adoption of a uniform rate of postage at the rate of a penny per half ounce for letters throughout the British Empire.

In 1873, arrangements were made for the carriage of parcels to and from England and for their collection and distribution by the Peninsular and Oriental Navigation Company. This was soon followed by the introduction of exchanges of postal parcels with certain other European countries and with several British colonies. In 1885, the exchange of parcels with the United Kingdom was transferred to the agency of the British Post-Office and in 1895, India joined the International Parcel Post Union which enabled parcels to be exchanged by post between India and almost every other country in the world.

Prior to 1880, sums not exceeding Rs. 150 could be remitted by money order from one district to another through the agency of the Government Treasuries. A commission of about 1 per cent was charged, the remitter sending the order obtained from the remitting Treasury to the payee who was required to present it at the Treasury of payment. The cost of transmitting the order was a charge over and above the commission and there was the risk of the order being lost or stolen in the post unless forwarded under the security of registration. With less than 300 Treasuries, the system was not popular and could not compete with the remittance of currency notes by post. The service could be improved under the Post-Office which had 5,500 offices. From January 1, 1880, it was decided that the money order business should be taken over by the Post-Office. The commission remained the same but the procedure was greatly simplified. The remitter had only to fill in an application, the Post-Office undertaking to transmit the money to the payee and to obtain his acknowledgement and deliver it to the remitter. The success of the Post-Office handling this was shown by the fact that the transactions more than quadrupled within three months.

Among the several improvements effected later were: the addition to the money order form of a "coupon" on which the remitter could write a communication to the payee; the payment since 1884 of money orders by postman at the residence of the payees; the introduction, also in 1884,

of the telegraphic money order system; and the use of finger impressions for the identification of illiterate payees.

The rate of the commission for ordinary money orders were: 1 anna per Rs. 5, or fraction thereof upto Rs. 15, 4 annas on sums between Rs. 15 and Rs. 25; for telegraphic money orders the scale of charges began with 2 annas for any sum not exceeding Rs. 10, and progressed in the same way as money order rates upto Rs. 150. For any sum exceeding Rs. 150 upto Rs. 600, the charge was Rs. $1\frac{1}{2}$ for a complete sum of Rs. 150 plus 2 annas per each additional sum of Rs. 10. For the cost of the telegram in the case of urgent orders, the further fee was a rupee and in the case of deferred orders 8 annas.

On the money order system proper were grafted measures for the remittances of rent to landowners and of Government dues such as land revenue, cesses and income-tax. These facilities had a special value in protecting the people from illegal exactions. The landowner was saved from improper demands made by subordinate revenue officials and the tenant was protected against the landlord or his agents.

Foreign money orders were drawn upon or received from the United Kingdom and also most British colonies and foreign countries in sterling. There were also a few foreign countries and British possessions to and from which money orders were advised in Indian currency.

The sale of British postal orders for small sums, payable in the United Kingdom and at certain British post-offices in foreign countries, was introduced in India in 1884. The number sold in 1890-91 was 39,683 of the total value of £27,761. With the introduction of more denominations, the number issued showed a marked increase to 453,943 in 1913-14. The number, however, declined in the following years, touching 121,501 by 1921-22. During the inter-war period, the sales improved, but the setback during World War II and the later years led to its final discontinuance by April 1, 1951.

The Post-Office provided for the use of the public postage stamps of various denominations (14 in 1904), embossed envelopes, postcards and newspaper wrappers. Stamps required for official purposes were overprinted "On H.M.S." (On His Majesty's Service). The colour and design of the postage stamps underwent various changes from time to time, the most important being in 1900 when India adopted the colours green, red and blue recommended by the Universal Postal Union for the stamps representing the three standard Union rates of 5 centimes, 10 centimes and 25 centimes, the Indian equivalent of which being $\frac{1}{2}$ anna, 1 anna and $2\frac{1}{2}$ annas.

The one-quarter anna inland postcard in 1879, sold for its face value, gave a lower rate of postage than had been available. In April 1880, service postcards for the use of Government officials were also provided. Reply postcards were introduced in 1884. The introduction of

the postcard, the most popular medium of private correspondence in India, aroused considerable opposition in the public press, mainly on ground that it would interfere with the secrecy of postal communication.

Postal Savings Banks: As the Post Office happened to be the only organization of the Central Government having a large network of establishments covering the entire country, it took over the responsibility for a number of services of a variegated character which had nothing to do with the primary function of carrying mails. In addition to those already referred to, the post-offices sold stock notes from 1882 onwards and, as from 1886, the purchase and sale of Government Promissory Notes were also undertaken. Perhaps the most important was the service performed by the Post-Office by the institution of savings banks.

Post-Office savings banks came into existence in April 1882 and by April 1883 they were in operation throughout India. The post-office savings banks and the district savings banks, instituted in 1870 in connection with certain treasuries, continued side by side till 1886, when the latter were abolished. Only the Government savings banks in the cities of Calcutta, Bombay and Madras remained in the hands of the Presidency Banks until 1896.

The popularity of the post-office savings banks was evidenced soon after they were opened in 1882-83. The number of depositors in that year was 38,121; the amount at their credit nearly Rs. 28 lakhs, and the interest which they received was Rs. 49,020. By the turn of the century, the number rose to 736,000 and the amount to Rs. 965 lakhs. The minimum deposit was four annas and the maximum total credit permitted was Rs. 2,000. The interest was formerly allowed at the rate of $\frac{1}{4}$ anna a month on every complete sum of Rs. 6, equivalent to $3\frac{1}{8}$ per cent per annum, which was later reduced to 3 per cent on deposits held at call and raised to $3\frac{1}{4}$ per cent on deposits requiring six months' notice of withdrawal. The Post-Office received no remuneration for its savings bank, all incidental expenses in connection therewith being borne by it. The Post-Office also afforded facilities to invest in Government securities any sum in whole rupees from Rs. 10 to Rs. 1,000 in any one year, provided the depositor's total investment including his current deposit account did not exceed Rs. 5,000. At his option, the securities purchased may be kept by himself or on his behalf by the Comptroller.

The rapid progress at first of the post-office savings banks was slowed down by the lowering of interest and the reduction in the permissible annual and total amounts to be deposited. The total balances varied regularly with the economic conditions of the country, a famine year showing a considerable decrease and a better agricultural season an improvement. Similarly, war and war scares also made the deposits

sensitive. During both World Wars, there were unprecedented withdrawals. In 1914, the balances dropped from Rs. 23 crores to Rs. 16 crores. In 1940-41, the balances came down from Rs. 81.86 crores (as of 1938-39) to Rs. 59 crores. There were also the decreases, as were to be expected, from the separation of Burma in 1937 and the partition of India in 1947. But the general trend, allowing for these factors, was steadily upward. Since 1947, the deposits and the annual balances have responded to the better facilities and the economic progress of the country. The balance at the end of 1961-62 amounted to Rs. 466.54 crores as compared with Rs. 142.35 crores and Rs. 167.17 crores on March 31, 1947 and 1950, respectively. The average balance per depositor has risen from Rs. 122.8 in 1900 to Rs. 358.9 in 1947 and Rs. 492 in 1962. These increases are all the more striking as there had been, during the period covered, a considerable expansion in savings bank facilities provided by commercial banks.

Railway Mail Service: With the commencement of the railways, an obligation was imposed on them to carry letters and parcels free of charge and the Provincial Governments were empowered to require the railways to run trains to carry the mails. The mail bags were at first carried as such in a guard van or a separate compartment. Sorting of mails in transit was a later development, first at large centres and subsequently in 1870 with the mail service. In 1877, Government decided that the Post-Office should pay the railways for the cost of conveyance. Postal vans were standardized in 1882. The basic principles applied to the carriage of mails by rail adopted at this time have continued since then without much change.

Progress of Postal Services from 1860 to 1947: The steady expansion of post-offices in the country led to a progressive increase in the volume of work handled by them. In forty years from 1860-61 to 1900-1901, the number of post-offices rose from 889 to 12,970 and the letter boxes from 190 to 25,507. The number of postal articles handled rose from 48 millions to 582 millions over the same period. During the next forty five years, 1901-02 to 1945-46, which included two World Wars and separation of Burma, the number of post-offices doubled and the number of articles handled increased to 370 per cent. The same picture is presented by the money order business and the post-office savings banks.

The length of postal lines steadily rose from 70,148 km. in 1860-61 to 191,910 km. by 1900-1901. By 1950-51, the figure had gone up to 260,989. In assessing the progress, it is necessary to make allowance for the separation of Burma in 1937 and the partition in 1947.

Mail Runners: In some of the branch offices, the mail runners, a unique figure in the dispersed areas, with their belts and badges, had spears

with clusters of small bells attached, which, beside being useful in scaring away wild animals by their jingle, helped the runners to travel at a measured pace and notify the approach of the mails. Ordinarily, the mail bags are tied together and suspended to one end of the spear and thrown over the shoulder. In many parts of the country—mail runners have been exposed to considerable danger from diffrent causes, such as floods, storms, wild beasts, and on occasions to highway robbers. Although the mails usually contain cash and other valuables, it seldom happens that a runner attempts to tamper with them. On the other hand, there are many cases on record in which the runners have defended the mails in their charge at the risk or cost of their own lives.

Mails to and from Foreign Countries: Postal traffic with foreign countries forms an important part of the activities of the Post-Office. The earliest mail communication between Europe and India was by sailing vessels, starting at irregular intervals from England and proceeding round the Cape of Good Hope. In 1815, the charge for a single "letter" was 3s. 6d. payable on delivery in India, of which 2d. was paid to the ship with an additional 2d. to the commander. But soldiers in the service of the Company or the Crown were privileged to send and receive letters at the rate of 1s. In 1825, the voyage was for the first time performed by steam. It was not until 1835 that the Indian mails were conveyed over the isthmus of Suez and through the Red Sea. In 1840, the Peninsular and Oriental Navigation Company was selected to convey mails to Alexandria, and, in 1842, the company established a line of steamers between Suez, Ceylon, Madras and Calcutta for which in 1844 it received a contract for five years with a subsidy of £250,000 for the combined India and China services. This contract was subsequently extended from time to time. It provided in 1853 for a fortnightly service between the United Kingdom and India (Calcutta), and in 1867 for a weekly mail service to and from India (Bombay) with a transit of about twenty-six days. The annual subsidy increased to £400,000 to be raised, if necessary, upto £500,000 to give the company a net profit equal to 6 per cent on its capital. In 1880, the weekly service and transit of mails were brought down to 17½ days. In 1888, the conveyance of the mails through the Suez canal, instead of across Egypt, reduced the time by one day, and later 14½ days for th entire transit. The subsidy also came down gradually to £330,000 under the combined Eastern and Australian mail service 1898-1905.

From 1854 to 1869, the trans-European route for mail service between the U.K. and Inda was *via* Marseilles, but towards the end of the latter year the service by that route was supplemented by a service *via* Brindisi. The sorting of mails on board and mail steamers in the Indian Ocean

was introduced in 1868 and the mails landed at Bombay ready sorted for chief towns.

Field Post-Officer: The Post-Office was called upon from time to time to serve the field forces on military expeditions. Indian postal staff went on active service on several occasions, such as with the Persian expedition in 1856 and Expeditionary Force in Abyssinia in 1867, in the Afghan Wars of 1878-80, Egypt in 1882-83 and Sudan in 1885, with the Chinese field forces in 1901, in Somaliland in 1903, in Mesopotamia, East Africa and Persia during the World War I and World War II.

Service Stamps: Upto 1865-66, all official articles were conveyed free and the Government Departments concerned were pro-forma debited with the postage due from them. The result was in almost unrestricted licence to frank letters on public service. In 1867, service stamps were introduced and pre-payment of official correspondence was insisted on. At first restricted to official articles passing out of Presidency towns or outside the limits of the district in which they were posted, it was gradually extended, until in 1873 all franking privileges were abolished. This tended to keep within reasonable limits the amount of official correspondence conveyed by the Post-Office.

The rates of postage applicable of official correspondence were originally the same as for ordinary correspondence. But, taking into account that the official covers were larger and less troublesome or expensive to deal with, the rates were reduced in 1873. Further reductions were made in later years by which the permissible weight was raised to 10 tolas against $1\frac{1}{2}$ tolas for private letters. The rates applied to parcels and packets were the same.

Postal Insurance: The Indian Post-Office has an insurance branch from which any Government servant subject to civil rules can obtain a life insurance or endownment policy upto Rs. 4,000 or an annuity upto Rs. 50 a month. Originally started in 1883 for the postal servants, it was gradually extended to civil employees of Government. In 1949, however, the facility was extended to members of the Defence Services as well as to employees of certain semi-Government institutions. The number of policies issued has in recent times declined considerably. Between 1955-56 and 1962-63, the civil portion of the life insurance policies issued dropped from 17,074 to 4,100 and the military portion from 1,026 to 320. In 1950, the grant of loans on the security of the policies was also allowed.

Air Mail Services: India is perhaps the first country in the world to have flown mails, although in an experimental way, when on February, 21, 1911, a de Havilland aircrfat carried mails comprising about 6,500

letters during a demonstration flight from Allahabad to Naini across the river Yumana. Regular use of air services for carrying mails, however, had to wait till 1920 when the air service between Bombay and Karachi was started. On April 7, 1929, the U.K. — India air mail service was inaugurated. Six months later an Indian air company carried a feeder air mail service between Delhi and Karachi. Th eastern service of the K.L.M. and of Air France also traversed India about this time. In 1931, the Indian Post-Office introduced the air mail postcard. Under the Empire Mail Scheme in 1938, the mail service operated four times a week between London and Malaya, touching Karachi and Calcutta.

There has been steady improvement in the air mail service since independence, and this has kept pace with the extension of air services in the country.

The inauguration of the Night Air Mail Scheme in Nagpur in January 1949, was a landmark in the history of airborne mails in the country. This service, working in conjunction with the day air services at the four-terminal stations at Madras, Bombay, Calcutta and Delhi, provided a channel for continuous aerial transmission of mails between the four corners of India, greatly cutting down the mail transit time. This was followed by the "All Up" Scheme on April 1, 1949, under which all unsurcharged first class mail was given air lift, wherever such air lift resulted in speedier delivery.

In May 1951, money orders were also brought under the "All-Up" Scheme and, in September of the same year, insured letters were also included. In the following month, the inland letter card, designed on the pattern of foreign air letters, was introduced and priced 1½ annas.

The volume of the traffic carried by air mail, foreign and inland, is indicated in the following Table:

TABLE XXXI

Volume of Foreign and Inland Air Mails
1956-57 to 1968-69 (Select Years)

(Figures in thousands)

	Outwards	*Inwards*	*Inland*
	Foreign (kgs.)		*(lbs.)*
1956-57	334	597	14,140
1958-59	412	696	9,980
1959-60	444 (403)	769	10,598
1964-65	647	1,403	6,120 (kg.)
1967-68	783	1,918	7,093 (kg.)
1968-69	742	1,749	6,669 (kg.)

Agency Functions: Among the several agency functions undertaken by the Post-Office, the most important is the sale of savings certificates. The Five-Year Post-Office Certificates date back to 1917. Besides

these, in order to encourage small savings, the Post-Office in the past had sold the war loans and in 1940, the Defence Savings Certificates, later replaced by the National Savings Certificates. The business reply cards were introduced in 1932, and in 1934, on behalf of the Finance Department, the Post-Office undertook the sale of revenue stamps for use in payment of duty under the Indian Stamps Act. Ten years later, it took over the sale of the tobacco excise revenue stamps for the collection of fees on tobacco excise licences. A year later, it handled the sale of the Central Excise revenue stamps.

The sale of quinine to the public has been one of the oldest agency functions of the post-office. During 1962-63, the Post-Office sold through the agency of its offices in Central, Madras and West Bengal Circles 317 lbs. and 144,000 tablets of quinine and its substitutes. The other States had their own arrangements.

Since 1947, the department continued to enlarge the sphere of its activities. In 1950, on behalf of the Ministry of Health, it put on sale the T.B. Seal on its counters. At the instance of the All India Khadi and Village Industries Board, arrangements were made to sell *Khadi Hundies* during September 1954 to March 31, 1955.

Increase in Number of Post-Offices since 1951: There has been an acceleration in the development and expanison of the postal services since independence. As a result of the Five-Year Plans, the progress has been systematic and continuous. The objective in the First Plan, 1951-56, was to serve, besides all administrative headquarters such as *tehsils*, *talukas* and *thanas*, every group of villages located within a distance of 3.22 km. and having a population of 2,000, provided the annual loss did not exceed Rs. 750 and there was no Post-Office within a distance of three miles.

The conditions for opening Post-Offices were relaxed during the Second Plan, 1956-61, and the programme aimed at providing Post-Offices to each group of villages within a radius of two miles and having a population of 2,000. In addition to these, Post-Offices were also sought to be provided at every headquarters of National Extension and Community Project Blocks, subject to the conditions relating to the permissible limits of annual loss and distance. The conditions for opening Post-Offices were further liberalized in 1950 by including also places where schools were run by district boards or schools run were approved by the State Governments.

As a result of these steps, the number of Post-Offices in the country increased from 36,000 to 55,000 in 1955-56, and to 77,000 in 1960-61. The increase during the period of the Third Plan was 20,942. The total number by the end of 1968-69 was 102,477.

The needs of rural areas received special attention and, as a result of this, the number of villages obtaining daily service increased from 186,661 in 1956-57 to 320,311 on December 31, 1969. There are no more "No Dak" villages

There were on the same date 48,991 villages receiving mails at an interval of one week and 7,702 villages at an interval of more than a week. There have been a steady improvement during the plan periods.

Mobile Post-Offices: In 1948, a novel experiment of a post-office on wheels on a fixed schedule was started covering about 150 villages in the Nagpur-Wardha-Yeotmal-Amraoti region. This had to be given up as it proved highly uneconomic. In the following year, however, a night mobile Post-Office was started at Nagpur as an adjunct of the Night Air Mail services. It was soon extended to Madras, Delhi, Bombay and Calcutta. The mobile Post-Office goes to important centres in the city at specified hours after dusk and after the normal working hours of post-offices. It works during all the days of the year, but does not book money orders or do savings bank work. A floating mobile Post-Office was opened at Srinagar in 1953, working in a *shikara* on the Dal Lake and the Jhelum river to meet the needs of tourists staying in house-boats. Towards the end of 1969, 15 mobile Post-Offices were functioning in all "A" Class and "B" Class cities.

Growth of Postal Traffic and Revenues: Since independence, there has been a growing demand for communication facilities represented by the postal, telegraph and telephone services and overseas communications. The progress during the period of the three Five-Year Plans and the three Annual Plans may be judged from the comparative figures relating to 1948-49 and 1968-69 set out below:

	Figures in million	
	1948-49	1968-69
(1) Postal articles (excluding money orders)	2,264	6,056
(2) Registered articles	76	178
(3) Money orders	45	100
(4) Savings Bank (transactions)	9	69

A perspective view of the development of postal facilities related to population is afforded by the figures given in the Table XXXII.

With 100,000 Post-Offices, there is a Post-Office for every 6.4 villages, 5,000 population and 37 sq. kilometres in the country. This compares favourably with the statistics of certain foreign countries as shown in Table XXXIII.

TABLE XXXII

Average Revenue and Traffic per head of Population: 1921—1968-69

Year	*Population (million)*	*Revenue Rs. Crores*	*No. of articles (millions)*	*Average revenue per head of population (Rs.)*	*Average No. of articles per head of population*
1921	310	5.82	1,410	0.19	4.34
1931	337	7.37	1,175	0.22	3.49
1941	392	9.85	1,272	0.26	3.33
1951	356	21.04	2,270	0.59	6.37
1961	439	40.78	4,029	0.93	9.17
1968-69	531	93.98	6,056	1.77	11.41

TABLE XXXIII

Average Population and Area per Post-Office in India and Certain Foreign Countries

Country	*No. of Post-Offices*	*Population per Post-Office*	*Area per Post-Office* (Sq. km.)
Australia	8,179	1,204	942
Canada	11,205	1,542	862
Great Britain	24,937	2,065	9.87
Japan	15,971	5,760	23.10
U.S.A.	36,308	4,802	264
India	88,058	4,988	37.30

The total capital outlay on the Post-Office to the end of 1968-69 is Rs. 15.22 crores, of which Rs. 1.05 crores are from ordinary revenue. The financial results of working the Post-Office disclose fluctuations, surpluses in some years and deficits in others. Because of its being administered along with the Telegraph Department together with the telephones and the radio, the total results are better indicatives of the working of the entire organization. The working of the Post-Office has on the whole resulted in a surplus. Taking the period 1956-57 to 1968-69, the surpluses and deficits have been as follows:

TABLE XXXIV

Surplus or Deficit in Working the Post-Office during 1956-57 and 1968-69

(In crores of Rs.)

Year	Surplus + Deficit —
1956-57	+ 1.33
1958-59	— 1.99
1959-60	+ 1.30
1960-61	+ 0.80
1961-62	— 0.87
1962-63	+ 2.24
1963-64	+ 0.79
1964-65	+ 3.44
1965-66	— 3.28
1966-67	— 3.28
1967-68	— 8.34
1968-69	— 14.12
	— 6.16

The financial result, of working the Post-Office during 1968-69 are as follows:

	(In Crores)
Total receipts	Rs. 93.98
Net working expenditure	Rs. 99.16
Dividend	Rs. 0.98
Deficit	Rs. 6.16

There are three Reserve Funds. The Renewal Reserve Fund for the Post and Telegraphs Department has shown a steady increase under the closing balance. From Rs. 5.89 crores in 1955-56, it has gone upto Rs.101.55 crores in 1968-69, representing in this year 28.8 per cent of the value of the total fixed wasting assets.

The closing balance in the Capital Reserve (Post and Telegraphs) was Rs. 2.29 crores on March 31, 1969. The Revenue Reserve Fund (Postal) on this date was overdrawn by Rs. 23.82 crores.

Telegraphs: The earliest experimental telegraphic lines in India were those for which, in 1951, Dr. W. B. O'Shaughnessy, Assistant Surgeon and Professor of Chemistry in the Medical College at Calcutta, obtained sanction to construct along the Hooghly from Calcutta to Diamond Harbour, with a branch from Bishtopore to Mayapur and an extension from Kukrahati to Kedgeree, making with some short additional sections, a total of 132 km. In the same year, offices were opened at Calcutta, Mayapur, Bishtopore and Diamond Harbour for business connected principally with shipping. To these were added in February 1852, Kukrahati and Kedgeree. The receiving instrument was a small galvanoscope designed by Dr. O'Shaughnessy and made in India, and this pattern continued in use until 1857 when it was replaced by the Morse instrument.

These experimental lines proved successful and Lord Dalhousie obtained sanction from the Court of Directors for the construction of lines from Calcutta to Agra, Agra to Bombay, Agra to Peshawar, and Bombay to Madras, extending in all over 4,848 km. and including 41 offices. These were opened for paid message traffic in February 1855. By 1857, the lines had been further extended, bringing Mysore, Ootacamund and Calicut into the system, which now amounted to 7,331 km. of wire and 62 offices opened to public.

During the revolt of 1857, the Telegraph office was able to render notable service, indicating thereby the political value of the telegraph. Nearly 3,219 km. of line were constructed during the following year in addition to the reconstruction of the lines destroyed during the convulsion. Since then the Department has steadily expanded year by year. Steady progress was also maintained in establishing telegraphic connections with countries outside India. All telegrams on the service

of the State were paid for, except those relating to the service of the Postal and Telegraph Departments.

Tariff — Local and Foreign: The Tariff was first fixed at Re 1/- for each 16 words, including the address for transmission over 644 km. of telegraph line and at double this charge on telegrams presented between 6 P.M. and 6 A.M. After several experimental modifications, a revised tariff was introduced in January 1882, under which the charge was made uniform for all hours of the day and night and for any distance, the address being signalled free in all cases. In 1886, telegrams were classified into 'Urgent', 'Ordinary' and 'Deferred', the charges for these being Re. 1 for 8 words and 2 annas for each additional word for 'Ordinary', double these rates for 'Urgent' and half the ordinary rates for the 'Deferred'. There were several changes in the tariff from time to time.

For messages between India and the U.K., the original tariff was £5 for 20 words. This was reduced to £2-17-6 in 1868 and raised to £4-10-0 in 1871. In 1875, this was replaced by a word rate of 5½ Francs *via* Suez or Tehran and 5 Francs *via* Turkey. Since 1885 the rates were gradually reduced to 2s. The tariff for foreign countries were susceptible of variation, being made up of the shares of different administrations concerned and in accordance with the alterations in rate made by them and the routes employed.

Press telegrams were given the privilege of despatch at a far lower rate than was allowed for ordinary private messages, namely, about one-sixth of the usual rate, for inland press messages; about one-third, for foreign press messages.

During 1895-96, the phonogram was introduced at Bombay and Calcutta, by which any telephone subscriber could for a nominal charge read out his telegram by phone to a departmental telegraph office where it was booked and transmitted to its destination in the usual way by the telegraphic service.

Progress of Telegraph Services: The growth of the telegraph transactions at the turn of the century may be indicated by a few figures. In 1860-61, about 17,710 km. of telegraph lines had been opened with 145 offices. In 1900-1901 there were 88,550 km. of telegraph line with 1,939 offices which dealt with more than 6,462,000 messages, about 90 per cent of these being for the public. The net revenue earned by the Department showed a profit in that year of 6.2 per cent on its capital outlay, without taking into account the Home charges, including those of the Indo-European Telegraph Department.

The Indo-European department was in charge of that portion of the system of telegraphs between England and Karachi which was owned by the Government of India. This included: (1) the Persian

Gulf section from Karachi to the head of the Persian Gulf and connecting the Indian Telegraph lines terminatng at Karachi with the Persiad section at Bushire and the Turkish telegraph at Fao.

Efficient and prompt maintenance and repairs could hardly be undertaken without an adequate workshop. A Central Workshop was established in 1885 and this was later supplemented by another at Calcutta. During World War I, these workshops turned out many useful articles. A store depot was opened in Lahore in 1932. There were similar depots at Calcutta and Bombay. The workshops manufactured many important items such as telephone switch-boards.

There was a rapid development of the telegraph service after World War I, as will be seen from the figures shown in the following Table relating to the telegraph offices and licensed offices.

TABLE XXXV

Progress of Telegraph Offices and Traffic 1921-1936 (Select Years)

Year ending March 31	*No. of Telegraph Offices*	*No. of Telegrams (in '000)*	*Telegraphic Revenue in lakhs of Rs.*
1921	3,584	19,893	3,24
1926	3,851	18,778	2,88
1931	10,540	18,124	2,68
1936	10,394	17,152	2,68

A number of additional items of service to the public were introduced by the Department during the inter-war period. Among these may be mentioned the "Greetings Telegram" as from June 2, 1931, the "De Luxe Telegrams" to certain Empire countries in 1938, and the "De Luxe Inland Telegrams" as from June 1, 1938.

The teleprinter system was introduced between Delhi and Agra. In 1932, a four-channel HF telegraph carrier, the first of its kind in India, operated between Bombay and Calcutta. The teleprinter routes installed on November 26, 1936, were expanded to include two systems between New Delhi and Bombay and a system each between Madras and Bombay and Karachi and Bombay.

The telegraph system prior to partition, as on March 31, 1947, stood as follows:

Lines and Cables	
Post lines	188,694 km.
Wire Copper, Iron and Bronze	1,138,148 ,,
Cables, Aerial u/g, submarine	8,461 ,,
Telegrams:	
No. of Press	944,107
No. of Ordinary	242,990
Revenue	Rs. 7,64,65,000

Phonograms:	
Booked	945,553
Delivered	358,689
Revenue	Rs. 1,18,200

Development during the Five-Year and Annual Plans: Since independence, the policy of expanding telegraph facilities, particularly in the rural and semi-urban areas, was vigorously pursued by the Department. Until 1951, no scheme for opening a telegraph office could be taken up unless it was profitable. From October 1951 onwards, the policy was gradually liberalized. At first, special consideration was given to places where the loss in working would not exceed Rs. 500, and this was later raised to Rs. 1,000. In September 1953, it was decided to open telegraph offices at all district towns without any limit of loss and, subject to a loss not exceeding Rs. 1,000, at subdivisional and tehsil towns. During the Second Five Year Plan, the programme of extension of telegraph facilities to rural areas with a population of more than 5,000 was taken up.

The number of telegraph offices in the country increased from 3,000 in 1950-51 to 12,612 in 1955-56.

The Indian Language Telegraph Service in *Devnagri* script, called Devnagri Telegraph Service, which started in nine offices on June 1, 1949, covered 2,518 offices on March 11, 1966. The number of telegrams in *Devnagri* script during 1965-66 was 341,766, the total number of telegrams handled during the year being 40 millions.

The programmes of improvement and development aimed at reducing the time interval between the initial booking and the delivery of the telegrams. This has necessitated the installation, on an extensive scale, of modern devices such as teleprinters and tape-relay systems to avoid repeated handling of telegrams and the gradual replacement of morse working. Further improvement, such as additional teleprinter exchanges, telex services and voice frequency telegraph channels, contemplated during the Fourth Plan period.

The financial results of working of the Telegraph Branch during 1968-69 may be seen from the following Table:

TABLE XXXVI

Financial Results of Working of the Telegraphs Branch during 1968-69

	In crores of Rs.
Total revenue	22.52
Total net working expenses*	25.90
Dividend to General Revenues	4.06
Deficit	—7.444
Progressive capital outlay	103.22
Balance in Renewals R. Fund	—16.68

*Includes dividend and contribution to Renewals and Reserve Fund.

Telephones: In 1881 and 1882, the Government of India granted to the Oriental Telephone Company licences to establish telephone exchanges at Bombay, Madras, Calcutta, Karachi and Rangoon. Permission was given to the company to erect private lines each under a separate licence in the localities not covered by the exchange licences.

In 1882, the Bombay Telephone Company, to which the licence was transferred, was established under the Companies Act with a nominal capital of Rs. 9.4 lakhs and 90 subscribers. The Bengal Telephone Company started in the previous year with 102 subscribers. In smaller towns, the Government itself assumed the reponsibility to run its own telephone system. Even in the larger cities like Bombay and Calcutta, where private companies had been given the licences to run the services, the Government had its own telephone system for its offices.

The policy in regard to telephones was laid down in the Simla resolution of October, 25, 1883, which stated that the Government of India had no desire to compete with private enterprise in the matter of telephone exchanges in the country but reserved to itself the right to undertake such business in places where private agencies were not prepared to take it up. Also, so long as the business was conducted satisfactorily and in terms sufficiently advantageous to the public there would be no necessity of taking over.

By 1900, there were 46 departmental exchanges with 401 exchange connections and 535 private lines. The telephone companies at Calcutta, Madras, Bombay, Karachi, Ahmedabad, Rangoon and Moulmein had 2,005 connections and 273 private lines. The magneto exchanges eventually gave way to Central battery exchanges and later to the automatic. A number of public call offices were also functioning in places such as Mussoorie, Landour, Dehra Dun and Kulri Bazaar.

On January 1, 1907, irrespective of the number of calls, uniform rates were made for 8 hours', 16 hours' and 24 hours' service at Rs. 120, Rs. 135 and Rs. 150 per annum, respectively, on all connections not exceeding 2 miles in length from the departmental exchange. Internal installation charges were also made to vary respectively for these different hours of working at Rs. 90, Rs. 100 and Rs. 112 per connection not worked by the Telegraph Department.

In 1914, the first automatic telephone exchange was installed at Simla; the second at Poona. Automatic exchanges were later extended to Ootacamund, Gomoh, Allahabad, Delhi and Lahore. The telephone companies in Bombay and Madras also kept pace with developments replacing their system by automatic system.

By 1920-21, there were in the country 255 exchanges with 10,703 connections owned and maintained by the Government of India, of which a few were not operated by the Department. The gross rental from

the Railways and Canals was Rs. 14.84 lakhs. The licensed telephone companies owned 11 exchanges with 20,335 connections and these earned Rs. 34.91 lakhs. The trunk lines extended to 9,034 km.

The inter-war period witnessed a boom followed by a world wide depression. During this period, there were a number of changes in the service and technical sides — in 1923, a 145 km. long distance channel between Lahore and Lyallpur, the use of a single channel carrier between Delhi and Agra in 1930 which brought telephone communication without erection of additional wire, and radio-telephone connection between England and India in 1933 and with Burma in 1936. When the World War II broke out there was a sudden demand for communication facilities from the administrative and defence services. The Telecommunication Development Board was set up in 1942 to co-ordinate the requirements and the plans for expansion.

During 1941-43, the Government of India exercised their option to terminate the licences of the private telephone companies and the Department took over the administration of the Bombay, Calcutta and Madras telephones. After the termination of the war and, when independence came, it became possible for the Department to undertake expansion of its services on a scale adequate to the growing requirements of the country. The Federal Financial Integration of the States into the Union on April 1, 1950, brought with it the lines previously operated by them, consisting of 196 exchanges of varying capacities, designs and installed capacity with 13,362 lines and 11,296 working connections.

Progress under Five Year Plans: Together with the expansion of development of the telephone system of the country came also the modernization of the equipment and their housing in new buildings. With the commencement of the Five-Year Plans, the schemes of the Department were integrated into the overall national plan. During the First Plan, for which Rs. 39.59 crores were provided, considerable progress was made on the schemes of automatization and expansion of the Calcutta exchange which had not responded to these changes during the company management; further progress was made in the development of the Madras and Bombay exchanges. By the end of the First Plan, 109,600 telephones, 347 trunk exchanges and 44,803 carrier telephones were added to the system. By the end of the Second Plan, 183,400 telephones and 564 exchanges were installed. By the end of the Third Plan, 401,000 telephones were added giving a total of 870,000 connections.

During the Third Plan and the Annual Plan period of 1967-68 and 1968-69 the increases recorded against partical items are shown in the following Table:

TABLE XXXVII

Development During the Third Plan and Annual Plans Relating to the Telephones

		Third Plan 1961-62 *to* 1965-66	*Annual Plans* 1967-68	1968-69
(1)	No. of telephone exchanges opened	1,537	266	271
(2)	No. of direct exchange lines installed	359,240	65,374	67,058
(3)	No. of telephones instlled	396,415	83,819	103,630
(4)	Micro-wave route opened (km.)	190	200	100
(5)	Coaxial route opened (km.)	3,150	552	..

The quality of the service to the public has been steadily improved. Among the changes introduced in recent years may be mentioned the progress of long distance dialling. In November 1960, the subscriber could trunk dial on the Kanpur-Lucknow line. The "Own your Own Telephone" system introduced in 1949 enabled the applicant to get a telephone on advance payment of Rs. 2,500 at Bombay and Calcutta and of Rs. 2,000 at certain specified places, being 20 years' advance payment of rent involving no further payment during this period except the maintenance and call charges. "Own your Own Exchange" came next in 1950, whereby the Department undertook to open a small exchange at any station when a loan of Rs. 50,000 at $2\frac{3}{4}$ per cent interest repayable at the end of 20 years was forthcoming. Under the "Phoncom" service introduced in 1950, telegrams in Indian languages by telephone can be transmitted. The extension of trunk telephone facilities at the district headquarters and exchanges at these places having a population of 20,000 during 1954 brought the facilities of telephonic communications to places which never had them before. There are departmental testing organizations at Alipur, Jabalpur, Bombay, Bangalore and New Delhi.

In recent years, other changes designed to cater to wider public needs have been introduced. The "Shared Phone Service" by which those who have not been able to get the connection may share with an OYT (*own your own telephone*) or a non-OYT subscriber on certain prescribed rentals. Some progress has been achieved in bringing out Telephone Directories in Hindi and other regional languages. Cross-bar exchanges, now manufactured in Indian Telephones Industries, are being commissioned at an increasing number of places. As of 1969-70, about 17 places are under cross-bar installation. Telegraph service in *Devnagri* script has been extended to more and more offices, the total number as on December 31, 1969 being 3,444. Teleprinter Exchanges (Telex), first introduced in the country on a nation-wide basis in June 1963, with the simultaneous commissioning of 200 telex lines at Delhi, Calcutta, Bombay and Madras, have been extended to other places. Telexes have , during 1960-70, increased to 27, with an installed capacity of

6,560 lines. International Telex service, direct and switched, has been extended to a steadily increasing number of foreign countries. From 1,140 calls in 1960-61 the number has gone up to about 155,000 in 1968-69 and from 12,000 minutes to well over a million during this nine-year period. New trunk telephone exchanges are being opened, and point-to-point subscriber trunk dialling introduced on new routes. The aim is to facilitate national subscriber dialling. New micro-wave relay systems are being established. Other facilities, such as, long distance postal call offices, standard application form to expedite processing of applications for connections, the measured rate system for local calls, leasing of wireless links, services on special occasions to coastal station to rescue operations to ships in distress at sea — indicate the extensive range of activities of the Department.

Manufacture of Telephone Equipment: With a view to attaining self-sufficiency in telephone equipment, the Indian Telephone Industries was set up in 1948 as a Government undertaking under a 15-year agreement with the Automatic Telephone and Electric Co. Ltd., Liverpool. At the end of the Second Plan, the production of exchange lines increased from about 50,000 to 120,000, besides transmission equipment worth about Rs. 64 lakhs. At the end of the Third Plan, the production of exchange lines was expected to increase to 100,000 and to 160,000 telephone instruments along with a substantial expansion in the transmission equipment. Actually, by 1967-68, the production of Indian Telephone Industries amounted, under automatic exchange equipment, to 216,000 telephones, 658 multiple racks, 961 miscellaneous racks, 42,286 small exchange lines, 58,600 switches and 23,000 relay sets. Under transmission equipment, the production in 1967-68 made progress and, during the year, several new items were also taken up for production. The sales amounted to Rs. 20 crores. The company made a profit of Rs. 153.29 lakhs after providing for taxes. The undertaking also entered the export market in respect of sale of equipment to a number of countries.

Teleprinter Production: The Hindustan Teleprinter Factory was started in December 1960 with the Government holding all the shares and with Italian collaboration, namely, with Messrs. Olivetti of Italy. Production of teleprinters reached 3,800 by 1967-68, the indigenous content being steadily increased to 84 per cent of the bought out components of major parts. The expansion programme now envisages a production capacity of 8,500 units by 1970-71 as compared with the earlier target of 1,300 teleprinters by the end of 1963-64. The manufacture of *Devnagari* teleprinters has been started and the first batches had been released for use in July 1968.

Overseas Communication Service: Prior to the Government of India taking over, the external communication services were under the India Radio and Cable Communications Company, itself being the successor of the Cable Companies operating in India since 1870. The Overseas Communication Service was constituted as a nationalized undertaking under a Director-General with headquarters at Bombay on January 1, 1947. With a network then consisting of two submarine cable telegraph services, five radio telegraph services, one radio telephone service to U.K. and a restricted radio-telephone service to U.K., India was primarily dependent upon London as the clearing house for most of her overseas telecommunications traffic.

There has been considerable expansion since then. By the end of the Second Plan, India had, through 25 wireless telegraph, 25 radio-telephone and 12 radio-photographic services, established direct radio contacts with 28 countries.

The service, with its four gateway centres at Bombay, New Delhi, Calcutta and Madras, handles the submarine telegraph cable system from Bombay and Madras and the radio-telegraph and radio-telephone systems from all four centres. The submarine telegraph cables are owned and maintained by Messrs Cable and Wireless, London. By switched service, these direct connections with the international trunk routes are available with practically all countries of the world. Radio-telephone is also available *via* London to a number of ships of British, American and other foreign registries. It has also provided other services, such as multi-address broadcasts for Indian diplomatic posts abroad, news transmission services from Bombay for press, leased telegraph channels for long-distance radio-typewriter to private customs and the international telex service, enabling the subscribers in Bombay to have immediate teleprinter connection with another in the U.K. or any one of a number of other countries. Radio-photo services are available with 28 countries.

The financial results of working and traffic of the Overseas Communication Service are summerized in the following Table.

TABLE XXXVIII

Financial Results and Traffic of the O.C.S. for Select Years

(In thousands)

Year	*Gross Revenues*	*Net Profit*	*Capital Assets*
	Rs.	Rs.	
1950-51	147,24	46,61	72,75
1956-66	175,58	43,40	148,28
1960-61	214,80	69,32	270,35
1963-64	285,25	127,22	401,61
1964-65	421,30	117,86	421,30
1965-66	362,16	178,65	441,24
1966-67	491,89	261,35	477,31
1967-68	497,07	245,04	500,69
1968-69 est.	537,37	263,69	990,68

Traffic **Radio Photo**

Year	Radio Telegraph		Radio Telephone		Telex Traffiic	
	Messages (million)	*Words*	*Minutes (thousands)*	*Sq. Cms. (thousands)*	*Calls (thousands)*	*Minutes*
1950-51	2.64	70.08	51.96	27.1	..	..
1955-56	2.97	78.33	138.61	124.83	..	..
1960-61	2.79	77.69	287.86	346.40	1.14	12.8
1963-64	2.83	87.79	254.41	319.05	15.13	103.1
1964-65	2.98	96.51	280.66	712.92	44.80	306.3
1965-66	3.06	119.03	362.82	919.10	75.58	541.0
1966-67	3.16	98.95	423.29	473.35	84.72	589.1
1967-68	3.23	102.97	520.00	1,010.00	114.56	803.7
est. 1968-69	3.39	108.00	..	..	155.00	1,080.0

The growth in demand for overseas tele-communication facilities in India has reached proportions which cannot any longer be met by conventional HF radio facilities. India has, therefore, to provide herself with modern facilities like wide band micro-wave communications *via* satellites. India has joined the international consortium of nations set up for installing a global communication satellite system. India's share of capital participation in this consortium is one half of one per cent. Plans are in progress to establish an earth station at Arvi, near Poona to utilize communication satellite facilities when they become available to this part of the world.

TABLE XXXIX

Growth of Postal and Telecommunication Services from 1957-1962

	1856-57	1913-14	1948-49	1956-57	1964-65	1965-66	1966-67	1967-68	1968-69
1. Post Offices	787	18,946	26,760	58,871	96,895	96,936	97,080	99,833	102,477
2. Combined Offices	—	3,147	3,284	5,511	8,216	8,581	8,289	8,704	8,970
3. Postal articles handled (Total No. in Millions)	38	1,050	2,264	3,262	5,714	6,555	6,212	6,285	6,152
4. Unregistered parcels & packets (Millions)	—	65	199	342	578	615	—	—	—
5. Insured articles No. (Millions)	—	2.9	3.6	4.7	5.3	5.5	6.0	6.1	6.0
Amount (Crores)	—	Rs. 73	Rs. 146	Rs. 139	Rs. 157	Rs. 172.0	Rs. 224	Rs. 236	Rs. 223
6. Money Order No. (Millions)	—	31	44.9	67.4	91.4	91.5	96.7	94.5	95.8
Amount (Rs. Crores)	—	Rs. 57	Rs. 150	Rs. 247	Rs. 434	Rs. 477	Rs. 507	Rs. 559	Rs. 559
7. P.O. Savings Bank Accts. No. (Millions)	—	1.6	3.4	6.4	12.1	13.7	15.2	17.0	18.4
Balance of credit (Rs. Crores)	—	Rs. 23	Rs. 149	Rs. 322	Rs. 556	Rs. 644	Rs. 702	Rs. 760	Rs. 812
8. Postal Life Insurance Policies	—	—	92,629	139,910	177,508	188,678	190,502	200,885	221,508
Amount invested (Rs. Crores)	—	—	Rs. 19	Rs. 33	Rs. 42	Rs. 45	Rs. 49	Rs. 53	Rs. 61
9. Surface Mail Routes (Miles)	36,933	155,806	138,924	253,256	634,169**	675,165**	666,082**	661,680**	670,514**

TABLE XXXIX (Contd.)

	1856-57	1913-14	1948-49	1956-57	1964-65	1965-66	1966-67	1967-68	1968-69
10. Air Mail Routes	—	—	N.A.	19,416	58,683**	60,065**	61,580**	61,194**	4,1,563**
11. Staff	25,000	106,000	168,600	301,800	470,370	490,354	505,659	519,608	534302
12. No. of Telegraphic Offices	144*	10,340	7,781	10,052	12,151	12,612	13,019	13,539	14,594
13. No. of Telegrams (Million)	N.A.	17	27	35	41	44	44	46	49
14. Telephone Exchanges	—	130	2,800	6,202	11,233	12,701	13,429	14,132	15,182
15. Trunk Phone Calls (Millions)	—	—	4	21	54	58	57	63	71
16. Telephones No.	—	5,193	120,000	309,000	766,000	858,000	933,000	1,017,000	1,120,000
17. Capital Outlay end of year	—	N.A.	Rs. 40	Rs. 100	Rs. 234	Rs. 265	Rs. 295	Rs. 321	—
18. Expenditure Postal (Crores)	Rs. 0.36	Rs. 3.05	Rs. 18.27	Rs. 31,42	Rs. 60.65	Rs. 68.92	Rs. 78.29	Rs. 88.35	Rs. 100.14
Telegraphs and telephones (Crores)		Rs. 1.36	Rs. 8.37	Rs. 18.91	Rs. 62.78	Rs. 68.55	Rs. 81.05	Rs. 98.53	Rs. 111.17
19. Revenue Postal (Crores)	Rs. 0.28	Rs. 3.61	Rs. 16.70	Rs. 32.75	Rs. 59.37	Rs. 66.00	Rs. 70.15	Rs. 74.24	Rs. 93.98
20. Telegraphs and Telephones (Crores)	—	Rs. 1.56	Rs. 12.71	Rs. 23.99	Rs. 64.09	Rs. 71.54	Rs. 89.19	Rs. 100.07	Rs. 115.22

* Relates to 1862-63 N.A. Not available **Kilometres