

rate of Rs. 5,010 per annum and the Ariyankuppam stretch for Rs. 9,600 per annum. The lease amount of Ariyankuppam mattee fishing is divided between the Municipalities of Mudaliyarpettai and Ariyankuppam in the ratio of 3:2 as the river flows across both the communes.

The mattee shell fishery of Uppar was leased out by the Mudaliyarpettai Municipality for Rs. 1,250 from July 1970 to June 1971. The mattee shell of Chunnambu Ar was auctioned for Rs. 8,050 but was not accepted by the Government.

Some studies were conducted by the Directorate to increase the mattee shell income. Due to apparent loss of the bivalves in the rivers on account of pollution and drought, the shell fishery of Uppar and Chunnabu Ar could not be auctioned during 1971-72.

VI. Floods, Famines and Droughts.

Flood :

A critical study of the origin of rains in the months of October—November along the Coromandel Coast has shown that they are caused by tropical disturbances and depressions which develop in the Bay of Bengal.⁶⁸ These atmospheric depressions are almost always followed by cyclonic storms of great velocity ripping across the sub-continental land mass. Naturally therefore, the coast must have been subjected to the ravages of cyclones from ages unknown.

While vital statistics of cyclones should be of interest only to meteorologists and climatologists, the dimension and frequency of cyclones should be of some interest to the general public and the administrators as well. Rains caused by cyclonic depressions bring about floods, which invariably cause considerable damage to the agricultural economy of the Territory. Especially in Karaikal the flood waters encroach upon agricultural lands and disrupt agricultural operations, besides causing considerable damage to crops. In Mahe, the Ponniyam river is usually subjected to floods, its intensity varying according to the monsoon every year. In Yanam floods are caused almost every year by Godavari which runs through the region.

The earliest known cyclone which crossed the Pondicherry coast-line occurred in November 1681. On account of the floods caused by the rains, people had to move to up-country lands. There was another severe cyclone on the night of 17 August 1687 which caused considerable havoc.⁶⁹ A number of small vessels anchored along the shore were either damaged or lost.

Although for a continuous span of 54 years i.e., from 1691 to 1745 there are no reliable records about cyclones, we may be certain that the coast might not have been spared of cyclonic storms for such a long period.

The next cyclone about which a great deal of information is available occurred in November 1745. In fact Anandarangapillai has left us a detailed account of the devastation caused by the cyclone. Three storms of varying intensity crossed Pondicherry on the 3, 23 and 27 of November 1745 of which the first inflicted the greatest damage. The flood waters of Uppar swept away the huts on its embankments. The town itself was flooded. As many as forty persons died in the flooded regions of the town and over 2000 houses were damaged. On the night of 22 November 1745 the town was rocked by violent winds which, however, did not cause much harm. But the cyclone of 27 November was of considerable fury.⁷⁰

On 30 October 1752 a terrible cyclone, followed by incessant rains lasting several days, paralysed life all along the Cuddalore—Pondicherry coastal region. Vast stretches of land were submerged in water.

Comparatively Karaikal seems less exposed to the attacks of cyclonic storms. A cyclone struck Karaikal coast on 8 October 1754. Sea waves entered the town and reached up to the Bazaar area. Many houses collapsed and crops suffered extensive damage. Two vessels anchored off the shore ran aground.

The cyclone of 30 December 1760, harassed the British troops under Sir Eyre Coote and the British Fleet anchored off Pondicherry. The first cyclonic spell which crossed the town between 8 and 10 p.m. posed an imminent threat to the ships anchored along the coast. The second spell after mid night ripped through the town with even greater fury. Three vessels carrying 1,100 Europeans were drowned two miles south of Pondicherry leaving only seven survivors.⁷¹

Cyclonic storms of moderate force struck Pondicherry region in January 1761, July 1780, 26 November 1785 and 20 May 1787. Two cyclones of considerable intensity attacked the coast on 21 October 1763 and 5 October 1782. The effects of these cyclones were felt all along the coast from Cuddalore to Madras.

Again between 1795 and 1818, five cyclones (1795, 1800, 1807, 1811, 1818) have been reported. There were again cyclonic storms on 25 March 1820, 6 December 1827 and 2 December 1830.

De Melay, Governor of Pondicherry, in a report sent to France on 29 January 1831 has furnished an account of the havoc wrought by the severe cyclone of 2 December 1830. Crops in the surrounding villages were completely lost. The newly laid out Cours Chabrol suffered many breaches due to the onslaught of tidal waves. The Governor's report also listed the measures taken to provide relief to the affected people and specified how the cyclone had affected the settlement.⁷²

The cyclones of 30 November 1778, 7 May 1827 and 27 March 1853 left their scars on Karaikal.

The cyclone which struck Pondicherry on 24 October 1842 was the worst of all since 1745. Earlier, the region had experienced mild storms on 30 October 1836 and May 1840. The report sent by Camper on the cyclone of 1842 provides a detailed account of the cyclone and the havoc wrought by it. This cyclone blew in two spells, first at 4 p.m. and then at 6 p.m. the same day. The town suffered heavy damage. Roof tops were blown off. Uprooted coconut trees falling on houses had aggravated the damage. All the roads were filled with fallen trees and debris thrown up by the storm. Portions of the Central Jail were damaged. The hangars of Grand Bazar came down under its attack. The two weaving mills of Blin and Poulain suffered considerable damage. In the "**Place du Gouvernement**" hardly a tree or plant was left unaffected. Out of five ships that lay in anchor then in Pondicherry, three were wrecked. At least 82 men on board were reported lost. The total damage was estimated at over 5,00,000 francs. The Government of France sanctioned a sum of 13,000 francs for the immediate relief of those affected.

Cyclones in the month of March are very rare. But the one which struck Pondicherry and Karaikal in the year 1853 came early on 26 March. Four vessels anchored off Pondicherry port were lost. The tanks at Abhishekkapakkam, Kilur and Mel Sattamangalam suffered serious breaches. In Karaikal the banks of Arasalar were breached at many points. 73

The cyclone of 20 November 1856 was so violent that the surging tidal waves broke the quay of **Cours Chabrol**. Two ships anchored off Pondicherry port went adrift in the tempest and ran aground at the mouth of river Ariyankuppam. The excessive rains of 1858 were responsible for inundating large tracts of land in Pondicherry and Cuddalore.

Loss of a large number of boats and vessels was reported in the cyclone of 19 October 1863. Karaikal too was not spared this time.

A cyclonic storm of great intensity struck the Coromandel Coast on 25 November 1865 not sparing Pondicherry from its impact. Telegraph posts were uprooted. The cyclone of 6 November 1871 accompanied by a storm and torrential rain simultaneously struck Pondicherry and Karaikal. While the damage in Pondicherry was moderate, Karaikal bore the brunt of its attack. The Administrator's Office and the Hospital in Karaikal were damaged. The Arasalar overflowed its banks and inundated the neighbouring residential areas. As many as 50 were counted dead in the floods.

In 1874, floods in the Ponnaiyar disrupted road communication between Pondicherry and Cuddalore for several days. 74

Pondicherry and Karaikal had again to face torrential rains which gave rise to floods on two occasions on 6 November 1884 and 16 to 19 December 1884. The cyclone of December 1884 proved to be the worst. The rains which came in a heavy down pour on 16 December did not stop for three days. Flood water, entered many houses in the town, and stored foodgrains were lost. But for the Govindasalai route and the circular boulevard, Pondicherry town would have been in great danger. The inhabitants of Thengathittu and the Leprosorium in Dubrayapet were evacuated to safety. Pondicherry town remained cut off from the adjoining areas. Vast stretches of roads were carried away by waters. Even the bridge over Chunnambu Ar on the Pondicherry—Cuddalore route gave way due to the extraordinary pressure of

water discharged from Usteri tank which was itself in imminent danger of rupture posing a threat to Villiyanur which would have been devastated. Even Pondicherry town, it was feared, would be submerged. For three days no assistance could be sent to Villiyanur where the people had taken refuge in the Sri Thirukameshwarar temple.

The pipe-lines bringing drinking water to the town had ruptured at Saram due to the collapse of a bridge, and the residents of the town were forced to drink well water. Repeated attempts were made by the Governor to proceed to Villiyanur. '*Kattumarams*' were rapidly constructed and were loaded in bullock carts. These carts could not, however, proceed beyond Nellittoppu as many culverts and bridges had been carried away by the surging flood waters. The Mayors of Villiyanur and Ozhukarai made splendid efforts in the face of unsurmountable difficulties to save life and property as much as possible. But still there were a few instances of loss of life, especially of those residents living on the banks of river Gingee. The loss of crops was colossal. The Governor sent an urgent message to Paris asking for immediate and massive aid for the flood ravaged colony. The bridges over Chunnambu Ar and Ariyankuppam river on the Pondicherry—Cuddalore road collapsed. Ferry service was, therefore, operated across these rivers until the bridges were repaired. In Karaikal also, the damages caused were heavy. Nedungadu and Grand' Aldee Communes were worst affected by the cyclone.

A commission was set up to study the losses suffered in the territories. A sum of 5,00,000 francs was granted by the Government of France towards relief. The Government of Indo-China contributed a sum of 5,000 piastres for the same purpose. While the total loss was estimated at 30,00,000 francs the amount of actual relief obtained amounted to 10,44,000 francs.

A cyclone of very great velocity struck Pondicherry on 22 November 1916. The effects of the cyclone were felt between 6 and 7 p.m. and by mid night it reached its maximum intensity. The local power house broke down even before the cyclone had hardly commenced. The darkness that enveloped the town only accentuated the severity of the situation. Almost the entire network of powerlines supplying electricity to the town was in a shambles. The Government Distillery building, the construction of which had just been completed, had its roof blown off.

The hospital buildings also were hit badly and left with their roofs blown off and walls cracked. The warehouses at the terminus of the railway lines in South Boulevard were inundated by flood waters. Although the old pier was not damaged, the watchman's cabin was uprooted. The buildings housing the water works were also affected, but the machinery were intact. Both Savana Mill (now Swadeshi Cotton Mills) and Rodier Mills (now Anglo-French Textiles) suffered damage. Roads throughout the region suffered extensive damage. The Pondicherry—Cuddalore road developed wide breaches at five points. The Usteri lake had accumulated water necessary for over $7\frac{1}{2}$ months. A number of small tanks had broken their bunds. Post and telegraph communications between Madras and Pondicherry remained cut off for three days. The train services between Villupuam—Pondicherry stood suspended for five days. Trees in hundreds were uprooted. Plantain and betel fields were the worst affected. Large tracts of paddy fields were totally submerged by flood waters. A number of houses collapsed. More than 18,850 huts were destroyed. The number of casualty was 307. Of these, as many as 47 died in **Parc Colonial** (Botanical garden) alone.

The Government had to permit the public to lift all wood from the fallen trees on the roads and other public places to clear the roads of the debris quickly and inexpensively.

The victims of the cyclone, however, found immediate relief in the form of food, clothing and shelter through the philanthropy of local population*. But the aftermath of the cyclone was aggravated by a spell of heavy rains that hampered the execution of relief and repair works.

The victims were assisted with large contributions from the public. Governmental expenditure on establishment was reduced in order to divert the savings towards National Defence, and for the relief of cyclone victims.** From distant Mahe came a sum of Rs. 376 for the relief of victims. A sum of Rs. 9,000 was allotted in the budget towards repairing the damages caused by the cyclone. 75

* A report of the relief work done by V.V.S. Iyer is published in the November—December 1916 issue of *Kalaimagal*, Kalaimagal Kazhagam, pp. 270–271.

** It was the period of the First World War.

We have also records of cyclones which occurred in the years 1930, 1933, 1941 and 1943. The cyclone of 1943 was accompanied by torrential rain followed by floods. ⁷⁶

There was another major cyclone in Pondicherry in 1952, which did not spare Karaikal as well. Because of sea erosion water entered Karaikal town and three persons died and many heads of cattle perished. The municipal administration provided relief to the victims. The biggest casualty of this cyclone was the old pier at Pondicherry. The bridge-head gave way and became totally unfit for operation. Although we hear of the flood disaster of 1958, no detailed information about the damage caused and the loss incurred is available. It appears, however, that some of the families cut off from the mainland were evacuated to safer areas.

Pondicherry region witnessed another cyclone of some intensity on 1 May 1966. The Government stepped into action and formed three-member Committees for each commune, with the Mayors as Chairmen, to assess the damage and to report to the Government. It was also decided to give an outright grant not exceeding Rs. 30 to houses damaged by the cyclone. Most of the colonies around the town of Pondicherry were flooded. Karuvadikkupam, Laspettai, Uppalam, Dubrayapettai and Attupatti (Dr. Ambedkar Nagar) were some of the areas seriously affected. The marooned population was rescued with the help of catamarans fetched from Kuruchchikkupam, a neighbouring fishing village. The very next morning, five relief centres were opened at five different points in the town to arrange for immediate shelter, food and clothing to the poorer sections of the people affected by the cyclone. Fifty bags of rice were made available to the relief centres. ⁷⁷ The same year on 3 November, another cyclone of mild intensity, but accompanied by heavy rains lashed Pondicherry leaving large areas submerged in water. Nonanguppam, Puduppalaiyam and Vembakirappalaiyam were very much affected.

The worst flood in living memory was the one which occurred in the year 1968. Crops were damaged and many houses collapsed.

The cyclonic rain of October 1969 flooded large areas in Pondicherry region. The Sankaraparani was in spate. Nine persons of a family and a driver who ventured to cross the river were carried away by the currents. In an attempt to rescue them, one police officer and a fire service officer also lost their lives. A large number of houses and huts in the coastal villages were damaged. Large tracts of paddy fields were submerged in water.

A severe cyclonic storm which formed in the Bay of Bengal crossed the coast between Kakinada and Machlipatnam on 7 November 1969. The was accompanied by heavy rains causing damages in Yanam region. As this cyclone was sudden and unexpected, no precautionary measures could be taken by the Administration. The velocity of the cyclone was about 140 km. per hour. People in the entire region stood as helpless spectators against the fury of the storm which passed through the region between 9 a.m. and 3 p.m.

There was no loss of human life, but as many as 1,404 houses were damaged, 863 heads of cattle lost, crops in about 1,530 acres were lost. Damage to public buildings alone was estimated at Rs. one lakh. Rice mills, a cinema hall, the church, the mosque and the temples were damaged. The total loss was estimated at Rs. 19,04,586 for the entire region.

By way of relief, a sum of Rs. 1,19,400 was given as grant to owners of damaged houses. Another sum of Rs. 93,000 was given as housing loans. The fishermen were given Rs. 6,400. Agriculturists in the region were given a sum of Rs. 45,000 for cultivation purposes. A sum of Rs. 5,000 was given as cattle loan. The Government also granted remission of land tax for the year 1969 for the entire region. An amount of Rs. 1,162 was advanced as loan to government servants.

In 1970 there was a flood in the Ponniyam river running along the northern boundary of Pandakkal. But the flood waters receded within 48 hours. Some of the families living on the banks of the river were evacuated. There was, however, no heavy damage to crops.

In the heavy rains of November 1970 in Pondicherry, as many as 2,083 families were affected. Cash relief amounting to Rs. 37,380 was extended to 1,925 flood victims in the region.

Almost every year certain areas of the coasts are exposed to damage by floods in Pondicherry, Karaikal and Yanam. In Karaikal, floods encroach upon agricultural land preventing it from growing full crops.⁷⁸ The occurrence of such floods year after year points to the necessity to provide for permanent flood control and relief measures in the Territory. The emergence of residential colonies in many low lying areas around Pondicherry has been instrumental in raising the level of those areas. Many of the field channels

and drains which existed in these areas have lost all their traces. The outlets of channels like Uppar, carrying the flood waters to the sea, were not always open. In the course of the last many years the drains and channels running around the Boulevard did not receive much attention resulting in accumulation of silt. Nor were there permanent arrangements to open up the mouths of channels in times of floods. As a result, some parts of the town, especially the residential areas alongside the **Petit Canal** running east-west of Pondicherry town towards **Grand Canal**, are subjected to the entry of flood waters. The rain floods emanating from Saram, Sittankudisai, Dhanvantarinagar, Orlayanpet, Venkatanagar, Kamarajnagar, Tattanchavadi also called for proper channelisation.

During the IV Plan one reach of the Uppar drain, starting from Tindivanam road (now Kamarajsalai), reaching upto Villiyanur road was provided with cement pavements. The other reaches were proposed to be covered during the V Plan. The construction of a revetment along Pondicherry sea coast at a cost of Rs. 13.7 lakhs was taken up during 1970-71. As to Karaikal, no improvements have been carried out to the river banks for a long time. A provision of Rs. 4.95 lakhs was made in the III Plan, of which a sum of Rs. 1.82 lakhs only was spent. An area of 1,352 hectares of agricultural land is said to have been protected from the ravages of floods.

Under the Fifth Plan, however, it was proposed to carry out improvements to the bunds of Nandalar, Nular, Arasalar, Tirumalarajanar, Pravadayanar, and Muliyar.

Ponniyam puzha (river) is the only drainage outlet to drain all the flood waters in Mahe region. The river is subjected to tidal action for a distance of about 6 km. from the sea up to Kunduchira anicut. Flood waters usually submerge the Chambad area in Mahe limits. This drain is, however, too small to drain off all the waters coming from the adjacent areas, especially during rainy season. As a major work under anti sea-erosion, protection of the coastal area in Mahe was taken up at a cost of Rs. 4.40 lakhs during 1970-71.

Famines and droughts:

Although we have some information about droughts and famines in Pondicherry, we have no precise data of the famines and droughts in the other regions. Among the four regions, Pondicherry is more susceptible to the vagaries of monsoon and hence more open to the threats of droughts and famines. Karaikal, Mahe and Yanam are relatively more secure from these threats.

The famine of 1687 is the earliest that we learn of from records. Accompanied by drought which was almost total, the famine was marked by extreme shortage of food. It took a heavy toll of lives. People migrated to the Thanjavur region. François Martin arranged for the import of rice by boats to be sold here. ⁷⁹

The famine of 1708 was again accompanied by a severe drought. The price of rice, the staple food of the population, is reported to have risen almost eight times. Private charities were fortunately forthcoming in ample measure. ⁸⁰ The famine was followed by an outbreak of cholera.

Pondicherry again faced acute famine conditions in 1717 having failed to receive rains the previous year. In order to attract food grains to the town all duties and levies on the import of food grains from outside the territory were suspended for 36 days. ⁸¹

As a result of the drought in 1737 there was a severe shortage of rice. The *Conseil Supérieur* of Pondicherry authorised purchase of rice at 50 pagodas per 'garce' for distribution to its employees. The situation improved slightly with the showers late in January 1738. Nevertheless, famine conditions continued to prevail till October 1738 when rice was sold at 80 to 100 pagodas per 'garce'. ⁸²

There was another famine in the year 1747. A large number of dying children and others were converted and baptised. ⁸³

There was a severe famine again in Pondicherry in the year 1760. It is reported "that there was not even a single dog or cat left in the town, all the creatures having been consumed by the hungry population." Rats were sold at Rs. 2 each. Soldiers were obliged to sell their possessions in order to feed themselves. ⁸⁴

Famine struck Pondicherry again in 1844. In view of the extreme drought conditions which prevailed, a rebate was given for the import of rice into the town. ⁸⁵ Again in 1853 following the serious shortage of paddy and other food grains in Pondicherry, all duties on food grains were abolished. ⁸⁶ There was another severe famine in the year 1877 and the Chamber of Deputies in France voted a sum of Rs. 1,00,000 on 2 February 1877 to render assistance to the victims of famine.

The famine conditions which prevailed during World War I and World War II period were caused more by human agencies than by nature. The import of rice and other food grains from traditional sources like Indo-China and Burma was disrupted due to war conditions.

After merger, the Territory never once had to face the predicament of famine although it had to face threats of drought. Pondicherry region was hit by drought during 1968-69 as a result of the failure of the south-west as well as the north-east monsoon leading to withering of crops and scarcity of drinking water. As part of the drought relief measures, irrigation works like desilting of tanks and provision of drinking water supply, like sinking new wells, provision of hand pumps, deepening of wells, sinking of new bore-wells and centrifugal pumps were carried out. According to a survey, 204 hand pumps were installed, 42 tanks were desilted, 85 wells were deepened, 21 open wells were provided. 87

Again during 1974-75 some areas in Pondicherry and Karaikal were affected by drought due to failure of monsoon. A sum of Rs. 23.55 lakhs was provided for drought relief operations.

Earth quakes:

Earth tremors have been very rare in all the four regions as none of them are located in areas prone to earth quakes. Nevertheless, records of mild tremors are not wanting. On 16 June 1819, an earth tremor of mild intensity is reported to have occurred in Pondicherry at 7.30 p.m.

In recent times, Yanam experienced a mild earth tremor of very short duration in June 1969. There was, however, no damage.

There are no seismological observation stations anywhere in the Territory.

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