

# KARNATAKA STATE

## CHAPTER VII

### TRANSPORT AND COMMUNICATIONS

**T**ransport and communication system of a territory has been often compared to the nervous system of blood circulatory network in a human body. Economic activity can prosper only when these facilities are properly organised. The existing railway network is inadequate and inland water transport is yet to develop in Karnataka.

Ancient Karnataka had a considerably good road network, and trade could flourish only because of its existence. The flourishing ports of ancient Karnataka were connected with the hinterland. Military and administrative needs of the rulers forced them to have road constructed and properly maintained. We hear of *rajapatha*, *rajaveethi*, *rajamarga*, *heddari*, *hiriya heddari*, *hebbatte*, etc., in inscriptions. There was a *hebbatte* (big road) connecting Terdal and Halasi, two important commercial centres in North Karnataka according to a record of 1123. A Chola record from Tamilnadu speaks of a major road between Tanjore and Kalyana (Chalukya capital). There is also reference to *bandidari* or cart road, and a Tiptur taluk record speaks of their common ownership. These roads had *aravattiges* where water was provided and resting places like groves and *chhatras* (choultries) existed. *Manasollasa* makes a mention of an official called *margadhikarana* who was in charge of maintenance of roads. We hear in inscriptions of a very huge road called *Doddamarga* connecting Konkan with the interior in Karnataka, the vestiges of which are seen even today between Goa and Belgaum. Records speak of *kadahu* or *haygada* (ferries) across rivers and also the use of boats and basket boats (*harigolu*). There was a bridge connecting Hampi and

Anegondi across the Tungabhadra, the remains of which are seen even today. The travellers who visited Vijayanagara also speak of the highways in the Empire. Paes speaks of his travel from Bhatkal to Vijayanagara *via* a town called Darcha (not identified). This road, in fact, passed through Bankapura. There was a road connecting Vijayanagara with Dwarasamudra, and another with Raichur *via* Adoni. Another road from the capital reached Shivasamudram and thence to Srirangapattana and Mulbagal.

Transport of goods was by headload or by carrying a *hasibe* (a kind of bag put on shoulder), *kavadi* or by pack animals like bullocks, asses or he-buffaloes. Carts were used wherever there were roads. While speaking of Bhatkal port, Paes says that "every year there come five or six thousand pack-oxen". Palanquins were used by well-to-do to move from place to place in addition to carts and horses. Pietro Della Valle who visited Ikkeri in 1623 says that "The way between Ikkeri and Sagar is very handsome, plain, broad, almost totally direct, here and there beset with trees which make a shadow and delightful verdure."

### Road Development

*Old Mysore Area:* Roads in old Mysore were narrow, tortuous village tracks, partly passing through dense forests and mountainous parts of the Western Ghats. The means of conveyance then adopted were crude country carts drawn by animals bearing little roads to suit the small local requirements of the ryots.

Tipu and Haider had maintained the old roads well and in proper order. There is a bridge of their times across the Cauvery near Srirangapattana. During the rule of Haider Ali and Tipu Sultan, the necessity for roads suitable for carrying heavy guns began to be felt. Efforts were made by Tipu to construct roads for moving troops and heavy guns. According to Col. Dew who was a Commissioner under the British in the West Coast, Tipu had visualised and carried into fruition a grand work of inter-communications from his capital, Srirangapattana, to the various places he conquered. In fact, during the wars with the British, Tipu moved considerable forces and arms through these roads. No details are available about Tipu's "gun roads", except the fact that they were hastily improvised tracks which soon fell into disuse. But better roads, metalled regularly, and provided with bridges is a legacy of the modern period. The railways too were a legacy of the British. Till about the middle of the 19th century road making was tardy and

haphazard. In June 1856, the Department of Public Works was constituted in the old Mysore State and maintenance of roads was completely handed over to the new department. By 1873, the Public Works Department was created with two distinct branches: one for construction of roads and buildings and the other for irrigation. The Superintendent of Maramat was in charge of roads and irrigation works from 1834.

In 1831 there were only three trunk roads worth the name. They were, the road from Naikneri to Mysore *via* Bangalore, the road from Srirangapattana to Sira and on to Bellary and the road from Bangalore to Harihara. But these were not all-weather roads and in indifferent state, often swampy and difficult to negotiate. During the administration of Sir Mark Cubbon (1834-61), roads were classified as imperial, provincial and village roads. His period saw some vigorous road-making efforts and considerable sums of money were spent on the improvement of road communications between Bangalore and the various district headquarters towns. Communications before the days of the Original Settlement in 1870 were very bad, there being only one road between Bellary and Bangalore passing through Pavagada taluk. The road was in a state of decay in 1872 when Col. J. P. Grant attempted to survey the area where that particular road existed. During the period between 1831 to 1856 the famous ghat roads opening out of the hilly tracts of *malnad* were formed. All district headquarters came to be connected with Bangalore by 1856 by roads. The new ghat roads were Kogar Ghat, Hyder Ghar Ghat, Agumbe Ghat, Bhund or Charmadi, Maranahalli Ghat and Bisle Ghat. Altogether 1,597 miles of roads, 309 bridges of 20 feet span and 1,998 culverts were constructed between 1831 and 1856. In 1920, the total length of State Fund Roads was 2,813 km and that of the District Fund Roads was 5,384 km. The progress of road development in the old Mysore area for some years from 1925-26 to 1950-51 is given in the following table.

(length in km)

Year	Length of State Fund Road	Length of District Fund Road	Total
1925-26	3,318	5,146	8,464
1939-40	3,567	6,033	9,600
1943-44	6,865	7,388	14,253
1950-51	8,837	10,635	19,472

**Bombay-Karnataka area :** In the Bombay-Karnataka area the state of communication was not satisfactory and even as late as in 1844 there were hardly any roads suitable for bullock carts for all seasons. Construction of bridge across the river Tungabhadra near Harihara by about 1856 and another bridge over the Varada near Karjigi in 1866 made it possible to connect the old Mysore with Pune *via* Hubli-Belgaum. Financing of roads from local funds in 1864 enabled the district authorities for improving the roads which further facilitated the improvement of marketing, trade and commerce. In Bombay-Karnataka area there were only two lines of communications ; one from Shikaripur (Shimoga dt.) to Bijapur and Sholapur and the other from the Sea (Bombay) to the Nizam's territory through Bagalkot as in 1820. These two roads were also rough and tracks were hard to cross for loaded animals and impossible for vehicles. By about 1826, a fair-weather road of about 96 km from Pandharpur to Bijapur was built. In 1883, it has been recorded that there were three provincial roads and fifteen local fund roads in the area. Of them, Sholapur-Hubli road having a road length of about 180 km was the main line of communication between the marketing places on the way and the Sholapur Railway Station. This road which stretches from the Bhima in the north of Bijapur through the trade centers of Bijapur and Bagalkot to the Malaprabha in the south, was a very important link in Bijapur district. The only bridges on this road were a few slab drains near Bijapur, Simikeri and Govankop. It was unmetalled over the entire length and it had five great unbridged river crossings. The road was fit for traffic only during the hot season and for a part of the cold season, generally from the end of November. The two other provincial roads were the Pansagaon-Bagalkot road and the Bijapur-Nagaz road. The first road started from Pansagaon passed through Belgaum district and entered the Bijapur district. It was a fair road during the dry season but was almost impassable during the rainy season as the major portion of it passed through black soil areas. This road is now Vengurla-Belgaum-Bagalkot-Bellary State Highway. The second road from Bijapur to Nagaz was 22.4 km long and was unbridged and whenever it came across black soil, it became impassable especially during the rainy season. Of the 15 local fund roads the two most important were the 44.8 km long Bagalkot-Hungund road and the 169.6 km long Sholapur-Bellary road. The former road was not passable during the rainy season but the latter road passed through Indi, Hippargi, Muddebihal, Hungund and Ilkal. This road was originally intended to be a military trunk road to Bellary but it was never completed. The other local fund

roads were mostly used in fair-weather. Many of them were unmetalled, unbridged and presented enormous difficulties during the monsoon season. They had many river crossings and the road traffic had to be maintained by means of ferry services. It is interesting to note that there were 43 such ferries in the region in 1882 – 21 over the Krishna, 12 over the Malaprabha, five each over the Bhima and the Ghataprabha. It is estimated that the total road length by 1951 in this area was about 8,000 km.

*Hyderabad-Karnataka Area:* Though it is not possible to give an exact account of the condition of road communications during the reign of many dynasties which ruled the Hyderabad-Karnataka Area, roads must have existed even then but the nature of these roads and their alignment have not been described sufficiently anywhere. Inscriptions, which are numerous speak of the existence of roads and their maintenance for military needs. Many inscriptions relating to the Rashtrakuta dynasty describe the roads as great and small and kept in good condition. They were generally maintained by local authorities, the villages being expected to give the labour force to upkeep the roads. The breadth of the main road seems to have been about 24 ft. There were also tracks in those days slightly better than foot paths which were apparently impossible for wheeled traffic. During the rule of the Bahmani Sultans the inland trade was no doubt facilitated by a system of good roads in existence at that time. There is no authentic information to say which of the roads took off from the administrative capital of the Bahmanis, but it is possible that a good arterial highway existed from Delhi to Daulatabad. The road from Daulatabad continued into Telangana and the Deccan.

With the decline of the Mughal rule, the system of communications deteriorated due to never-ending wars in the Deccan Plateau. After the death of Aurangzeb in 1707, Nizam-ul-Mulk Asaf Jah I declared independence and began to rule the State of Hyderabad. It was after this event that the real road-making commenced, mainly for defence needs. The oldest road in this part of the State (*i.e.* Gulbarga division) is the one which runs from Gulbarga to Ferozabad *via* Kotnur, Nandikere, Sirur and Parwatabad. This road which runs south from Gulbarga was mainly used by the defence forces from Gulbarga to Shorapur. During the rule of the successive Nizams, the construction of roads and their proper maintenance progressed. The Gulbarga-Humnabad road and the Gulbarga-Aurangabad road are also among the oldest roads in the area. The Paigah *jahgirs* had their own roads and these roads were maintained by the Jahgirdars. The

pattern of revenue administration in this area in the past was an obstacle in aligning long distance roads. The feudal order of *Jahgirs* had their own system of administration and the Jahgirdars took little or no interest in laying out good roads. Thus road development in this area prior to the Reorganisation of States was comparatively poor and in recent years, there is improvement in road communications. The total road length in this region was about 1,800 km by about 1951.

*Kodagu Area :* There is no authentic information about old-time trade routes in Kodagu district except for some observations of surveyors who have described the state of affairs prior to the British annexation of Kodagu in 1834. Lt. Connor, in his "Memoir of the Codugu Survey" published in 1817, has stated "Codugu broken by hills covered with woods having but indifferent roads and no large towns, holds out but few temptations to an extensive inter-course with its neighbours." No attention was paid to the development of road communications during the reign of the princely rulers of Kodagu. It was the policy of those who ruled the areas before the British to make the country as inaccessible as possible. Before 1834, roads in Kodagu were in a primitive state, wholly unfit for wheeled carriages and difficult even for bullocks.

The earliest road construction work in Kodagu was begun in January 1835, a year after the British took over. The road from Fraserpet (Kushalnagar) to Madikeri, a distance of about 20 miles was completed in two years and was opened for traffic. This route from the Mysore side to Madikeri had to cross the river Cauvery over which a bridge had to be constructed. This bridge at Kushalnagar was opened for traffic in 1848. The portion of the road near Madikeri is in several places very steep and has many hairpin curves. The next important road in this area was through the Sampaje Ghat, taken up in 1837. This was the road from Madikeri to Mangalore which is also called "Fast's Ghat" named after an engineer who planned and executed the road and died at the spot of jungle fever. This road was laid in good soil with a gentle slope down the valleys so as to facilitate cart traffic of those days. Another important old-time road from Cannanore in Kerala towards Kodagu which was completed by 1849 passed through the Periyambadi Ghat. This road was laid mainly for military purposes. Shortly afterwards a road was laid from Virajpet to Madikeri connecting the Periyambadi Ghat road. This line was linked to Kodlipet from Madikeri in 1868. Beyond the twelfth mile, the Cauvery had to be crossed and in the old days a ferry service was provided. From this point to Virajpet the road is level. Near about

Virajpet the Periyambadi Ghat descends towards Kerala. The northern high road which is also old, constructed near about 1870, connects Madikeri with Sakleshpur in Hassan district through Somwarpet and Kodlipet. In addition to the roads maintained by the Government funds, there are also roads laid out by the planters of Kodagu without any government assistance.

Before the First World War, Kodagu had 205 miles of metalled road and by 1927 it was increased to 253 miles. By 1935, a network of village communications was opened by the State and District Boards. In the year 1953, it had 253 miles of metalled roads, 132 miles of gravel roads and 73 miles of local fund roads. The roads leading to the headquarters town were widened upto 1953, more than 80 miles of road were asphalted. Before Kodagu became a part of Karnataka, there were ten main roads, namely 1) Madikeri-Mangalore *via* Sampaje, 2) Madikeri-Kerala *via* Makut, 3) Madikeri-Kerala *via* Kutta, 4) Madikeri-Hunsur *via* Kushalnagar, 5) Madikeri-Hunsur *via* Gaddige, 6) Madikeri-Hunsur *via* Anechowkur, 7) Madikeri-Konanur *via* Sirangala, 8) Madikeri-Arakalgud *via* Shanivarasanthe, 9) Madikeri-Sakleshpur *via* Shanivarasanthe and 10) Madikeri-Hassan *via* Kodlipet. There is also a network of internal village communications reaching almost every village in the district.

*Madras Area :* The two districts which have been added from the old Madras Province were Dakshina Kannada and Bellary. Communications were indeed a problem in Dakshina Kannada because of the rugged and mountain ridden nature or portions of the district. Even small streams assume river-like proportions during monsoon months. Even at the close of the 18th century, when the district came into the possession of the East India Company there were only a few roads as distinguished from cart roads. There was no improvement in urban roads. The mountain passes were used in the later wars for the passage of artillery but they too had been very much damaged by the monsoon rains. A proof of attention given to the important roads was to be seen in the fine avenue of trees grown. Care had not been bestowed to keep the pathways in good condition and in many cases they had been worn down by traffic and washed by the rains of the monsoon and they had become the drain for the rain water. The entire length of the road looked rugged. The backwaters of the sea and the rivers near the sea were made use of, but the boats in use were canoes carved out of tree trunks. Generally these were not well-suited for carrying cargo. Considerable traffic was carried on by means

of coastal craft, but that was expensive, slow and risky unlike the *donies* of the East Coast.

However the position underwent a change early in the 19th century. The mountain passes were used for the passage of artillery and troops by the Rajas, but after the war they were no longer kept in order and became again very rugged. Later, a corps of pioneers was employed in laying out the more important roads and in opening of the passes of the Nilgiris and the Western Ghats. Among the most laborious undertaking of the time were the Bisle, the Higgeloh and the Periah Ghats, which had been abandoned except as local passes for Manjarabad, Sampaje and Periambadi respectively. In the course of the early years from 1837 to 1843, some important roads were opened or improved. Madras was connected with Mangalore *via* Bangalore, Mysore and Madikeri and the stations on the West Coast. At that time there was a revolt against the Government in Kanara and the road was intended for movement of troops. The Sampaje Ghat was the first of the western passes opened and is a standing monument for the genius of Lt. Fast. The chief roads then were the coast road from Baindur to Kavoy 216 km (135 miles), the Calicut-Panemangalore road traversing the Kasargod taluk (now in Kerala) and passing through Hosadurg and Vittal, the roads passing through Sampaje and Agumbe Ghats, the Kodkal Ghat road *via* Charmadi to Bantwal and from there to Mangalore.

In 1936 there were 2,372 km of roads and for every 2.74 square mile area there was one mile of road in the district, of this 1,390 km were motorable. There was lack of good road communication between this district and Malabar on the south and Uttara Kannada on the north. The want of through communication from Calicut to Kundapur and from there to the then Bombay Presidency *via* Bevinje, Bantwal and Karkal was keenly felt.

The mountain passes on the Western Ghats have been utilised to open up communication from the old Mysore area and Kodagu with Dakshina Kannada. Among the major roads laid through the picturesque valleys are Hulikal Ghat Road, Shiradi Ghat Road, Bisle Ghat Road, Agumbe Ghat Road, Nagodi Ghat Road and Sampaje Ghat Road. Originally these roads were *kachcha* roads, the Sampaje Ghat Road offers an easy passage up the ghats. But the most difficult road is the Agumbe Ghat Road from Someshwar with a drop of nearly 2,000 ft from Agumbe to Someshwar. The Charmadi Ghat Road contains sharp hairpin bends and passes through a deep valley. The Shiradi Ghat Road had also many



curves and after it became a part of the National Highway, it has been widened and most of the curves have been straightened. The Hulikal Pass road has several weak bridges and the road is very narrow with little or no bunding on either side. By about 1951, the total length of the road in Dakshina Kannada was about 2,000 km.

Till about two decades ago, vehicles, old and modern, were transported across the rivers and streams with the help of floating rafters built on small boats like *teppas* rowed from one end to the other. Ferries have been a unique characteristic of traffic in the district. The roads in Dakshina Kannada were formerly under the control of the District Board before the formation of the Highways Department in 1946. Maintenance of these roads were attended to by the engineering establishment of the District Board. The condition of these roads under the District Board was not satisfactory due to the limited financial resources.

During the time of the old ruling dynasties, and especially during the days of the Vijayanagara rulers, there existed a good system of road communication in Bellary district. Well-known travellers like Razzak, Paes, Nicolo Conti and Barbosa have all noted in their travelogues the excellent system of road communication in the Vijayanagara empire. According to the writings of some of these travellers, there was a highway from Vijayanagara to Goa, facilitating the flow of merchandise from the West Coast to the capital of Vijayanagara. Due to the ravages of war, recurring famines and the decline of the Vijayanagara empire, these roads became mere cart-tracks owing to disuse and neglect. By the middle of the 19th century, the condition of road communication in the area was such that there were no roads worth the name. Major Henderson, Civil Engineer in charge of the area said in 1852: "Roads there are none deserving the name. They are mere tracks". It was in the middle part of the 19th century that the roads were laid in the district.

Travellers in the old days were able to reach Bellary from the old Mysore State without much trouble. From there, it was difficult to go northward for want of good roads or rest houses. No attempts were made to form roads or to make the tracks passable. The condition of the road northward to Adoni was also the same. A beginning in road making was made in 1851 by constructing a highway from Bellary to Dharwad through Hospet and also a road from Bellary through Hirehalu to the old Mysore border. As a result of this, an outlet for the cotton grown in the

district was made to the West Coast. In the middle of the 19th century, there were several roads in the district linking Bellary to places outside the district. Some of the important old-time roads were: Bellary-Dharwad road *via* Hospet and Hampasagar, Bellary-Siruguppa road, Bellary-Kurnool road *via* Moka, Adoni-Siruguppa road, Kudligi-Somalapura road and Hospet-Sandur road. When the famines occurred in 1866 and 1876, the construction of roads received a further impetus. The district had a few tanks or irrigation channels at that time, and the formation or improvement of roads was the only relief work. In 1876, a sum of Rs 56 lakhs was spent on the construction of new roads and another sum of Rs 12 lakhs on repairs. The rivers of the district had not been bridged anywhere in the middle of the last century and there were not even causeways. At the close of the 19th century, the chief metalled roads were Bellary to Dharwad, Bellary to Siruguppa, Bellary to Kurnool, Adoni to Siruguppa, Adoni to Nagaladinne, Madhavaram to Aspari, Halvi to Malapalli, Kudligi to Somalapura and Hospet to Sandur.

In 1928, a road bridge across the Hagari on the Madras-Bombay trunk road was opened. Most of the roads in the district which were unmetalled, were metalled by 1930 and made fit for motor car and bus traffic. When the Bellary district was under the control of the then Madras Government, there were only two trunk roads, *viz.*, Hospet-Mysore frontier road of a length of 100.18 km and Madras-Hospet road of a length of 122.31 km. There were 20 branch roads in the district in 1930 and they were Adoni to Siruguppa, Alur to Nagaladinne, Aspari to Madhavaram, Bellary to Siruguppa, Guntakal to Alur, Bellary to Kudatini, Chippigiri to Alur, Chippigiri to Tuggali, Gundalapalli to Bellary, Harapanahalli to Hadagalli, Harapanahalli to Somalapura, Hirehalu to Aspari, Hospet to Sovenahalli, Kudligi to Gowripur, Rachmari to Halvi, Rayadurg to Kanekal, Hospet to Kampli, Rayadurg to Kuderu, Toranagal to Ramadurg and Hospet and Kudatini to Kampli. The road mileage of the old Bellary district was 881.92 km in 1871-72, 1,355 km in 1901-02 and 1,639.92 km in 1925-26. When Bellary was merged with the old Mysore State in 1953 the road length was 1,218.27 km. The total length of provincial highways in 1953 was 200 km while that of the major District Board roads was 416.8 km and that of the other district roads was 482.8 km and that of village roads was about 112.6 km. The total length of the roads in the seven taluks of the district was 1,218.27 km. In 1956, the road length in charge of Public Works Department alone stood at 1,137 km and this went upto 1,639 km by 1970.

**Development of Roads after 1956**

The total road length existed in the various districts of the State was 43,182 km out of which the road length in the old Mysore area (including Bellary district) was 26,423 km and that of the Bombay-Karnataka was 11,260 km and Hyderabad-Karnataka 2,478 km while the road length existed in Dakshina Kannada was 2,109 km and Kodagu 912 km. The physical and financial progress achieved in respect of road development that has taken place during the Plan periods is given in the following table.

*(length in km)*

Sl. No.	Details	Actual Achievements during					
		First Plan	Second Plan	Third Plan	Three Annual Plans	Fourth Plan	Fifth Plan
		1951-56	56-61	61-66	66-69	69-74	74-78
1	New length	658	943	1,664	699	1,331	1,422
2	Improvements to existing roads	1,785	1,595	4,582	2,287	5,825	7,565
3	Existing road-length asphalted	...	2,586	5,560	2,202	4,070	1,925
4	—do— cement concreted	...	133	1	...	...	...
5	Length of rural roads formed	...	...	18,340	1,796	6,482	3,925
6	No. of major bridges completed	10	36	122	120	146	42
7	Plan outlay incurred (Rs in lakhs)	696.77	961.68	1,640.35	869.84	2,372.22	3,210.54

The road length in the entire State has been improved substantially during the Plan periods, the total road length in the State increasing from 43,182 km in 1956 to 95,363 km as in 1979 and 98,523 km in March 1981. The road length in charge of the P. W. D. which was 22,177 km in 1956 has increased to 64,375 km in 1979 and 64,628 km in 1981. The above improvement in the total road length is mainly due to the construction of new roads under various rural communication programmes in order to connect the rural areas with a network of roads and also due to the taking over of roads from Taluk Development Boards. The progress of

road development in the State for some years during the period from 1956 to 1981 is given in the table below.

Year	<i>Road length in charge of</i>				Total
	<i>P.W.D.</i>	<i>Irrigation Department</i>	<i>T.D.B.</i>	<i>Forest Department</i>	
1956	22,177	...	19,222	1,783	43,182
1961	34,429	...	9,462	1,778	45,669
1966	40,299	...	12,969	2,101	55,369
1969	45,805	...	15,118	2,362	63,285
1974	51,489	...	25,744	2,714	79,947
1978	62,325	4,920	23,426	2,345	93,016
1979	64,375	5,249	23,397	2,342	95,363
1981	64,628	5,615	25,875	2,405	98,523

The table given below shows the details of road development under various surfaces for some years from 1956 to 1981.

Year	Surfaced road length	Unsurfaced road length	Total	<i>Road length per 100 sq km of area</i>		
				<i>Surfa- ced length</i>	<i>Unsur- faced length</i>	<i>Total</i>
1956	21,917	21,265	43,182	11	11	22
1961	27,315	18,354	45,669	14	9	23
1966	33,653	21,716	55,369	17	12	29
1969	37,752	25,533	63,285	19	14	33
1974	46,258	33,689	79,947	24	18	42
1978	53,651	39,365	93,016	28	21	49
1979	55,738	39,625	95,363	29	21	50
1981	58,129	40,394	98,523	30	21	51

### Classification of Roads

In the development of roads, a national conception is necessary not only because of their strategic importance but also because of their need

for co-ordination between different types of roads. Immediately after the Second World War, to undertake post-war development schemes, the Nagpur Plan was drawn up in the year 1943, which is a landmark in the road development in the country. It also classified the highway system on a scientific and rational basis according to the functions. According to the Nagpur Plan, the roads have been classified into National Highways, State Highways, Major District Roads, Other District Roads and Village Roads. The Plan proceeded on the basis that in a highly developed agricultural area no village should be more than 3.2 km away from a road nor more than 8 km away from the main road, the average distance from the main road being generally less than 2.3 km, in an agricultural and less developed area, no more than 32 km from a main road, the average distance from the main road being nine to ten km in most cases.

The next landmark in the history of road development after the Nagpur Plan is the Chief Engineers Plan of 1961-81 which was drawn up in 1961 by the Chief Engineers of the States and the Central Government. The main objective of this Plan is that every village in a developed and agricultural area should be within about six km from a metalled road and 2.5 km from any road and in a semi-developed area should be within 12 km from a metalled road and five km from any road. In any under-developed and uncultivable area, every village should be within a distance of about 20 km from a metalled road and eight km from any road. The Plan envisages that by 1981, the average length of road would be about 32 km per 100 sq km of area and it also proposed a scheme of priorities which include amongst others provision of missing bridges, improvement to road surface of at least one-lane black-topped surface for National Highways and State Highways, widening of main roads in the vicinity of large towns to two-lane or more and provision of two-lane roads on the major arterial routes. As per the All-India Road Plan of 1961-81 the standards and specifications prescribed for various categories of roads are Express Highways, National Highways, State Highways, Major District Roads, Other District Roads and Classified Village Roads. The existing various categories of roads do not satisfy the above standards and specifications prescribed. In order to bring them to the level prescribed the existing roads are to be improved as shown in the following table.

*(length in km)*

<i>Classification</i>	<i>Length existing as on 31-3-1974</i>	<i>Length requi- red as per the targets laid down in the Road Plan</i>	<i>Additional length required to be upgraded or constructed</i>
National Highways	1,968	3,892	1,924
State Highways	6,086	7,101	1,015
Major District Roads	14,222	15,530	1,308
Other District Roads	9,193	19,513	10,320
Village Roads	48,478	22,466	...
Total	79,947	68,502	14,567

The existing roads of the State do not satisfy the above conditions and specifications. Hence, the implementation of the All-India Road Plan of 1961-81 involves (1) improvements to the existing roads and (2) upgrading or new construction of additional roads. The execution of the above Plan is estimated to cost the National Highways Rs 91.48 crores, State Highways Rs 81.16 crores, Major District Roads Rs 126.29 crores, Other District Roads Rs 140.17 crores and Other Village Roads Rs 67.40 crores.

But with the growing of the economy and in the context of greater emphasis on agricultural production, the importance of rural roads came to the forefront. Hence, the Government of India appointed a one-man commission to make recommendations regarding the development of rural roads in the country in the year 1967. The Committee has defined rural roads as those roads which serve predominantly the needs of village and provide communications not only between one village and another but also from one village to *mandi* (market place) and to the main road. The rural roads include Village Roads and Other District Roads also. The Committee has suggested the following four priorities for phasing the 20-year Rural Road Development Programme, *viz.*, (1) areas where special steps have already been taken for rapid increase in agricultural production, for example, areas of the intensive agricultural districts programme are to be given the first preference, (2) areas where villages will get connected to the existing road system by constructing

just a few short lengths of rural roads, are to be given second preference, (3) backward areas are to be given third preference, and (4) areas where no other means of transport are available are to be given the fourth preference. The above programme was accepted by the State Government and a Master Plan for the development of rural roads has been prepared and is being executed.

### Survey of 1970-71

The Government, through the Public Works Department, conducted a survey in 1970-71 to ascertain (a) the total number of villages connected by all-weather roads, (b) the total number of villages connected by fair-weather and *kachcha* roads and (c) the total number of villages not connected by any road. It was found that out of 26,286 inhabited villages, 10,299 villages accounting to about 39 per cent of the total inhabited villages were connected by metalled and all-weather roads and 9,865 villages forming about 37 per cent of the total inhabited villages were considered to have been connected by unmetalled and partly motorable and partly non-motorable roads and the rest were found not connected by any road. Thereafter statistics were collected every year and in 1981-82 the position of the rural roads was that 7,448 villages (27 per cent) were connected by all-weather metalled and motorable roads, 5,932 villages (22 per cent) by fair weather and motorable roads, 11,451 villages (43 per cent) were connected by *kachcha* and non-motorable roads and the remaining 2,040 (eight per cent) were not connected by any feeder roads.

### Master Plan for Rural Roads

The State Government has drawn a master plan for rural roads with the objective of providing an all-weather road to every inhabited village in the State at a cost of Rs 949 crores. As a first phase of the plan, resource-based plan has been drawn up wherein it is proposed to construct linear waterway of less than six meters and side drains. This plan is being implemented from 1980-81 and the actual expenditure incurred was Rs 2.25 crores in 1980-81. During 1981-82 the outlay was Rs 1.50 crores.

The entire road length has been distributed under various categories of roads as shown in the following table as in some years,

*(length in km)*

<i>Year</i>	<i>Road length under the category of</i>					<i>Total</i>
	<i>National Highways</i>	<i>State Highways</i>	<i>Major Dist. Roads</i>	<i>Other Dist. Roads</i>	<i>Village Roads</i>	
1956	864	5,983	7,006	5,951	2,373	22,177
1961	1,269	6,019	12,614	6,888	7,639	34,429
1966	1,269	6,640	13,180	7,678	11,532	40,299
1978	1,968	7,652	12,921	9,145	30,639	62,325
1979	1,968	7,802	12,895	9,048	32,662	64,375
1981	1,968	7,813	12,901	9,049	32,897	64,628
1982	1,968	7,813	13,200	10,000	32,987	65,968

(anticipated)

**National Highways**

The National Highways are defined as the Highways which connect the Metropolitan cities, the capitals of States, ports and foreign highways and constitute the main arteries of communication in the country. They would also include roads of strategic importance. National Highways were under the complete control of the Central Government with the main object of developing the major trunk roads of the country in a guaranteed manner with effect from 1st April 1947. But later these are maintained by the State Public Works Departments out of the Central Government funds. These roads are generally fully bridged and metalled and in recent years almost all of them have been black-topped.

The State has a total length of 1,968 km of National Highways in 1981 and in 1971 it was 1,269 km. The distribution is in seven National Highways as shown below with distances in the State.

<i>National Highway No.</i>	<i>Name of the National Highway</i>	<i>Length of the National Highway in the State in km</i>
1	2	3
4	Madras-Kolar-Bangalore-Hubli-Belgaum-Poona-Bombay	661.3
4. A	Belgaum-Khanapur-Anmod-Panaji	84.2
7	Banaras-Nagpur-Hyderabad-Kurnool-Bagepalli-Hosur-Bangalore-Krishnagiri-Salem-Madurai-Cape Comorin	124.1



1	2	3
9	Pune-Sholapur-Humnabad-Hyderabad-Vijayawada	75.0
13	Chitradurga-Hospet-Bijapur-Sholapur	408.6
17	Panvel-Panaji-Karwar-Kundapur-Udupi-Mangalore-Cannanore-Calicut-Trichur	258.0
48	Bangalore-Nelamangala-Kunigal-Hassan-Sakleshpur-Mangalore	330.0
Total		1,968.2

Of the above National Highways, the Belgaum-Anmod-Panaji road was declared as National Highway in July 1971. The National Highways 17 and 48 were declared as National Highways from 1st April 1972. The State has only 6.8 per cent of the total length of National Highways in the country. The length of National Highways in the State is less per 1,000 sq km of area than that prevailing in Kerala and Tamilnadu. According to the targets prescribed by the All-India Road Plan of 1961-81, the length of National Highways required for the State is 3,892 km. Hence, to make up the deficiency the following nine roads have been proposed to be declared as National Highways.

Sl. No.	Name of the Road	Length in km
1	Bangalore-Mysore-Madikeri-Mangalore Road (to join NH 17)	385
2	Mysore - Nanjangud - Gundlupet - Ootacamund - Coimbatore (to join NH 47 in Tamilnadu)	80
3	Chitradurga - Holalkere - Hosadurga-Chikmagalur-Mudigere-Belthangadi-Bantwal and on to Mangalore (to join NH 47)	293
4	Mysore-Srirangapattana - Nagamangala-Chikkanayakanahalli-Huliyur - Hiriya - Bellary - Siruguppa - Shahpur-Gulbarga-Humnabad (to join NH 9)	678
5	Tumkur-Arsikere-Shimoga-Sagar-Honavar (to join NH 17)	332
6	Ootacamund - Gooty on NH 7 in Andhra Pradesh - Guntakal-Bellary-Hospet-Gadag-Hubli-Karwar (to join NH 17)	422
7	Belgaum-Bijapur-Gulbarga-Humnabad (to join NH 9)	364
8	Belgaum - Bagalkot - Raichur - Mahabubnagar in Andhra Pradesh	336
9	Dharwad - Londa - Anmod and on to Panjim	95
Total		2,985

According to the periodical traffic census and sample surveys conducted by the State Public Works Department it is seen that the rate of increase of traffic on the National Highways is about 10 per cent per annum.

During the Plan periods from 1956-57 to 1980-81, a total investment of about Rs 44 crores has been made on the improvement of the existing National Highways in the State. The Sixth Five-Year Plan (1980-85) envisages further development of the existing National Highways to satisfy the prescribed standards. The Plan makes provision for new road works for about Rs 31.50 crores and new bridge works for about Rs 8.50 crores, helping the National Highways Nos. 4, 7, 9 and 17 in the State to satisfy the prescribed standards in regard to the width of pavement and crust thickness necessitated by the traffic volume and intensity.

The total road length in Karnataka in 1974 was 79,947 km, of which the length in charge of the Public Works Department was 51,849 km and the remaining road-length km was in charge of local bodies and the Forest Department. This works out to 42 km of road length per 100 sq km. The total road length in 1981 was 98,523 km. This works out to 52 km of road length per 100 sq km out of which the length of surfaced roads is 30 km and the length of unsurfaced roads is 21 km. Thus the road length per 100 sq km has increased from 22 km in 1956 to 51 km in 1981. The important feature of road administration in Karnataka is that the State has followed a policy of taking over important roads from the local bodies and other agencies for maintenance during the last 25 years. The State P.W.D. has taken over a length of about 37,000 km from Taluk Development Boards and other agencies as State Fund roads. This has resulted in increasing the road length in charge of P.W.D. from year to year. The total road length in charge of P.W.D. was 22,177 km as on 31-3-1956. This has now increased to 64,628 km by 31-3-1981. It is estimated that the department will have control over 65,968 km in 1982. The annual increase works out to about 1,570 km per year.

The road length in charge of P.W.D. has not only increased from 22,177 km to 64,628 km during the last 25 years but there has been substantial qualitative improvement in respect of surfaces of the road length during this period. The cement concreted and asphalted length was 3,858 km as on 31-3-1956 and it has increased to 26,022 km as on 31-3-1979 and 26,834 in 1981 and it is expected to be 27,300 km in 1982,

The water bound *macadam* road length was 15,946 km as on 31-3-1956. It has increased to 22,841 km as on 31-3-1979 and to 23,718 km in 1981 and is expected to be 24,981 in 1982. The length of unmetalled roads which was 2,343 km in 1956 has increased to 15,512 km in 1979 and it was 14,076 km in 1981 and anticipated to be 13,687 km as on 31-3-1982. The variations in the length of the unmetalled roads is mainly due to the taking over of roads from the Taluk Development Boards during the period from 1956-75 and this has added unmetalled road length in charge of P.W.D. The details of progress of roads improved under various surfaces during the period from 1956 to 1981 is given in the following table.

(length in km)

Year	Total road length in charge of P.W.D. under				
	Cement	Asphalted (Black topped)	W.B.M.	Unmetalled	Total
1956	426	3,432	15,946	2,373	22,177
1961	555	7,407	17,411	9,057	34,429
1966	565	13,888	16,911	8,935	40,299
1978	423	25,167	21,582	15,153	62,325
1979	420	25,602	22,841	15,512	64,375
1981	419	26,415	23,718	14,076	64,628
1982 (anticipated)	—	27,300*	24,981	13,687	65,968

\* Includes cement concrete roads

The road development in Karnataka was not only uneven but it was not uniformly distributed in all the 19 districts of the State. The road development in the districts of the old Hyderabad - Karnataka and other areas was very poor and as such these areas were identified as backward regions and were given special attention for the development of roads during the last 26 years. Considerable improvement in the communication facilities has been made in those districts. There had been considerable improvement in the districts of Bidar, Gulbarga, Raichur, Bellary and Bijapur, but still they are backward as compared to the State average as also to some other districts in the State, as can be seen by the progress of road development in Karnataka during the period from 1956-1981.

**District-wise total road length in Karnataka during 1956-1981***(length in km)*

Sl. No.	District	Total road length existed during				
		1956	1966	1974	1979	1981
1	Bangalore	2,800	3,530	4,303	6,065	6,181
2	Belgaum	2,783	3,324	4,881	5,822	6,009
3	Bellary	1,298	1,670	2,780	3,701	3,709
4	Bidar	322	766	2,122	2,422	2,443
5	Bijapur	2,939	3,805	5,245	5,972	6,056
6	Chikmagalur	2,040	2,557	3,371	4,295	4,738
7	Chitradurga	2,268	2,294	3,710	4,937	5,507
8	Dakshina Kannada	2,100	2,589	3,663	4,295	4,351
9	Dharwad	3,118	3,690	4,754	5,963	5,976
10	Gulbarga	974	1,985	3,844	4,413	4,413
11	Hassan	2,225	2,716	3,490	4,065	5,116
12	Kodagu	912	1,458	2,149	2,434	2,440
13	Kolar	2,444	2,820	4,763	5,161	5,345
14	Mandya	3,507	4,457	5,866	6,535	6,545
15	Mysore	3,634	4,608	7,762	8,151	8,151
16	Raichur	1,182	2,212	3,308	4,862	4,862
17	Shimoga	3,076	3,446	5,566	6,776	6,959
18	Tumkur	3,130	3,585	4,402	4,692	4,701
19	Uttara Kannada	2,420	3,456	3,968	4,802	5,021
Total		43,182	55,369	79,947	95,363	98,523

Apart from the five backward districts, there were certain backward taluks in the developed districts and these taluks were recognised as backward taluks and priority has been given to start works in such taluks during the previous Plans to the extent funds were available. The following table gives details of development works undertaken in these taluks during the previous Plans,

District	Taluk	Length of 100 sq km as on 31st March			
		1971	1974	1978	1979
Belgaum	Khanapur	21	22	29	32
	Raibag	25	38	48	48
Bijapur	Bilgi	19	25	29	31
Dharwad	Mundargi	20	22	27	27
	Ron	21	23	28	29
Chikmagalur	Narasimharajapura	25	31	38	40
Mysore	Kollegal	19	24	28	28
Uttara Kannada	Ankola	23	30	31	33
Tumkur	Pavagada	18	27	27	27

The road development in the above taluks has made substantial progress during the last 10 years. However, in some taluks progress so far secured is less than that of the State average and these taluks are required to be given further attention for speedy accelerated development during the coming years.

### Rural Communication Programme

The entire rural population in the State is depending on agriculture and its subsidiary occupations. Almost all the villages depend only on road communication for their commercial needs and the provision of a rural road connecting the village to a market place or a rail head or an existing road is a basic necessity for the development of the rural economy of the State. Hence the rural communication programme with the objective of providing the important villages with a network of fair weather roads was launched in the year 1959-60. The programme consisted of (a) construction of rural roads, (b) construction of missing links and (c) construction of cross drainage works with linear waterway of more than 20 feet on non-P.W.D. roads. These roads were provided with only gravel or local soil in surface and the roads were mainly intended to cater to the cart traffic. The average construction cost of these roads has been estimated at Rs 3,750 per km with permissible maximum limit upto Rs 6,250 per km in black cotton soil and *malnad* tracts. This average cost of construction excluded the cost of land which is to be gifted by the villagers. Under this programme a total length of 21,999 km was constructed to the end of 31st March 1972 at a cost of Rs 8.67 crores.

During the year 1972-73 the Government revised and enhanced the rural communication programme by taking up the Integrated Comprehensive Rural Communication (I. C. R. C.) Programme and under this programme both new construction and improvements to existing rural roads are included. About 12,000 km of new rural roads and improvements to about 10,000 km of existing rural roads is envisaged under this programme.

In Karnataka a detailed survey was undertaken in the year 1978-79 for the preparation of a Master Plan for Rural Roads to connect all the inhabited villages in the State and according to this survey, out of a total number of 26,871 inhabited villages, only 7,324 villages were connected by all-weather roads, 6,046 villages by fair-weather roads and 11,454 villages by *kachcha* roads (as on 31-3-1979). It was also revealed that only 2,047 villages were not connected by roads. The cost of improvement and new construction was Rs 818.56 crores.

### Bridges

Bridges are a contributing factor in the roads and railways. Even in olden days bridges were constructed. The bridge across the Cauvery at Srirangapattana, the bridge over the Kabini river at Nanjangud, that at Bethamangala on the old Kolar road and five other small works of the same class within the fortification of the ancient city of Nagar or Bednur are some of the works mentioned in the pages of history. It is mentioned in a document that during 1831-56 there were 309 bridges in the old Mysore area. Some of the bridges on the roads in between the Bhima river and the Malaprabha were a few slab drains.

Bridge construction in the State during the period from 1956 to 1981 has been very substantial as the total number of major bridges having a linear waterway of more than 30.40 metres which was 304 in the year 1956 has increased to 868 as on 31st March 1981. The following table gives the total number of major bridges (district-wise) completed during the period from 1956-1981.

Sl. No.	Name of the District	No. of major bridges completed as on 31st March				
		1956	1961	1966	1974	1981
1	2	3	4	5	6	7
1	Bangalore	9	10	14	17	23
2	Belgaum	20	23	33	60	96

1	2	3	4	5	6	7
3	Bellary	15	18	23	28	33
4	Bidar	7	8	11	22	26
5	Bijapur	10	15	25	75	84
6	Chikmagalur	11	14	15	24	27
7	Chitradurga	19	21	23	33	38
8	Dakshina Kannada	36	41	65	96	103
9	Dharwad	7	9	21	57	63
10	Gulbarga	26	26	40	74	77
11	Hassan	11	12	13	15	16
12	Kodagu	9	10	10	17	19
13	Kolar	5	5	8	16	28
14	Mandya	14	16	18	21	23
15	Mysore	20	22	27	37	44
16	Raichur	43	45	56	78	84
17	Shimoga	15	22	30	39	39
18	Tumkur	13	15	18	21	25
19	Uttara Kannada	14	24	29	46	47
Total		304	356	484	776	868

The total number of major bridges having more than 30 meters of linear waterway existing as on 31st March 1971 was 693. This has increased to 868 as on 31st March 1981. The number of major bridges on different categories of roads is shown below.

<i>Category of Road</i>	<i>No. of Major Bridges as on 31-3-1981</i>
National Highways	85
State Highways	290
Major District Roads	262
Other District Roads	109
Village Roads	122
Total	868

During the year 1981-82 ten major bridges were targetted to be completed. On an average about 15 major bridges are being completed every year. The total number of minor bridges having a linear waterway of less than 30 metres existing at the end of 31st March 1981 is as under.

<i>Category</i>	<i>No. of Minor bridges existing as on 31-3-1981</i>
National Highways	1,733
State Highways	11,875
Major District Roads	16,509
Other District Roads	10,854
Village Roads	18,145
Total	59,116

The total number of minor bridges having a linear waterway of more than six metres, but less than 30.00 metres existing as on 31st March 1978 and on 31st March 1981 is given below.

	<i>1978</i>	<i>1981</i>
1. Upto 6.00 metres	27,420	52,349
2. No. of minor bridges having a linear waterway of more than 6.00 metres but less than 12.00 metres.	3,807	5,191
3. No. of minor bridges having a linear waterway of more than 12.00 metres but less than 24.00 metres.	1,069	1,224
4. No. of minor bridges having a linear waterway of more than 18.00 metres but less than 24.00 metres.	438	509
5. No. of minor bridges having a linear waterway of more than 24 metres but less than 30 metres.	332	450
Total	33,066	59,723

### Major Road Projects

Among the major road projects completed in Karnataka State in recent years, mention may be made of the Kudremukh-Mangalore Highway Project which has been completed recently on a top-priority basis. The total distance from new Mangalore Port to Kudremukh Mining Project at Malleswara in Chikmagalur district along the newly formed Highway is 104 km whereas the distance from the Mangalore harbour to Malleswara along the circuitous existing road *via* Charmadi Ghat and Kottigehar-Kalasa is 180 km. The newly formed road, in addition to being shorter in length by 76 km, is free from hairpin bends and steep gradients and make quick transport easy and comfortable.



### Road Funds

The Central Road Fund came into being in the year 1929 on the recommendation of the Jayakar committee. The proceeds of the *ad hoc* additional duty on customs and excise on petrol are credited to this fund. In the beginning the rate of this additional duty was 12 paise per gallon of petrol and this was raised to 15 paise in 1931. The present rate is 15 paise per litre. The fund is non lapsing and has two sub-divisions (i) the Central Road Fund Allocation and (ii) the Central Road Fund (Ordinary) Reserve. The State Government is provided with 80 per cent of the proceeds credited to the fund on the basis of the petrol consumed within the respective territories for taking up works under the scheme of Central Road Fund Allocation. The remaining is credited to the Central Road Fund (ordinary) Reserve. Grants are made for research and experiments and also for specific road and bridge works out of this fund. There is also another fund, the Central Road Fund (Special) Reserve for which contributions are made by organisations like the Ministry of Defence for road works under their control.

In order to make available adequate and guaranteed funds on a continuous basis for undertaking the road development in the State, the State Government have constituted "Karnataka Roads and Bridges Fund" beginning from the year 1975-76 with the proceeds of 10% surcharge on motor vehicles and 1% tax on the turnover of the regulated markets. The annual revenue being received from the above fund is being utilised for the construction of rural roads under the Integrated Comprehensive Rural Communication Programme as also bridge works and other formation of roads in the State.

In order to ensure development of roads in sugar factory areas on a planned and continuous basis, the Government of Karnataka have raised the purchase tax on sugarcane by Rs 2 per tonne and the extra revenue realised on this account is being utilised for the development of roads in sugar factory areas. It is seen that the traffic volume in the State is increasing from year to year. The 1961-62 Traffic Census figures when compared with those of 1975-76 have revealed an average increase of 23% per year in respect of the mechanical vehicles and 7% in respect of the animal-drawn carts. It is seen that the average increase of traffic intensity per year has been about 10 per cent on all National Highways in the State. In respect of other roads like State Highways, Major District Roads, Other District Roads and Village Roads, it is seen that the traffic

increase during the period from 70-71 to 75-76 was of the order of about 20% giving an increase of 4% per annum. The traffic intensity as revealed in the Census conducted during 1975-76 and the Sample Survey conducted during 1977-78 and 1978-79 on the various categories of roads in Karnataka are given in the following table.

Category of roads	Traffic intensity as revealed during					
	1975-76		1977-78		1978-79	
	Census		Sample Survey		Sample Survey	
	Traffic intensity in Mt. per day of 24 hours	Annual percentage of increase	Traffic intensity in Mt. per day of 24 hours	Annual percentage of increase	Traffic intensity in Mt. per day of 24 hours	Annual percentage of increase
National Highways	7,871	7.84	9,141	8.07	11,959	17.31
State Highways	2,478	5.05	3,408	3.05	4,505	13.42
Major District Roads	1,048	5.49	1,835	0.08	2,383	10.03
Other District Roads	732	5.59	1,518	1.11	1,690	4.60
Village Roads	671	19.12	1,142	8.93	1,488	17.85

The traffic surveys conducted by the P.W.D. during the last 17 years have revealed that the road traffic in the State is growing from year to year and the average growth rate per annum is more than 5% in respect of all roads. With this growth it is expected that the road traffic would be more than doubled during the next 15 to 20 years. It is therefore necessary that the existing roads should be strengthened to take the future traffic loads as new roads to be designed for the above anticipated road traffic.

### Vehicles and Conveyances

The total number of vehicles registered in Karnataka at the time of the Reorganisation of the State (1956-57) was only 25,976. The number of registered vehicles in Karnataka has increased to more than 13 times during the last 23 years, the number as in March 1979 being 3,41,876 and

in 1981 it was 4,08,349. The number of motor cycles in 1956-57 were actually 3,106 and this has increased to 1,76,574 registering an increase of over 57 times during the last 23 years, and this number has increased to 2,25,022 as in 1981. There were no autorickshaws in 1956-57. At present (1981) the total number of autorickshaws is 19,333 in the State. During the year 1956-57 the total number of motor cars and jeeps were only 10,835, but this has now increased to 69,342, an increase of over six times of that existed about 23 years ago and in 1981 it was 74,407. The total number of buses in 1956-57 was only 2,843. This has now increased to 11,271, an increase of more than four times during the above period (1979). The number of goods vehicles during 1956-57 were only 7,487, but there were nearly 29,650 in 1979 and 33,492 in 1981. Thus there has been an enormous increase in the total number of vehicles during the last 25 years. The progress in the number of vehicles registered in Karnataka and kept in use during some years is given in the table on p. 28.

Out of the total 3,41,876 vehicles registered in Karnataka State during 1978-79, the commercial vehicles account for 61,209 which form about 19 per cent of the total vehicles registered in the State. And in 1981 there were 4,08,349 vehicles registered in which 61,835 were the commercial vehicles and it forms about 20 per cent of the total vehicles registered in the State.

Taxies or cabs usually ply in urban areas where they supplement the city bus services by providing a different type of passenger transportation at charges higher than those of the scheduled services. Taxies in Karnataka are patronised largely by the tourists and the casual visitors. The total number of taxies registered in the State in the year 1956-57 was only 611 and it has now increased to 2,681 during the year 1978-79 and 2,885 in the year 1981. Three-wheeler mini taxies (Badal) are also included in this.

Buses constitute by far the most important category of transport vehicles in the State. The total number of buses as on 31-3-1979 was 11,271 and 12,788 in the year 1981, of which 2,815 were omni-buses and 9,973 stage carriers (KSRTC+ private buses). The Karnataka State Road Transport Corporation is a public sector undertaking. The licencing and operation of buses is strictly governed by the Karnataka Motor Vehicles Act, 1956, and the Rules framed by the State Government from time to time. The routes, number of trips, service timings and the fare structure have all to be approved by the State Motor Vehicles Department. So far

<i>Year</i>	<i>Motor Cycles</i>	<i>Autorick- shaws</i>	<i>Motor Cars &amp; Jeeps</i>	<i>Motor Cabs</i>	<i>Omni Buses</i>	<i>Stage carriers</i>	<i>Contract carriers</i>	<i>Goods Vehicles</i>	<i>Others</i>	<i>Total</i>
1956-57	3,106	—	10,835	611	—	2,843	—	7,487	1,094	25,976
1960-61	5,621	591	13,946	724	208	4,248	—	10,656	3,328	39,232
1965-66	18,980	2,018	24,976	1,158	842	6,323	110	15,179	6,152	75,738
1968-69	27,086	4,052	30,002	1,334	NA	7,030	NA	17,673	6,498	93,675
1973-74	77,830	10,124	43,664	2,479	1,344	6,443	933	19,924	16,284	1,79,025
1977-78	1,55,337	15,857	61,914	2,535	2,004	8,138	1,076	27,087	26,815	2,98,763
1978-79	1,76,574	17,600	69,342	2,681	2,253	9,018	—	29,657	34,751	3,41,876
1981-82	2,25,022	19,333	74,407	2,885	2,815	—	—	*36,680	4,907	4,08,349**

\*It includes private buses, private and public carriers

\*\*It includes autoricksahaws, motor cabs, omni-buses and goods vehicles

as the passenger transport in the private sector in Karnataka is concerned, it is essentially a small scale enterprise. Single vehicle ownership is common. The major concentration of large scale fleet operators is in the districts of Bangalore, Dakshina Kannada, Shimoga and Tumkur. In Dakshina Kannada, there was a well organised "Combined Booking Agency" of the private bus owners prior to State Reorganisation.

*Goods Vehicles:* Two categories of vehicles, both public carriers as also private carriers, are included under this category. The total number of goods vehicles which was 7,487 in 1956-57 has increased to 33,492 during 1981. It has increased by more than four times during the last 25 years. The goods vehicles are mostly in the private sector as goods traffic is not nationalised and it is entirely in the hands of private operators. Individual ownership predominates in the goods transport industry in the State. There are however very big fleet owners and they operate on many inter-State routes also.

*Autorickshaws:* The number of autorickshaws during 1960-61 was 591 and this has now increased to 17,600 during 1978-79, accounting to twenty-fold increase within a period of about 18 years and it figures to 19,333 in 1981. The use of these vehicles is confined to the larger towns in the State. Bangalore Metropolitan area alone accounts for more than 60 per cent of the total autorickshaws in the State. The autorickshaws provide taxi service for local transportation at a comparatively cheaper rates than the taxi cabs and supplement the city bus service. The seating capacity is two passengers and these vehicles are popular with the middle-income groups for short distance local journeys.

### **Road Transport Corporation**

The Mysore Government Road Transport Department (MGRTD) was established on 12th September 1948 when certain services radiating from Bangalore were taken over by the Government. By the end of the year 1948-49, the Department was operating services on 81 routes, with a fleet of 120 buses and with an invested capital of Rs 17.77 lakhs. The services were covering 15,000 km per day and catering to the transport needs of about 4,000 passengers daily. Nationalisation of Road Transport was also initiated in Bombay State in 1948, and by the time of States Reorganisation, the Belgaum area was well served by State Transport buses. The urban and suburban services in Mysore City and Bangalore Metropolis were nationalised in October 1955 and October 1956

respectively. At the time of Reorganisation, the new State inherited 438 nationalised routes with 530 buses from Bombay State, 30 nationalised routes with 80 vehicles from Hyderabad state and 310 nationalised routes with 215 buses from Mysore State. In Hyderabad, the policy of nationalisation had been initiated earlier than in Mysore, but the impact was very limited. In the wake of the Reorganisation of States, the MGRTD grew overnight phenomenally and became the fourth biggest undertaking in the country, the fleet strength rising to nearly 1,100 on 1-1-1957.

Karnataka State Road Transport Corporation (KSRTC) was statutorily established on 1-1-1961 under the provisions of the Central Road Transport Corporation Act of 1951 and was being managed as a Government Department, as a wing of the Home Department for nearly 13 years since its inauguration. It was entrusted to the new statutory body to operate and manage the nationalised bus services. As in 1982, the Corporation is the second biggest in the South and fifth in India. The Corporation consists of 20 members — nine official and 11 non-official. The official members are six from the State Government and three from the Central Government. Among the objectives of the Corporation are (1) to provide the public with road transport facilities marked by high reliability, reasonable comfort and moderate cost within the existing technological and economic constraints, (2) to constantly explore the newest and the latest technological developments in the field of road transport in order to provide better, safer and cheaper mode of road travel to the travelling public and (3) to build up and maintain a high technological capacity in the Corporation to keep the ever-growing fleet in an excellent condition.

The total capital investment of the Corporation increased from Rs 78.07 crores as in March 1980 to Rs 93.81 crores as in March 1981. During 1980-81 the State Government provided an amount of Rs 4.50 crores as capital contribution to the Corporation as against Rs 1.50 crores during 1979-80. The Central Government also granted Rs 0.45 lakhs. The Corporation raised Rs seven crores as loan from financial institutions like banks and the Life Insurance Corporation. An amount of Rs 5.23 crores was financed from internal resources. With repayment of loans amounting to Rs 1.44 crores, the net addition to the capital was Rs 15.74 crores. The State Government also provided a short term loan of Rs 3.35 crores during 1980-81,

The inter-State services, on a reciprocal basis with the five neighbouring States, continued to be operated and augmented from time to time. The sixties witnessed as many as eight schemes of nationalisation implemented, in pursuance of the accepted and proclaimed policy of the State Government to have complete nationalisation of passenger transport in the State. With the implementation of these schemes, the fleet strength was 4,494 in 1978-79. An important development was the nationalisation of the private contract carriages in the State in January 1976, when the State Government acquired and transferred nearly 600 buses to the KSRTC. The extent of nationalisation as in 1982 has been nearly 69 per cent by area and 61 per cent in terms of the number of stage carriages in the State.

The jurisdiction of the Corporation extends over the entire State of Karnataka. The operations are being conducted through five regional offices, 12 operating divisions—one exclusively for the City and suburban services in Bangalore. There are 68 Depots attached to these Divisions. Two Regional Workshops, one each at Bangalore and Hubli, have been set up with specified jurisdiction for the purposes of reconditioning of vehicles and assemblies, retreading of tyres, new bus body buildings, etc. A printing press is also attached to cater to the Corporation's needs. There are three Civil Engineering Divisions at Bangalore, Hubli and Gulbarga with nine sub-divisions attached to them.

The five regional offices started functioning since April 1980. These offices are headed by Regional Managers who are of the rank of major heads of departments, responsible to the General Manager. These Regional Managers have to function predominantly as Field Officers exercising proper, adequate supervision over all the operating units coming under them. The region-wise disposition of the Divisions and the depots as on 31-3-1981 is as shown below :

<i>Regions (Headquarter)</i>	<i>Division attached</i>	<i>No. of Depots</i>	<i>No. of Schedules</i>
1	2	3	4
Bangalore Metropolitan Region (Bangalore)	Bangalore Transport Service Division	6	656
Bangalore Rural Region (Bangalore)	1. Bangalore Dn. 2. Kolar Dn,	12	670

1	2	3	4
Mysore Region (Mysore)	1. Mysore Dn. 2. Hassan Dn.	12	765
Belgaum Region (Hubli)	1. Belgaum Dn. 2. Hubli Dn. 3. Bijapur Dn. 4. Uttara Kannada Dn.	27	1,252
Gulbarga Region (Gulbarga)	1. Gulbarga Dn. 2. Raichur Dn. 3. Bellary Dn.	11	512

Vast powers have been delegated to the Regional Managers and the Divisional Controllers. The powers delegated pertain to operational control, purchase of stores, disciplinary matters and recruitment. The route sanctions and operations within the Divisional jurisdiction are now left to the Divisional Controllers. The Regional Managers are the authorities for route matters with inter-divisional ramifications. Only inter-regional and inter-State operations have to be referred to the Central office at Bangalore.

At present (1982) the total strength of the Corporation consists of nearly 5,700 passenger buses. The total number of routes under operation is 4,869 covering 3.42 lakh route km as in 1981. Nearly 3,855 scheduled vehicles are on road, covering 11.20 lakh km daily. Nearly 20.9 lakh passengers are carried in the State Transport services daily. The total gross revenue turnover of the Corporation increased by 18.2 per cent from Rs 88.65 crores during 1979-80 to Rs 104.74 crores during the year 1980-81. The rate of earnings per km also increased by 9.4 per cent from 262.3 paise to 286.9 paise. The total cost of operations during the year 1980-81 was Rs 115.70 crores as against Rs 90.41 crores during the previous year. The increase in cost per km was from 297.5 paise to 316.9 paise. The Corporation recently revised the fares twice — once in 1980 and another in 1981 and once in 1980 in respect of City Services.

Carriage of postal mails is a necessary adjunct to passenger transport on all the nationalised routes. Unlike many of the State Transport undertakings in the country, KSRTC has been operating urban and suburban services in Bangalore Agglomeration, Hubli-Dharwad Agglomeration, the cities of Mysore, Belgaum, Bijapur, Gulbarga, Bellary, Shimoga, Davanagere, Raichur, Karwar, Gadag and many other



important towns. These services constitute nearly a fifth of the total number of schedules and a sixth of the schedule kilometres operated. Although such services are a losing proposition, KSRTC has been operating them as a part of its social obligation to the commuters.

The outlay and actual expenditure of the KSRTC, during the Third Plan, three Annual Plans, Fourth Plan and the Fifth Plan are given in the following table.

(Rs in lakhs)

Sl. No.	Details of Plan	Outlay proposed	Actual expenditure
1.	Third Plan 1961-66	425.00	637.87
2.	Three Annual Plans 1966-69	618.79	874.36
3.	Fourth Plan 1969-74	1,739.40	1,152.13
4.	Fifth Plan 1974-78	2,080.00	2,384.46

**Amenities :** The Corporation has built 140 permanent Bus Stations as on 31st March, 1981. In addition, there were 27 temporary Bus Stations. There were also 294 way-side shelters and 432 city pick-up shelters. In Bangalore city alone, there were 285 shelters. A modern Bus Terminal Complex for city services has been constructed with a foot-bridge, passenger platforms, a depot and an administrative office at Bangalore. Cloak room facilities have been provided at some important bus stations. In the bus stations maintained by the Corporation waiting halls, sanitary arrangements, drinking water, etc., have been provided.

Advance booking facility on payment of full fare plus the reservation charges of 50 paise per ticket is provided. Special buses on contract basis are also run. Concessional rates in fares are made available to students, sportsmen, working journalists, police personnel, trainees in Rehabilitation Centres, Armed Force personnel, home-guards, K S R T C employees, farmers from Community Development Areas and National Extension Service Areas. Blind persons are issued with free passes for travel in mofussil and sub-urban services in connection with their legitimate profession on duty from the place of work to residence. A free pass without restriction of distance is issued to all the employees of the Corporation and their families once a year for travel to any place where the Corporation operates the buses. Complaints from public are also received. During 1980-81, 3,413 complaints were received as against 3,897

in 1979-80. The number of complaints per lakh of passengers decreased from 0.50 during 1979-80, 0.39 during 1980-81.

*Welfare Measures :* Several welfare measures are being instituted for the benefit of the employees. The welfare measures include provision of medical facilities, housing facilities, etc. Dispensaries are run at Bangalore, Belgaum, Bellary, Bijapur, Gulbarga, Hassan, Hubli, Kolar, Mysore and Raichur. The benefits under the Employees' State Insurance Act are in force in all the divisions except Kolar and Uttara Kannada. The Scheme is applicable to all the Units of the Corporation registered as factories and 9,271 workers were covered under the scheme. Other workers who are not covered under this scheme and coming under the Workmen's Compensation Act are paid compensation as per provisions. Housing facilities are provided at different places by constructing houses under subsidised Industrial Housing Schemes and Schemes of the Corporation.

*Training:* Training facilities to the various categories of employees are provided. During 1980-81, 49 officers/officials were deputed to the Central Institute of Road Transport, Pune for various training programmes conducted by the Institute. Eighty-two employees of the technical cadre were deputed to undergo training with leading automobile organisations in India. In addition, 98 employees were also deputed to undergo training or participate in seminars, etc., in some of the prominent institutions like Productivity Council, Institute of Management, Institute of Engineers, etc., on various disciplines. There are training centres at Bangalore and Hubli for drivers to inculcate good driving habits and during 1980-81, 473 drivers were imparted training. The K S R T C Training Institute also conducts pre-service training for new recruits for the posts of Statistical Assistants and Divisional Statisticians and during 1980-81, 10 Statistical Assistants and five Statistical Officers were given such training. Inservice Training to 34 conductors under Polyvalent Adult Education Course was imparted at the K S R T C Institute. Special facilities are provided in the Regional Workshops at Bangalore and Hubli for training of apprentices under the National Apprenticeship Act, 1951. During 1980-81, eight apprentices were trained.

The operational date and progress of the K S R T C during some years is given in the following table :

# TRANSPORT AND COMMUNICATIONS

35

Sl. No.	Particulars	1961-62	1968-69	1973-74	1977-78	1981-82
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## 1. ORGANISATION

(a) Regional Office					5
(b) Divisions	8	11	12	12	12
(c) Depots	42	57	61	65	70
(d) Regional Workshops	2	2	2	2	2

## 2. STAFF

Total Number	11,752	19,524	24,783	30,555	35,000
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## 3. OPERATIONS

(a) Schedules	1,311	2,080	2,634	3,330	5,581
(b) Daily Schedules-km in lakhs	2.58	4.66	6.42	9.22	12.98
(c) Routes	1,301	2,565	3,556	4,248	5,452
(d) Routes-km in lakhs	0.72	1.39	2.12	2.77	3.94
(e) Inter State Routes	47	55	123	150	230
(f) Express Service	65	144	234	473	61
(g) Luxury Service	9	10	8	52	8
(h) Night Service	—	3	21	40	NA

## 4. FLEET

(a) Fleet as on 31st March	1,792	2,705	3,499	4,494	5,589
(b) Average Fleet held	1,675	2,623	3,479	4,579	5,267
(c) Average Vehicles on Road	1,145	1,932	2,543	3,371	4,284
(d) New Vehicles added	355	484	407	207	924
(e) Vehicles scrapped	161	68	292	300	549
(f) Percentage fleet utilisation	68.4	73.7	76.9	75.3	84.04
(g) Average vehicle utilisation (Gross km)	198.9	225.0	231.3	231.3	273.6
(h) Average Carrying Capacity	49.6	54.9	57.2	58.3	60.6
(i) Average age of vehicles (km in lakhs)	2.27	3.38	4.02	4.44	4.42

## 5. TRAFFIC ACTIVITIES

(a) Total Service (km in lakhs)	808.62	1,536.32	2,087.00	3,211.69	4,277.38
(b) Daily service (km in lakhs)	2.22	4.21	5.72	8.80	11.72

<i>Sl No.</i>	<i>Particulars</i>	<i>1961-62</i>	<i>1968-69</i>	<i>1973-74</i>	<i>1977-78</i>	<i>1981-82</i>
(c)	Daily passengers carried (in lakhs)	4.35	7.52	11.90	17.94	26.51
(d)	Traffic receipts (Rs in lakhs)	674.90	1,849.07	3,197.08	6,766.31	13,616.94
(e)	Daily traffic receipts (Rs in lakhs)	1.85	5.07	8.76	18.54	36.08
(f)	Traffic earnings per km (in paise)	83.5	120.4	153.2	210.6	307.9

### Road Transport Regulations

Road transport is subject to statutory regulations under the Indian Motor Vehicles Act, 1939, as amended in 1956. This is a Central Act, but it is administered by the State Government. With the concurrence of the Central Government, the State Government has drawn up the Karnataka Motor Vehicles Rules, 1963, keeping in view the local needs and the circumstances. The State Government has also enacted the Karnataka Motor Vehicles Taxation Act and Rules thereunder of 1957. The control of transport vehicles is exercised through a system of licensing prescribed under these rules. The licensing system is administered by the Motor Vehicles Department. In the issue of permits for regulating the operations of mechanised vehicles a distinction is made between passenger vehicles and goods vehicles. The system also makes distinction between the vehicle used for hire and reward and for one's own transportation.

### Transport Authority

The Karnataka State Transport Authority is constituted under Section 44 of the Motor Vehicles Act, 1939. The Chairman of the Authority is the Transport Commissioner and two official and two non-official members are also in the Authority. One of the Deputy Commissioners for Transport functions as the Secretary to the Authority. It is a quasi-judicial body exercising the powers vested in it under the Act. The Authority has powers to grant permits for the use of transport vehicles between this State and other States, countersign permits of vehicles of other States to ply in this State and other official powers. The Regional Transport Authorities are also functioning in each district under Section 44 of the Motor Vehicles Act, 1939. The Deputy Commissioner of the respective district is the Chairman, the Regional Transport officer being the Secretary. There are two official members and one non-official member. These also

function as quasi-judicial bodies. Under the Act, permits are granted by the Regional Transport Authority for the use of transport vehicles plying within the State.

*Licencing of Drivers and Conductors :* The Regional Transport officers are authorised under the Karnataka Motor Vehicles Rules, 1963, to issue licences to drivers and conductors in their regions. The Inspectors of Motor Vehicles are the authorities to conduct the test of competency in driving as set forth in the III Schedule of the Act and also to assist the licensing authorities in this regard. A learner's licence is issued to an applicant after verifying his physical fitness. He has to pass an oral test on mandatory, cautionary and informatory signs. To minimise accidents of motor vehicles and to see that driving licences are issued only to persons who are fit to drive safely, the testing of applicants for driving licences was streamlined in the Regional Transport or Assistant Regional Transport offices. The testing officers are instructed to test each candidate for one hour comprising of 30 minutes' oral test and 30 minutes' driving test. Apart from this test a systematic training for persons who wish to become drivers in recognised Government institutions is also felt necessary. The Government has accepted the proposal for starting training courses for drivers in Polytechnics and Training Institutes in each district under the control of the Directorate of Employment and Training. The candidates who undergo training will also be taught the minor repairs of the vehicles and they will also be explained about the implication of the Motor Vehicles Act, 1939, and the Karnataka Motor Vehicles Rules, 1963. Licences are issued only after the applicants complete successfully the tests. By the end of 31st December 1981, 3,91,525 driving licences were in force in the State. Conductors are also tested and licences are issued to those who possess the requisite qualification and 56,361 conductors' licences were in force as on 31st December 1981 and the amount collected as fee for the issuing of licences to drivers and conductors was Rs 78,45,355 during the year. The Deputy Commissioners for Transport are the Appellate authorities to hear appeals in this regard.

*Registration of Vehicles :* The Regional Transport Officers are the registering authorities of vehicles in their respective regions. Under the Act it is mandatory for the transport vehicles to carry Certificate of Fitness when they are used on public roads. At the time of registration and at regular intervals prescribed thereafter the vehicles are inspected by the Inspectors of Motor Vehicles and those vehicles which comply with

the provisions of the Act and Rules are issued with the fitness certificate. The object is to see that mechanically defective vehicles are not allowed to ply on the roads. The Regional Transport Officers countercheck certain percentage of the vehicles passed by the Inspectors of Motor Vehicles. During the period from April to December\* 1981, 6,525 fitness certificates were issued for newly registered vehicles and 43,814 fitness certificates were renewed and a sum of Rs 44,50,695 was collected as fee for issue of fitness certificates. During the same period 32,793 and 5,485 motor vehicles of different types were registered and re-registered respectively and a sum of Rs 34,89,323 was collected towards the fee for registration. There is an increase of ten per cent in the vehicular strength which was 3,96,162 during the period from 31st December 1980 to 4,39,627 at the end of 31st December 1981. There were 23,647 transport operators owning goods vehicles and 1,520 operators owning private buses in the State as on 31st December 1981.

*Inter-State Passenger Transport :* The operation of transport vehicles under the bilateral inter-State agreements exists. A second supplemental agreement between Karnataka and Andhra Pradesh is likely to be finalised for operation of Stage Carriage Services on certain important routes. The Government of India have increased the quota of vehicles for the grant of all-India Permits under the Act from 150 to 200 in respect of tourist motor cabs. For the grant of all-India tourist cab permits, 50 vehicles were granted permission as against 100 applications. Similarly the quota of 100 South Zone tourist cab permits allocated to the State, in response to an agreement entered into between the Southern States for the operation of tourist taxis under the South Zone Scheme comprising the States of Karnataka, Tamilnadu, Andhra Pradesh and Kerala has been utilised and permits have been granted on single point tax. To encourage tourist transport in the State, 82 tourist motor cab permits were issued to ply on inter-State routes under the South Zone Scheme and 136 all-India tourist motor cabs and 25 tourist omni-buses at the end of December 1981.

*Inter-State Goods Vehicles Permits :* (1) The National Permit Scheme was introduced in the State to encourage quick transportation of goods throughout the country. It is a very popular Scheme and the additional quota of 400 permits granted to the State was fully utilised by granting permits. (2) Under the Composite Permit Scheme, 600 permits were allotted of which 504 permits were issued and another 300 permits of additional quota have been allotted. The Government of Karnataka has entered into reciprocal agreement on 16th July 1981 with Gujarat,

Pondicherry, Goa, Daman and Diu and Nagar Haveli in addition to Andhra Pradesh, Kerala, Maharashtra and Tamilnadu. The restriction on obtaining permit for a minimum of five States under this scheme has been modified to a minimum of three States including the home State. (3) The Bilateral agreements have been arrived at between Karnataka and other neighbouring States namely Andhra Pradesh, Tamilnadu, Kerala, Maharashtra, Madhya Pradesh and Goa. Number of permits recommended, issued and countersigned upto end of 31st December 1981 are as follows.

<i>Name of State</i>	<i>Public Carriers</i>			<i>Private Carriers</i>		
	<i>Quota agreed</i>	<i>Issued</i>	<i>Counter-signed</i>	<i>Quota agreed</i>	<i>Issued</i>	<i>Counter-signed</i>
Karnataka —						
Andhra Pradesh	3,750	3,250	3,569	150	150	150
Karnataka —						
Kerala	600	600	600	50	50	50
Karnataka —						
Maharashtra	3,750	3,750	3,359	100	100	100
Karnataka —						
Tamilnadu	2,250	2,250	2,250	150	53	50
Karnataka — Goa	300	300	300	25	25	25
Karnataka —						
Madhya Pradesh	50	14	...	...	...	...
Karnataka —						
Delhi	50	...	...	...	...	...
Composite permits	600	504	...	...	...	...
National permits	800	400	...	...	...	...

### Road Accidents

In spite of the latest technological improvements, an alarming increase in road accidents with consequent economic and social loss is taking place all over the State. It is calculated that about 1,812 persons are being killed and over 11,554 are injured every year by road accidents in the State till 1979. The total number of road accidents during the last 21 years (till 1979) have increased from 2,288 to 11,600, showing a five-time increase. The number of persons killed has increased from 297 in 1958 to 1,812 in 1979, registering a six-fold increase and the number of persons injured from 1,678 in 1958 to 11,554 in 1979, accounting for

seven-fold increase. The average number of road accidents per day was 12 in the year 1968-69 and it has increased to 32 in the year 1978-79. Similarly the average number of persons killed per day which was two in the year 1968-69 has increased to five in the year 1978-79 and the number of persons injured per day was 12 in 1968-69 and it has increased to 32 in 1978-79. It is further seen that the major number of road accidents that have occurred are in Bangalore City. Out of 11,600 road accidents in the State, 4,381 have occurred in Bangalore alone (38%).

During the year 1978-79 it was observed that out of 11,600 road accidents that have occurred in the State, 227 have occurred due to bad conditions of the road and 661 due to mechanical defects and 10,712 due to human errors. Thus 92 per cent of the total road accidents occurred due to human errors, as against two per cent due to bad conditions of roads and six per cent due to mechanical defects. Further it is observed that the accidents have occurred due to the faults of the drivers in about 74 per cent of the cases.

### **Bullock Carts**

The role of bullock carts in the State economy is very important as they still play a predominant role in the movement of goods and people in the rural areas. Before the advent of the railways and automobile carriers, they were the major means of transport on land, as already noticed. The total number of bullock carts in the State as per the quinquennial census conducted in 1972 was 6,74,955. Compared to the number of carts as revealed in the previous quinquennial censuses, *i.e.*, 1961 and 1966, it shows a reduction in the total number of carts from 6,93,756 in 1961 to 6,88,549 in 1966, the average reduction being 1,709 carts per year. This reduction is insignificant as it accounts for 0.02 per cent of the total number of carts.

The maximum number of carts are found in the districts of Belgaum, Bijapur and Dharwad and they together count for 2,27,103, accounting roughly to 34 per cent of the total number of bullock carts in the State (1972). A table showing the district-wise number of bullock carts as in 1972 and 1977 in the State is given as follows.



Sl. No.	District		No. of carts (animal drawn)	
			1972	1977
1	2		3	4
1	Bangalore	Urban	859	723
		Rural	32,258	31,551
2	Belgaum	Urban	4,338	3,181
		Rural	81,432	74,798
3	Bellary	Urban	1,582	2,830
		Rural	29,086	26,342
4	Bidar	Urban	623	397
		Rural	7,683	9,253
5	Bijapur	Urban	3,662	3,356
		Rural	56,699	50,808
6	Chikmagalur	Urban	1,350	763
		Rural	18,214	19,190
7	Chitradurga	Urban	1,493	1,159
		Rural	38,127	36,702
8	Dakshina Kannada	Urban	48	28
		Rural	1,774	1,357
9	Dharwad	Urban	7,333	8,912
		Rural	73,629	63,336
10	Gulbarga	Urban	1,895	2,313
		Rural	45,541	40,830
11	Hassan	Urban	412	367
		Rural	23,422	32,715
12	Kodagu	Urban	98	27
		Rural	873	721
13	Kolar	Urban	874	1,312
		Rural	32,836	36,845
14	Mandya	Urban	1,078	1,207
		Rural	32,884	38,624
15	Mysore	Urban	2,219	1,328
		Rural	41,780	46,412
16	Raichur	Urban	2,168	1,181
		Rural	30,182	32,068

1	2	3	4
17	Shimoga	Urban Rural	1,999 41,095
18	Tumkur	Urban Rural	994 44,899
19	Uttara Kannada	Urban Rural	350 9,156
	State Urban Total	33,385	32,806
	State Rural Total	6,41,570	6,44,483
	State Grand Total	6,74,955	6,77,289

The bullock carts are being used increasingly to meet the rural transport needs. The Central Government and the Central Road Research Institute (Pune) are trying to improve the design of the bullock carts so as to make it more useful and roadworthy to meet the increasing transport needs of the rural areas. The Indian Institute of Management, Bangalore and the University of Agricultural Sciences, Bangalore and other agencies have innovated new designs of bullock carts.

Statement showing the details of road lengths in charge of P.W.D. during some years from 1956-81.

Sl. No.	Particulars	Total length in Kilometres								
		1956	1961	1966	1971	1976	1977	1978	1979	1980
1	2	3	4	5	6	7	8	9	10	11
<b>I NATIONAL HIGHWAYS</b>										
1	Cement concrete	26	26	26	26	70	70	70	70	70
2	Black top	815	861	1,007	1,119	1,834	1,838	1,838	1,838	1,838
3	Water bound maccadam	23	267	225	113	64	60	60	60	60
4	Unmetalled surface	...	115	11	11	...	...	...	...	...
	<b>Total</b>	<b>864</b>	<b>1,269</b>	<b>1,269</b>	<b>1,269</b>	<b>1,968</b>	<b>1,968</b>	<b>1,968</b>	<b>1,968</b>	<b>1,968</b>
<b>II STATE HIGHWAYS</b>										
1	Cement Concrete	400	503	503	351	314	314	314	313	313
2	Black top	1,843	3,336	5,165	6,066	6,926	6,996	7,057	7,223	7,239
3	Water bound maccadam	3,683	1,934	923	283	314	305	281	266	250
4	Unmetalled surface	57	246	49	4	...	...	...	...	...
	<b>Total</b>	<b>5,983</b>	<b>6,019</b>	<b>6,640</b>	<b>6,704</b>	<b>7,554</b>	<b>7,615</b>	<b>7,652</b>	<b>7,802</b>	<b>7,802</b>
<b>III MAJOR DISTRICT ROADS</b>										
1	Cement concrete	...	22	27	22	21	21	22	22	20
2	Black top	500	2,689	6,389	9,733	10,318	10,338	10,413	10,488	10,559
3	Water Bound maccadam	6,400	8,895	6,061	4,084	2,447	2,392	2,306	2,218	2,174
4	Unmetalled surface	106	1,008	703	381	194	170	180	167	159
	<b>Total</b>	<b>7,006</b>	<b>12,614</b>	<b>13,810</b>	<b>14,220</b>	<b>12,980</b>	<b>12,921</b>	<b>12,921</b>	<b>12,895</b>	<b>12,912</b>

1	2	3	4	5	6	7	8	9	10	11
<b>IV OTHER DISTRICT ROADS</b>										
1	Cement Concrete	...	1	1	1	7	7	7	5	5
2	Black top	263	365	990	2,154	3,274	3,377	3,542	3,602	3,675
3	Water Bound maccadum	3,500	3,398	4,796	5,353	5,148	5,113	5,038	4,945	4,924
4	Unmetalled surface	2,188	3,124	1,891	1,682	709	648	558	496	444
	Total	5,951	6,888	7,678	9,190	9,138	9,145	9,145	9,048	9,048
<b>V VILLAGE ROADS</b>										
1	Cement Concrete	...	3	8	10	10	10	10	10	10
2	Black top	11	155	337	803	2,239	2,403	2,317	2,451	2,642
3	Water bound maccadum	2,340	2,957	4,896	7,976	13,947	14,593	13,897	15,352	15,999
4	Unmetalled surface	22	4,564	6,281	8,760	13,821	13,328	14,415	14,849	14,122
	Total	2,373	7,679	11,522	17,549	30,017	30,334	30,639	32,662	32,773
<b>VI TOTAL FOR THE STATE</b>										
1	Cement concrete	426	555	565	410	422	422	423	420	418
2	Black top	3,432	7,406	13,888	19,875	24,591	24,952	25,602	25,602	25,953
3	Water bound maccadum	15,946	17,411	16,911	17,809	21,920	22,463	21,582	22,841	23,407
4	Unmetalled surface	2,373	9,057	8,935	10,838	14,724	14,146	15,153	15,512	14,725
	Total	22,177	34,429	40,299	48,932	61,657	61,983	62,325	64,375	64,503

**Statement showing the details of total length of roads in charge of Public Works Department as on 31st March 1980**  
**classification-wise, surface-wise and district-wise**

(length in km)

State Highways						Major District Roads					
Sl. No.	Name of the District	Total Length	CC	BT	WBM	Total	Total length	CC	BT	WBM	Total
1	Bangalore	271	18	253	...	271	699	1	564	118	683
2	Belgaum	483	...	483	...	483	841	...	718	123	841
3	Bellary	360	7	353	...	360	571	...	447	124	571
4	Bidar	219	...	196	23	219	180	...	124	54	178
5	Bijapur	694	46	648	...	694	934	...	792	137	929
6	Chikmagalur	337	41	296	...	337	703	12	577	60	649
7	Chitradurga	471	3	456	12	471	645	...	503	140	643
8	Dakshina Kannada	307	...	507	...	507	535	...	535	...	535
9	Dharwad	370	...	355	15	370	1,141	...	1,064	71	1,135
10	Gulbarga	575	4	498	73	575	688	...	330	331	661
11	Hassan	262	23	237	2	262	655	...	538	117	655
12	Kodagu	166	...	166	...	166	573	...	551	22	573
13	Kolar	270	...	241	29	270	879	...	626	240	866
14	Mandya	168	43	125	...	168	468	...	408	60	468
15	Mysore	581	52	510	19	581	777	4	707	66	777
16	Raichur	634	3	609	22	634	346	3	218	91	312
17	Shimoga	459	33	426	...	459	1,016	...	888	128	1,016
18	Tumkur	334	40	247	47	334	894	...	646	248	894
19	Uttara Kannada	641	...	633	8	641	367	...	323	44	367
Total		7,802	313	7,239	250	7,802	12,912	20	10,559	2,174	12,753

TRANSPORT AND COMMUNICATIONS

**Statement showing the details of total length of roads in charge of Public Works Department as on 31st March 1980 by Classification-wise, Surface-wise and District-wise.**

46

Sl. No.	Name of the District	Other District Roads							Village Roads								
		Total Length	C.C.	B.T.	W.B. M.	Total	Mot' ble	Non Mot' ble	Total	Total length	C.C.	B.T.	WBM	Total	Mot' ble	Non Mot' ble	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Bangalore	419	...	207	210	417	2	...	2	2,050	...	186	867	1,053	417	580	997
2	Belgaum	805	...	381	367	748	57	...	57	1,459	...	140	1048	1,188	173	98	271
3	Bellary	418	...	184	226	410	8	...	8	918	4	83	616	703	146	69	215
4	Bidar	249	...	45	180	225	24	...	24	796	...	11	398	409	266	121	387
5	Bijapur	747	...	166	502	668	79	...	79	1,917	...	101	913	1,014	685	218	903
6	Chikmagalur	577	...	241	300	541	31	5	36	936	...	41	435	476	234	226	460
7	Chitradurga	286	...	136	150	286	...	...	...	1,741	...	182	957	1,139	412	190	602
8	Dakshina Kannada	433	...	291	99	390	43	...	43	1,342	...	361	193	554	533	255	788
9	Dharwad	321	...	116	205	321	...	...	...	2,527	...	243	1,556	1,799	175	553	728
10	Gulbarga	305	...	109	182	291	14	...	14	1,977	2	61	736	799	654	524	1,178
11	Hassan	346	1	114	224	339	7	...	7	1,837	...	69	912	981	51	805	856
12	Kodagu	60	...	60	...	60	...	...	...	739	...	214	257	471	166	102	268
13	Kolar	361	...	179	171	350	11	...	11	1,838	...	74	794	868	389	581	970
14	Mandya	611	...	233	361	594	17	...	17	3,856	4	246	2,666	2,916	396	544	940
15	Mysore	782	...	396	383	779	3	...	3	2,431	...	136	1,273	1,409	491	531	1,022
16	Raichur	256	...	112	132	244	12	...	12	1,835	...	101	797	898	744	193	937
17	Shimoga	964	...	300	629	929	35	...	35	1,220	...	51	683	734	265	221	486
18	Tumkur	857	4	252	556	812	45	...	45	1,562	...	42	472	514	301	747	1,048
19	Uttara Kannada	251	...	153	47	200	51	...	51	1,792	...	300	426	726	712	354	1,066
Total		9,948	5	3,675	4624	8,604	439	5	444	32,773	10	2,642	15999	18,651	7,210	6,912	14,122

KARNATAKA STATE GAZETTEER

Statement showing the total road length in charge of various agencies as on 31st March 1980.

(length in km)

Sl No.	Name of the Department/ Authority	Classification-wise break up					Surfaced roads				Unsurfaced roads		
		NH	SH	MDR	ODR	VR	Total	CC	BT	WBM	Total	Motor-able.	Non-Motor-able.
1.	Road length in charge of Chief Engineers of PWD												
a)	National Highways	1,968	—	—	—	—	1,968	70	1,838	60	1,968	—	—
b)	Communications and Buildings	—	7,802	12,912	9,048	32,773	62,535	348*	24,115	23,347	47,810	7,790	6,935
c)	Ayacut roads	—	—	—	—	5,455	5,455	1	355	2,738	3,094	168	2,193
	Total	1,968	7,802	12,912	9,048	38,228	69,958	419	26,308	26,145	52,872	7,958	9,128
2	Taluk Boards	—	—	—	—	25,063	25,063	—	105	3,690	3,795	9,011	12,257
3	Forest Dept.	—	—	—	—	2,380	2,380	—	13	445	458	774	1,148
	Grand Total	1,968	7,802	12,912	9,048	65,671	97,401	419	26,426	37,280	57,125	17,743	22,533

\*Length reduced due to recoating of C.C. with B.T.

TRANSPORT AND COMMUNICATIONS

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## RAILWAYS

In India railways were introduced for the first time in 1853 (Bombay-Thana line). At present, railways are playing a very significant role in transporting men and materials to long distances and they are managed by the Central Government. The origin and development of railways in Karnataka can be studied region-wise.

*Princely Mysore :* In the Old Mysore area, the first railway to be constructed was the broad-gauge section of Madras-Bangalore line in 1859 and was opened for public traffic in August 1864. This line was constructed by the former Madras Railway Company under the old-guarantee system of Government of India. This was about 84.5 miles (135 km) long of which 55 miles (88 km) extending from Bangalore to Bisanattam were within the limits of the State. By about 1863-64 a survey work for a system of light railways to connect Bangalore-Tumkur was taken up. The construction of railway by the State (Mysore State Railway) was first contemplated by about 1871 and the project of construction of Bangalore-Mysore line was actually taken up in 1877-78 and earth work between Bangalore and Channapatna was commenced as a measure of famine relief in that year. The first section of three miles, between Bangalore Cantonment and Petta (Bangalore City) was broad-gauge while the metre-gauge was adopted for the remaining line between Bangalore City to Mysore, a distance of 86 miles. This project of metre-gauge State Railway from Bangalore to Mysore was sanctioned only in June 1879 by the Government of India, at an estimated cost of Rs 38.82 lakhs. The project of Bangalore-Mysore line was transferred to the Madras Railway Company in 1880 and it completed Bangalore-Channapatna line (35 miles) in 1881. By the Rendition, besides the 55 mile railway within Mysore State in the Bangalore-Jalarpet broad-gauge line, the Mysore State Railway (M.S.R.) had 58 miles (93 km) on the metre-gauge from Bangalore to Mandya, and it was further extended to Mysore in February 1882. In October 1882, the lines from Bangalore to Tumkur, about 43 miles (69 km) on the metre-gauge was commenced and a loan of Rs 20 lakhs at 5% of interest was raised for the purpose and the line was opened for traffic in August 1884. Later it was continued upto Gubbi, a distance of 11 miles (18 km) in December 1884. Surveys and estimates for extending the line to the State frontier at Harihara was also prepared and the construction work was entrusted to Southern Mahratta Railway Company. In February 1889, the line was opened for traffic from Harihara to Birur and in August



1889 from Birur to Gubbi opening direct communications between Bangalore and Pune *via* Harihara. In order to bring about connection to other important places several lines were laid between 1890 and 1899. By December 1890, a line from Yeshwanthpur Junction to Hindupur, 83 km in length within old Mysore State, was completed and connected to Guntakal in 1893. These lines were metre-gauge lines excepting Kolar Gold Fields Railway which was in broad-gauge. In December 1891, an extension of the line from Mysore to Nanjangud having a length of about 15 miles (24 km) was completed out of State funds and was opened for traffic. The Kolar Gold Fields Railway having a length of about 9.88 miles (16 km) on the broad-gauge from Bangarpet Junction to Marikuppam was completed by the State in June 1894. In July 1899, a minor extension of 0.76 mile from Nanjangud to Nanjangud town was opened. Another line from Birur to Shimoga-Bidare, covering a distance of 37.92 miles was constructed by the State by December 1899. This line connected Shimoga with the Bangalore-Harihara railway line. The lines from Birur to Shimoga and Bangalore-Mysore-Nanjangud which were under the Madras and Southern Mahratta Railways were handed over to the Government of Mysore (State Railway Department) in 1919. From Shimoga-Bidare, the line was extended to Shimoga town in 1929. It was further continued to Raghosahalli in 1930 and to Anandapuram *via* Arasalu in 1934. Later, it was linked to Sagar in 1938 and to Talaguppa in 1940. This Birur-Talaguppa line runs for a length of 161 km. There was a demand to extend this line upto Honavar on the West Coast and also to Bhatkal. After a lull between 1900 and 1910, a vigorous programme was adopted from 1911 and as a result, a new State Railway Construction Department was set up in June 1912. Bowringpet was connected with Kolar by means of a narrow-gauge line in December 1913, financed partly by the Kolar District Board. The Bangalore-Chikballapur light railway was next taken up by the State under agreement with a private Company, namely B.C.L. Railway Company, the survey for the line being already carried out and sanctioned by Government of India in 1909. This line from Chikballapur was first opened for traffic upto Yelahanka in April 1915 and to Bangalore City through Yeshwanthpur in 1918 in stages. After the mutual agreement between the Government and the Kolar District Board, connection between Chikballapur to Kolar was effected in 1916. At the same time, work on the principal line from Mysore to Arsikere which had been under contemplation was taken up for execution. This line which is of a length of 103 miles, crossing the three prominent rivers, *viz.*, the Lakshmanatirtha, the Cauvery and the Hemavati was commissioned (1918)

Hassan district has been served by two metre-gauge railway lines with a total length of 78 miles (126 km); one is from Holenarasipur to Arsikere (60 miles) and the other is from a point between Honnavalli road railway station and Arsikere to Banavar (18 miles). The Chikjajur-Chitradurga branch line of about 21 km was opened for traffic in 1921.

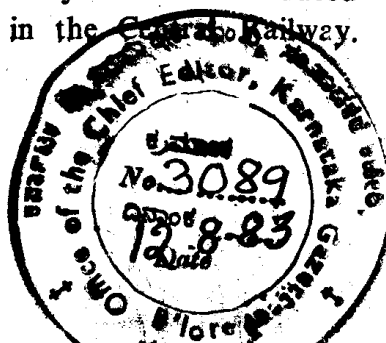
In 1904-1905, the net earnings from passenger, merchandise and miscellaneous traffic over several existing lines of railway after deducting the working expenses was about Rs 8.07 lakhs and for 1905-06 it was about Rs 10.99 lakhs. The decade-wise development in railway lines owned by the State from 1881 when the railway line was opened is as follows.

<i>Year</i>	<i>Length of lines open for traffic (miles)</i>	<i>Number of passengers conveyed (lakhs)</i>	<i>Net earnings (lakhs Rs)</i>	<i>Percentage of net earnings on capital outlay</i>
1881	58	1.63	0.54	1.50
1891	296	6.25	2.27	1.52
1901-02	411	26.41	6.61	2.90
1911-12	411	40.46	14.04	5.61
1923-24	571	57.87	12.09	2.74

By the end of 1925, there were 402 miles of Mysore State Railway lines comprising 263.6 miles of metre-gauge, 102.2 miles of narrow-gauge and 36.2 miles of tramways. In addition to this, 9.88 miles of broad-gauge and 261.6 miles of metre-gauge were owned by the Madras and Southern Mahratta Railway. There had been a gradual increase in railway in the State upto 1937-38 when the total length was 748.19 miles excluding 9.88 miles of broad-gauge, which became State worked during 1947-48. During 1948-49, the length of open lines was reduced to 721.55 miles, due to the removal of tramway lines of about 36.2 miles between Tarikere—Narasimharajapura and Tadasa—Hebbe due to submersion of the area in Bhadra reservoir. The increase in railway length was in the metre-gauge section only. In 1946-47, the construction of a railway line from Kadur to Chikmagalur was sanctioned as a post-war measure, though survey work had been initiated as early as 1926. However, even today the aspirations of the people are not yet realised. The erstwhile Government

of Mysore had several programmes of railway construction in the State during the triennial period of 1917-1918 to 1919-1920, of which the lines between Shimoga-Bhatkal, Mysore-Madikeri (extending upto Tellichery), Nanjangud - Kakanakote, Tumkur-Chitradurga *via* Sira and Hiriya, Koppa-Muthodi, Koppa-Chikmagalur *via* Mudigere, Nanjangud to Erode *via* Chamarajanagar, Narasimharajapur to Sringeri, and Bangalore-Hosur were prominently considered. Kodagu is not still served by railway till now. The necessity of linking the Mysore plateau with Mangalore Port was felt as early as 1882 and the construction of Hassan-Mangalore railway line was pressed right from that time. Another proposal to open a Chikmagalur-Hassan railway line linking it up with Hassan-Mangalore line resulted in a survey of 60.5 km in 1912.

**Gulbarga Area:** The Gulbarga area has two major broad-gauge sections *viz.*, Madras-Bombay line passing through Raichur-Wadi-Gulbarga and the other from Wadi to Secunderabad passing through Chitapur and Sedam. In addition, the Vikarabad-Purli Baijnath line passes through Bidar district for a distance of 78.73 km. The broad-gauge line from Madras to Bombay enters Karnataka on the bank of the Tungabhadra in Raichur district and leaves the State at Dudhni in Gulbarga district. The distance of this line in Raichur district is about 56 km and that of this line in Gulbarga district is 164 km. The broad-gauge portion of Raichur-Sholapur section was laid between 1861-1871 in order to provide a direct railway communication between the Presidencies of Madras and Bombay. The total length of this line in Karnataka is about 220 km. In between Raichur and Gulbarga districts, the line passes for a short distance in Mahboobnagar district of Andhra. The Great Indian Peninsular Railway Company administered this line. Later on, the Government of India took over this section in 1944. After Independence, the Great Indian Peninsular system was merged with the Central Railway. In the Wadi-Secunderabad section, there is a total length of 43 km in Gulbarga district. This railway line was opened in 1874, connecting Hyderabad with Madras and Bombay. This line was administered by the Great Indian Peninsular Railway till the end of 1878. From 1878 to 1884, the State Railway Agency was in charge of this line. In January 1885, the Nizam's Guaranteed State Railway took over this section and managed it till the end of 1929. From April 1930 this section of the railway was purchased by the Nizam and was operated by the then Hyderabad Government. When the zonal system was introduced after Independence, this section was included in the Central Railway.



There is a persistent demand for a line from Gulbarga to Bidar *via*, Humnabad. Railway line in Raichur district (Madras-Bombay line *via* Guntakal) has changed from one administration to another during the period of nearly a century. The old Madras Railway (till June 1908), the Madras and Southern Mahratta Railway Company (till 31-3-1944), the Great Indian Peninsular Railway, the Nizam's Guaranteed State Railway, the Nizam's Railway (N.S.), and later on the Southern and Central Railway zones, the parts of which finally have been merged in the new South-Central Railway. The other line in Raichur district is Hubli-Guntakal metre-gauge. The metre-gauge track between Hubli and Hospet was laid out in 1885 and since then, it has served as a major link between the two coasts of the peninsular India. This track in the district commences at a point between Hospet and Munirabad stations and ends in between Sompur Road station and Halligudi station and it has a length of 55.3 km. The broad-gauge line passing through Bidar was constructed by the Nizam's State Railway and was opened for traffic on 1st July 1932. From the beginning it has been a single line. It was integrated into the Central Railway in 1951 and then into the South-Central Railway in 1966 which has its headquarters at Secunderabad.

In Bellary district, there are four metre-gauge railway lines. The South-Central Railway system is operating these lines covering a total length of 209 km. These four lines in the district, are 1) Guntakal to Hubli passing through Bellary and Hospet (already referred to), (2) Bellary Rayadurga line, (3) Hospet-Kottur line and (4) Gunda Road Junction-Samehalli line. The section from Guntakal to Bellary was opened in 1871 and from Bellary to Hospet in 1884. The former was constructed and originally worked by the Madras Railway Company, and this line was at that time a broad-gauge line. In February 1887, the line was handed over to the Madras Southern Mahratta Railway Company and the broad-gauge line was converted into metre-gauge. This section of the line has a total length of 102 km. In 1905, two more lines were opened, one from Bellary to Rayadurga and another from Hospet to Kottur, the former with a length of 53.67 km and the latter 69.46 km. The Bellary-Rayadurga line is a metre-gauge one along the Bellary-Bangalore road. The Hospet-Kottur line runs south of Hospet along Hospet-Harihara road upto Hagaribommanahalli. The Hospet-Kottur and Hospet-Samehalli lines branch out at Gunda Road Junction. The distance between Gunda Road Junction and Samehalli is 21 km, the line being constructed at the instance of Messes Sandur Manganese and Iron Ores Private Limited,

There has been a public demand to open a few more lines in the district. The question of extending Bellary-Rayadurga line upto Chitradurga, has been recently taken up. A new proposal for constructing a line from Hospet to Harihar *via* Harapanahalli is being pressed. A new broad-gauge line is now being laid from Torangal station to Mudukulpenta covering a distance of 23.5 km. Besides the four existing metre-gauge lines, a broad-gauge line was constructed in 1966 from Guntakal to Hospet running parallel to the metre-gauge line exclusively for the movement of the iron ore.

*Mangalore - Kollegal area :* In Dakshina Kannada the only route passing through the district for long was the broad-gauge line from Madras, terminating at Mangalore. Before the Reorganisation of the States, the railway line in the district was about 46.7 km in length ; but when the Kasargod taluk was separated from the district and merged with Kerala, only 12.87 km of the railway remained in the district. This line was constructed in 1906-07 when the Calicut-Azzhikal section of the broad-gauge was extended upto Kanhangad and then in stages to Kasargod, Kumbala and Mangalore. Of late, a track of about 11 km is laid from Mangalore station upto New Mangalore port, Panambur. With the opening of Mangalore-Hassan railway line for goods and passenger traffic in 1979, the total length of railways in the district has increased. Ever since 1870, there has been a persistent demand for a link between Mangalore port and Mysore plateau. A survey of four possible routes was conducted between 1893 and 1894 by Mr. Groves. Later, the Government of India ordered for a detailed survey of the distance of 240.5 km from Mangalore to Arsikere and the work was entrusted to Mr. Gilchrist who conducted a location survey during 1895 to 1899. In 1954-55 another detailed survey was conducted, and the Railway Board sanctioned the line in 1964. The actual work was taken up in 1965 and by April 1970 about 11.26 km line was completed. Out of the total length of 189 km of Hassan-Mangalore new line, a length of 112.53 km (70.07 miles) is within the confines of the Dakshina Kannada district. Another broad-gauge line linking Mangalore and Apta a town near Kalyan in Bombay is under active consideration. The survey work was over by June 1971. Kollegal taluk is not served by railways.

*Belgaum Area :* The railway construction between Pune and Harihara *via* Belgaum and Dharwad districts had begun in 1882 by the Southern Mahratta Railway Company, which was completed by the beginning

of 1887. By 1889, the system of railways worked out by the this Company extended from Pune to Mysore *via* Bangalore. The line was also linked with Goa from Londa Junction. In 1908, it was amalgamated with the Madras Railway Company to form the M. & S.M. Railway Company which was further taken over by the Government of India on 1st April 1944 in pursuance of the policy of State management. Again as a result of the regrouping of the railways in 1951-52, the railway of the M. & S.M. system were included in the Southern Railway Zone and since 1966, the lines of this area have been entrusted to the South-Central Railway. Dharwad district has three rail routes, *i.e.*, Miraj - Bangalore line, Hubli - Sholapur line and Hubli - Guntakal line. The Hubli - Sholapur metre-gauge line *via* Gadag, passing through Bijapur district was opened in 1884. It became the part of Madras and Southern Mahratta Railway Company in 1908. Mainly to facilitate the export of firewood and timber and other forest products of the Uttara Kannada district (which is otherwise poorly served by the railways), a railway line between Dandeli and Alnawar was provided during the Second World War.

### After Independence

Before the regrouping of the railways in 1951, the present geographical area of Karnataka State was served by the then Madras and Southern Mahratta Railway, the South Indian Railway, the Mysore State Railway, the Nizam's State Railway and the Great Indian Peninsular Railway. In 1951, the Railways were taken over by the Central Government and effected a Zonal system. Thus on 14-4-1951, Southern Railway was formed. The entire metre gauge and narrow-gauge railway network in the State was under the charge of the Southern Railway. At the time of Reorganisation in 1956, the length of railway lines was about 2,595 km (comprising 1,232 km in old-Mysore area and 1,363 km in the rest of Karnataka) of which broadgauge was 352 km, metre-gauge 2,080 km and 163 km of narrow-gauge. The State had about 2.2 miles only of railway line per 100 sq miles of area as compared with that of Bengal (4.0 miles), Uttar Pradesh (5.1 miles) and Gujarat (6.0 miles). Even within the State, the development of railways had been quite uneven. In the old Mysore, there was only eight miles of railway line for every lakh of population whereas in the rest of Karnataka it was about 12 miles. However, in respect of the development among the districts Bangalore and Dharwad districts top the rank, having about 3.9 and 4.0 miles of line per 100 sq miles with a length of 120 miles and 205 miles of

lines respectively. But the case of Raichur, Bidar and Bellary was utterly bad with a length of 0.6, 1.5 and 1.5 miles per 100 sq miles area having a total length of 35, 45 and 150 miles of railway line respectively. The position of Coastal districts was still worse, Kodagu having no lines at all. The districts of Uttara Kannada and Dakshina Kannada had only about 30 and eight miles of railway line, accounting for only 0.8 and 0.3 mile respectively for every 100 sq mile area. Having due regard to strategic, administrative and operational considerations, the South-Central Railway with its headquarters at Secunderabad was created in October 1966 taking some portions out of Southern and Central Railways. The previous Central Railway's portion in Karnataka as well as the portion of Hubli and Guntakal Divisions of the Southern-Railway now form part of the South-Central Railway. Thus, since October 1966, three zonal railways, namely, Southern Railway, South Central Railway and Central Railway serve the needs of the people of Karnataka State. The total length of railways in each district of Karnataka State at the end of 1976-77 is given in the following table.

<i>District</i>	<i>Railway routes (in km)</i>	<i>Railway route per 100 sq km of area</i>	<i>Railway route per lakh of population as per 1971 Census (in km)</i>
Bangalore	348	4.34	10.33
Belgaum	220	1.64	9.07
Bellary	309	3.25	27.51
Bidar	79	1.45	9.58
Bijapur	202	1.18	10.17
Chikmagalur	94	1.30	12.75
Chitradurga	129	1.18	9.23
Dakshina Kannada	107	1.26	5.57
Dharwad	320	2.32	13.66
Gulbarga	205	1.26	11.78
Hassan	167	2.44	15.15
Kodagu	—	—	—
Kolar	117	2.12	11.66
Mandya	83	1.67	7.19
Mysore	121	1.01	5.82
Raichur	105	0.74	7.41
Shimoga	126	1.19	9.67
Tumkur	98	0.92	6.01
Uttara Kannada	46	0.44	5.41
State Total	2,936	1.53	10.02

Out of the total length of 2,936 km in the State as in 1976-77, only 546 km were of broad-gauge, 2,242 km of metre-gauge and 148 km of narrow-gauge. This shows the deficiency of the State in broad-gauge lines which are much needed for quick-transportation services and direct-route connections to important cities of the country. The fact is that the railway length in the State was hardly 14.5 km per 1,000 sq km against the all-India average of 18 km per 1,000 sq km. The figures for 1981 are 15.71 km for every 1,000 sq km of area and 81.3 km for one million population. The entire network of railways in the State is almost in single line except the section from Guntakal to Hospet which is served by both broad-gauge and metre-gauge lines. The sections of Bangalore City-Yeshwanthpur, Bangalore-Krishnarajapuram and Shahbad-Wadi are served with double lines. The position of Karnataka in respect of broad-gauge lines compared with other Southern States and all-India figures as in 1977-78 was only 15.95 km per million population, whereas it was 25.00 in Kerala, 66.70 in Andhra Pradesh, 21.00 in Tamilnadu and 53.60 at all-India level. At present (1981-82) the State has about 3,013.5 km of railway line comprising of various gauges which are confined in Southern Railway (1,630.50 km), South-Central Railway (1,297 km), and Central Railway (86.00 km). Ever since the formation of Zones, only two new lines are opened for traffic in the State, one being Bangalore City-Salem line (65 km in 1969) and the other one is Hassan-Mangalore line (189 km in 1979). When compared to the total kilometrage of Indian Railways, the total length of railways in Karnataka forms about 4.8 per cent only and in respect of different gauge lines, the percentage in Karnataka is about 1.5 in broad-gauge, 9.0 in metre-gauge and 3.45 in narrow-gauge. In Karnataka, the entire length of about 3,013.5 km of railway track is spread over the jurisdiction of six divisions of railway, namely, Mysore, Bangalore and Palghat divisions of Southern Railway, Hubli and Guntakal divisions of South-Central Railway, and Sholapur division of Central Railway, though the major coverage is by Mysore, Bangalore and Hubli divisions. The important junction stations from which major trains connecting neighbouring States originate are Bangalore City and Hubli. The other junction-stations which complete the network of tracks within the State are Mysore, Arsikere, Wadi, Hassan, Birur, Yeshwanthpur, Yelahanka, Bangarpet, Chikjajur, Londa, Alnawar, Gadag, Hospet, Bellary, Gunda Road and Mangalore.

### Development

Developmental aspects in the Railways in Karnataka which have been executed and those which are under contemplation can be considered



broadly under (a) Track-expansion programmes, (b) Surveys and (c) Railway Services in backward areas.

*Track-Expansion Programme* involves laying of new lines, conversions, doublings, electrification and construction of new bridges or renovation or remodelling of bridges. All the Zonal railways have evinced great interest in these respects in Karnataka. Construction of a new line between Chitradurga and Rayadurga in Andhra over a length of 99 km was taken up by the Southern Railway, on an urgency certificate of Rs three million, sanctioned in May 1982. The completion of this project will help the backward district of Chitradurga in Karnataka.

Under the gauge conversion, Bangalore-Guntakal metre-gauge line was converted to broad-gauge and was opened for traffic in January 1983. The next significant project of conversion of metre-gauge to broad-gauge is that of Bangalore-Mysore Section (138.25 km) which was started in April 1979. Doubling the lines is another project which helps quicker and unhindered passenger and goods transportation services. In this connection, work in Madras-Bangalore line was taken up in 1970 and from Bangalore end, the work till Krishnarajapuram (13.87 km) was completed in September 1980. The work on another patch of 9.30 km between Krishnarajapuram and Whitefield had been sanctioned for doubling in 1981-82. Steam locomotives are generally used in the State. Diesel locomotives are being replaced over a limited number of sections for hauling certain passenger as well as goods trains. Electric traction is not in use in the State though sections of Wadi-Raichur-Guntakal and Hospet-Guntakal-Renigunta of South-Central Railway are under consideration for electric traction.

*Survey for New Lines :* Demands for new railway lines connecting prospective business centres are being made and survey marks over the proposed new lines are taken up. Among such lines, those connected with Kanara and Konkan coasts and those connecting the coastal areas with the plateau are notable. As early as in 1868, George Latham had conducted a survey for a broad-gauge line from Karwar to Bellary through Baraballi Ghat between Yellapur and Mallapur. According to this survey, the distance between Karwar and Hubli was calculated to be the shortest (92 miles) as against another route (120 miles) *via* Arabail Ghat. This earlier survey could as well be a guidance to the present administrative authorities. A new line between Mysore-Tellichery *via* Madikeri was discussed as early

as in 1881-82 and the Commissioner of Coorg in his letter dated 13-7-1883 to the Secretary to the Chief Commissioner suggested two alternative routes for Mysore-Madikeri section, one from Mysore *via* Yedathore (present Krishnarajanagara)-Bettadapura - Fraserpet (Kushalnagar) and the other being a more direct route *via* Hunsur - Sagarkatte-Gonikoppal.

However, during the 20th century, several survey works have been initiated though much progress in follow up work has not been done in subsequent years. Some of the proposed new lines have been either dropped or cancelled for the reasons of their unremunerative nature and poor prospectus. Among the surveys completed and report sent to the Railway Board for new lines in the Southern Railway Zone, 1) Haveri - Havanur, completed in 1917, 2) Hubli - Sirsi in 1920, 3) Tumkur - Sira - Chitradurga in 1927, 4) Nanjangud - Kakanakote in 1947, 5) Kadur - Chikmagalur - Sakleshpur in 1961, 6) Chikmagalur - Hassan in 1914, 7) Hosa Agrahara - Mysore frontier section of Mysore-Coorg (Cauvery line) in 1920, 8) Chamarajanagar - Kollegal in 1928, 9) Mangalore - Udupi (Malpe) in 1931, 10) Kottur - Harihar in 1971, and 11) Talaguppa - Bhatkal in 1946 confine to the areas within the State. Surveys for lines connecting places of neighbouring States are, 1) Bangalore - Hosur (of Tamilnadu) in 1929, 2) Bangalore - Cuddapah (of Andhra Pradesh) in 1947, 3) Sidhaghatta - Hosur (of Tamilnadu) in 1938, 4) Chamarajanagara - Satyamangala -- Mettupalyam (both of Tamilnadu) in 1950, 5) Chamarajanagara -- Satyamangala -- Coimbatore in 1970 and 6) Bangalore - Morappur (of Tamilnadu) in 1951. In respect of the conversion to broad-gauge between Bangalore City to Hubli along with connected branch lines and Bangalore City - Salem, surveys are in progress, being sanctioned in 1981 and 1982 respectively. A survey sanctioned in 1981 is in progress for laying a new line in broad-gauge between Chamarajanagar and Mettupalyam. Surveys for the conversion of the existing narrow-gauge line into broad-gauge between Yelahanka and Bangarpet and for laying a new line in broad-gauge between Mysore and Madikeri *via* Kushalnagar have been sanctioned in 1980 and 1982. Surveys for the new lines/conversion are also undertaken by the South-Central Railway Zone which are going to benefit the State of Karnataka in future. The survey of the line-capacity work in Secunderabad - Wadi - Guntakal section was completed and the report was sent to the Railway Board in November 1980. Among others, traffic surveys for conversion of lines to broad-gauge between Hubli - Miraj, Londa - Vascodagama line with all branch lines, Gadag - Sholapur, are in progress. A preliminary survey for

construction of a new broad-gauge line from Macherla to Raichur *via* Gadwal has been sanctioned. Besides the projects and surveys for new lines/conversions, several other new proposals for lines in the State are demanded for consideration. Among them, mention may be made of the following.

*Konkan Railway:* A broad-gauge railway line is proposed between Apta near Kalyan in Bombay and Mangalore along the West Coast. This proposed railway line would greatly help the development of the backward areas along the West Coast. The Government is keen on going ahead with the execution of the project. The work on the first phase of the coastal railway between Apta and Rohan in Maharashtra was inaugurated in 1978, but the Railway Ministry is still awaiting the approval of the Planning Commission for starting the work on the project from Mangalore end.

*Hubli - Karwar Railway:* The long persistent demand for linking Karwar with Hubli by railway has not yet received the attention. A preliminary engineering-traffic survey for connecting Hubli to Karwar was done by the South-Central Railway during the year 1972 as per the instructions of the Railway Board and it was found that the total estimated cost of the project was Rs 34.82 crores and the length of the railway line was about 192 km. The anticipated return was between 0.19% to 10.21% for a traffic between one million tonne to six million tonnes. The Railway Board has advised that unless a firm decision is taken to export five million tonnes of iron ore through Karwar Port and that until the Port is developed to handle this quantity, the construction of this railway line will not be justified. According to the 1977 traffic reappraisal survey, the cost of the project was Rs 57.03 crores and the return was estimated at about 4.6 per cent without taking into account the cost of the land and wooden sleepers. However, a final decision on the above railway line is still pending.

There is also a proposal to expand the Bellary-Rayadurg metre-gauge line upto Chitradurga and also for constructing a line from Hospet to Harihara *via* Harapanahalli. Among the other railway lines which are being pressed, mention may be made of the lines between :

- 1) Gulbarga and Bidar *via* Humnabad ;
- 2) Mysore district to the West Coast *via* Kushalnagar with a branch line connecting Madikeri ;

- 3) Bangalore and Hassan *via* Kunigal, as a direct link to Mangalore;
- 4) Hospet and Harihara *via* Harapanahalli; and
- 5) Conversion of Hassan – Mangalore line into broad-gauge.

### **Sheds and Yards**

There are only two break of gauge-transshipment points in the State located at Bangalore City station and Bangarpet. There are five marshalling yards in the State, three for broad-gauge (Bayyappanahalli, Wadi and Raichur) and two for metre-gauge (Hubli and Yeshwanthpur). The goods sheds are located at Bangalore City, Bangalore Cantonment, Krishnarajapuram, Raichur, Bangarpet, Mandya and also at other big railway stations. In the Hubli Division, there are as many as 31 goods sheds. Several loco-sheds are also located in the State for steam and diesel engines. Among the sheds for the steam engine, the major sheds are at Bangalore, Mysore, Arsikere, Hubli, Gadag and Castlerock and the minor sheds are at Shimoga, Bellary, Hospet, Alnawar, Londa and Bagalkot. The locosheds for diesel engines are at Bangalore Cantonment, Yeshwanthpur and Krishnarajapuram. The locoshed at Krishnarajapuram is a Rs three crore project expected to be commissioned shortly and will be capable of attending 60 engines a day. Several sheds for the repairs to coaches and wagons are functioning in Karnataka, some of which are at Bangalore, Yeshwanthpur, Mysore, Arsikere and Birur.

### **Railway Users' Amenities**

Among the various amenities provided for the benefit of the users, improvements and remodelling of stations with facilities of cover over platforms, provision of water taps on platforms, water coolers, public address systems, merchants' waiting rooms, electrification of stations, raising/ extension of platforms, provision of retiring halls, dormitories, etc., to passengers, latrines and toilet rooms on platforms, improved approach roads to stations, etc., are important. For instance South-Central Railway Zone has been allocated with an outlay of Rs 42 lakhs in 1982-83 for the purpose. The railway allows season tickets at concessional rates for the benefit of commuters and also further concession to student commuters. Special trains are put on certain sections for the benefit of passengers during certain special occasions like *jatras*, Dasara festivities, etc. Ministry of Railways has constituted a special task force called Service Improvement Group to inspect, monitor and direct zonal railways

regarding the maintenance of cleanliness of stations and on trains, booking and reservations, catering and other amenities, etc. The Service Improvement Group has also constituted Surveillance Teams on various points on the zonal railways. In order to secure better representation of railway users and affording more frequent opportunities for consultation between the Railway administrations and users, the Government of India established Railway User's Consultative Committees at the Divisional and Zonal levels and a Council at the National level. These bodies consider matters relating to provision of amenities, opening of new-stations, arrangement of time tables, improvements of existing amenities and such matters of public interest.

### **Railway Workshop, Hubli**

Railway Workshop at Hubli was set up by the erstwhile Southern Marhatta Railway Company in 1885. Later in 1919, it came under the Madras and Southern Marhatta Railway Company and on to the jurisdiction of Southern Railway in 1951. When the South-Central Railway Zone was formed in October 1966, the workshop came to be governed by the South-Central Railway, undertaking overhaul, repairs, reconditioning, manufacture of spares, etc. A major remodelling of the workshops was carried out during 1960-1966 at a cost of Rs 1.55 crores, being equipped at present, with up-to-date machines of about 727 in number (1982). It undertakes overhauling, repairs, etc., of the entire metre-gauge rolling stock. Besides, a start has also been made for undertaking the manufacture of a few broad-gauge components for carriage and wagons, in addition to the spares required for diesel engines. The workshop manufactures about 2,500 items of components required for day-to-day maintenance. During 1969, the workshop at Hubli was adjudged as the best workshop and the Railway Board's award was bagged by it for the highest productivity during the 100-days drive from 1-1-69 to 31-3-1969. Presently, the workshop has on its role 4,945 workers comprising 4,413 in mechanical, 408 in electrical and 124 in accounts sections. The workshop complex comprises 13 independent shops (See table at the end of the chapter).

### **Railway Workshop, Mysore**

The Railway Workshop at Mysore was established in 1938 as a part of Mysore State Railway and brought into the fold of the Southern Railway System in 1951. This is one of the four independent mechanical workshops in the Southern Railway Zone. Periodical over-hauling, heavy repairs to

damaged or worn-out components, manufacture of spares to locomotives, carriages, wagons and other rolling stock, etc, are carried out in this establishment. It has a construction section for narrow-gauge coaches at the rate of one coach per month. At present (1982), the workshop has 25 buildings and 495 machines, employing about 2400 workers.

### **Training Facilities**

Several institutions are functioning to provide training to the staff of the railways. The Traffic Training School at Srirangapattana instituted on 26-1-1979, provides (a) initial course for class IV staff with a duration of about three weeks, (b) refresher course for about 10 days to Shunting Masters, Shunting Jamadars, Pointsmen, Cabinmen, Levermen, Gatemen and trained hamals and (c) a promotional course for Assistant Guards for about three weeks to acquaint them with rules and enable them to work as independent Assistant Guards. The Railway Basic Training Centre at Mysore was opened on 15th August 1977 and is housed in a carriage at Mysore Station. It imparts training to artisans and the staff of carriage and wagon-maintenance wing. The duration of training is about three weeks, and 125 persons are given training annually.

There is a Training School at Dharwad for giving training to the Engineering Class IV Staff and also to Traffic Class IV Staff with an intake capacity of about 80. The school provides (a) Refresher course for pointsmen (ten days), (b) Initial course for pointsmen (21 days), (c) Gatemen course (14 days), (d) Initial course for Gangmen (14 days) and (e) Refresher/promotional course for Gangmen (30 days). Besides, safety camps are also conducted in this school for six days, in respect of Class IV Staff of Traffic Branch under the guidance of a separate Instructor. There is a similar Training School at Bellary under the control of Southern Railway which conducts similar courses to the Class IV Staff. There is an Electrical Technical Training School at Hubli since 1-4-1968 for imparting training to skilled artisans with an intake capacity of 20. There is also a mechanical branch in which training to (1) loco-engine staff for promotional courses, for a duration of 6 to 12 weeks, (2) practical training to drivers about steam engine, and diesel engine each for a period of four weeks, (3) Refresher/promotional course for class IV Carriage and Wagon employees for a period of two months and (4) to repairs and maintenance staff like engine fitters, boiler makers, fitter khalasi and boiler maker/khalasi, for a period of two months. The System Technical School at Bangalore was started on 16-9-1957. The objectives are to impart

training to power running staff, *i.e.*, drivers, shunters, firemen, diesel assistants, apprentices and train examiners. About 20 courses are conducted varying from two weeks to one year. Refresher courses are also conducted for running staff and train examiners. The intake capacity is about 150 depending on the accommodation in the hostel. There is also an engineering training school at Bangalore Cantonment on similar lines.

An Office of the Railway Service Commission was opened in Bangalore on 19-9-1980. It functions as a recruitment body for the Railways, in the selection of initial staff of the Class III category such as Assistant Station Masters, Guards, Commercial Clerks, Ticket Collectors, Typists, etc.

### **Railway Protection Force**

The erstwhile railway watch and ward organisation became Railway Protection Force in 1955. Protection of various properties belonging to the Railway system, detection of theft and pilferage of booked consignments and pulling of chains, escorting passenger and goods trains, etc., are some of its duties and responsibilities. The Railway Protection Force in the State Works under several railway divisions. The divisional head of the R.P.F. will be either a Security Officer or Assistant Security Officer depending on the nature of responsibility in the Division. The Railway Protection Force usually has four branches, *viz.*, (a) Uniformed branch, (b) Fire brigade, (c) Prosecution branch and (d) Ministerial branch. This department has identified black spots and vulnerable sections in each division and at such spots posting of pickets, armed or unarmed patrolling and many other preventive measures are taken up. The Railway Protection Force maintains a Dog-Squad also in each of the Division. Besides the Railway Protection Force, there is also the Railway Police set up in the State, headed by Deputy Inspector General, with headquarters at Bangalore.

### **Commission of Railway Safety**

The Southern Circle office of the Commission of Railway Safety is functioning at Bangalore, since 1-1-1932, with the Commissioner as the Head of the Office having jurisdiction over the Southern and South-Central Railway. The main task of the office is to assist the Railway executives with a view to ensure that all reasonable precautions are taken in respect of operation of trains, track locomotives, rolling stocks and signalling and to offer suggestions in the matter to the Railway Board,

The principal functions of the Commission are 1) inspection of new lines prior to authorisation for passenger traffic, 2) periodical inspections of open lines, 3) approval of new works and renewals effecting passenger carrying lines, 4) investigation into accidents to passenger trains considered to be of a serious nature and 5) general advice on matters concerning the safety of train operation. Any structural or material alterations can be effected only under the Commission's prior approval and sanction.

### **Railway Museum**

The Railway Museum at Mysore is the first Regional Museum set up on 2nd June 1979. In this Museum there is a circular gallery named 'Chamundi Gallery' which exhibits collection of paintings and photographs showing the development of railway-signalling from the very beginning and also the old and new coaches. The adjacent building "Sriranga pavilion" houses two royal coaches of the Royal train of the Maharaja of Mysore. Among other exhibits, in the Sriranga pavilion, Maharani's saloon and the kitchen/dining car unit, Mysore State Railway clock in good condition, manufactured during 1881, working model of steam engines, etc., are important. There are several out-door exhibits like steam engines, coaches, rail-motor car, signalling lever frames, etc. The battery-operated mini-electric train is a unique exhibit.

### **Wheel and Axle Plant**

The Wheel and Axle Plant at Yelahanka, one of the biggest projects in Asia, approved by the Government of India in July 1978, and has been set up to manufacture the full requirements of wheels and axles for rolling stock over and above the capacity available at the plants at Durgapur and Tata Iron and Steel Company. The Project is estimated to cost approximately Rs 129 crores at current prices. The installed capacity of the plant will be about 70,000 wheels and 23,000 axles with a scope for future expansion. The total value of the annual output from the plant is expected to be about Rs 55 crores at current prices effecting a savings of foreign exchange to the tune of Rs 38 crores. The plant is expected to commence trial production of wheels and axles in 1983.

### **Rail India Technical and Economic Services Limited**

The Rail India Technical and Economic Services Limited (RITES), Government of India undertaking under Ministry of Railways, set up in



the country during 1974, has its Southern Region office at Bangalore. The RITES has several professional consultancy wings in the various fields such as transportation, material handling, industrial engineering, quality assurance and inspection and training of personnels. In Karnataka, RITES are undertaking inspection and quality assurance system at Bharath Earth Movers Ltd., Hindustan Machine Tools, New Government Electric Factory, Mysore Lamps, Guest Keen Williams and a host of other industries on behalf of Indian Railways, Canadian International Development Agency, Bangladesh Railway, Kuwait Railway and Ceylon Government Railway. The total worth of materials inspected in the State is about Rs 60 crores per annum.

### **Research Designs and Standards Organisation**

The Research Designs and Standards Organisation, a Government of India undertaking under the Ministry of Railways, has a branch office at Bangalore under the control of a Deputy Director of Inspection (Signalling and Telecommunications) since 1970. This office was transferred from Madras in view of the location of industries like ITI., BEL., etc., at Bangalore from whom signalling relays and telecommunication equipments had to be procured in large quantities. The jurisdiction of this cell extends over the four Southern States. The functions of this organisation consists of 1) co-ordination between RDSO (Lucknow) and various manufacturing organisations of electric and electronic equipments, (2) assistance in the laboratory evaluation and field trial of such equipments to finalise their designs, (3) assisting RDSO (Lucknow) in formulation of standard specifications in respect of S and T items, to enable the RSDO (Lucknow) to issue approved list of suppliers, (4) assisting railways in locating new firms to undertake manufacture of standardised S and T items wherever acute shortage or delay in supply from existing firms is observed, (5) helping the new firms to make developed S and T items by giving technical guidance and suggestions, (6) assessing periodically the capacity-cum-capability of various approved as well as new firms so as to assist the RDSO to issue an approved list of suppliers for procuring quality items of S and T, (7) inspecting the materials to be supplied to various railways against regular purchase orders to ensure that the materials meet the specifications and (8) to conduct periodical type tests in respect of standard items as and when they fall due or when any change specification or design has been decided by the Railways.

There are organisations in Bangalore, particularly Hindustan Aeronautics Ltd., and Bharat Earth Movers Ltd., who undertake the work of building railway coaches. The Hindustan Aeronautics Ltd., started Rail-coach division in 1947 for building railway coaches and this division was transferred to Bharat Earth Movers Ltd., after a few years. The Bharat Earth Movers Ltd., has the Rail-coach building division at Bangalore which produce rail coaches.

### **City Circular Railway**

An electric tramway project had been planned even earlier in 1914 and an estimate had been sanctioned by the erstwhile Government of Mysore. A further revised estimate was prepared in 1917-18 taking cognisance of the developments during the period after 1914. However, during 1982, the question of laying a circular electric railway to meet the requirements of commuters of the fast-growing Bangalore Metropolitan area has been under consideration. A project plan is being prepared and according to the plan, the circular railway is expected to touch Banasawadi, HAL Air Port, Bellandur Village, Koramangala, Madivala, Kanakapura Road, vicinity of Bangalore University campus, Chord-Road, with Yeshwanthpur as both starting and terminus point.

### **TRAMWAYS**

Tramways are in existence in certain areas of the State particularly, Shimoga and Chikmagalur districts. The main object of laying tramways had been to transport forest products and raw materials like timber, ores, lime-stones, quartz, clay, etc., consumed in large quantities by industrial establishments. The first tramway was constructed in the State of erstwhile Mysore, under the Mysore Tramways Regulation of 1906 from Shimoga to Kumsi (sanctioned in 1907) and from Sheregere an intermediate station to Shankaragudda (sanctioned in 1915) by Workington Iron and Steel Company.

Another line between Tarikere and Narasimharajapura (26.6 miles) was laid in stages in order to carry forest products. But passenger traffic was also allowed in subsequent years. The track between Tarikere and Lakkavalli was opened for passenger traffic on 22-5-1915 and thereafter to Narasimharajapura on 15-5-1917. The total cost of the entire length of track was about Rs 4.73 lakhs. During 1917-18, a branch line from Tadasa an intermediate station, to Hebbe over a length

of 9.6 miles was taken up for construction and the track was opened for goods traffic from 5-2-1921. The entire track of 36.2 miles had to be closed for traffic in 1949 due to the submergence of the area in the Bhadra Reservoir.

During 1917-18, Tramway Scheme of the Iron Works were under construction at a cost of Rs 5.21 lakhs and Rs 5.31 lakhs for lines of Bhadravati, Agasanahalli and Bhadravati-Kemmannugundi respectively. Now there are three tramways viz., 1) Bhadravati-Kemmannugundi, 2) Bhadravati-Joladal and 3) Bhadravati-Agasanahalli. Bhadravati-Kemmannugundi tramway (40.22 km) connects Bhadravati with Tanigebyle in Chikmagalur district and was opened for traffic in 1923. It transports the iron ores of Kemmannugundi, brought to Tanigebyle through a ropeway. Bhadravati-Joladal tramway, opened for traffic in 1934, connects with Bhadigunda lime-stone mines which are about 19.3 km away. Bhadravati-Agasanahalli tramway, started in 1950, connects Bhadravati with black clay mines located at Bilikalbetta (12.87 km from Bhadravati) and also Umblebyle (38.18 km from Bhadravati). It is meant to transport quartz and black clay to Bhadravati everyday.

#### WATER TRANSPORT

Water transport also plays a vital role in the transport system. Karnataka has had many waterways and more notable in this respect are the coastal districts. The waterways include inland water transport and ocean transport.

##### Inland Waterways

Before the introduction of new modes of transport, only the country boats, basket boats, crafts, etc., were used for transportation from place to place, where rivers or streams had to be crossed. The rivers and ferries had to be crossed by rafts, basket boats, canoes, etc. All these crafts were propelled by long bamboo poles. (These boats at the ferries were licensed by the Taluk Development Boards or Village Panchayats). Owing to either rocky or shallow beds, most of the rivers in the erstwhile Mysore State were not navigable. In the Bombay Karnataka area there were 43 ferries, in 1882, maintained by the Public Works Department.

In the districts of Uttara Kannada and Dakshina Kannada the inland water transport was more popular. It has been recorded in chronicles of travellers that foreign boats used to go upstream upto Barakur and

Basrur which are about five km inland. The waterways worth mentioning are the two important routes *viz*, from Mangalore to Buntwal along the Netravati, a distance of 28 km and Mangalore to Gurpur, along with the Phalguni (Gurpur) river upto a distance of 16 km.

The inland water navigation owes its existence to the presence of many rivers and streams. The Inland Water Transport Committee set up by the Government of India in 1957, examined the role of inland water transport in the national transport system. The State Government proposed a scheme of connecting the backwaters from Kundapur to Mangalore to form a continuous inland waterway. It was suggested by the above Committee that this canal could be extended in the north upto Karwar and in the south upto Hosdurg in Kerala. The Gokhale Committee formed by the Government of India in 1959, to evolve a strategy for inland water transport made the following recommendations.

(a) The State Government should undertake the running of the ferries regardless of financial commitments; (b) Abolition of auctioning of ferries was emphasized; (c) Supervision and control by the State of all country boats given for flood relief; and (d) The State Government should make arrangements to see that all boatmen in charge of ferries are properly trained, that the crafts are in a state of good repair and that the police administration makes special arrangements during fairs and festivals to control the crowds at ferry ghats. The Bhagawati Committee formed in 1970 by the Centre on Inland Water Transport in its report endorsed the Gokhale Committee recommendations. It also recommended that the operation of ferry services should be under the technical control of the Ports Department. Further, the development of inland water transport should not be viewed from the sole consideration of economic or commercial viability.

In the coastal belt of Karnataka, Dakshina Kannada is more suited for inland navigation than Uttara Kannada. The navigable portions of the rivers in these districts near their estuaries and the connected backwaters have afforded the facilities for inland water transport. There are altogether 312 km long navigable waters in the two districts. The rivers in the Uttara Kannada providing such waterways are the Gangavali, the Aghanashini, the Sharavati and the Kali. The total navigable length of rivers in this district is about 95 km. The Kali is navigable for a length of 29 km upto Kadra during high tide and a passenger launch service operates in that section. Ferry traffic is heavy, there being 15 ferries

across this river. The Gangavali river is navigable by country boats for 21 km upto Gundabala while the Aghanashini which is navigable by small craft upto 19 km upstream. The Sharavati is navigable for 29 km from Honavar to Gersoppa.

The waterways in the Dakshina Kannada district consist of estuaries and backwaters and the navigable portions of six river systems flowing into the sea, through five outlets. The river basin at Gangolli consists of four rivers and one backwater, flowing into a broad estuary to the north of the town and sea port of Kundapur. In this basin the length of navigability of flows are, the Halady river upto 24 km upstream, the Kubja upto 18 km, the Chakra 15 km and the Kollur 16 km. In the south of estuary is the four kilometer long Kodi backwater which is navigable at high tide. The Swarnanadi which joins the Sitanadi is navigable upstream for 26 km during high tide. The Sitanadi is navigable for a distance of 16 km at low tide and 21 km at high tide. North of the common estuary of the two rivers, is 10 km long backwater navigable high tide. The Udyavar river is navigable for 15 km upstream of Malpe port where it joins the sea. The Mulki and the Pavanje rivers have a common estuary. Navigability is poor in both these rivers and not more than 0.6 metre of water is available at low tide. The Mulki river is navigable for 11 km and the Pavanje for 6.4 km. The Gurpur is navigable at high tide for 19 km and the Netravati for 29 km for small boats of one to four tonnes capacity. The total navigable length of the rivers and connected waters in Dakshina Kannada is 214 km.

As the navigable waterways in Karnataka consist of only of short lengths of the west-flowing rivers and their estuaries and the backwaters connected with them and as the rivers are not connected to each other by North South canal-cum-backwater system as in the case of Kerala, their use is mostly limited to local transportation helping the coastal shipping. The type of boats that ply in the rivers and backwaters of the State are country boats or canoes of one to two tonnes capacity and sailing vessels of two to twelve tonnes. The canoes are used for short distances along the rivers and across the ferries. Out of 672 ferries/navigation services spread over the State, 15 navigation services are directly under the departmental management while 49 navigational services are under the management of department through auction-cum-lease. The rest are in private hands.

In order to streamline the system of inland water transport in Karnataka the Inland Water Transport Organisation came into existence

during 1972 in accordance with the recommendations of IWT Committee constituted by the Government of India. The primary function of this Organisation is to promote development activities of inland navigation undertaking techno-economic and hydrographic surveys of waterways and also collection of essential field data to study the economic viability of the projects besides providing basic transport facilities in the remote rural areas across rivers and reservoirs. The development schemes are confined to the modernisation of existing ferries by providing mechanised crafts of standard design, equipped with life-saving-appliances and navigational equipments to replace the outmoded and primitive type of crafts, *tokras*, etc. The IWT schemes in the State mainly serve the transport needs of rural population. This unit is a wing of the Directorate of Ports and Inland Water Transport. The office of the State Port officer (Inland Water Transport and Ferries Branch) is functioning with its headquarters at Bangalore. During the Fifth Plan seven ferries previously managed by the State Public Works Department and eight ferries managed by the Taluk Development Boards were placed directly under the management of the Departments of Ports (Inland Waterways), and 29 ferries transferred from Public Works Department and Taluk Development Boards were auctioned on lease.

The Year-wise expenditure for four years during the Fifth Plan was, Rs 1.85 lakhs in 1974-75, Rs 4.07 lakhs in 1975-76, Rs 7.94 lakhs in 1976-77 and Rs 6.76 lakhs in 1977-78. No new scheme in respect of water transport was implemented during 1978-79 and 1979-80. The total outlay for the period 1980-85 is Rs. 26.54 lakhs. The Sixth Plan provides an outlay of Rs 51 lakhs for modernisation of 32 ferry services (see table). The traffic moved in the departmental ferries during 1981-82 included 24,30,349 persons, 42,138 scooters/motor cycles, 3,687 rickshaws, 14,219 cars, 8,351 vans, 10,371 trucks, 2,670 buses, 736 carts, 53 jeeps, 3,36,179 cycles, 3,079 animals and 4,33,198.75 quintal of goods. The revenue collected is Rs 17,25,765 and the expenditure is Rs 11,72,401.

To promote the water transport activities in the State, a Water Transport Co-operative Society was formed with its registered office at Karwar in 1977. The activities of the society, included among others, are procurement and supply of stores and spares, etc., for maintenance of floating crafts, etc.

## Details of ferries in Karnataka

<i>Sl. No.</i>	<i>Name of the District</i>	<i>No. of ferries existing</i>	<i>Departmentally managed</i>	<i>Managed by Auction-cum-lease</i>	<i>Proposed for Departmental management during the Sixth Plan 1980-85</i>
1	Bangalore	3	...	...	...
2	Belgaum	41	3	4	7
3	Bellary	44	...	...	...
4	Bidar	12	...	...	...
5	Bijapur	57	5	5	5
6	Chikmagalur	16	...	...	...
7	Chitradurga	8	...	...	1
8	Dakshina Kannada	99	2	9	6
9	Dharwad	30	1	3	2
10	Gulbarga	71	...	25	6
11	Hassan	12	...	...	...
12	Kodagu	21	...	...	...
13	Mandya	12	...	...	...
14	Mysore	74	1	...	1
15	Raichur	34	...	...	1
16	Shimoga	67	2	...	...
17	Tumkur	1	...	...	...
18	Uttara Kannada	70	1	3	3
Total		672	15	49	32

One ferry in Uttara Kannada is managed by the co-operative society. Kolar district has no ferry services.

## Ocean Transport

The erstwhile Mysore State was land-locked and did not possess any ports. The former Mysore State also ventured to own a suitable port. It was Sir M. Viswesvaraya the then Dewan of Mysore who invited Sir Francis Spring, former Chairman of Madras Port Trust, in 1915 and A. G. Lister of the Sir James Wolf Barry and Company, England in 1919 to make a study on the feasibility of developing Bhatkal into an all-weather port. The scheme proposed by the firm was then estimated to cost Rs 1.5 crores and was expected to handle a cargo of one million tons. As the traffic survey made in 1919 promised a traffic of only about two lakh tons

a year, the whole scheme was dropped in 1923. The Mangalore Port and Karwar Port with 18 ports in between were under the former Madras and Bombay States prior to the Reorganisation of States. The ports are New Mangalore Port, Mangalore (old port), Malpe, Hangarakatta, Kundapur and Baindur in Dakshina Kannada and Bhatkal, Shirali, Murdeshwar, Manki, Honavar, Kumta, Tadri, Gangavali, Ankola, Belikeri, Chendia, Binaga, Karwar and Majali in Uttara Kannada. These ports received less attention, as there were two other major ports on the West Coast, viz., Cochin and Bombay. The entire coastal region in Uttara Kannada and Dakshina Kannada was in an undeveloped stage and this caused greater use of a large number of small ports. With the Reorganisation of States and the creation of Mysore Ports Department in July 1957, a sum of Rs 18 lakhs was allotted for providing certain minimum amenities at the several ports in the State except Mangalore during the Second Plan, and the Mangalore Port was under the Mangalore Port Trust Board. The ports in the State except Mangalore were divided into three divisions with headquarters at Karwar, Honavar and Kundapur. The Second Plan period did not see any notable physical progress in respect of ports. Still, during the above period, all the ports except Mangalore handled a total of 4,03,324 tonnes of cargo. During the period between 1957 and 1960, Karwar, Belikeri and Honavar ports commenced exporting iron ore. The Third Plan made a breakthrough in the development of ports. The Department of Ports had an outlay of Rs 280.3 lakhs which included the Government of India loan assistance of Rs 65.3 lakhs. The development of Mangalore into an all-weather major port at Panambur was also sanctioned by the Government of India. The development of Karwar into an all-weather port with the along-side berth for 32 feet draft steamers was one of the major projects included in the Third Plan.

The Fourth Plan made a provision for an outlay of Rs 128 lakhs, which included Rs 114.31 lakhs in respect of carry over schemes of the Third Plan. Traffic potentials, both fisheries and general cargo, were on the increase in the minor ports. The cargo handled at eight minor ports was around 14.43 lakh tonnes by the end of the Fourth Plan. In view of the expected increase in the cargo movement, development of the minor ports became an imperative need. In the light of this requirement, the strategy in respect of the Fifth Plan was to improve the port facilities, to meet the needs of changing technology, and to plan for integrated development of minor ports and their hinterland. In order to achieve this, a total investment of Rs 850 lakhs was proposed in the Fifth Plan and a sum of



Rs 257.24 lakhs was proposed under Centrally-sponsored scheme for the development of Karwar port. During the Annual Plan of 1974-75, a total outlay of Rs 117.38 lakhs was proposed for the development of ports and inland waterways.

During the Annual Plans of 1978-79 and 1979-80, the expenditure was Rs 23.73 and Rs 23.07 lakhs respectively. These Plans aimed at the development of ports of Karwar, Belikeri, Tadri, Honavar, Bhatkal, Kundapur, Hangarkatta, Malpe and the old port at Manglore. The Plan also aimed to complete the on-going schemes, the construction of wharves, jetties and other facilities, the installation of machinery and equipment, facilities for dredging, navigational aids and workshop facilities. The traffic on these nine ports crossed the mark of 11 lakh tonnes per annum (eight lakh tonnes of foreign cargo and three lakh tonnes of coastal cargo). All these are functioning as fair-weather lighterage ports. Based on the potentiality for traffic, Karwar has been taken up for development as an all-weather port in stages under the State sector at an estimated cost of Rs 8.5 crores. The outlay for 1982-83 is Rs 120 lakhs. The ports of Karwar, Belikeri, Tadri, Honavar, Bhatkal, Kundapur, Hangarakatta and Malpe have been selected for the development on the basis of their relative importance and traffic potential. The ports of Karwar, Belikeri and Kundapur handle foreign traffic in addition to coastal traffic and the remaining ports cater solely to coastal traffic.

All the minor ports except Karwar are riverine. The depth of water over the sand bars varies from 1.22 to 1.82 m at LWOST. The sailing vessels and other crafts which draw more than 1.82 m drafts have to await the tidal rise for entry to or exit from the port. Due to technological changes in shipping bigger tonnage ships and faster cargo handling system are being deployed to get quick turn round of ships. In view of the increasing size of vessels, the depth of water available in the navigational channels are not sufficient for safe navigation and it is required to deepen the channels to about 5.5 m below LWOST. The larger ocean-going vessels require deeper channels of about 18 m.

The Port Officers, Mangalore, Kundapur, Honavar and Karwar are authorised to register only sailing vessels under the Merchant Shipping Act. The number of vessels so registered as on 31-3-82 are Mangalore 248, Kundapur 103, Honavar 199 and Karwar 242. Training classes are conducted at Karwar, Kundapur and Mangalore ports during monsoon for training of tindals and seamen in the tradition of sea and the cost of

training is borne by Central and State Governments equally. Karnataka ports are making a headway to achieve a distinct and satisfactory position among the maritime States of India. A dry dock for ship repairing under joint sector at Karwar and a ship breaking unit at Tadri are being studied at the instance of Karnataka State Industrial Investment and Development Corporation.

*Mangalore Port :* The New Mangalore Harbour is an all-weather major port developed by the Government of India. The project work was started in 1964 and the work on the major main structure such as alongside wharf and breakwaters was taken only towards the end of 1968. The port was declared as the ninth major port of the country on 4th May 1974. The development of this port has been taken up in stages. During the first stage of development, three alongside berths having a draft of 9.15 m, a shallow berth having a draft of 3.65 m, an oil jetty having a draft of 9.15 m with two breakwater on either side of the water channel and other infrastructural facilities were constructed. During the second stage, development facilities were created for the export of iron ore concentrates from Kudremukh region and exclusive iron ore berth for bringing in bulk ore carriers of 60,000 DWT with a draft of 12.5 m has been constructed and the lagoon and the approach channel of the port has also been deepened to 13 m and 13.5 m respectively. The iron ore berth which is equipped with a ship loader having a capacity of 6,000 tonnes per hour became operational in August 1980. The completion of the second stage of development marked this port as the deepest inner harbour in the country.

The Mangalore port provides for three alongside berths to cater to 1) general cargo, 2) iron and manganese ore, 3) raw material imports (for fertiliser factories) and 4) export of finished fertilisers and an oil jetty for handling of naphtha and petroleum products. An additional alongside berth is also provided to handle the increased traffic. The port has been provided with cargo handling equipments. Among the navigational aids, signal station front and rear leading lights have been provided. The total expenditure incurred from 1961 to 1978-79 under the first stage is Rs 156.52 crores.

The port has received 1,621 ships and handled a total traffic of 56,16,207 tonnes right from its inception to 1980-81. The number of ships handled has increased from 77 in 1974-75 to 286 in 1978-79. The port handled a traffic of 9,26,000 tonnes during 1980-81. There has been an

increase in the traffic handled by the port during the year 1981-82 which has exceeded 16.4 lakh tonnes including the export of five lakh tonnes of iron ore concentrates to Rumania.

The port administration has also increased the draft on one of its general cargo berths from 30 ft to 33 ft and also the oil jetty from 30 ft to 32 ft. As a result, steamer operators are using this port more frequently for loading/discharging part of the cargo for better utilisation of the ships. The port is having three transit sheds, with a storage capacity of 18,000 tonnes. The port has started container traffic from 1980-81. The Shipping Corporation of India has started a regular container service from Mangalore to western countries. A paved stockyard measuring 10,000 sq m has been constructed. The average productivity achieved during 1981-82 is 25% more than the average of all major ports. An outlay of Rs 31.84 crores has been made in the Sixth Plan for augmenting and developing the port facilities. Two additional berths will be added to meet the growing volume of traffic of more than one million tonnes of cargo. Construction of the first berth is expected to be ready by mid 1983. The berth will be 250 meters long, capable of handling 2.5 lakh tonnes of general cargo. The port will shortly be getting two 22.5 tonnes bollard pull tugs. The Kudremukh Iron Ore Company will be putting up a pelletisation plant near the New Mangalore Port. The Government of India has plans for setting up an oil refinery of 6-million-tonne capacity. Necessary port facilities for receiving huge crude tankers and also for exporting the products of the refinery have to be created at New Mangalore Port. There is a proposal to operate a Ro-Ro-cum passenger service between New Mangalore and Jafarabad *via* Marmagoa.

Statement showing the Imports and Exports and the expenditure incurred on development works the New Port from 1977-78 to 1981-82 are given below.

<i>Period</i>	<i>Expenditure (Rs in lakhs)</i>	<i>Imports (in lakh tonnes)</i>	<i>Exports</i>	<i>Total</i>
1977-78	820.62	2.62	1.15	3.77
1978-79	976.36	6.71	2.03	8.74
1979-80	672.81	6.75	2.27	9.02
1980-81	495.76	6.39	3.23	9.62
1981-82	1,026.00	8.21	8.21	16.42

*Mangalore Port (Minor) :* The Mangalore Port (Minor) is situated about eight km south of the New Mangalore Port. It is administered by the State Government. It is an open roadstead port. Steamers anchor about three to four km off-shore in depths of five to six fathoms. The backwaters the port are used by sailing vessels of upto 150 tonnes laden. Vessels drawing upto 2.5 m enter the inner harbour at high water. A bar lies about a km from the entrance and it is a seasonal port. Loading of sailing vessels and lighters is done at alongside wharves, except larger sailing vessels to which loading is done mid-stream from smaller craft. Loading of tiles is done along side the tile factories which are having their own wharves. This port was also handling steamer traffic before commissioning of the New Mangalore Port. About 100 sailing vessels used to call at this port annually besides about 1,500 sailing vessels, and the cargo handled was to the tune of 5 lakh tonnes. Presently, there is hardly any steamer traffic but about 1,200 sailing vessels use the port involving a cargo tonnage of 1.5 to 2.0 lakh tonnes.

The port administration is also attending to the registration and licensing of sailing vessels and smallcraft under the Merchant Shipping Act, 1958 and the Indian Ports Act, 1903. The main functions of the port are however governed by the Karnataka Ports Act 1961. In view of the New Mangalore Port being developed at Panambur, 10 km north of this port, no development work has been taken up since 1963. The State has moved the Centre for provision of funds for development of the minor port of Mangalore into an all-weather port in a phased manner. The first stage of development at a cost of Rs 12.2 crores is included in the Sixth Plan. The total cargo traffic at this port for the years 1977-78, 1979-80 and 1981-82 are 1.78 lakhs, 1.78 lakhs and 1.60 lakhs tonnes respectively.

*Karwar Port :* The Port of Karwar is located in the southern end of Karwar Bay of Karwar Head. Karwar Bay lies between Karwar Head and the mouth of the Kalinadi, roughly 4.5 km long and provides a fairly extensive anchorage with varying depths of water upto about 11 m. The port is partially protected from south-west winds by Karwar Head, a rocky promontory, stretching out into the sea at the southern extremity of the bay. The Baithkol Cove, a shallow cove on the southern end of Karwar Bay is a well protected shelter for sailing vessels. The port has been surveyed by the Indian Navy. The approach to the port from northward or westward, is between Oyster Rock light house and Kurmagad Island. Vessels approaching from southward may enter between Oyster Rock

light and Karwar Head. Currents in the Bay are negligible. Ocean-going steamers are piloted into anchorage by the departmental Port Officer. The anchorage for shallow draft steamers is with the Port Signal Station bearing 120° distance one km to three km depending on the draft. Anchorage for deep drafted ships is with the signal station bearing 105° distance five km. Sailing vessels anchor in the protected Baithkol Cove and handle cargo alongside the wharf during high tide. But most of the sailing vessels traffic is handled at Sadashivagad, situated five km to the north at the mouth of the Kalinadi. The bar at the entrance to the river maintains a depth of five feet at level of water at ordinary spring tides. The rise of tide is about seven feet during spring tides and about four feet during neaps. Vessels cross the bar and work cargo at Kodibag a wharf of Karwar Port.

In 1963-64, 2,88,240 tonnes of iron ore were exported from this port. In addition, the port handled 14,128.9 tonnes of export cargo and 11,154.82 tonnes of import cargo. The passenger traffic during this period was 3,715 embarkment and 3,776 disembarkment, majority of them travelling to and from Bombay. Before the Fourth Plan, a sum of Rs 74.59 lakhs was spent on certain requirements such as lighterage wharves, transit sheds, floating crafts, water supply barge, and navigation aids. This resulted in rise in shipping activities. The ore trade rose from 1.28 lakh tonnes in 1958-59 to 5.17 lakh tonnes in 1964-65 and to 5.38 lakh tonnes in 1969-70. During the Fourth Plan, the entire programme of development of Karwar Port was treated as a Centrally-sponsored scheme.

During the Fifth Plan the total outlay of Rs. 770 lakhs (including an outlay of Rs 494.57 lakhs for spillover) was earmarked. On economic considerations, it was found out that Karwar Port was preferable to Madras and Goa for exporting ore from Bellary-Hospet belt as the cost details (in figures) per metric tonne were 71.26 in Karwar, 81.34 in Marmagoa and 88.51 in Madras. The total cargo traffic handled at this port during the years 1977-78, 1979-80 and 1981-82 are 1.18 lakh, 4.28 lakh and 2.62 lakh tonnes respectively. The Sixth Plan outlay for the development of Karwar Port is Rs 779 lakhs. Since the Fourth Plan, the development of this port was a Centrally-sponsored scheme with hundred per cent loan assistance. But as per the recent decision taken by the National Development Council, the responsibility of developing the minor ports rests with the concerned maritime States. As such, it is proposed to

take up development of Karwar port as an all-weather port in the State sector. The demand from the new industries coming up in the district pressurised the development.

The first stage envisages to develop an all-weather port for catering to ships upto 9.14 m draft in Karwar Bay area, by providing them general cargo (one for 7.5 m draft and another for 9.14 m draft) along with other facilities. The work on the first stage is programmed to be completed by 1985. The second stage is to provide an alongside berth facilities for 40,000 DWT ore carrier with faster ore loading facilities for medium loading rate of 10,000 tonnes per day to ensure the installed medium annual traffic of two to three million tonnes of iron ore from Bellary-Hospet area. The third stage is to improve the berth facilities created in the second stage of development including mechanical loading arrangements to handle alongside 60,000 DWT ore carrying five to six million tonnes of iron ore per year with a railway link from Hubli to Karwar. (See also part I, p. 760 for Indo-Norwegian Project on fishing harbour).

*Belikeri Port:* The Belikeri Port is 27 km south of Karwar. The coastline near Belikeri forms a bay with Belikeri creek debouching into it. It is a low and rocky stretch of land. This port has been surveyed by the Indian Navy. The bar at the creek mouth has a depth of three to four feet at level of water at ordinary spring tides. The rise of tide is about 5 1/2 feet during spring tides and about four feet during neaps. Shallow drafted sailing vessels work cargo within the Belikeri creek. The entrance to the creek is marked by two beacons. Deep drafted ships anchor close north or south of the transit between the Kukra Island and the Aversa hills in sufficient depth of water. There is no system of licensed pilotage for sailing vessels at the port. Tindels of sailing vessels unfamiliar with the port utilise the services of local fishermen. The total cargo traffic in this port for the period from 1977-78 to 1981-82 are 2.21 lakh, 1.08 lakh, 2.19 lakh, 4.17 lakh and 3.22 lakh tonnes, respectively. For the development of this port, the outlay proposed during the Sixth Plan is 8.60 lakhs.

*Tadri Port:* The port of Tadri is located at the mouth of the Aghanashini, 54 km north of Honavar. The hydrographic survey of the port was carried out by the Minor Ports Dredging and Survey Organisation in 1963. The approach to the port is easy due to the presence of high hillocks jutting into the sea on both sides of the entrance. There is a lighthouse on the northern side of the entrance situated at an elevation of

124 feet. No steamers call at this port. Anchorage of steamers is a position in transit with the beacon and the western extremity of the coast bearing 320° in a depth of 4 1/2 fathoms. The bar at the entrance to the river maintains a depth of seven feet at LWOST. The rise of the tide is about 5 1/2 feet during spring tides and four feet during neaps. There is no system of licensed pilotage. There is a small built-up ramp in front of transit shed used for loading and unloading a jetty. (See also part I, p. 761 for Indo-Danish fishing harbour project). The total traffic at this port during the years 1977-78, 1978-79, 1979-80, 1980-81, and 1981-82 are 0.046 lakh, 0.0358 lakh, 0.015 lakh, 0.012 lakh and 0.009 lakh tonnes respectively. The outlay for the Sixth Plan is Rs 0.5 lakh.

*Kundapur Port :* Kundapur port was identified during ancient days as Lower Barcelore by the Portuguese and the Dutch. It is located at the confluence of five rivers forming the Gangolli (Panchagangavali) river, 96 km north of Mangalore. The northern bank of the river which is also the deeper bank where the port facilities exist, is called Gangolli ('Cambolim' of the Portuguese) and the main town of Kundapur is situated on the southern bank of the river. The hydrographic survey of this port has been conducted. The northern approaches to the port area is very rocky, whereas the southern approach is safe. The best anchorage for steamers is with the light house bearing 090° distance 0.8 km to 4 km depending upon the draft. Licensing portage is available for sailing vessels. The rise of tide is about 5 1/2 feet during spring tides and about four feet during neaps. Sailing vessels of up to 10 feet draft enter the bar during high tides and lie alongside the Government wharf. A pilot launch is available. There is a built up Government wharf, 300 feet in length and 23,000 sq ft (2137.2 sq m) of stacking area. A stacking platform of about 24,300 sq ft (2,257.55 sq m) on the southern bank is approachable by shallow draft vessels during high tides.

Prior to the development of Karwar Port, this port stood second in traffic. Manganese ore was first exported from this port in 1961 and by 1963-64, 25,834 tonnes of manganese ore and 30,233 tonnes of iron ore were exported and the total traffic at this port for the years 1977-78, 1979-80 and 1981-82 are 0.7 lakh, 0.4 lakh and 0.78 lakh tonnes respectively.

*Bhatkal Port :* From remote past, Bhatkal was a notable overseas trading centre. It is a natural harbour and the Portuguese had tried to erect a factory at Bhatkal in 1505 and it was the main port on the West Coast in Vijayanagara times. The Mysore Government, in the days of

Sir M. Viswesvaraya, had made a serious but futile attempt to acquire the port to the land-locked princely state. In 1924, the Government of India appointed a Committee with Dr. R. P. Paranjape as President to investigate into the feasibility and advisability of carrying out Bhatkal Harbour Project. M. Shankaralingegowda, Member of the Mysore Representative Assembly, in the early forties, moved a resolution in the Assembly for the acquisition of Bhatkal Port for Mysore. Later, a company by name "The Bhatkal Bunder Construction Company Limited" was floated in 1945 with Shankaralingegowda as Managing Director. But this Project proved abortive.

Bhatkal is at the mouth of the Sharabi river, about 40 km south of Honavar. In view of the deep water very close to the shore, ships can anchor in four fathoms of water only, about two cables away from the shore. There are two conspicuous islands lying northward of the port namely the Netranis (Pigeon Island) and Hog Island, situated about 20 km west-north-westward and 6.5 km north-west ward respectively. The hydrographic survey of this port was conducted in 1949 by the Indian Navy. There is a light house on top of a hill, 150 feet high with a range of 32 km. The approaches to the port are very rocky and dangerous and sufficient caution has to be taken while entering the port. Anchorage for shallow draft vessels found with the main light house bearing 014° distance 2 1/2 cables in a depth of four fathoms. Deeper draft vessels can anchor with light house bearing 058° distance 1.6 km in 5 1/2 fathoms. The bar at the entrance to the river maintains a depth of about one foot at LWOST. The rise of tide, during springs is 5.5 feet and during neaps four feet.

The total cargo traffic handled at the port of Bhatkal for the periods of 1977-78, 1979-80 and 1981-82 are 190 tonnes, 54 tonnes and 165 tonnes respectively. A sum of Rs four lakhs been earmarked in the Sixth Plan for development.

*Honavar Port :* Honavar called as Onor by the trading Arabs and the Portuguese is second in importance to Karwar. It is situated at the mouth of the Sharavati. Basavadurg (Basradrug) Island or Fortified Island, 160 feet high is situated about 4 km north-northwestward of the entrance and is most conspicuous from seaward. On the rising ground behind the town of Honavar, there is a prominent monument, 36 feet in height and is known as the "Colonel's Pillar". The hydrographic survey of the port has been carried out in the year 1959 by the Indian Navy. A light is exhibited from a flagmast on an elevated hillock from a height of 105 feet,



The approach to the port is easy and safe. Steamers anchor opposite the entrance to the river with light house bearing 097° (T) distance four km to five km depending on their draft. There is a sand bar at the mouth of the river with a depth of only about 6 1/2 feet of water during LWOST. The rise of tide is about 5 1/2 feet during the spring tides and about four feet during the neaps. A lighterage wharf, about 125 m long with a stacking area of 6,410.6 sq m is available. Another wharf, about 170 m long with stacking area of about 27,871 sq m is also constructed. (See Part I, p. 760 for FAO fishing harbour project).

The total cargo traffic handled at this port for the years from 1977-78 are as follows : 1977-78-24,956 tonnes, 1978-79-25,651 tonnes, 1979-80-24,548 tonnes, 1980-81-21,357 tonnes, 1981-82-22,158 tonnes. A sum of Rs 2.70 lakhs has been proposed for the development of this port during the Sixth Plan.

*Malpe Port :* The port of Malpe is supposed to be of great antiquity, being known to the ancient Greeks. It is situated at the confluence of the Udyavara river. It is 64 km north of Mangalore and five km west of Udupi. The port possesses a great natural advantage and is sheltered from the sea by a string of granite boulders. The northern most island called Daria Bahadurgarh Island is 16 m high, while the southern most island called Kare-Illada Kallu is 14 m high. The island in between is called Daria Gadora Kallu. The best anchorage for ocean-going steamers is about 1.5 km west-north west of Malpe light house, in about five fathoms of water with soft mud bottom. Being a riverine port, it has a bar at the entrance which maintains a depth of about four feet at LWOST. The rise of tide is about 5.5 feet during spring tides and about four during neaps. Sailing vessels upto about seven feet draft negotiate the bar during high tides and anchor in the river opposite the passenger jetty. An ore stacking platform of about 6,503.42 sq m area has been constructed with the wooden jetties. Passenger jetty was constructed in 1952 for embarking and disembarking of passengers. The port handled 11,047.35 tonnes of cargo during 1963-64 (28, 210. 11 tonnes exports) and 18,248 passenger traffic. Since long, this port is an active fishing centre and in 1976, Government of India sanctioned an amount of Rs 4.26 crores for establishing a fishing harbour with FAO aid which is expected to be completed by 1983. This port will accommodate 250 mechanical boats and 20 common boats. The cargo traffic handled at this port are 1977-78-16,663 tonnes, 1978-79-12,870 tonnes, 1979-80-7,767 tonnes,

1980-81-7,078 tonnes and 1981-82-9,867 tonnes. The outlay proposed in the Sixth Plan is Rs seven lakhs.

*Hangarakatta Port :* The Hangarakatta port is situated at the mouth of the Sitanadi, 22 km south of Kundapur. There is a bar at the entrance of the river with a depth of only about four feet at LWOST. The rise of tide is about 5.5 feet during spring tides and four feet during neaps. Vessels of about seven feet draft enter the bar during high tides and anchor at the wharf. There is a built up wharf about 900 feet in length with sufficient stacking area. The cargo traffic handled at this port for the years from 1977-78 are as follows : 1977-78-4,736 tonnes, 1978-79-4,410 tonnes, 1979-80-4,780 tonnes, 1980-81-5,722 tonnes and 1981-82-9,867 tonnes. A sum of Rs 15.50 lakhs has been proposed for the development of this port during the Sixth Plan.

*Majali Port :* The Majali Port is an open roadstead port situated south of Goa frontier and 16 km north of Karwar Port. There are three islands near the port which are conspicuous. A foreshore bunder light is exhibited from an iron post. Sailing vessels anchor off the coast in sufficient depth of water.

*Binaga :* The Binaga port is situated at a distance of five km to the south of Karwar. The port area is covered by rocky hills and thick vegetation. It is an open roadstead port situated within the Binaga Bay. The exports are fish and fish products. With the establishment of the caustic soda factory and other industries near Binaga, the importance of this port has increased.

*Chendia :* The Chendia port is situated about 15 km south of Karwar. It is an open sea port and one of the fishing ports. It is bounded by hills, Kodar and Arge which project into the sea and as such they protect the port from northerly winds during fishing season. There is a creek called Chendia Creek which is shallow and joins the sea near the Arge Hill. Sailing vessels anchor in the open sea. The exports are mainly fish, fish manure, coir and coir products and general cargo.

*Ankola :* The port at Ankola is situated at the mouth of Ankola Creek, about 35 km south of Karwar port. This creek is very shallow, short and narrow. A small island like hillock is situated opposite but close to the bar in the sea. This port has been bracketed with Belikeri port for development.

*Gangavali :* The Gangavali port is situated at the mouth of the Gangavali river in Uttara Kannada district, 60 km north of Honavar. This port is bracketed with Tadri port for development.

*Kumta :* The port at Kumta is situated 20 km north of Honavar. Prior to the laying of railway lines, this was the port for the transshipment of cotton from the Haveri area. It has a creek of about six km length and is navigable only during high tides. Before the bridges on the West Coast were completed, this was a busy port handling about 4,000 tonnes of exports and imports and about 1,600 passengers annually. Presently, this port is bracketed with Honavar Port for development.

*Manki Port :* The Manki port is situated 11 km south of Honavar, and is an open sea port, where only fishing vessels enter and depart. This port is bracketed with Honavar for development.

*Murdeswar Port :* The Murdeswar port is situated 23 km south of Honavar. Ptolemy is believed to have referred to this port. It is an open sea port. Murdeswar rock, 99 feet high is very conspicuous from seaward and is situated close off-shore and is connected with the main land by drying reef. With the construction of West Coast National Highway, the traffic at this port dwindled.

*Shirali Port :* The Shirali port is situated at the mouth of the Venkatapur river at 39 km south of Honavar. This has been bracketed with Bhatkal port for development.

*Byndur Port :* The Byndur port is situated at the mouth of the Byndur river and is 28 km north of Kundapur. It has a wharf at Shiroor, eight km north. This port is bracketed with Kundapur for development.

The nine ports—Belikeri, Bhatkal, Kundapur, Hangarakatta, Honavar, Karwar, Malpe, Mangalore (Old) and Tadri—are being developed and the rest have to depend on the natural facilities. The list of ports indicating the working seasons of each port is given in the appended table.

### List of Ports in Karnataka State

<i>Sl.No.</i>	<i>Name of Ports</i>	<i>Remarks</i>
1	Mangalore Port (Minor)	S. * from 15th September to 15th May
2	New Mangalore Port	All-weather major port administered by New Mangalore Port Trust under Government of India.
3	Malpe (F) **	S. from 15th September to 15th May.
4	Hangarakatta	S. do
5	Kundapur	S. do
6	Byndur	S. do
7	Bhatkal	S. do
8	Shirali	S. do (Bracketed to Bhatkal Port)
9	Murdeswar	S. do
10	Manki	S. from 15th September to 15th May (Bracketed to Honavar Port)
11	Honavar (F)	S. do
12	Kumta	S. do
13	Tadri (F)	S. do
14	Gangavali	S. (Bracketed to Tadri Port)
15	Ankola	S. (Bracketed to Belikeri Port)
16	Belikeri	S. from 15th September to 15th May.
17	Chendia	S. do
18	Binaga	S. do
19	Karwar-Sadashivgad	S. do (being developed as an all weather port) in stages).
20	Majali	S. do

\* S stands for seasonal

\*\* F being developed as fishing harbour

### Light Houses

The following are the light houses in Karnataka

<i>Sl.No.</i>	<i>Name of light house</i>	<i>Height (in feet)</i>	<i>Administered by</i>
1	2	3	4
1	Oyster Rocks light	210	Ministry of Shipping and Transports, Govt. of India
2	Port Karwar (Koney light)	70	Director of Ports and IWT., Government of Karnataka
3	Belikeri (Kukral Isles) light	205	do
4	Tadri light	124	do
5	Kumta point light	108	[do

1	2	3	4
6	Honavar light	105	Government of Karnataka
7	Honavar (Beacon) light	36	do
8	Bhatkal light	184	As in sl. no. 1
9	Bhatkal guiding light	37	Director of Ports
10	Tipusultan Gudda light	60	do
11	Kodi light	48	do
12	Malpe light	59	do
13	Kapu light	140	As in sl. No. 1
14	Surathkal Point light	144	do
15	Mangalore light	33	Director of Ports

## AIR TRANSPORT

The first aeroplane flight in India was in January 1911. Tata Sons Limited introduced an air service (two light-engined aircraft) in October 1932 from Karachi to Madras with calls at Ahmedabad, Bombay and Bellary (presently in Karnataka). Deccan Airways, a company mooted by the then Hyderabad Government operated a flight between Hyderabad and Bangalore during 1946. On August 1, 1953, airlines in India were nationalised and since then Bangalore has seen the growth from Dakotas to Skymaster, Turboprops, Viscounts, HS 748 and presently Bangalore is connected with Jet services and by Airbus to Bombay, Delhi and Hyderabad, Avros to Coimbatore and Goa, and Boeings to Madras, Delhi, Cochin and Mangalore. Presently (1982) 13 flights are operated from Bangalore, two from Mangalore, and one from Belgaum. The details regarding the route sector, number of flights, type of aircrafts, etc., is as shown below.

<i>Route Sector</i>	<i>No. of flights</i>	<i>Type of aircraft</i>	<i>Distance in km</i>
Bangalore - Madras	3	Boeing	284
Bangalore - Coimbatore	2	HS 7	224
Bangalore - Mangalore	1	737	284
Bangalore - Bombay	3	Airbus 2	864
		HS 7 1	
Bangalore - Hyderabad - Delhi	2	Airbus	1829
		Boeing	
Bangalore - Cochin	1	Boeing	371
Bangalore - Goa - Belgaum	1	HS 7	520
Mangalore - Bangalore	1	HS 7	284
Mangalore - Bombay	1	Boeing	725
Belgaum - Bombay	1	HS 7	402

In total, there are 592 flights in Indian Airlines of which, 16 are operating in the State.

### **Airports**

Most of the airports in India are administered by the Director General of Civil Aviation, except the four international airports, Madras, Bombay, Calcutta and Delhi which are administered by the International Airports Authority of India. The Bangalore airport was built by the Hindustan Aeronautics Ltd., for its use and the same is presently used by the Director General, Civil Aviation as civil airport on hire. The technical departments like Aeronautical Communication Station, Aeronautical Inspection Directorate and Pilots Briefing Section are also situated in the airport. The airports at Mangalore, Belgaum and Mysore are administered by the Director General of Civil Aviation. The airstrips at Kolar and Hambli (Ginigera airport) are managed by the Government of Karnataka. Besides there are few airstrips for the use of helicopters and other small aircrafts to land in the State. One of them is at Kudremukh project (Chikmagalur district) owned by the Kudremukh Iron Ore Company Ltd. The facilities in different airports in the State are as detailed below. Bangalore : Almost all types of aircrafts can land at all the 24 hours, Mangalore : HS 748 and Boeing can land in day time, Belgaum : HS 748 can land in day time ; Mysore, Kolar and Ginigera : Only Dakotas can land in day time.

The Director General of Civil Aviation, Delhi is the authority to accord permission for airlines services in the country. There are two types of services namely, scheduled and non-scheduled services. Indian Airlines, Air India and Vayudooth are operating the scheduled services. In respect of non - scheduled services, certain companies (both government and private) may seek permission from Director General of Civil Aviation for operation. Air-India operates only international services. There is one off-line office at Bangalore which caters to the needs of passengers for booking tickets and cargo. In Karnataka there are five Indian Airlines offices, of which, three are on-line offices (Bangalore, Mangalore and Belgaum) and two off-line offices (Hubli and Mysore). Booking and delivery of cargo are done both at on-line and off-line offices. Cargo booked at off-line offices are transported by surface transport for further on-carriage by flights. International cargo are cleared through customs with a separate cargo complex at Bangalore airport. The revenue earned in Bangalore

airport by the Indian Airlines for some years from 1969-70 to 1981-82 is as follow.

<i>Year</i>	<i>Revenue (Rupees in lakhs)</i>	<i>Cargo carried in tonnes</i>	<i>Mail carried in tonnes</i>	<i>No. of passengers travelled</i>
1969-70	194	1,190	246	—
1972-73	331	1,899	675	—
1975-76	494	1,657	428	NA
1976-77	582	1,784	439	NA
1977-78	697	2,708	541	NA
1978-79	850	3,100	392	2,78,000
1979-80	966	3,308	364	2,55,000
1980-81	1,365	3,699	440	2,79,000
1981-82	1,854	4,224	NA	3,62,000

### Travel Agents

There are at present 17 approved travel agents of Indian Airlines in the State. These agents receive commission from the Indian Airlines. They are: Thomas Cook Overseas Ltd., Transoceanic Travels, Trade Wings Ltd., Mercury Travels Ltd., Ram Mohan and Co Ltd., International Travel Service, Travel Air, Airwings International, Pierce Leslie India Ltd., Ravel Tours and Travels, Indtravels, Bharat Travels Ltd., Globe Express Travels, Travel Corporation India Ltd., Travel International, Sheriff Travels and Cargo Services (P) Ltd., and Sita World Travels India Ltd., all in Bangalore.

### Flying Training School

The Director General of Civil Aviation is the licensing authority for according permission for the Flying Training Clubs and Gliding Clubs. The Government Flying Training School, Bangalore was launched during 1948 and was established as a permanent department of the State during october 1959. The functions of the department are (1) to make the youth air-minded by providing flying training required to obtain private pilot licence, (2) to train commercial pilots by providing flying-training to enable them qualify for commercial pilot licence (issued by the

Government of India) and (3) providing training to cadets of N.C.C. Air wing.

### **Improvements to Airfields**

The Government of India has announced that Vayudoot will extend its operation to southern parts covering Raichur and Hubli. The other places of tourist importance in the State, such as, Mysore, Hassan, Bijapur and Hampi are also expected to be covered by Vayudoot. Hence infrastructural facilities are to be provided at these places. Airstrips at Hubli, Bijapur, Hambli and Gulbarga are contemplated. It was the dynamism and far sightedness of the former Mysore State administration that has conferred on Bangalore the distinction of being called the aviation and electronic capital of India by providing immediate and general facilities for the establishment of Hindustan Aeronautical Complex, the National Aeronautical Laboratory, the Technical Command of the Indian Air Force, the School of Aviation Medicine, the Indian Institute of Science, the Bharat Electronics, the Inspectorate of Electronics of the Ministry of Defence, the Flying Training School and a number of private sector enterprises for the manufacture of parts for electronic instruments and aircraft accessories.

### **Passport Office**

Till June 1978, there was no Passport Office in Karnataka. It was on the 12th June, 1978 a separate Passport Office for the State was opened in Bangalore. The main functions of this office is the administration of Passport Act and Rules 1967 and also partial administration of the Indian Emigration Act 1922. The Passport Office is concerned with the grant of passport facilities to the citizens of India residing within the territory of Karnataka. Under the partial powers delegated by the Ministry of Labour, this office grants such as 'Emigration check required' as well as 'Emigration check not required' on Indian passports. For those coming under the category of tourists, businessmen, etc., different endorsement regarding suspension of emigration requirement for a stipulated period is given. This office is headed by a Passport Officer with an establishment of about 40 staff. Karnataka takes the eleventh place in receipt of passport applications among the States of India. The year-wise issue of passports in the State is 17,116 in 1978, 32,467 in 1979, 33,507 in 1980 and 45,840 in 1981.



**Principal operational statistics of the Indian Airlines  
Corporation in Karnataka**

<i>Particulars</i>	<i>Year</i>	
	<i>1979-80</i>	<i>1980-81</i>
No of Scheduled flights operated as at the end of the year (in the State)	7,432	7,710
Goods carried in tonnes (in the State)		
Cargo	6,059	5,808
Mail	1,181	1,106
Passengers Carried (in the State)	3,07,456	3,33,855
<i>Bangalore</i>		
Originating	2,55,429	2,78,165
Destination	2,51,566	2,76,709
<i>Belgaum</i>		
Originating	7,537	8,188
Destination	8,767	9,241
<i>Mangalore</i>		
Originating	44,490	47,502
Destination	47,341	49,643

**POST AND TELEGRAPH SERVICES**

The old postal system of former Mysore State called "Anche" dates back to the time of Chikkadevaraya in the seventeenth century. Anche Bakshi was the Head of the Department, who was a subordinate to the Commissioner. In 1863-64, the Imperial Post Offices at Srirangapattana, Hunsur and Tumkur were abolished and their service was undertaken by the Anche department. There were two Imperial Post lines traversing the State, one from Bangalore through Chitradurga to Harihara (*en route* Bombay) and the other from Bangalore *via* Mysore to Mangalore. There were Imperial Post offices at Bangalore, Mysore and at the military stations of Harihara and Frenchrocks (Pandavapura). During 1867-68, there were one Bakshi, Sheristedars, Peshkars, Gumastas, etc. numbering 17, Shroffs,

Daffiedars, and Peons numbering 30, eight Inspectors, 184 Mutsaddis, and 1,511 Daffiedars, Peons, and Runners in Mysore State. In 1853, during Cubbon's time was commenced the construction of telegraph lines, and by 1856, 334 miles of telegraph lines were laid. In 1870-71, there were only two telegraph offices in the State, one at Bangalore and the other at Mysore. In 1879-80, Hobli School Masters were appointed Anche Mutsaddis and given a small remuneration of Rs three per mensem for doing the extra work.

The department was re-organised in 1882. The number of Anche offices reached 231 in 1886-1887. Quarter-anna post cards were introduced. In 1889, the Anche system of Mysore was transferred to the Imperial Postal Department. The then State Post-Master General was appointed the Superintendent of Bangalore Division. The British Postal Department opened new post offices in the Mysore State as suggested by the State.

Even in 1902-03, 10,742,264 post-cards, newspapers, packets and parcels were delivered in Mysore State. There were 261 insured parcels, 346 value-payable articles, 214 money orders issued and 129 money orders paid in the Mysore State. There were 19,619 Savings Bank Accounts with a total amount (at credit of the Depositors) of Rs 8,15,671. The postal department afforded facilities for carrying mails by motor buses. In 1921-22, the Director of Industries and Commerce was appointed Liaison Officer between the State and the British Postal and Telegraph Department. The total number of post offices at the end of 1923-24 was 489 of which four were Head Offices, 109 Sub-offices and 376 Branch offices.

Owing to restoration of Civil and Military Station, Bangalore, to the Mysore Government, the administration of Mysore Wireless Telegraphy Act and Rules framed thereunder devolved on the Industries and Commerce Department from 1-8-1948 except from 1-1-1948 to 1-4-1948 during which time, the Indian Posts and Telegraphs Department had taken over the issue of licences in civil area.

*Kodagu area :* In Kodagu district the post offices were founded at Virajpet in 1864, at Madikeri in 1870 and a branch office at Ammathi in 1871. These post offices were opened by the British Government and the *Anche* (local post) played a notable part in conveying letters to all the taluk headquarters by employing mail runners. In 1894, a landmark was established in the carriage of mails. The foreign and outside mails were transported from Mysore to Madikeri by *tangas*. The main telegraph line

from the Mysore district passed through Madikeri, straight on to Cannanore in Kerala. In 1865, a branch telegraph line to Mangalore on the West Coast was completed.

*Madras Karnataka* : A postal division in Dakshina Kannada comprised the whole of the district and a portion of the present Cannanore district in Kerala. There was one Central Telegraph office at Mangalore. Mails from Bangalore were also lifted by air to Bangalore, Belgaum and Bombay. A postal division in Bellary comprised the entire district of Bellary.

*Hyderabad Karnataka* : In Hyderabad Karnataka area the Government Service Mails were carried by *sawars* or orderlies appointed for the purpose or by Bhiagars travelling from place to place. In 1810, the Nizam's Government discontinued the old mode and introduced a system of licenced carriers called Parwandars. These carriers worked under contract with the Government and were paid through grants of lands. The Nizam's Government had a postal department of its own. Hyderabad's first postage stamp was introduced in 1869 A.D. In 1873, the word *Sarkari* was overprinted on the stamps in red and black. This was discontinued in 1877 and instead, official letters carried an inscription as *Kar-e-sarkar* in Persian script. The Nizam's Government introduced a Postal Insurance system in 1907, money order system in 1910, value payable system in 1914, and Postal Savings Bank in 1923. The British Indian Postal Department and the Nizam Government's Postal Department were both working in the Hyderabad State by a mutual arrangement. There was a British Indian Post Office at Humnabad only. The Hyderabad State's Postal Department was merged in the Central postal system on 1-4-1950. From 1950 to 1960 the Hyderabad Karnataka area was attached to the Gulbarga Postal Division under the Director of Posts and Telegraphs, Hyderabad.

*Bombay Karnataka* : Uttara Kannada and Dharwad districts were under Dharwad Postal Division as early as in 1883. There were chief receiving and distributing offices at Karwar and Dharwad. The post offices were supervised by the Superintendent of Post Offices, Dharwad Division. In 1883, the Uttara Kannada district had 17 sub and 11 village post offices, two telegraph offices, one at Karwar and one at Kumta. In 1958, there were 32 sub-offices and 142 branch offices, and 28 telegraph offices, in Dharwad district. In 1884, Bijapur and Belgaum districts were under the Southern Maratha Postal Division. Bijapur, Kaladgi, and Belgaum had head post offices. The Bijapur district had 30 post offices (two head offices, 15 sub-offices and 13 village offices) and one telegraph office at Bijapur.

Belgaum district had 40 post offices and one telegraph office at Belgaum in 1884. All the post offices in these districts were inspected by Superintendent of Post Offices of the Division. Mails were carried to and from Belgaum by Peninsular Railway from Bombay to Pune. They were carried from and to Bombay once a week by steamers for Karwar. They were also carried by rail, motor buses, postal runners and pony carts.

### **Karnataka Circle**

Karnataka Posts and Telegraphs Circle was formed on 1-4-1960 with headquarters at Bangalore. The Circle was headed by a Director of Posts and Telegraphs. The new Circle was formed by transferring the areas administered by different circles. The following were the areas transferred from the different circles.

<i>Postal Divisions</i>	<i>Areas transferred to Karnataka Circle</i>
Gulbarga Division of Hyderabad Circle	Gulbarga, Raichur and Bidar districts
Dharwad and Belgaum Divisions of Bombay Circle	Dharwad, Uttara Kannada, Belgaum and Bijapur districts
Bangalore, Mysore and Dakshina Kannada, Bellary Divisions of Madras Circle	Old Mysore State, Kodagu, Dakshina Kannada and Bellary districts

One Railway Mail Service Division, viz., 'Q' Division with headquarters at Bangalore was transferred from Madras Circle. There were six RMS sorting offices in running trains under this RMS Division. As on 1-4-1960, the total number of post offices in the Karnataka Circle (category-wise) was 17 Head Post Offices, 502 Sub-Post Offices, 64 Extra Departmental Sub-Post Offices and 3,383 Extra-Departmental Branch Post Offices bringing the total to 3,966. Of the Sub-Post offices, 370 were combined Post and Telegraph Offices and 259 were public call offices providing telephone facilities.

As in other parts of the country, there has been an appreciable growth in the postal services in the Karnataka Circle. This has resulted in greater number of people having postal services nearer to their homes and receiving mails earlier than hitherto. Postal services in rural areas have been widely extended. Urban services have been further strengthened by opening new sub-offices and widening the range of

postal services. There were 3,966 post offices in 1960 with a post office for every 48.38 sq km of area and for every 5,934 people. The corresponding figure as stood on 1-1-1980 was 9,124 for every 21.12 sq km of area and 3,282 people respectively. The break-up of figures is 42 Head Offices, 1,482 sub-offices, 932 Extra-Departmental Sub-offices and 6,668 Extra-Departmental branch offices. The total number of Post and Telegraph Offices was 2,359 in 1979, out of which 567 were working on Morse and 1,802 on Phonocom.

The development of post offices for some years between 1969 and 1982 is given in the following table.

<i>Details as on</i>	<i>Head Offices</i>	<i>Sub Offices</i>	<i>Extra-Departmental Branch Offices</i>	<i>Total</i>
1st April 1969	17	566	3,386	3,969
1972	32	1,288	7,060	8,380
1975	38	1,358	7,196	8,557
1978	39	1,439	7,325	8,803
1st January 1980	42	2,414	6,668	9,124
31st December 1982	71	2,963	6,469	9,503

See Table I at the end of this section for district-wise figures.

Notwithstanding the above progress made so far, there is still wide scope to provide increased postal facilities and better service in urban and rural areas of the State. Due to financial constraints, there was a set-back in planning efforts during 1974-75 and 1975-76. However, it is expected that the tempo of postal development in the State would be accelerated during the Sixth Plan, wherein it is proposed to upgrade 117 Branch Offices into Sub-Offices. The Postal Department also provides savings bank facilities and postal insurance (for details see chapter VI, part 1).

The present progress in Karnataka State as compared to the national progress can be had by comparing the circle and national averages and the area and population served per post office. Karnataka has one post office for every 21.13 sq km area catering to an average of 3,382 persons in 1978-79 as against the national figure of one office for every 27.31 sq km and each office serving 4,550 persons.

Quick Mail Service was introduced between Bangalore and Delhi on 1st July 1975. This was extended to all the District Headquarters in the

State with effect from 1-8-1975 by increasing the number of Quick Mail Services. It was gradually increased to 48 centres as the service had proved to be very popular.

There is a Mobile Post Office (Van) functioning in Bangalore. This mobile Post office works from 5 p.m. to 8.30 p.m., providing facilities at Rajajinagar, Malleshwaram, Sheshadripuram, Mahatma Gandhi Road and Queen's Road at present. In rural areas, Branch Post Masters proceed to nearby villages and render counter service like sale of stamps, booking of money orders and registered articles for half an hour daily. There are 3,568 such rural mobile post offices in Karnataka Circle. Apart from these, there are seven post offices which are functioning as night post offices in the Circle. They are Chickpet, (Bangalore), Bangalore GPO, Belgaum City H.O., Davanagere H.O., Hubli H.O., Hampanakatta S.O. (Mangalore), and Mysore H.O. These night post offices work till 7 p.m. in the evenings for booking of registered articles, sale of stamps, etc. Karnataka Postal Circle has three Railway Mail Service Divisions as on 1-12-1982. They are (1) Bangalore Sorting Division, (2) RMS 'Q' Division, and (3) RMS 'HB' Division. There are sorting offices and sections in five running trains. There are also 14 offices in running trains which only transit closed bags without doing any sorting work. There are 31 stationary mail offices in Karnataka Circle doing sorting of letters, registered articles, etc.

There are six philatelic counters at Mangalore, Hampanakatta, Mysore, Udupi, Shimoga and Davanagere and one Philatelic Bureau at Bangalore General Post Office. Wide publicity is given through press, All India Radio and newspapers and also through the philatelic news letters to popularise philately among all sections of the public. There is a growing interest in this activity as reflected by the formation of 56 Philatelic Clubs/Associations in the State.

### **Recruitment and Training**

At Postal Training Centre, Mysore, training is imparted for newly recruited candidates for the posts of Postal Assistants and Sorting Assistants. Non-residential local training classes are also arranged in certain headquarters of the divisions. Each such training class should contain not more than 34 candidates. The training is for a period of three months, which includes both theory and practical.

Postal Assistants, RMS Assistants, Lower Selection Grade Supervisors, and Inspectors are given refresher training for a period of 15 days at Postal Training Centre, Mysore. Postal Assistants are given training in Telegraphy (English Morse) at Hubli and Mysore. They are also given training in Teleprinters and Hindi Morse.

### Administration

Karnataka Postal Circle is headed by the Post Master General with his office at Bangalore. He is assisted by two Regional Directors – one at Dharwad and another at Bangalore. The Post Master General is also assisted by Director of Postal Service (Headquarters), as in 1982. The Circle has 32 Postal Divisions, each division headed by a Senior Superintendent of Post Offices or Superintendent of Post Offices depending upon the establishments and work of the division. The district - wise Postal Divisions of the State are as follows.

<i>Sl. No.</i>	<i>District</i>	<i>Postal Divisions</i>
1	Bangalore	Bangalore East, Bangalore West, Bangalore South, Channapatna
2	Belgaum	Belgaum, Chikodi, Gokak
3	Bellary	Bellary
4	Bidar	Bidar
5	Bijapur	Bijapur, Bagalkot
6	Chikmagalur	Chikmagalur
7	Chitradurga	Chitradurga
8	Dakshina Kannada	Mangalore, Udupi, Puttur
9	Dharwad	Dharwad, Gadag, Haveri
10	Gulbarga	Gulbarga, Yadgiri
11	Hassan	Hassan
12	Kodagu	Kodagu (Madikeri)
13	Kolar	Kolar
14	Mandya	Mandya
15	Mysore	Mysore, Nanjangud
16	Raichur	Raichur
17	Shimoga	Shimoga
18	Tumkur	Tumkur
19	Uttara Kannada	Karwar, Sirsi

Each Divisional Superintendent of Post Offices is assisted by a few Sub-Divisional Inspectors. The Sub-Divisional Inspectors control and supervise the working of Branch Post Offices. There are 121 Postal Sub-Divisions in Karnataka.

In 1960, when Karnataka Circle was formed, there was one common administration circle for Postal and Telecommunications functions. On account of the expansion of Postal and Telecommunications services, the combined set-up was bifurcated functionally. From 1-9-1974, Karnataka is having a Karnataka Postal Circle headed by the Post Master General, a Karnataka Telecommunications Circle headed by the General Manager, Telecommunications, and a Telecommunications circle for Bangalore City only headed by the General Manager, Telephones, Bangalore.

#### TELECOMMUNICATIONS

Telephones appear to have been installed in Bangalore Cantonment soon after their introduction in Madras. In 1889, during the Khedda Operation at Kakanakote, a line for 36 miles was laid between Hunsur and Kakanakote. A line of 11 miles length between Hesaraghatta Water Reservoir to Banavar was laid in 1896. During the attack of plague in Bangalore and Mysore in 1898, temporary telephone lines were laid in Bangalore for use in anti-plague operations. In 1899, fifty government offices were provided with permanent lines and a government report says that "on an average, there were 122 calls every day". In December 1889, the rate for use of telephone lines for private parties had been announced by the Central Government department; but it is not clear how many private receivers were installed. Lines were laid in Mysore City in 1909 and Bangalore—Mysore line was laid in 1911-12. Initially, the telephones in princely Mysore were under the control of the Electricity Department to whose departmental use telephones were very essential. In 1918 there was a total length of 533 miles of telephone line network in old Mysore, and out of which the lines in Bangalore City and Mysore City were of the length of 92 miles and 48 miles respectively.

#### Telecommunication Services

Karnataka falls under the administrative jurisdiction of two distinct units namely, Bangalore Telephone District whose jurisdiction is confined to the urban area of Bangalore and Karnataka Telecommunication Circle



whose jurisdiction covers the rest of Karnataka. The telecommunication services provided are mainly local and trunk telephone services, the telex service and the telegraph service. These services are derived over a common telecommunication network, made up of a large number of local telephone exchanges or systems, telex exchanges and telegraph offices distributed all over Karnataka.

The local telephone system at Bangalore was formed after the Reorganisation of States, by merger of telephone exchange in city area then controlled by the Mysore Power and Light Department with the Local and Trunk Exchange in civil area controlled by Posts and Telegraphs Department. Outside Bangalore, the other large local telephone systems include those at Mangalore, Mysore, Belgaum, Hubli, Davanagere and Bellary, which have automatic equipment of Type Max I (Main Automatic Exchange). In addition, there are a large number of smaller automatic exchanges of the MAX II and MAX III types as well as manual exchanges spread all over Karnataka. As on 30th September 1982, Karnataka Telecommunication Circle maintained 739 Telephone Exchanges with equipped capacity of 96,900 lines and with 83,258 direct exchange lines working for subscribers.

The total number of telephones used in 1976-77 was 1,16,113 as against 18,753 during 1960-61. Thus within a period of about 17 years, there has been an increase of more than six fold in the number of telephones in use in Karnataka. The growth of telephones during some years is stated below.

<i>Sl. No.</i>	<i>Year</i>	<i>No. of telephones on use in Karnataka</i>
1	1960-61	18,753
2	1965-66	36,102
3	1968-69	39,882
4	1969-70	47,971
5	1973-74	68,332
6	1976-77	1,16,113

The other statistical details regarding the extent of the development of telephones as in 1979 is detailed below.

a) No. of telephone exchanges working in Karnataka excluding Bangalore City (details of Bangalore City are given separately)	616
b) Total exchange capacity	78,795
c) Total No. of telephones working at present	72,752
d) No. of telephones per 1,000 population	2.62
e) No. of people on the waiting list	1,632
f) No. of telex exchanges excluding Bangalore City	6
g) Total telex capacity	250
h) Total telex connections working	193
i) Long distance public telephones	1,042
j) Combined offices	2,433
k) No. of trunk exchanges	70

See Table II for 1982 figures

Bangalore Telephones was formed in the year 1964 from the erstwhile Bangalore Telephones Division of Mysore Posts and Telegraphs Circle in the Indian Posts and Telegraphs Department. It was upgraded into a major Telephone District on 23-7-1976. As on 1-4-1982, there were 55,658 working lines.

The details in respect of growth of telephones in Bangalore City are as follows.

1955	3,600	1975	33,700
1956	4,200	1976	37,300
1961	8,500	1977	42,200
1966	13,300	1978	44,800
1969	18,300	1979	49,900
1974	26,800	1982	57,658

According to the programme of growth, it is proposed in the Sixth Plan that the total number of telephones in Bangalore would be increased from 49,900 in 1979 to 85,100 in 1983. Thus, it is expected that during the next four years, the total number of telephones would increase

by about 35,200 in Bangalore in order to cope up with the increased demands of the telephones.

In addition to this, the S T D code has been extended to about 64 stations from Bangalore on a full time basis and another four on restricted timings.

### **Micro-Wave System**

There are three types of micro-wave systems engineered in the State, viz., 1) Ultra High Frequency System (UHF), 2) Narrow Band Micro-wave Systems and 3) Wide Band Micro-wave System. UHF are shorthaul systems working in the frequency range of 400 MHZ. The capacity of this type of systems is 60 trunk telephone circuits. Narrow Band Micro-wave systems are also shorthaul systems working in the range of the frequency of 2 GHZ or 7 GHZ. The trunk handling capacity of this system is 300 trunk telephone circuits. The Wide Band Micro-wave system works in the frequency range of around 4 GHZ or 6 GHZ. These are provided as long distance medium. The trunk handling capacity is 1,800 trunk telephone circuits or a T. V. radio channel per bearer. More than one bearer can be engineered in the same route. A protection bearer is also invariably provided with automatic switch over facility to reduce the interruption to the minimum. The various schemes already commissioned are as follows.

1. Mangalore - Udupi UHF System was commissioned during 1975. This meets the trunk requirements between Udupi and Mangalore and connects places beyond Mangalore and Udupi.
2. Shimoga - Davanagere UHF Scheme was commissioned during 1975. S T D (Subscriber Trunk Dialling) facility could be extended to Shimoga.
3. Hubli - Gadag SHF Scheme was commissioned during 1977 to meet the traffic requirements in that region.
4. Mangalore - Kudremukh VHF Scheme was commissioned during October 1980 to meet the traffic requirements of the Kudremukh Project and also to provide the data communication facility essentially required for slurry ore operation between Kudremukh and Panambur.
5. Bangalore - Hassan UHF Scheme was commissioned during October 1981. With this the STD facility has been extended to Hassan.
6. Mangalore - Puttur UHF Scheme was commissioned during November 1981 to meet the trunk traffic requirements in that region.

The following UHF systems are being executed.

- 1) Bangalore - Mandya TF-48,
- 2) Bijapur - Bagalkot UHF System.
- 3) Mangalore - Targod-Sirsi

UHF System. 4) Bangalore - Chikballapur UHF System, and 5) Madikeri - Virajpet UHF System. These schemes are provided to meet the trunk demand in those regions.

Mysore-Ooty Narrow Band Micro-wave System was commissioned during March 1977. This meets the trunk traffic between Ooty and Mysore and also from Mysore to places beyond Ooty. The following schemes are under execution : 1) In addition to a TF-48 system providing 48 channels, and S.T.D. facility extended to Madikeri, Mysore-Madikeri Narrow Band scheme has been engineered and is being executed between these places in order to meet the trunk demand. 2) Bangalore-Kolar Narrow Band Scheme is being executed in order to bring Kolar on the National Trunk network and also to extend S T D facility to Kolar. 3) Although one UHF system is at present working between Mangalore and Udipi, it is found that due to the growing demand, this system could not fully cater to the traffic needs. Hence, Mangalore-Udipi-Kundapur Narrow Band Scheme connecting Udipi and Kundapur to Mangalore is being executed. With this, Kundapur and a few important towns around Kundapur would be connected to the National Trunk network. 4) Belgaum-Bagalkot-Bijapur Narrow Band Scheme is provided to meet the trunk traffic demand of important towns in that region. This would enable to bring Bijapur and Bagalkot on the National Trunk network. 5) In addition to existing one UHF System between Hubli and Gadag, another Hubli-Gadag Narrow Band Scheme is being executed in order to meet the trunk traffic demand.

Bombay-Madras-Trivandrum Wide Band Micro-wave route was commissioned in five stages to connect the main cities in the West Coast. 1) Panjim-Mangalore Section of the scheme was commissioned during February 1978. This has enabled Mangalore to get linked with Bombay with S.T.D. facility. 2) Mangalore-Calicut Section was commissioned during 1978. This enabled Mangalore to get connected to Kerala State. 3) Bangalore-Mysore Section was commissioned during April 1978. With the commissioning of this system, S T D facility could be introduced to Mysore and thus Mysore was brought on National Trunk network. 4) Mysore-Mangalore Section was commissioned during April 1978. This helps in direct dialling facility between Mangalore and Mysore and also for further expansion. 5) Bangalore-Madras Section was commissioned during July 1978. This enabled to meet the additional trunk needs in the region and also meet the trunk needs beyond Madras. One T.V. bearer is

provided between Bombay and Madras along the same route. This was commissioned during March 1980 and this has enabled to extend Door-darshan programmes from Bombay and Madras to Bangalore.

Bangalore-Guntakal-Raichur-Hyderabad-Nagpur Wide Band Micro-wave System is under execution. This scheme is provided to the trunk traffic requirements between Bangalore and Hyderabad. Raichur also gets connected to the main national trunk network with the completion of this scheme. This scheme has got another spur, narrow band micro-wave route between Hyderabad and Gulbarga which enables the important towns near Gulbarga to get connected to Hyderabad as well as Bangalore.

With the commissioning of all these schemes, every effort is being made to connect all the District Headquarters and also important towns in the State to Bangalore city. In order to carry out effective planning in the region, a separate micro-wave survey division has been newly opened at Bangalore. This wing will conduct Micro-wave survey depending upon the traffic demands at various towns and submit a report about the feasibility and types of systems required, etc., which will enable the project authorities to suitably engineer, and to get sanction from the Posts and Telegraphs Directorate.

Subscriber Trunk Dialling (STD) facility on a point to point basis is available in the State. Trunk Automatic Exchange (TAX) was commissioned at Bangalore. This has now been linked to the TAX at Coimbatore in such a way that a number of stations is connected to these two cities. Trunk operators can dial into more than 50 countries and can readily establish an international trunk call to these countries without the intervention of an operator at the other end.

There is Regional Telecom Training Centre at Bangalore to train Junior Engineers and other staff. Advanced Level Telecom Training Centre is at New Delhi/ Ghaziabad, to train officers in the latest technological development in the field of telecommunications.

### **Telex**

In Telex, subscribers are provided with teleprinter machines, which are similar to typewriters. Telex exchanges are of various sizes, viz., 40 lines, 80 lines, 100 lines, etc. The smaller are of cabinet type whereas 100 lines and above are of Rack type extendable to the required capacity. Air conditioning is one of the essential items in installation of Telex Exchange

The facilities available of Telex are, 1) messages can be sent much faster than telephones, 2) they can be transmitted even if there is no attention at the distant end, 3) one can have a local record of the message transmitted while sending it to the distant end, 4) Answer Back Code facility is provided from which the calling subscriber can ensure that he has got the called subscriber correctly, 5) concessional rate period is available, 6) subscribers are metred depending upon the distance and duration just as in the case of STD, and 7) overseas contacts can be made through GATEX at Bombay. Telex is of more reliable and faster in nature and automatic. Hence, almost all the industrial, and the business concerns and many governments avail of the Telex facility. This service is of great use to daily newspapers.

Switching of the network is done automatically. A subscriber having a Telex connection can reach his counterpart within India and outside, dialling the appropriate station, zonal and national codes. They are all connected by high-grade voice frequency telegraph channels, provided on Coaxial or Micro-wave medium. Switching zonal centres are at Madras, Bombay, Delhi and Calcutta. In Karnataka, the first Telex Exchange was installed at Bangalore in 1963. It is followed by Telex Exchanges at Mysore, Mangalore, Hubli, Belgaum, Davanagere, Raichur and Bellary.

The following statement gives the particulars of Telex Exchanges of the State as on 30th September 1982.

<i>Sl. No.</i>	<i>Name of Exchange</i>	<i>Present capacity 1981-82</i>	<i>Expansions/ Installations in 1982-83</i>
<b>I EXPANSIONS</b>			
1	Mangalore	100	100-150
2	Hubli	50	50-100
3	Mysore	60	60-100
4	Belgaum	20	20-40
5	Raichur	20	—
6	Bellary	20	—
7	Davanagere	40	—
<b>II NEW INSTALLATIONS</b>			
1	Hospet	—	20
2	Udupi	—	20
3	Gulbarga	—	20

It is proposed to have 20 new Telex installations at Shimoga, Hassan and Chikmagalur during 1984-85.

### Telegraphs

There were only 444 telegraph offices in Karnataka in the year 1960-61. By 1965-66 the number had gone up to 566 and by 1969-70 it had further risen to 1,076. The number of telegraph offices by 1973-74 increased to 1,470 and it further increased to 1,730 by 1976-77. Thus there has been a four-fold increase in the number of telegraph offices during the period from 1960-61 to 1976-77. The latest figures (as on 30-9-1982) showing the number of telegraph offices of different categories in the State are given below.

<i>Telegraph offices</i>	<i>Number</i>
Combined offices	2,667
Departmental offices	32
Central Telegraph offices	4
12 Channel Open Wire Systems	45
8 Channel Open Wire Systems	79
3 Channel Open Wire Systems	251
Voice Frequency Telegraphic Systems	56

### Radio

The All India Radio operates over a network of broadcasting stations located throughout the country. It caters to the complex needs of all communities in the country. Broadcasting constitutes the most powerful medium of mass communication covering 85% of our population. At the end of February 1977, there were 80 broadcasting centres with 151 transmitters in India.

Akashvani (broadcasting station) was first started at Mysore by Professor M. V. Gopalaswamy of Mysore University in 1935. It was taken over by the State Government in January 1941, and Dr. M. V. Gopalaswamy was appointed as the Director. It started functioning as a Government institution from 1-1-1942. Subsequently it was taken over by the Central Government and it was transferred to Bangalore in November 1955. Today the State is served by six large stations, two main stations being at Bangalore and Dharwad and the other four at Mysore, Bhadravati, Gulbarga and Mangalore. The Bangalore AIR Station

started broadcasting on a high power transmitter on 2nd November 1955. The AIR Station at Dharwad was inaugurated on 8th January 1950 to serve the Kannada districts of the erstwhile Bombay State. An auxiliary Station at Bhadravati to extend the coverage of Bangalore Station was inaugurated on 7th February 1965. Another auxiliary station of Dharwad, to ensure better service in the districts of Hyderabad Karnataka was inaugurated at Gulbarga on 11th November 1966. The low power transmitter to ensure better reception to the programmes of Bangalore in Mysore was inaugurated on the 14th November 1974. The Mangalore station was inaugurated on the 14th November 1956.

Radio has progressively enabled even the illiterate people of the rural area to be in touch with the happenings in the State as well as in the rest of India. About 75% of the population has been covered by medium wave transmission upto the end of the Fourth Plan and during the Fifth Plan practically the entire State was covered. The total number of radios in use during 1976-77 in Karnataka was 11,23,934 as compared to 1,04,132 during 1960-61.

### Television

Television was first introduced in India in 1959 when the All India Radio set up an experimental television service centre in Delhi. It was soon converted into a full-fledged telecasting station. Subsequently it delinked from the AIR and is now functioning under the name "Doordarshan".

In Karnataka, Gulbarga was the first district to receive a transmitting or relay centre. It was inaugurated on 3-9-1977. Apart from Gulbarga, 240 towns and villages of the districts of Raichur and Bijapur within a radius of 40 km are benefited by the facility of community viewing. The community viewing television sets are maintained and serviced by the Doordarshana Kendra, Gulbarga, transmitting programmes for one hour daily. Feature films for more than one hour in Kannada are being telecast on Sundays through the recorded video facility from the Doordarshan Kendra, Hyderabad. Other programmes include science features, improved farming, rural development, folk music and programmes for school-going children. Bangalore City was provided with an interim TV Relay Centre on 1-11-1981 (on the 25th anniversary day of Karnataka), relaying programmes of Bombay and Madras TV Stations on selected days of the week. Since the Broad Band Microwave system between Bombay and Madras passes through Bangalore,



it has been possible to utilise the programmes of both Bombay and Madras. The Wide Band Micro-wave system for the exclusive use of the TV Centre is maintained by the Telecommunication Division of the P & T Department. Programmes of National importance, are being relayed in the networking INSAT plan. It is further planned to feed programmes of greater national importance from Bangalore to Delhi for making them available all over the country. Plans are also afoot to set up a full-fledged TV studio with all the ancillary and a 10 kw transmitter. The number of TV sets and the number of Radios in Karnataka State for some years are given in the following table.

<i>Year</i>	<i>Number of T.V. sets licensed</i>	<i>Number of Radios licensed</i>
1978	...	13,49,708
1979	418	13,97,036
1980	622	13,20,116*
1981	17,314	7,15,885
1982	42,542 (as on 30-9-82)	7,36,033 (as on 30-9-82)

\*Radios of one and two bands are exempted from licensing since August 1980 and hence the figures of 1980 and onwards are less, which include only radios of three or more bands.

TABLE I

**District-wise distribution of the post offices, telephone exchanges, telephones, telegraph offices and the radio receivers sets as in 1976-77**

<i>Sl. No.</i>	<i>District</i>	<i>Post offices</i>	<i>Telephone exchanges</i>	<i>Telephones</i>	<i>Tele-graph offices</i>	<i>Radio receivers</i>
1	Bangalore	549	19	54,729	145	2,40,105
2	Belgaum	640	43	6,653	172	69,384
3	Bellary	436	14	2,757	67	68,452
4	Bidar	254	9	678	30	6,654
5	Bijapur	701	32	2,932	125	35,294
6	Chikmagalur	267	36	1,796	56	24,853
7	Chitradurga	435	17	3,059	67	58,354
8	Dakshina Kannada	714	68	11,577	224	69,495
9	Dharwad	558	45	8,253	170	63,528
10	Gulbarga	566	16	1,947	58	90,170
11	Hassan	367	30	1,825	54	46,701
12	Kodagu	160	21	1,371	36	16,693
13	Kolar	357	25	2,020	71	42,855
14	Mandya	327	18	1,339	56	24,382
15	Mysore	518	19	7,024	127	55,412
16	Raichur	453	21	1,878	55	69,489
17	Shimoga	405	33	2,553	69	42,232
18	Tumkur	527	14	1,737	68	72,109
19	Uttara Kannada	418	26	1,985	80	27,772

TABLE II

## Statistics of Telecommunications of Karnataka Circle as on 30-9-1982

<i>Sl. No.</i>	<i>Item</i>	<i>Number</i>
1	Total number of Telephone Exchanges	739
2	Main Automatic Exchanges I	6
3	Main Automatic Exchanges II	28
4	Main Automatic Exchanges III	567
5	Central Battery Multiple	22
6	Central Battery Non-Multiple	116
7	Total Exchange Capacity	96,900
8	Total working connections	83,258
9	Total Telephones including extensions	98,430
10	Waiting list	11,146
11	Telex Exchanges	7
12	Telex Capacity	292
13	Telex waiting list	39
14	Telex working connections	266
15	Subscriber Trunk Diallings	14
16	Point to Point S T D Routes	6
17	Long Distance Public Telephones	1,001
18	Local Public Telephones	1,941
19	Number of Stations of Karnataka Circle connected to TAX	12

TABLE III

**Main Automatic Exchanges I of Karnataka Circle as on 30-9-1982**

<i>Name of the Exchange</i>	<i>Present capacity (1981-82)</i>	<i>Development plans in</i>		
		<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>
<b>A. EXPANSION</b>				
Belgaum	6,000	...	6,000-9,000	...
Bellary	1,800	1,800-2,100	2,100-2,700	...
Davanagere	2,400	2,400-3,000	3,000-3,300	3,300-3,600
Hubli	5,000	5,100-6,600	...	6,600-8,100
Mangalore	7,800	8,100-9,600	9,600-10,200	10,200-1,200
Mysore	7,000	7,000-8,000	8,000-10,000	10,000-12,000
<b>B. REPLACEMENT OF MANUAL/MAX II EXCHANGES</b>				
Bijapur	1,320 CBM	...	2,000	...
Chikmagalur	900 MAX II	...	...	1,500
Gadag	1,000 MAX II	...	...	1,200
Gulbarga	1,800 CBM	...	2,000	...
Hassan	1,100 MAX II	...	...	2,000
Hubli-Dharwad	1,500 MAX II	...	2,500	...
K. G. F.	500 MAX II	...	...	1,200
Mandya	960 CBM	...	1,200	1,200-1,500
Shimoga	1,700 MAX II	...	2,500	...
Tumkur	1,300 MAX II	...	2,000	...
Udupi	1,500 MAX II	...	2,000	...

TABLE IV

Main Automatic Exchanges II of Karnataka Circle as on 30-9-1982

<i>Name of the Exchange</i>	<i>Present capacity</i>	<i>Proposals for</i>		
		<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>
Bagalkot	600	...	600-700	...
Bhadravati	600	...	600-800	...
Bidar	500	500-600	600-700	...
Chitradurga	700	700-800	800-900	900-1,000
Kundapur	400	400-500	500-600	...
Harihara	300	300-400	400-500	...
Hubli-Dharwad	1,500	1,500-1,600	...	...
Karwar	500	...	500-700	...
K. G. F.	500	500-600	600-700	...
Koppal	200	...	200-300	...
Madikeri	600	...	600-800	...
Moodbidri	200	...	200-300	...
Panambur	500	500-600	600-800	...
Puttur	500	...	500-600	...
Shimoga	1,700	1,700-1800	...	...
Sirsi	400	400-500	500-600	...
Udupi	1,500	1,500-1,600	...	...
Ullal	300	300-400	400-500	...
Whitefield	200	200-300	300-400	...
Hassan	1,100	1,100-1,200	...	...
Raichur	1,000	1,000-1,100	...	...
Chikmagalur	900	900-1,000	...	...
Hospet	800	800-900	...	...

TABLE V

## Main Automatic Exchanges II of Karnataka Circle

Name of the Exchange	Present Capacity	Proposal for		
	1981-82	1982-83	1983-84	1984-85
Aldoor	...	...	...	200
Ammathi	...	...	...	300
Anoor	...	...	...	200
Avati	...	...	...	200
Bajpe	...	...	300	...
Balele	...	...	...	300
Bantwal	400	...	...	...
Farangipet	...	...	...	200
Gangavati	...	500	...	...
Gangolli	...	...	...	200
Gurpur	...	...	...	200
Hebbagodi	...	...	200	...
Hoskote	200	...	...	...
Kanakapura	...	200	...	...
Kampli	200	...	...	...
Kengeri	200	...	...	...
Kinnikambla	...	...	...	200
Kolar	...	500	...	...
Krishnapura	...	...	300	...
Kutta	200	...	...	...
Nanjangud	...	...	...	300
Nelamangala	...	...	...	200
Polibetta	200	...	...	...
Saligrama	...	200	...	...
Srirangapattana	...	200	...	...
T. Narasipura	...	200	...	...
Vijayapura	...	200	...	...
Yelahanka	200	...	...	...
Yelwal	...	...	...	200
Shirva	...	...	...	200

TABLE VI

## Central Battery Multiple Exchange of Karnataka Circle

Exchange	Present capacity	Expansion in the years		
		1982-83	1983-84	1984-85
Channapatna	240	240-360	360-480	—
Chikballapur	240	240-360	—	360-480
Chintamani	360	—	—	360-480
Doddaballapur	360	—	—	360-480
Gokak	360	360-480	480-600	—
Haveri	360	—	360-600	—
Jamkhandi	240	—	—	240-360
Karkala	240	240-360	360-480	—
Kollegal	360	360-480	—	—
Kumta	240	—	—	—
Madhugiri	240	—	243-360	—
Nippani	360	—	360-480	—
Sakleshpur	240	240-360	360-480	—
Sagar	240	240-360	—	—
Tiptur	360	360-480	—	—
Yadgiri	240	—	—	—
Ranebennur	360	—	—	360-480

## New C.B.M. Exchanges proposed :

Bangarpet	250	360
Gonikoppa	300	360

## Trunk Automatic Exchanges proposed :

Belgaum	Cross Bar	2,000 lines	1984-85
Mangalore	Digital	1,000 lines	1984-85

## TOURISM

Karnataka has a vast tourist potential and several tourist spots in the State are world famous, which include historical monuments like temples with carvings of exquisite beauty, forts, mosques, hill stations, beaches, water falls, wild life sanctuaries and many scenic spots. There are also many pilgrimage centres. The southern region, particularly Karnataka, lacks in proper infrastructural facilities and publicity due to which many important tourist spots are not widely known. Every district of Karnataka has many tourist attractions.

### **Tourism Department**

Till 1974 there was no separate Tourism Department and it was a part of the Department of Information and Tourism. In 1974, a separate Department of Tourism was established to promote tourism on systematic lines. The strategy of the Department of Tourism for development of tourism infrastructure in the State is based on the broadly accepted principles of concentrating on selected centres. The Department, therefore, has a two-fold function, namely, (1) developmental and (2) regulatory. Developmental activities of the Department centre around the creation of infrastructural facilities including wayside inns, tourist homes, canteens and all round development of places of tourist interest. Regulatory activities are (a) issue of certificates to hotels at project sites to obtain institutional finance, (b) inspection of the existing hotels and classifying according to facilities offered, (c) issue of recognition to excursion agents and (d) recommending cases of car operators, hoteliers, travel agents and air line offices for recognition by the Government of India.

Besides, the Department has also been entrusted with activities (which are not commercially remunerative) for the promotion of tourist activities like publicity, literature, advertisement, exhibition, etc. It is also taking up a programme for training guides and conducting training classes in catering, housekeeping, etc. The Department has also taken up publicity of a non-commercial nature of the tourism facilities in the State and brings out literature like brochures, folders and posters. The Department has recognised as many as 210 tourist spots in Karnataka. Among them many are pilgrim centres and scenic spots visited by domestic tourists in large numbers. In order to have a systematic and scientific development, the department has divided the entire State into five complexes, viz., (1) Bangalore and Mysore Complex, (2) Bijapur



Complex, (3) Hassan Complex, (4) Hampi Complex and (5) West Coast Complex.

The Department took up work on the concept and design of selected schemes in the first phase. These include wayside facilities such as providing fast-food counter, a restaurant, washroom facilities, parking space, etc., at Maddur, Yedyur (Tumkur district), Shanthisagar (Shimoga district) and Hesaraghatta (Bangalore district), etc., and new blocks of rooms with attendant facilities at Badami, Belur, Krishnarajasagar and Jog Falls. Preliminary work was also taken up at the proposed international golf resort with a hotel near Bangalore airport as also a wildlife viewing lodge at Nagarahole Sanctuary. Survey was conducted for a wayside facility at Hangala near Bandipur for putting up a small motel complex to supplement the lodging facilities at Bandipur. Near about Bangalore, plans were formulated for developing picnic spots at Ramohalli, Muthyalamadu and the Nandi Hills. Work is in progress on a restaurant-cum-park in the Banneraghatta complex. Three twin cottages with an attached kitchen-cum-restaurant block were completed at Srirangapattana. Additional accommodation facilities were provided at the tourist canteen at Somanathapur. Construction of the tourist lodge at Dandeli was also taken up. A preliminary survey and cost benefit study was done for the passenger ropeway connecting Chamundi Hill with Mysore City. The programme of improving the illuminations at the Brindavan Gardens is in progress with additional Central assistance of Rs 40.00 lakhs. The scheme envisages a number of novel features like sonorisation, dynamic lighting, ambient pipe music and musical dancing functions, etc.

The project to resurrect Hampi has also been taken up. It proposes to renovate the relics of the ancient city and to unfold the character of the ancient capital to its nearest possible original condition and to preserve it for posterity, and further to make it an attractive resort for tourists, both national and international. The Department made elaborate arrangements towards the commemoration of the 1000th anniversary and the Mahamastakabhishekha celebrations of Lord Gomateshwara at Shravanabelagola in 1981. On a trial basis, the Department organised a Tourist Week during November 1981 at Bangalore, Bijapur, Mangalore, Belur, Madikeri, Gulbarga, Bidar and Mysore. As part of the festival, it conducted art exhibitions and illumination of important buildings of the city of Bangalore. Special programmes of folk

arts, exhibition of jewellery and silks and fireworks were also arranged. Cultural programmes were also conducted at other centres throughout the week. Special trips to places of interest and wild life sanctuaries were arranged.

The Department also encourages young people who go out on hiking, by providing them tent building material and travel gear on hire at reasonable prices. Camp sites with facilities like water points are marked where people can pitch their own tents or hire them from the Department. Development of lakes and organising of water sports in a big way is also planned at some places like Badami, Aihole, Hampi, etc. The need to have airstrips at Bijapur and Hospet has been felt. These airstrips alone will constitute an extremely significant facility and be a major boost to the northern circuit.

A three star beach resort is also initiated at Malpe. A mini beach resort on the same lines is also planned at Bengre which is close to Mangalore. One of the significant plans of the department in the near future is to have "sound and light spectacle" at places like Srirangapattana, Mysore and the Tipu's Palace at Bangalore. Schemes have also been prepared for illuminating Hampi, Badami, Pattadakal, Aihole and Golgumbaz (Bijapur).

### **Tourism Corporation**

The vast potential for the development of tourism in Karnataka gave birth to the Karnataka State Tourism Development Corporation in July 1971. Since then it has been engaged in the task of developing the required infrastructure for tourism like accommodation, transport and guide facilities, exhibiting the industrial and cultural attainments of the State and promoting tourism in other ways as commercial organisations do. It started with a subscribed capital of Rs 48.61 lakhs. With a modest beginning of two coaches in 1972, the Corporation has steadily built up its transport fleet to 30 (1982). The Corporation hopes to have 50 luxury coaches by the end of the Sixth Plan. The Corporation initially arranged conducted tours from Bangalore to Mysore, the Mysore complex, Belur and Halebidu, the Nandi Hills, etc. Inspired by the success, it extended these tours further to Hospet, Bijapur, Hassan, Hampi, T.B. Dam, Badami, Aihole, Pattadakal, etc. Trips outside the State to places like Ooty, Tirupati and Mantralaya are also arranged.

The Government transferred to the Corporation some of the tourist homes at Aihole, Badami, Bijapur, Gulbarga, K. R. Sagar, Mangalore, Madikeri, Magod, Tungabhadra Dam, Kemmannugundi and Mysore. At Krishnanarajasagar, boating facilities are provided by the Corporation. As the Corporation is primarily concerned with 1) tourist transport and 2) construction of larger tourist lodges and hotels, the current planning for tourism development in Karnataka has been accelerated on a) selective approach to certain known tourist circuits so as to achieve the optimum results from investments of available resources and (b) giving as much attention to the stimulation of domestic tourism as to achieving a substantial increase in the number of foreign arrivals.

The Government of Karnataka in consultation with the Government of India has identified two broad tourist circuits, one in its northern parts covering Hampi, Badami, Aihole, Pattadakal, Bijapur and Belgaum and the other in the southern half covering Mysore, Srirangapattana, Shravanabelagola, Belur, Halebidu, wildlife sanctuaries of Bandipur and Nagarhole and beach resorts of Malpe and Mangalore. To achieve the national target of 3.5 million tourists by 1990, the KSTDC along with the Department of Tourism have a plan which spans for 10 years from 1980-1990. The hotels belonging to the KSTDC have been renovated. Besides the recently opened Hotel Adil Shahi at Bijapur, the Corporation has extended facilities at Badami, Aihole, T.B. Dam, Gulbarga and Bidar. A coffee kiosk-cum-canteen at Pattadakal also came up. On the southern circuit, the Corporation and the Department have accommodation facilities at Srirangapattana, Krishnarajasagar, Mysore, Madikeri and Bangalore. A tourist complex with restaurant, bar, conference facilities, etc., is due to be inaugurated at the Nandi Hills. Another unique tourist feature introduced in the southern circuit during 1980 were the tented camps put up by M/s Jungle Lodges and Resorts Ltd., a subsidiary of the KSTDC which offers package wildlife tours that include accommodation in the tents, a trip into the Nagarhole sanctuary and a boat ride in the country basket boats. The camp is located on a hillside overlooking the Kabini river about 10 km from the lodge site. The organisation arranges transport to tourists to and fro. This project in Karnataka is the first of its kind in India and its objective is promotion of wildlife conservation oriented tourism in the State.

#### **Plan Period**

It was towards the latter part of the Second Plan that tourism received some recognition in the State. Construction of eight low income group

rest houses and one tourist hotel was taken up. An additional four tourist rest houses were also completed before the close of the Second Plan. The Tourist rest houses at Bijapur and the T.B. Dam site (Hostpet) were also commissioned during the Second Plan and the Tourist hotel at Jog Falls was completed during the Third Plan. The Fourth Plan saw the completion of a number of tourist lodges, etc., which included five family quarters and tourist canteen at the Nandi Hills, tourist rest houses at the Mahadeshwara Hills, Devarayana Durga, Gulbarga and Vanivilas Sagar, LIG rest houses at the Magod Falls and Talacauvery, tourist house at Gokak Falls, pavilion at Belur, Tourist Canteen at Somanathpur, remodelling the TB at Sringeri and construction of an annexure to the existing tourist home at Bijapur. The total allocation made year-wise during the four years from 1974-75 to 1977-78 was Rs 59.20 lakhs of which the amount expended was Rs 41.67 lakhs.

A number of works have been taken up during the Fifth Plan which included construction of tourist homes at Gokarna, coffee kiosk at Halebidu and a motel at Srirangapattana. Tourist canteens at Somanathpur and Shravanabelagola are already catering to the tourists. The tourist cottage and dormitory at Belur have also been furnished. A tourist cottage and a coffee house are among the other facilities provided at Halebidu in this programme. It is proposed to fully integrate the programmes of the Department and KSTDC in the VI Plan. The department therefore proposes to launch an intensive advertising campaign with attractive brochures, folders, etc. As part of the publicity programme, the Department intends to open information centres at the main embarking places for foreign tourists *via.*, Delhi, Bombay and Madras.

The Indian Tourism Development Corporation, New Delhi, is also engaged in promoting tourism in Karnataka and it runs star hotels at Bangalore, Mysore and Bijapur.

**Table showing the outturn of the railway workshops for some recent years**

Year	Overhauling (all inclusive)			No. of spares produced (average)	Construction of Coaches (in Nos.)
	Loco	Carriage	Wagon		
(a) RAILWAY WORKSHOP, HUBLI					
1977	212 Nos.	2,028 Units	5,216 units		6
1978	183 „	2,081 „	5,000 „	2,494 + 98	6
1979	187 „	1,983 „	4,637 „	diesel - loco	8
1980	188 „	1,943 „	4,918 „	spares	NA
1981	199 „	2,037 „	5,188 „		NA
1982	180 „	2,023 „	5,424 „		NA
(b) RAILWAY WORKSHOP, MYSORE					
1977	66 Nos.	857 Nos.	2,408 Nos.		2
1978	50 „	847 „	1,687 „		10
1979	61 „	905 „	2,380 „	1,352	12
1980	59 „	910 „	2,911 „		12
1981	52 „	816 „	3,024 „		5 .

**Statement showing particulars of export and import handled through  
some ports in Karnataka State from 1972-73 to 1981-82**

*(in tonnes)*

<i>Year</i>	<i>Karwar</i>	<i>Belikeri</i>	<i>Honavar</i>	<i>Kundapur</i>	<i>Mangalore (minor)</i>
<b>1972-73</b>					
Export	2,15,688	1,75,555	17,069	90,373	2,67,323
Import	3,747	1,803	3,157	12,962	1,02,421
<b>1975-76</b>					
Export	3,41,621	8,301	22,098	70,705	1,50,368
Import	64,419	1,005	3,106	6,200	68,524
<b>1978-79</b>					
Export	1,70,848	1,06,931	23,128	47,925	1,35,758
Import	97,261	971	2,523	4,625	44,986
<b>1979-80</b>					
Export	2,61,919	2,17,939	22,353	37,343	1,10,589
Import	1,65,994	891	2,195	4,310	67,574
<b>1980-81</b>					
Export	2,01,290	4,16,523	18,712	51,260	1,18,653
Import	142,462	455	2,645	3,654	99,460
<b>1981-82</b>					
Export	94,477	3,21,530	19,846	74,953	1,15,694
Import	167,764	...	2,312	3,041	43,984