

CHAPTER I.
THE RIVER
SYSTEM.

for about 16 miles. The water of this river is believed to have medicinal virtues and to remove the ill effects of biliousness, prickly heat and boils and even to reduce elephantiasis. Consequently, Chovara, Alwaye and Thottumukham, all in the vicinity of the Railway Station, where the stream is broad, gentle and shallow, with very fine and smooth sands and with the banks dotted with neat little bangalows, are largely resorted to by people from Cochin, Ernakulam and Trippunittura during the hot months of March, April and May to enjoy bathing in the cool and limpid water of the river. These villages are in fact the sanitarium of Cochin and were used as such by the Portuguese and the Dutch during their palmy days.* At Alwaye, the river is crossed by the Cochin State Railway by means of a handsome bridge of nine 80 feet spans on piers sunk into the solid rock. Close under the bridge, the river divides itself into two branches, one flowing in a north-westerly direction into the back-water to the east of the Cranganur bar, and the other taking a southerly direction and joining the back-water near Verapoly. A branch again from the latter flows to the south and discharges itself into the back-water to the north of Trippunittura.

The Chalakudi.

The Chalakudi river rises from the ghats beyond the Kodasseri forests and flows through wild and mountainous country as far as Kanjirapilli, a distance of about fifty miles. Thence it takes a tortuous course of about twenty miles through picturesque and fertile tracts and between high banks dotted with houses and cultivated plots, and empties itself into the right arm of the Alwaye at Elantikara, about six miles to the east of Cranganur. This river is formed by the junction of the Parambikolam river with the Kuriyar or Nelliampati river near Kuriyakutti and with the Sholiar near Orukombankutti, a station on the Forest Tramway about thirty miles up Kanjirapilli. Its flow, till it reaches the plains, is broken by innumerable rapids and falls, the chief of which is the picturesque fall at Adirapilli, an almost vertical drop of over a hundred feet, a magnificent spectacle, especially in the monsoon time. The water of the Chalakudi, though good, is not so clear and light as that of Alwaye, and the river is not therefore so much resorted to as the latter in the hot season. It is navigable as far as Kanjirapilli, and near the Chalakudi Railway Station, it is crossed by a fine iron girder bridge of four 80 feet spans.

Tributaries
of the Chalakudi.

The Parambikolam, the Kuriyar and the Sholayar, though only tributaries of the Chalakudi, deserve separate mention

* Here, the Portuguese had a celebrated bathing place, called Fiera d' Alva.

owing to the picturesqueness of the scenery presented by them. They take their rise in the ghats beyond the Cochin frontier, and flow through primeval forests abounding in trees of gigantic growth. They are full of cataracts and waterfalls, and their banks are everywhere luxuriantly covered with foliage and flowers.

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The Karuvannur river is formed by the junction of the Manali and Kurumali at Parakadavu, and discharges itself partly into the Manakodi lake and partly into the Chetva back-water. The Manali takes its source in the Paravattani hills and flows in a south-westerly direction, while the Kurumali rises in the Palappilli hills and takes a westerly direction, being joined in its course by the Muppulli and the Vembodian from the Kodasseri hills. These rivers dry up during the hot season, but they are useful for floating timber during the monsoon months, and for irrigating certain lands by means of temporary dams thrown across them. The total length of the river is nearly 40 miles, and it is navigable for about 15 miles for half the year. Both the Manali and Kurumali are crossed by iron girder railway bridges, and after their junction, the river is crossed by a masonry road bridge at Karuvannur.

The Karu-
vannur.

The Ponnani or Bharata river, the largest on the Malabar Coast, forms the boundary between Cochin and British Malabar for about 25 miles, and receives numerous streams rising from the Cochin forests. One of its chief tributaries is the Cherukuzhi or Padur river in Pazhayannur, which is the continuation of a stream coming down from the Tenmalai range through Nemmara and the Palghat Taluk and joins the Ponnani at Kuttampilli near Tiruvilvamala. The Ponnani is useful to the State as a convenient outlet for the timber extracted from the Pottundi and Machad forests. The State Railway crosses the river at Shoranur by means of iron girder bridge of fifteen 60 feet spans, which was constructed as a road bridge over forty years ago.

The Ponnani.

The Chittur is that portion of the Anamalai river that meanders through 15 miles of Cochin territory in a broad bed of rock and sand. This river and the minor streams that pass through the Chittur Taluk, namely, the Korayar, the Varattar and the Velantavalam, have a gradual fall of about 200 feet from the Pollachi frontier on the east to the Palghat frontier on the west, and this natural advantage in level has been largely availed of by the Government and the ryots for irrigation purposes by the construction of anicuts across them. All these rivers fall into the Ponnani.

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Minor
streams.

Besides the above, there are several minor streams which are made use of for irrigating wet lands by means of temporary dams thrown across them. The chief of them are the Vadakancheri, 27 miles long, and the Viyyur, 15 miles long, which rise respectively in the Machad and Paravatani hills, and pour their contents into the Enamakkal lake. The Peranda, the Olipara, the Ayilur and the Kudallur are small streams that drain the lower reaches of the Nelliampaties and the Pottundies and pass through the Nemmara portion of the Chittur Taluk in their course to the Ponnani river through the adjoining British territory.

THE BACK-
WATER SYS-
TEM.

One of the most striking features of the country is the continuous chain of lagoons or back-waters running parallel to the sea and receiving the drainage of the streams descending from the ghats. These back-waters, with their subsidiary canals, extend far away north as far as Ponnani and south as far as Trivandrum, and also send numerous branches towards the interior. They are very irregular in form, with a breadth which ranges from four miles to forty yards, and branch out into a number of intricate and shallow channels, containing several low alluvial islands. The back-waters are at their best both in point of breadth and in point of depth between Cranganur and the southern frontier of Cochin, while those towards the north and the branches running to the interior are generally narrow and shallow. But almost throughout their length, they are navigable for all sizes of country boats throughout the year. Communicating as they do with the sea at three points, viz., Cochin, Cranganur and Chetva, they are affected by the flood tides twice in every 24 hours, when they rise about two feet and flow at the rate of $2\frac{1}{2}$ miles an hour, except during the monsoon months, when the rapidity is according to the volume of the freshes. The water is salt, but during the rainy season it is almost fresh except in the vicinity of the openings into the sea. The banks are low and generally marshy, and the bed a slimy mixture of black mud and dark sand. The shore on either side is densely covered with cocoanut and betel-nut palms or else is a succession of paddy fields.

The sea originally extended as far as the eastern shore of the present line of back-waters, and the tract of land between the latter and the sea, and the back-waters themselves came into existence in comparatively recent times by the antagonism between the rushing waters of the rivers and the littoral currents of the sea. "There being no lakes, in the still waters of which the rivers might clear themselves of the earthy matter swept along in their rapid course from the hills, they arrive at

the beach laden with sand and alluvium, and at their junction with the ocean, being met transversely by the gulf streams, the sand and soil with which they are laden, instead of being carried out to sea, are heaped up in bars along the shores, and these, being augmented by similar deposits held in suspension by the currents, soon extend to north and south, and force the rivers to flow behind them in search of a new outlet. These formations once commenced, their growth proceeds with rapidity. At the mouth of the rivers, the bars thus created generally follow the direction of the current, and the materials deposited, being dried and partially consolidated in the intervals between tides, long embankments are gradually raised, behind which the rivers flow for considerable distances before entering the sea. Occasionally, these embouchures become closed by the accumulations without, and the pent-up water assumes the appearance of a still canal, more or less broad according to the level of the beach, and extending for miles along the coast, between the mainland and the new formations. But, when swollen by the rains, if not assisted by artificial outlets to escape, they burst new openings for themselves; and not unfrequently they leave their ancient channels converting into shallow lagoons, without any visible exit". * In this manner were formed the back-waters and sea-board tracts of Cochin. The tract between the Cranganur and Chetwa bars, called *Manappuram*, was the first to come into existence, and that long before the Christian era, as Cranganur was known to the Phoenicians, Greeks and Romans as an emporium of trade. The tract between Cochin and Alleppey, called *Karappuram*, was formed some centuries later, as it appears from the descriptions of Pliny and Ptolemy that it was not in existence in the first century A. D., while the island between the Cochin and Cranganur bars, called Vaipin or *Pudu Vaipu*, was formed only in the fourteenth century. †

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There are several fresh water lakes in the State, of which the chief are the Enamakal and the Manakodi in the Trichur Taluk, the Muriyad in Mukundapuram, and the Kat-tukampal in Talapilli. The first two are connected with each other, and have a combined area of over 25 square miles, of which about $2\frac{1}{2}$ square miles belong to the Malabar District.

FRESH
WATER
LAKES.

* Sir James Emerson Tennent's *Sketches of the Natural History of Ceylon*.

† The names of these tracts are significant of their history. *Manappuram* means sand-bank, *Karappuram*, accreted land, and *Pudu Vaipu*, new deposit. There are villages on the eastern bank of the back-water whose names are similarly significant; e. g., *Kadamakudi* or *Kadalorakudi*, meaning sea-side settlement, and *Ezhikara* or *Azhikara*, meaning sea-shore (village).