TUMKUR DISTRICT

CHAPTER I

GENERAL

TUMKUR is the headquarters town of the district, and the district is also called by the same name. Popular tradition has it that Tumkur once formed part of a territory, whose capital was Kridapura, now a small village known as Kaidala, three miles to the south of Tumkur, and that it was presented by one of its rulers to a herald or tom-tom beater. *Tumuke* is the small drum or tabret, which is used for tom-toming, and the town might have been called *Tumuke-Ooru* to indicate that it belonged to the beater of *tumuke*. But the original name of the place, according to certain inscriptions of the tenth century, was Tummegooru, which means the place of the *tumme* or *tumbe*, a common fragrant herb (*Leucas aspera*) found abundantly in the area. It is said that the present town was built by Kante Arasu, a member of the Mysore royal family, and because the area was clearly known as *Tumme* or *Tumbe*, he seems to have continued the same name with the addition of *Ooru* for the town and called it *Tumme-Ooru* or *Tumbe-Ooru* which, in course of time, came to be pronounced as Tumakuru (or Tumkur in its anglicised form), as it is now known. **Origin of name**

Tumkur belongs to the group of districts called the *maidan* (plains) districts and is situated in the east-central part of the Mysore State and to the south and south-east of Chitradurga district. It is situated between 12° 45′ and 14° 20′ north latitude and between 76° 20′ and 77° 31′ east longitude. **Location**

It is bounded on the north by the Anantapur district of Andhra Pradesh, on the east by the Kolar and Bangalore districts, on the south by the Mandya district and on the west by the districts of Chitradurga, Chikmagalur and Hassan. **General boundaries**

One peculiar feature of this district is that one of its taluks, *i.e.*, Pavagada, is not at all connected with it at any point. The taluk is surrounded on all sides by the Anantapur district of Andhra

Pradesh and is connected with Mysore State at only one point by a narrow strip of land on the north-west, and that too, not with the Tumkur district to which it belongs, but with another district of Mysore State, *i.e.*, Chitradurga. This is because of the fact that this taluk once formed part of the Chitradurga district and was separated from it and attached to Tumkur district in 1886.

Area and population

The area of the district, according to the Commissioner for Survey, Settlement and Land Records in Mysore, is 4,073.7 square miles or 10,550.9 square kilometres* and its population, according to the 1961 Census, was 13,67,402. Both in area and population it occupies the eighth place. With a density of 336 per square mile, it is above the State average, which is 319, and ranks seventh among the districts of the State. But in 1951, the district was occupying the eighth place in respect of area, population and also density. The extreme length of the district from north to south is 102 miles and its greatest breadth from east to west is 67 miles.

Administrative history

During the early period, from the 5th to the 10th century A.D., a major portion of the area comprising the present Tumkur district formed part of Gangavadi and was in the possession of the Gangas. The north-eastern part of the district formed part of Nolambavadi in the 10th and 11th centuries and was ruled by the Nolambas, who had their capital at Penjeru or Henjeru (in the present Madakasira taluk of Andhra Pradesh) and a stronghold at Nidugal in the Pavagada taluk. At this time, the chief divisions of the country seem to have their revenue value affixed to their names. Thus, the area under the Gangas was known as Gangavadi-96,000 while the area under Nolambas was Nolambavadi or Nonambavadi—32,000. In the ninth century, there were matrimonial alliances between these two dynasties, and Nolambadhiraja, who married Jayabbe, younger sister of the Ganga king Nitimarga, assigned certain villages in the Sira country to each of his other queens. The Hoysalas, who succeeded the Gangas, held sway over almost the entire area. Their occupation of the country, it may be said, was in two stages: Vinayaditya (1047—1100) and Vishnuvardhana (1100—1152) are represented as ruling over only Gangavadi, whereas Narasimha I (1152—1173) is described as ruling over both Gangavadi and Nolambavadi. The area later came under the rule of the Vijayanagara kings in the 14th century and under the latter's sovereignty, there were, in this area, several small feudatory States such as those of Hagalvadi, Holavanahalli, Maddagiri and Nidugal. When the Bijapur army invaded the country, the descendants of some of these rulers were driven out of their estates and almost the whole of the northern part of the district was brought under Adil Shahi

*According to the figures furnished by the Survey of India, the area of the district is 4,091.58 sq. miles or 10,597.11 sq. kilometres. *See* also Appendix—Table 1.

rule. The Mughals, who later captured Golconda and Bijapur, made Sira a province, with Doddaballapur, Bangalore, Hoskote and Kolar, known as the Karnatak-Bijapur-Balaghat, under a Subedar or Faujdar. The southern part of the district, which was not appropriated by the Bijapur Government established at Sira, was, in the meanwhile, conquered by the Mysore ruler, Chikkadevaraja Wodeyar. Thus, by the end of the 17th century, the southern taluks of Tumkur district were part and parcel of the Mysore territory. The remaining portion fell to Mysore on the conquest of Sira by Haidar Ali in 1761.

After the fall of Tipu, the territory was restored to the Mysore royal family, and during the reign of His Highness the Maharaja Krishnaraja Wodeyar III (1811—31), Mysore State consisted of the six Faujdaris of Bangalore, Maddagiri, Chitaldrug (Chitradurga), Ashtagram, Manjarabad and Nagar. The present Tumkur district formed part of Maddagiri Faujdari. In 1834, these six Faujdaris were reconstituted into the four divisions of Bangalore, Nagar, Chitaldrug and Ashtagram. The Tumkur district, along with Chitaldrug district, formed the Chitaldrug division with headquarters at Tumkur.

Changes by British Commission

During the days of the British Commission, Mr. Bowring, who was appointed as Commissioner in 1862, divided the State into eight districts and Tumkur district was one of them. These eight districts were grouped into three divisions. Each division was under the charge of a Superintendent, while each district was placed under the charge of a Deputy Superintendent. When the Commission was reorganised in 1879, the posts of Commissioners of divisions were abolished and there was only one Chief Commissioner for the whole State. The districts were put under the charge of Deputy Commissioners, and Assistant Commissioners and Amildars were in charge of sub-divisions and taluks, respectively.

The Chitaldrug division was broken up in 1863 when the Chitaldrug district was added to the Nagar division, while the Tumkur district was attached to the newly formed Nandidurg division. The Sira taluk was transferred from Chitaldrug district to Tumkur district in 1866. In 1879, all the divisions were abolished. The Chitaldrug district was reduced to a sub-division in 1882 under Tumkur district. It was, however, re-established in 1886, but without the Pavagada taluk, which was made a part of Tumkur district.

Huliyar, a town 14 miles north-west of Chiknayakanahalli, was once the headquarters of the Budihal taluk, which was in Chitaldrug district. In 1886, it was the chief town of a sub-taluk named after itself and finally it was amalgamated with Chiknayakanahalli. At the time when the survey rates of

assessment were first introduced in the district between the years 1870—1882, the Tumkur district consisted of Sira, Tumkur, Maddagiri, Koratagere, Chiknayakanahalli, Honnavalli, Kunigal and Kadaba taluks. In 1881—82, Koratagere taluk, which consisted of 330 villages, was broken up and a sub-taluk of the same name attached to Maddagiri taluk was formed with 140 villages. The remaining 190 villages were added on to the adjoining taluks of Sira and Tumkur of Tumkur district, Nelamangala and Doddaballapur taluks of Bangalore district and Goribidanur (Gauribidanur) taluk of Kolar district. Turuvekere was transferred from the old Kadaba taluk and was made a sub-taluk in Tiptur taluk in the same year. The present Gubbi taluk was called Kadaba taluk while the present Tiptur taluk was called Honnavalli taluk till 1886.

Changes after 1915

In 1915, there were two sub-divisions, eight taluks and two sub-taluks in the district. The Tumkur and Kunigal taluks were under the direct charge of the Deputy Commissioner. While the Maddagiri, Sira, Pavagada taluks and the Koratagere sub-taluk formed the Maddagiri sub-division, the Gubbi, Tiptur and Chiknayakanahalli taluks and the Turuvekere sub-taluk constituted the Gubbi sub-division. Maddagiri was given the name of Madhugiri in 1927 at the request of the local people. The Koratagere sub-taluk was converted into a taluk in 1928 and the Turuvekere sub-taluk was formed into a taluk in 1938. A new sub-division, with Tumkur as its headquarters, was established in January 1938 with a view to relieving congestion of work in the other sub-divisional offices of the district and also for dealing with the large amount of acquisition work arising in connection with the Marconahalli project. The Gubbi sub-division was abolished and the Gubbi, Tumkur and Kunigal taluks, which were under the direct charge of the Deputy Commissioner, were constituted into the Tumkur sub-division. The remaining taluks of Tiptur, Turuvekere and Chiknayakanahalli of the erstwhile Gubbi sub-division were formed into the Tiptur sub-division. There was no change in the Madhugiri sub-division.

Under the Provinces and States (Absorption of Enclaves) Order, 1950, Kotagaralahalli and Sarjammanahalli (jodi) villages of Madakasira taluk of Anantapur district of the former Madras State (now of Andhra Pradesh), having an area of 6.3 sq. miles, were transferred to the Madhugiri taluk of Tumkur district.

When the new Mysore State was formed in November 1956 by the integration of the Kannada areas of the adjoining States of the then Bombay, Hyderabad and Madras States, Coorg and the old Mysore State as the result of the States' Reorganisation Act of 1956, and the number of districts rose from 10 to 19, it was found necessary, for administrative convenience, to revive the divisions. The new Mysore State was thus divided into four divisions, each

under the charge of a Divisional Commissioner. The Tumkur district, along with Bangalore, Kolar, Chitradurga and Bellary districts, was constituted into one division called the Bangalore Division. With effect from 1st February 1966, the Bellary district was transferred to the Gulbarga Division and in its place, the Shimoga district from the Mysore Division was attached to the Bangalore Division.

Present position

There are at present ten revenue taluks in the district. These taluks are grouped into three revenue sub-divisions for administrative convenience. There are eleven towns and 2,444 inhabited villages in the district. The present administrative divisions of the district and the number of hoblies and villages in them are as follows :—

Sub-Division and Taluk	*Number of hoblies*	*Number of villages*	*Number of towns*	*Area in*		*Population* (1961)
				Square miles	*Square kilometres*	
1	2	3	4	5	6	7
Tumkur Sub-Division						
1. Tumkur ..	6	351	1	393.1	1,018.1	2,17,911
2. Gubbi ..	6	300	1	475.1	1,230.5	1,47,422
3. Kunigal ..	5	290	1	380.5	985.5	1,55,073
Tiptur Sub-Division						
1. Tiptur ..	4	216	1	320.5	830.1	1,14,638
2. Chiknayakanahalli	5	208	1	418.5	1,083.9	1,15,657
3. Turuvekere ..	4	222	1	297.5	770.6	1,02,325
Madhugiri Sub-Division						
1. Madhugiri ..	6	275	1	423.9	1,097.9	1,53,793
2. Sira ..	5	225	1	573.2	1,484.6	1,54,004
3. Koratagere ..	4	222	1	243.8	631.4	89,383
4. Pavagada ..	4	135	2	547.6	1,418.3	1,17,196
Total ..	49	2,444	11	4,073.7	10,550.9	13,67,402

The names of hoblies and the taluks in which they are located are given below :—

Sl. No.	*Taluk*	*Number of hoblies*	*Names of hoblies*
1	2	3	4
1.	Tumkur ..	6	1. Tumkur 2. Hebbur 3. Kora 4. Gulur 5. Bellave 6. Urdagere
2.	Gubbi ..	6	1. Gubbi 2. Chandrashekharapura 3. Chelur 4. Hagalvadi 5. Nittur 6. Kadaba
3.	Kunigal ..	5	1. Kunigal 2. Yedeyur 3. Amruthur 4. Huliyurdurga 5. Kothigere
4.	Tiptur ..	4	1. Tiptur 2. Kibbanahalli 3. Nonavinakere 4. Honnavalli
5.	Chiknayakanahalli ..	5	1. Chiknayakanahalli 2. Settikere 3. Kandikere 4. Handanakere 5. Huliyar
6.	Turuvekere ..	4	1. Turuvekere 2. Dandinashivara 3. Mayasandra 4. Dabbeghatta
7.	Madhugiri ..	6	1. Madhugiri 2. Dodderi 3. Midigeshi 4. Ittigadibbanahalli 5. Kodigenahalli 6. Puravara
8.	Sira ..	5	1. Sira 2. Kallambella 3. Bukkapatna 4. Hulikunte 5. Gowdanagere
9.	Koratagere ..	4	1. Koratagere 2. Channarayanadurga 3. Holavanahalli 4. Kolala

1	2	3	4
10.	Pavagada ..	4	1. Pavagada 2. Nidugal 3. Hoskote 4. Nagalamadike

Natural divisions

Tumkur is a land-locked district. It has also no natural features like rivers or mountains dividing it from the other districts of the State. The district is generally an open tract except in the south of the Kunigal taluk, where the country is wooded and hilly, the other parts consisting mainly of undulating plains interspersed with clumps of tall and well-grown trees. To the east of Tumkur and north of Devarayanadurga, the appearance of the region presents the scenery of a hilly country intersected by cultivated valleys. The open parts of the district maintain a generally even level above the sea, except Sira and Pavagada which are at a considerably lower level than the rest of the district.

The following statement shows the elevation, above the sea level, of each of the taluk headquarters towns in the district :—

Sl. No.	*Name of place*	*Height above the sea level. (in feet)*
1.	Tumkur	2,669
2.	Madhugiri	2,389
3.	Koratagere	2,450
4.	Sira	2,160
5.	Pavagada	2,082
6.	Chiknayakanahalli	2,596
7.	Gubbi	2,544
8.	Tiptur	2,783
9.	Turuvekere	2,643
10.	Kunigal	2,554

Hills

The western parts of the Tumkur district are occupied by long ranges of hills running approximately in a south-south-easterly direction. These ranges of hills form the southern extension of the Chitradurga schist belt, grouped under the well-defined central group of the Dharwar schists occurring in Mysore State. The eastern part of the district is occupied by a narrow range of granitic hills forming the northern extension of the newer granites in Mysore grouped under the 'Closepet' granites. Their average width is about twenty miles, and they run north and south in this district. Among the hills of this group may be placed Devarayanadurga and Madhugiri hills. There are two parallel ranges

running north to south in the district. The first one on the eastern part of the district is made up of granites and passes through Pavagada, Madhugiri, Koratagere and northern part of Tumkur taluk. The second one, mainly composed of schistose rocks, passes through the western parts of the district in Chiknayakanahalli, Sira and Gubbi taluks. There is another cluster of hills covering the middle and southern parts of Kunigal taluk.

The eastern range enters the district from the north with Kamanadurga (3,534 feet) and Nidugal (3,769 feet) in the Pavagada taluk and is continued by Midigeshidurga (3,409 feet). This, which forms part of the range running through the west of the Bangalore district represented by Shivaganga and Savandurga, includes the prominent peaks of the Madhugiridurga (3,930 feet), Channarayanadurga (3,734 feet), Koratagiri (2,885 feet), Devarayanadurga (3,896 feet), Nijagal (3,562 feet), Hutridurga (3,708 feet) and Huliyurdurga (2,771 feet).

To the west of the chain of hills mentioned above, a low range, commencing near Kibbanahalli, runs north-west past Chiknayakanahalli and joins the central belt of the Chitradurga district. The watershed separating the river system of the Krishna northwards from that of the Cauvery southwards, may be defined by a line drawn east and west from Koratagere to Tiptur, while the main chain of mountains forms the western limit of the upper North Pinakini basin.

The more important of the hills and peaks in the district with their elevations are given below :—

Sl. No.	*Name of taluk*	*Name of peak*	*Height of the peak above the sea level (in feet)*
1	2	3	4
1.	Tumkur	.. Devarayanadurga	.. 3,896
		Nijagal	.. 3,562
		Ramadevarabetta	.. 3,881
		Seetakal	.. 3,345
2.	Madhugiri	.. Madhugiridurga	.. 3,930
		Midigeshidurga	.. 3,409
		Dodnaramangala	.. 3,101
		Byalya	.. 2,913
3.	Koratagere	.. Channarayanadurga	.. 3,734
		Koratagiri	.. 2,885

1	2	3	4
4.	Pavagada	.. Kamanadurga	.. 3,534
		Nidugal	.. 3,769
		Pavagada	.. 3,012
5.	Tiptur	.. Bommanahalli	.. 3,125
		Choudanahally	.. 2,665
6.	Kunigal	.. Hutridurga	.. 3,708
		Huliyurdurga	.. 2,771
		Hemagiri	.. 3,083
		Rangaswamibetta	.. 2,997

The southern taluks, except around Huliyurdurga, where the country is wooded and hilly, consist of undulating plains interspersed with clumps of tall and well-grown trees, where stone is scarce, except on occasional ridges of hillocks. Cocoanut and other palms are confined to the vicinity of tanks. Farther north, large plantations of cocoanuts occupy even the dry lands, especially in the taluks of Gubbi, Tiptur and Chiknayakanahalli. After crossing Tumkur eastwards, the park-like appearance of that taluk changes, north of Devarayanadurga, into the scenery of a hilly country intersected by cultivated valleys, the hills and their skirts being, for the most part, covered with shrubs interspersed with trees which remain verdant through the greater part of the year.

Rivers

There are no perennial streams in this district. There are a few small rivers and a number of big streams that rise in the hills and feed a number of tanks. They flow only during the rainy season and dry up during the summer.

The most important rivers of this district are the Shimsha and Jayamangali. The river Shimsha rises in the south of Devarayanadurga in Tumkur district and flows in a southerly direction and finally joins the river Cauvery. The Jayamangali also rises in Devarayanadurga and flows in a north-westerly direction in the initial stages and then changes its course in the western plains towards the north and finally joins the river Pennar. Therefore the northward and southward drainages of these two rivers clearly point out to the existence of a central ridge in the district, which forms the watershed, and the same central ridge passes also right across the middle of the State in an east-west direction.

The following is a list of the important streams and rivers that take their birth in or flow through the district :—

Sl. No.	*Name of stream or river*	*Place at which it rises*	*Taluk or taluks through which it flows with its length in each taluk*	
1	2	3	4	
				Miles
1.	Jayamangali	.. Devarayanadurga (North)	Tumkur ..	8
			Koratagere .. }	32
			Madhugiri .. }	
2.	Shimsha	.. Devarayanadurga (South)	Tumkur ..	17½
			Gubbi ..	21
			Turuvekere ..	8½
			Kunigal ..	15
3.	Suvarnamukhi	.. Channarayanadurga ..	Koratagere ..	15
4.	Garudachala	.. Devarayanadurga (South-East).	Koratagere	
5.	North Pinakini	.. Channakeshava hill (North-West of Nandidurga in Kolar district).	Pavagada	

Jayamangali

The Jayamangali, which is an affluent of the North Pinakini or Pennar, rises in Devarayanadurga in a gorge called Jaladagondi and flows in a northerly direction into the Madhugiri taluk and receives the Garudachala stream near Holavanahalli from the east and the Suvarnamukhi near Rampura from the west. Continuing its course through the east of the Madhugiri taluk, it flows into the North Pinakini near Parigi in Anantapur district. The river is full of *kapile* wells and *talapariges* or spring-head streams drawn from the channel.

Shimsha

The Shimsha is an affluent of the Cauvery and is also called the Shimshupa, the Kadamba and the Kadabakola. It rises in the south of Devarayanadurga, and flowing south-west through the Gubbi taluk, forms the large Kadaba tank. Thence running southwards, it unites near Kallur with the Naga stream which feeds the Turuvekere tank. Then it flows in the Kunigal taluk and unites with the Nagini flowing from the Kunigal tank. Then turning east, it skirts the hills west of Huliyurdurga and takes a southern course into the Mandya district. A reservoir has been constructed across this river near Marconahalli in 1939, and the *atchkat* under this is about 11,000 acres.

Suvarnamukhi

The Suvarnamukhi is a stream which rises in Channarayana-durga. It flows, at first, south-east and then north-east, and passing Koratagere after a course of 15 miles, runs into the Jayamangali. A reservoir known as the Boranakanive lake was constructed across this river between 1888—1892 as a famine relief work. The *atchkat* under this reservoir is 1,400 acres.

Garudachala

The Garudachala, a stream, which has its source near the boundary of the district south-east of the Devarayanadurga group of hills, flows north into Koratagere and joins the Jayamangali near Holavanahalli.

North Pinakini

The North Pinakini, also known as the North Pennar, has a course of only a few miles in the district through the Pavagada taluk. Nearly three-fourths of the taluk is in the basin of this river. It passes along the borders of south-east corner of the taluk for about three miles and after a north-easterly course of nine miles in the Penukonda taluk, enters the taluk in the north-east at Pendagivi and then after a run of about nine miles, passes into the Anantapur district.

Kundar or Kumudwati

The Kundar or Kumudwati is a stream, which rises near Makalidurga in Doddaballapur taluk of the Bangalore district, and flows northwards through the Gauribidanur and Madhugiri taluks and runs into the North Pinakini just beyond the border of the State.

Nagini

The Nagini has its source in the Kunigal-Doddakere and it flows in the Kunigal taluk for about six miles before it joins the Shimsha near Hanumapura. An anicut was constructed across this river in 1901 near Sankanpura in the Kunigal taluk with a total *atchkat* of 600 acres. One more reservoir across this river has been constructed near Mangala in the Kunigal taluk.

Springs and spring-heads

In the north-east of this district, there is a fertile tract irrigated from springs. These springs, called *talapariges* or flowing wells, form a marked and peculiar feature of the Madhugiri taluk. They are also to be found in the Pavagada and Koratagere taluks. *Talaparige* wells are dug up in various places, such as, alluvial terraces or beds of rivers, in or behind tank bunds or along the waste-weir *nalas* of some of the larger tanks.

The *talapariges* in Madhugiri taluk are distributed in four or five of the larger hydrographic basins which are of localised origin. The *talaparige* sources are mainly along the waste-weir *nalas* of the more prominent tanks of the villages of Bijavara, Siddapura, Chelanahalli, Hampapura, Midigeshi and Beddihalli.

The water obtained from these spring-heads is either conducted directly by narrow channels to the fields, or *kapile* wells are constructed from which the water is raised by two or four bullocks. The cultivators have taken every advantage derivable from this bounty of nature. The channels leading from these springs are generally of considerable length and take much labour for keeping them in working condition. The structure of the sub-soil and the existence of the hills have given rise to these fine springs, which frequently come to a head in favourable spots in the valleys. Where the soil is not sandy, springs may be tapped at short distances from each other.

These *talapariges* are being used only in the rainy season as they will be dried up in summer. For want of timely and sufficient rains, these springs are not now working satisfactorily.

Geology

The Tumkur district is situated right on the archaean complex and the geology of the area is fairly simple. The rock formations belonging to the archaean complex are represented by the crystalline schists, the granitic gneisses and the newer granites. The crystalline schists of this district form the southern extension of the well-defined Chitradurga schist belt of the Dharwar system which are the oldest members of the archaean complex. Apart from the main central schist belt developed to the east of Chiknayakanahalli, there are many patches of schists scattered in the gneissic complex. Many of these patches are highly metamorphosed and the biggest of these schist patches is developed to the west of Huliyurdurga. The other two schist patches are less than a square mile ; one of them is developed near the village of Tipsandra in Kunigal taluk and the other patch is developed near the village of Bidaloti in Koratagere taluk.

The schist belt, which passes to the east of Chiknayakanahalli, sends out, to the west-north-west, near Banasandra, a branch which extends over 20 to 25 miles. This narrow belt of schists is composed of chloritic schists, micaceous schists, quartzites, limestones and ferruginous quartzites. Just near Bellara, within the schist belt, lens-shaped masses of grey trap occur between the villages of Bellara and Bukkapatna. These are basic and intermediate types of volcanic rocks. They are found to occur as flows and minor intrusions. Lately, a pillow structure has been recognised in some of the flows in the vicinity of the abandoned gold mine near Bellara. Portions of the schist belt near Doddaguni exhibit clear evidences of sedimentation.

The highly calciferous limestones show distinct signs of stratification and bedding. The chemical and mineralogical examination of some of these rock formations has confirmed the original sedimentary nature of the rock formations.

The thin patches of schists scattered about in the gneissic complex show evidences of repeated metamorphism. In extent, these outcrops are less than a square mile. The biggest of the scattered schist patches is developed to the west of Huliyurdurga and covers an extent of about 20 square miles. Besides this, there are two small schist patches, one near Bidaloti in Koratagere taluk and the other near Tipsandra, east of Kunigal. These schists are intensely altered and new minerals like diopside, hyperthene, varieties of garnets, cordierite, sillimanite and corundum have developed giving rise to several interesting rock types. All these rock types are considered to be highly metamorphosed phases of impure argillitic sediments preserved here and there as remnants of the original schists in the gneissic complex.

Granites and gneisses

The narrow schist belt of Chiknayakanahalli as well as the scattered schist patches occurring to the west of Huliyurdurga, Kunigal and Koratagere, are all surrounded by the gneissic complex. The major portion of the district is covered by this complex of granitic gneisses which are classed under a separate group named the peninsular gneiss. This gneissic complex is said to be composed of four major components as follows :—

(i) Banded gneisses,
(ii) Granitic gneisses,
(iii) Gneissic granites and granites,
(iv) Grano-diorites, diorites, inter-action diorites and other varieties.

Regarding the mode of origin of this gneissic complex, it is stated that these banded gneisses form a composite series consisting of a mixed assemblage of older rocks—igneous and sedimentary—replaced and inter-bedded with acid material. Large parts of the granitic gneisses are found to be the granitised phases of older rocks, which are perhaps mostly argillites, grits and quartzites. The gneissic granites, on the other hand, represent the replaced and granitised phases of the dark hornblendic schists and granulites by the action of magmatic emanations and juices that came up during the intrusion of magma and engulfed the blocks of the gneissic granites and the dark hornblendic granulites and consolidated directly as granites. How and where the magma itself originated, and whether it formed a large continuous mass or arose as separate entities in different regions covered by the vast area of the peninsular gneiss, are points on which there is no information.

'Closepet' granites

The younger granites constitute a well-defined narrow range of hills, which run north and south in the eastern portions of the Tumkur district. These granites are usually coarse-grained and coarsely porphyritic, and they represent the northern extension of the younger 'Closepet' granites and intrude all earlier formations.

Minerals of economic importance

Asbestos (Amphibole type).—Asbestos is seen as small stringers in the amphibolites, about one furlong south-east of Honnamachanahalli tank bund and near Huliyur, both in Kunigal taluk.

Corundum.—So far, a detailed survey of corundum deposits has not been conducted in the Tumkur district. However, a few areas of corundum-bearing zones in the Madhugiri, Pavagada, Kunigal and Sira taluks have been noted, where corundum occurs in the form of loose grains in the decomposed parts of the parent rocks and sometimes in the form of lumps in association with the amphibolitic schists.

Occurrence of corundum is reported from the following localities in Tumkur district:—

About one-fourth of a mile south-east of Koratagere, grey corundum is found in felspathic veins, and to the east of Koratagere, old workings are seen near the rest house. Corundum also occurs near Bandihalli in Huliyurdurga. Near Palavalli in the Pavagada taluk, runs of corundum rock have been traced and loose crystals are seen on the rise east of the village of Timmasandra and in other areas in the Kunigal taluk.

Clay (Alkali-rich clays).—An extremely fine-grained type of white clay, soft and greasy to the feel, is exposed on a large scale in the manganese workings near Karekurchi, Muskondli and Janehar in the district. From the economic stand-point, these clays, which are rich in potash, are likely to be of use in the ceramic industry.

A number of white clay deposits have been located in other parts of the district, but their economic potentialities and uses are not yet fully assessed.

Feldspar.—This is a widely distributed mineral, but is found only occasionally in economically workable deposits. It is mostly used in the ceramic and pottery industry. There are several localities where feldspar is found in association with pegmatite veins in the Kunigal taluk.

Bellara Gold Mines

Gold.—Gold is found in the native form associated with the white quartz reefs in the basic grey traps. It is also found in the form of disseminated grains at the contact of the quartz reef and the host rock near Bellara and other places.

The Bellara gold mining block is situated about 95 miles north-west of Bangalore and about half a mile to the east-north-east of Bellara which is a roadside village. The auriferous formation of this region consists of a massive basic igneous-rock grouped

under the grey traps. Most of the quartz reefs are found to show traces of gold (*See* also Chapter V).

Besides the Bellara Gold Mines, where the Department of Mines and Geology conducted deep prospecting work, there are other gold-bearing areas like Ajjanahalli, which is nine to ten miles to the north-north-east of the Bellara Gold Mines. Extensive prospecting work conducted in the Ajjanahalli block disclosed a large ore body at a depth of 100 to 300 feet.

Garnet.—Green garnets (uvarovite) are found near the village of Bandihalli in the Kunigal taluk, associated with the metamorphosed micaceous schists.

Limestone.—Limestone generally occurs on the margins of the schist area and, in most places, they are closely associated with the red and yellow ochry schist and manganiferous clay beds. Large exposures of limestone are found near Doddaguni in the Gubbi taluk where they occur in sizable quantities. Limestones are also found in certain portions of the schist belt in the western fringe of the Chiknayakanahalli taluk. In composition, they vary from pure limestones to siliceous and dolomitic types. The magnesian varieties are usually intersected with numerous veins of quartz and are massive and structureless.

Manganese Mines

Manganese.—Manganese is a mineral of high importance next to iron and coal. It is largely used in the steel and ferro-alloy industry. Manganese is added to steel in the form of ferro-manganese. Manganese mines are all located on the marginal portions of the schist belt. Large-scale mining operations are being conducted in the following localities in the district :—

(1) South-west of Janehar (Chiknayakanahalli taluk),
(2) North-east of Honnebagi,
(3) Doregudda area,
(4) North-east of Sondenahalli,
(5) Round-about Karekurchi (Tiptur taluk),
(6) Round-about Hatyal,
(7) Round-about Shivasandra and Kondli, and
(8) All along Kudurekanive State forest.

Ochres.—Yellow and red ochres are found in close association with limestone and the manganiferous clay schists. In the vicinity of Janehar in the Chiknayakanahalli taluk, it is found in fairly large quantities.

Quartz.—White quartz is a common mineral of great utility in ceramic and metallurgical industries and is also a common building

stone and road metal. It is found in abundance in the following localities in the district :—

(1) East of Unkere (Tiptur taluk),
(2) East of Koratagere taluk, and
(3) Round-about Doddaguni (Gubbi taluk).

Sillimanite.—Sillimanite is an aluminium silicate mineral, which is used in the manufacture of spark plugs and other insulating materials required at high voltages. Sillimanite refractories are used in the cement, ceramic and glass industries. Sillimanite, 2" to 4" in length, occurs in the cordievite-mica gneisses near Polenahalli in the Pavagada taluk. The average content of sillimanite in the rock is 5 per cent.

Silver Sand.—The term ' silver sand ' is applied to a pure white finely granular quartz which is friable. The silver sand, on account of its purity and equi-granular dimensions, is specially suited for fused silica-ware. The outcrops of silver sand are noticed near the Hatyal and Doregudda hill ranges and also near Kondli.

Soapstone.—Soapstone or steatite is used in the manufacture of household utensils, in the rubber and cosmetic industries and also as a neutral refractory material. It occurs in the following localities :—

(1) On a ridge close to Kadehalli (Turuvekere taluk)
(2) Near Birasandra (Tiptur taluk).

Vermiculite (Bronze-coloured mica-like mineral).—Vermiculite occurs in the old workings for corundum to the east of Nagalamadike in the Pavagada taluk very near the State border. The deposit has not yet been prospected and a careful search in this locality may lead to the discovery of fresh deposits of vermiculite.

Building and Ornamental Stones.—Red and grey and porphyritic types of granites are quarried in parts of the Tumkur district for building and ornamental purposes. The Turuvekere trap, a dark amphibolite, has been used in several cases of ornamental work and it takes a fine black polish. Grey and blue crystalline limestones found in many parts of the Tumkur district make good ornamental stones and are used for decorative purposes since they take a fine polish.

Forest wealth

The forest-region in the district is classed under the dry-belt zone, as distinct from the evergreen and the mixed-belt, which are found in the extreme west of the old Mysore area and in the middle of the State, respectively. The dry-belt zone lies to the

east of the mixed-belt and includes in it the whole of the Tumkur area. In this dry area, the tree vegetation is very much inferior to that of the mixed-belt, the change noticed being gradual and in some areas very marked. The exact boundary limit between the dry-belt zone and the mixed-belt zone is seen near the eastern slopes of the Bababudan hills. This line passes from north to south, and the region lying east to the line is called the dry-belt in which Tumkur district is situated. Most of the tree vegetation found in the mixed-belt is also found in the dry zone, but in the latter, the growth is not so spectacular as is found in the mixed-belt.

The forest regions in the district are found, to a large extent, in the lower slopes of hill ranges, *viz.*, Devarayanadurga hills, hills around Koratagere, ranges near Madhugiri, chain of hills to the west of Kibbanahalli, the region around Bukkapatna, the area near Huliyurdurga, area around Kudurekanive and Keepalpura. The total area of the State forests in the district is 341 square miles, according to the Divisional Forest Officer, Tumkur.

Growth of tree vegetation

The forests in the district are confined mostly to the lower slopes of the hill ranges and are spread over the entire district in small blocks. The forests are mostly open and consist of mixed species varying from dry deciduous to thorny bushes. Because of the scanty rainfall, which is about 27 inches per year, the tree growth in the dry-belt zone never attains a height of more than 25 feet. The forests consist mostly of fuel trees, providing fuel throughout the year.

Characteristic of the zone to which the forest region belongs, the vegetative growth is of the dry deciduous type, typical of the *maidan* tracts. Classified technically according to the champion method, the area of forests in the district comes under the southern tropical thorn forest series. The northern half of the Bukkapatna State forest presents Hardwickia forest, which is an edaphic peculiarity. The growing stock is incoherent and consequently incapable of forming anything like a continuous forest canopy. The ground surface has no adequate soil or organic humous. Mineral or skeletal soil, therefore, lies exposed at the surface. The trees do not develop anything like a real 'bole' the stems being generally guarled, twisted, knotty and branchy. This is particularly so in the dry belts.

Problems of erosion

Due to unregulated and excessive fellings coupled with excessive grazing in the past years, the forests have become much depleted and, in most of the areas, they have become barren. The areas, which abut cultivation, have been drained completely. In most of the lower slopes of the hills, gully erosion is rampant. Soil conservation and anti-erosion measures have been undertaken under the Five-Year Plan schemes to reclothe these areas.

Measures like continuous contour-trenching, sowing on the mounds and planting in trenches are being carried out annually for about 600 acres in the district.

Though the National Forest Policy lays down that one-third of the area should be under the forests, the percentage of the area under forests in this district, however, is only 8. The free grazing permitted in the State forests has had an inimical effect on the natural and artificial regeneration. The natural regeneration is badly browsed over and it has become a difficult task to protect effectively the young natural regeneration from the cattle. Grazing needs to be well-controlled for effective regeneration.

Flora

The flora of the forest is of the dry deciduous type of two orders, *viz.*, higher and lower. The higher type is found in the Madhugiri State Forest zone, the Bukkapatna, Thirtharampura, Manchaldore, Huliyurdurga and Devarayanadurga State Forest areas. The species occurring in the higher order are :—

(1) *Shorea talura* (Kannada name—'Jalari').—This is also called the lac tree, and the lac insect is propagated on it. Besides, a kind of dammar is obtained from the tree. The wood of this species is yellowish in colour and is capable of taking polish. Mostly, this timber is used for building purposes.

(2) *Anogeissus latifolia* (Kannada name—'Dindiga').—This is a good fuel tree. The sapwood is yellowish in colour. The species is tough. The gum, which exudes from the tree, is used for calico printing and dyeing.

(3) *Pterocarpus marsupium* (Kannada name—'Honne').—The wood of this tree is close-grained. The colour is of reddish brown. It is tough, strong and durable. It seasons well and takes a good polish. The wood is used in furniture-manufacture and also for cart-making, window frames and agricultural implements. The bark yields crimson-coloured gum.

(4) *Terminalia tomentosa* (Kannada name—'Karimatti').—The wood is very durable and is largely used as fuel. The leaves are used as manure for arecanut gardens. It yields a gum said to be used as an incense and cosmetic. The bark is used for tanning.

(5) *Terminalia chebula* (Kannada name—'Alale').—The fruit of this tree is valuable as a tan. The gall-nuts make excellent ink and dyes. The wood is used for making furniture, carts and agricultural implements.

(6) *Terminalia arjuna* (Kannada name—'Toramatti').—This is also a fuel tree, hard and tough. The sapwood is strong.

(7) *Tamarindus indica* (Kannada name—'Hunise').—The fruit of this tree is most valued for culinary purposes. The seeds are also roasted and eaten as food. The fruit, seed and leaves are also of medicinal value. The heartwood is very hard and durable. The wood is used for naves of wheels, rice-pounders, mallets, tent-pegs, oil and sugar mills, handles to tools, and so on.

(8) *Tactona grandis* (Kannada name—'Tegu' or 'Tega').—The value of this well-known wood arises from its strength and durability. It is used mostly in construction and ship-building and for making railway sleepers and furniture. It seasons well and takes good polish.

(9) *Santalum album* (Kannada name—'Gandha' or 'Srigandha').—The sandal tree is a State monopoly and yields a large forest revenue. This species is not found in the evergreen or heavy forests of the mixed-belt, but grows abundantly in the dry zone. The heartwood is hard and heavy. The best parts are used for making caskets, walking sticks and other articles. The wood is rubbed up as a paste and is used as aromatic and religious mark by Hindus. The oil extracted from the wood forms the basis of many scents and is exported to foreign countries.

(10) *Albizzia lebbeck* (Kannada name—'Bage' or 'Bigi').—The heartwood is dark brown in colour. It takes a good polish and is durable. It is used for making picture frames, oil ganas, etc.

(11) *Boswellia serrata* (Kannada name—'Chilaka-dhupa' or 'Dhupa').—The wood is inferior and is used as fuel or charcoal. The gum is used in medicine and as incense in temples and homes.

(12) *Hardwickia binata* (Kannada name—'Karachi' or 'Kammara').—This is one of the most durable timbers in the State. The heartwood is close-grained, dark and ringed with purple. The wood is soft and easy to work; but when cut, it becomes very hard. The wood is used in construction work. The young shoots and leaves of the tree are used as fodder.

In addition to the above species, 'Maradi' (*Buchnania angustifolia*) and 'Thare' (*Terminalia bellerica*) are also found in the district.

The species of the lower types are found in the forest area of the Pavagada taluk. The predominant species in this zone are 'Kaggali' (*Acacia catechu*), 'Pale' (*Wrightia tinctoria*), 'Kare' (*Canthium parviflorum*), 'Bandre' (*Dodonaea viscosa*), 'Thangadi' (*Cassia auriculata*), 'Kakke' (*Cassia fistula*) and 'Chujjalu' (*Albizzia amara*).

Minor forest produce

'Thangadi' and 'Kakke' occur all over the district and are an important source of revenue. The other important minor forest produce are 'Alale' (*Terminalia chebula*), 'Hunise' (*Tamarindus indica*), 'Maradi' (*Buchnania angustifolia*), 'Tupra' (*Diospyros pruriens*) and 'Seethaphala' (*Annona squamosa*).

Fauna

As the district does not abound in rich forest wealth, game in the larger sense is absent. Formerly, tiger, panther and cheeta were sometimes met with. Wild animals like bear and wild boar can be now occasionally seen in the forest areas of the district. Small herds of spotted deer are found in the forest areas of Sira and Madhugiri taluks.

Among the birds, jungle-fowls are common, while peacocks are also sometimes seen. During seasons, ducks and teals visit the water-sheets. Among the rodents, mongoose and hare are plentiful throughout the district. Among the reptiles, both poisonous and non-poisonous varieties of snakes are found throughout the district.

Climate

The climate of this district, excluding the northern-most part, is similar to that of Bangalore district and is generally agreeable. But the climate of the Pavagada region and the part of the district north of Sira, is like that of the Chitradurga district with a somewhat hotter summer. The year may be divided into four seasons : The dry season, with clear bright weather, is from December to February. The period from March to May constitutes the hot season and the south-west monsoon season is from June to September ; October and November may be termed the post-monsoon season.

Rainfall

Records of rainfall are available for ten stations for periods ranging from 78 to 91 years. Rainfall data of some more stations are also available for varying periods, but the data of these ten stations and of the district as a whole, being quite representative of the conditions in the district, are included in Tables 1 and 2 at the end of the chapter. The average annual rainfall in the district is 687.9 mm. (27.08″). The rainfall increases from the north to the south generally, and in the western part of the district from the west to the east. The rainfall is mostly confined to the period from May to November. The rainfall during the south-west monsoon season is only 50 per cent of the annual rainfall.

The post-monsoon month of October has the heaviest rainfall. Rainfall in this month and in November constitutes 28 per cent of the annual total. Rain, mostly in the form of thunder-showers, occurs in the latter half of April and in May. There are variations in the annual rainfall from year to year. During the fifty-year period from 1901 to 1950, the highest rainfall in a year

amounting to 148 per cent of the normal occurred in 1948, while the lowest rainfall was 50 per cent of the normal and occurred in 1923. In the same fifty-year period, rainfall less than 80 per cent of the normal was received in 13 years. Considering the district as a whole, rainfall less than 80 per cent of the normal occurred twice on consecutive two years. At most of the individual stations, there were two or three such occasions. But at Gubbi, the rainfall was less than 80 per cent on six consecutive years from 1920 to 1925. It will be seen from Table 2 that the rainfall in the district was between 400 mm. and 900 mm. (15.75″ and 35.43″) in 41 years out of fifty.

On an average, there are 45 rainy days (*i.e.*, days with rainfall of 2.5 mm.—10 cents—or more) in a year. This number varies from 35 at Pavagada to 54 at Tumkur.

The heaviest rain in 24 hours which fell at any station in the district was 209.5 mm. (8.25″) at Kunigal on 30th September 1925.

Temperature

There are no meteorological observatories in the district. But, from the records of the observatories in the adjoining districts, a broad picture of the climatic conditions in the district can be formed. The period from March to May is one of continuous rise in temperatures. April is usually the hottest month. Maximum temperatures may sometimes reach 40 or 41°C (104 or 106°F). With the advance of the south-west monsoon over the district in June, the temperature drops appreciably and throughout the monsoon season, the weather is pleasant. After October, temperature decreases steadily and the weather remains cool till February. December is generally the coolest month of the year. The daily minimum temperature in the cold season sometimes goes down to 9 to 10°C (48 to 50°F).

Humidity

Relative humidities are high during the south-west monsoon period and are generally moderate in the rest of the year. The humidities in the summer afternoons are comparatively lower.

Cloudiness

Skies are heavily clouded to overcast in the south-west monsoon season and to a slightly lesser extent in the post-monsoon months. In the rest of the year, skies are clear or lightly clouded. There is some increase in cloudiness in the summer afternoons.

Winds

Winds are generally moderate with some increase in strength in the monsoon months. From May to September, winds are mainly south-westerly or westerly and on some afternoons north-westerly. North-easterly and easterly winds appear in October and these predominate till the end of January. There is a gradual shift of wind in a clockwise direction from February, and by April,

winds are mainly south-westerly to westerly in the mornings and between north-east and south-east in the afternoons.

Special weather phenomena

Occasional thunderstorms occur in February and March and these become more frequent in April, May and the early part of June. Even in the monsoon season, rain is sometimes associated with thunder. Thunderstorms increase in frequency again in September and October.

TABLE 1

NORMALS AND EXTREMES OF RAINFALL IN TUMKUR DISTRICT

Station	*No. of years of data*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Annual*	*Highest annual rainfall as % of normal and year***	*Lowest annual rainfall as % of normal and year***	*Heaviest rainfall in 24 hours**	
																	Amount (mm.)	*Date*
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Tumkur ..	50 a	3.8	9.9	8.1	32.8	91.9	77.0	97.3	123.7	152.1	142.7	60.5	7.1	806.9	168 (1903)	56 (1942)	139.7	1-11-1888
	b	0.3	0.6	0.4	2.6	5.8	5.9	8.2	9.2	8.7	7.8	3.9	0.7	54.1				
Madhugiri ..	50 a	5.3	4.6	6.3	31.0	74.9	64.8	75.4	96.0	145.5	142.0	62.5	9.4	717.7	146 (1948)	51 (1923)	195.6	15-9-1901
	b	0.5	0.4	0.4	2.1	4.5	4.7	6.5	6.7	7.6	7.4	4.1	0.9	45.8				
Chiknayakana-halli	50 a	2.8	5.1	9.7	37.1	103.1	60.2	67.3	83.8	115.8	146.1	69.3	8.4	708.7	153 (1917)	52 (1908)	183.6	13-10-1928
	b	0.3	0.3	0.7	2.7	6.0	4.5	6.5	6.7	7.0	7.8	4.0	0.6	47.1				
Sira ..	50 a	6.1	3.3	4.8	21.3	77.0	45.7	46.5	75.4	113.5	117.3	47.5	7.4	565.8	215 (1916)	44 (1942)	136.7	22-11-1946
	b	0.4	0.3	0.4	1.8	4.6	3.2	4.6	4.6	6.0	6.4	2.8	0.6	35.7				
Gubbi ..	50 a	2.5	5.8	6.1	33.8	99.8	72.1	86.6	111.0	140.5	142.5	63.0	7.9	771.6	185 (1948)	26 (1923)	165.6	13-11-1940
	b	0.3	0.4	0.6	2.2	5.8	5.0	7.6	8.2	8.0	7.3	3.7	0.8	49.9				

TABLE 1 (*contd.*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Tiptur ..	50 a	1.8	4.1	6.3	37 3	103.1	47.5	49.3	72.9	92.5	125.2	64.8	10.4	615.2	168	45	141.2	19-10-1935
	b	0.3	0.3	0.5	2.8	6.3	3.7	4.6	5.3	6.2	7.1	4.0	0.9	42.0	(1906)	(1908)		
Pavagada ..	50 a	4.1	3.8	5.3	20.3	72.4	48.0	51.6	79.5	112.0	103.9	51.8	7.6	560.3	179	34	132.1	8-9-1899
	b	0.3	0.3	0.4	1.4	3.9	3.1	4.7	4.9	6.5	5.4	3.4	0.7	35.0	(1916)	(1920)		
Kunigal ..	50 a	2.5	3.3	7.6	35.8	104.4	68.3	69.6	115.1	144.0	147.6	57.9	8.4	764.5	152	42	209.5	30-9-1925
	b	0.3	0.4	0.5	3.0	6.5	4.7	6.0	7.7	8.0	8.2	3.6	0.7	49.6	(1948)	(1908)		
Koratagere ..	50 a	4.8	5.1	4.3	27.2	82.8	59.4	74.4	84.8	123.7	125.2	58.7	7.9	658.3	160	45	134.6	26-9-1937
	b	0.4	0.4	0.4	2.0	4.7	4.4	6.6	6.2	7.1	7.1	4.1	0.9	44.3	(1933)	(1923)		
Turuvekere ..	50 a	2.5	4.1	6.6	33.0	107.7	55.6	56.6	89.9	120.7	147.3	74.7	10.2	708.9	159	43	174.0	5-11-1934
	b	0.3	0.3	0.5	2.9	6.6	4.0	5.1	6.6	7.0	8.3	4.3	0.9	46.8	(1915)	(1908)		
Tumkur district ..	50 a	3.6	4.9	6.5	31.0	91.7	59.9	67.5	93.2	126.0	134.0	61.1	8.5	687.9	148	50		
	b	0.3	0.4	0.5	2.3	5.5	4.3	6.0	6.6	7.2	7.3	3.8	0.8	45.0	(1948)	(1923)		

* Based on all available data upto 1955.

** Years given in brackets.

(a) Normal rainfall in mm.

(b) Average number of rainy days (days with rain of 2.5 mm. or more).

TABLE 2

FREQUENCY OF ANNUAL RAINFALL IN TUMKUR DISTRICT

(*Data* 1901—1950)

Range in mm.	*No. of years*	*Range in mm.*	*No. of years*
301—400	2	701— 800	12
401—500	2	801— 900	4
501—600	11	901—1000	4
601—700	12	1001—1100	3