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Efforts Of Britishers For The Irrigational Development In Tiruchirappalli District, Tamil Nadu

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Abstract

Agriculture and water issues make irrigation an important feature of India's economy. The territories of the Madras Presidency carried on its cultivation to a large extent by means of artificial irrigation. The water for this purpose was obtained either by channels taken off from the rivers or by tanks or reservoirs in which rainwater was stored and drawn off for the importance of irrigation was recognized by the British. The British administrators devoted a large sum of money for such works which in course of time became numerous and the revenue closely dependent on the efficiency of these works. They have also done modification to a large extent. The British Government gave much importance to the irrigation and agricultural activities for increasing the revenue. There are a number of dams, channels and irrigational sources constructed by the native government agencies. But these are under the foundation on the works initiated by the Britishers. The foresightedness and visualisation of the Britishers in irrigational activities must be remembered fondly by the present generation. There is a need of technological transformation. Such a transformation would continue the eco-friendly irrigational engineering technologies, which may serve the real purpose of irrigational works. Hence, the present article aims at describing the irrigational works of Britishers and the need for its continuous maintenance.

Keywords: Irrigation, Britishers, Tiruchirappalli, Cauvery, Anicut, Kallanai

I. Introduction

India's economy in general and agriculture in particular revolves around the irrigation and related activities. The territories of the Madras Presidency carried on its cultivation to a large extent by means of artificial irrigation. The water for this purpose was obtained either by channels taken off from the rivers or by tanks or reservoirs in which rainwater was stored and drawn off for the importance of irrigation was recognized by the British. The British administrators devoted a large sum of money for such works which in course of time became abundant and the revenue closely dependent on the efficiency of these works. They have also done modifications to a large extent. The British Government gave much importance to irrigation for escalating the revenue. Hence, the present article aims at describing the irrigational works of Britishers in the Tiruchirappalli District.

II. Minor Works of Irrigation

An important feature that characterised the irrigation works of the Madras Presidency was its minor works of irrigation. The extent to which it had been carried out throughout all the irrigated regions of the Madras Presidency was really extraordinary.[1] The sum length of the embankment and canal is approximately 2000 miles. The whole of this gigantic machinery of irrigation was purely Indian in origin. The revenue derived from them was roughly estimated to be Rs.115 lakhs and the area irrigated at nearly one million acres. The method of constructing these works was varied and depended on the ground they occupied. Natural drainage lines flowing through valleys were checked by embankments sufficiently long close to the gorges, and sufficiently high to maintain a volume of water necessary for the area of irrigation situated below them. Descending steps of land were occupied by a succession of the reservoir, the higher feeding the lower from its surplus supply and the whole farming one connected scheme of irrigation.[2] Examples of these methods were to be found scattered throughout the Madras Presidency. Among them, the minor works done by the Britishers upper Anicut and Lower Anicut on the Cauvery River is most remarkable those are Mukkombu and Kallanai.

III. Kallanai or Grand Anicut

The Grand Anicut is a splendid piece of hydraulic construction built across a great river in its sandy bed when science had not developed enough to construct safe structures on permeable foundations and serving to this date excellently well with a few alterations made in the nature of improvements to the structure. Judged from the recorded data, a flood to a level of about 5260 cumers (1,8,6000

cusecs) has been released through this anicut with least damage. It is possible that much high floods could have flown over in the past when there were no other constructions in this river.

No source is available as to have they established this structure nor on the way of its creation. It is thought that large cyclopean of it would have been brought and dumped transversely the stream and constantly replenished as these boulders sank in the sandy bed until the construction rose above to raise the water level. It has not been likely to investigate and detail the foundations accurately. The Anicut as seen consists of a cone of uneven stones in mortar. A piece of the crest was constructed with a curved top and the rest with a sequence of steps, the foot of the solid dam being protected by the uneven stone apron. The anicut is 329m (1080 feet) long 4.57 to 5.49m (15 to 18 feet) in height. The major purpose of this anicut was to preserve the supply in Cauvery and its branches and pass on the surplus into Coleroon through the Ullar River.

IV. Modifications of the British

Several modifications and improvements were made by the British in order to strengthen the dam through available technology to solve the problems that arose. In 1839, Sir Arthur Cotton constructed a dam under sluices 1.22m - 0.91m (4 feet - 3 feet) in body wall with their aisle 3.05 (left) under the crest. The basics of the under sluices consisted of about 2 feet depth of brickwork under the cut-stone floor of the vents and under this brickwork about 2 feet of dry rubble masonary on the sand.[3] They were thus mainly founded on the old dry rubble anicut, which was established on a stand; they were thus almost founded on the 30 spans of 9.14m (32 feet) each was built above the anicut. By the building of piers and due to the dam stones the effective length of the anicut got condensed to 224.0m (735 feet). In 1886, the dam stones were detached, piers and abutments elevated by 5 feet, and mechanical falling shutters 0.86m (2 feet 10 inches) height were fitted in the crest to enhance the waterway for floors. Four shutters while the ten scour vents occupied the next 2 ½ spans. Thirteen years later in 1899 the falling shutters were separated and replaced with elevate shutters of 9. 75m - 1.52m (32 feet and 5 feet) size designed and fabricated by Col. Smarts.[4]

There have been minor fractures in the abutment wing for more than a few years. In April 1909, the fractures increased significantly in the right using of the anicut in the scour vents portion. In the summer floods on 23rd August 1909 the apron below up unexpectedly brought down the right abutment and the arches in the three adjacent vents. They were reconstructed excluded the scour

vents before the irrigation period of the subsequent years. The new works were established on a solid clay bed about 6.1m (2 feet) below the anicut crest level. The foundations consist of concrete for a depth of 6 feet and of ground moulded brick in mortar for the next four feet. As an extra safety measure a puddle clay apron of 0.91m (3 feet), the thickness was provided upstream for such width as to make safe a hydraulic gradient of 1 in 10. The expenditure of the refurbishment was Rs.1,23,000.[5]

In 1922 new scouring vents, 5 in a number of 6.10m (20 feet) span fixed with radial gates were shaped and they were united to be on the downstream end of anicut to keep the Grand Anicut foundation from scouring a bed regulator was created for a length of 305m (100 feet) from the nose between the Anicut and scouring sluices on the upstream side with the object stopping the low watercourse away from the anicut towards the Vennar regulator and next to the scouring sluices.[6]

V. Grand Anicut Complex

A latest structure is projected to restore the present structure. It was first designed and shaped across the river path and along with it, the head regulator for the irrigation channels taking off from the river and the necessary scour vents or replace silt exclusion devices. The Grand Anicut construction is exceptional in this respect.[7] This was created on the left bank of the river Cauvery to keep high flow levels in Cauvery and divided the surplus into Coleroon. The Cauvery is unrelenting to flow into the delta with no regulator to control the release. Vennar is the river to the altitude of Cauvery, had its open off-take about 5 km upstream of the Grand Anicut location.

While the Upper Anicut, the Cauvery, and the Grand Anicut guaranteed sufficient flows being passed by Cauvery and Vennar for the delta irrigation there was no means of avoiding flood waters rushing into the delta stress into river and channels and causing heavy flood damages. The initial proposal for the regulation of floods entering into delta unconstrained was made by Capt. Mead in 1870.[8] He exactly felt a share of the floods decreasing the absorption of compensation in a precise router. At times of usual flows, the regulators would manage the allocation of flows between Cauvery and Vennar.

Major Montgomery's recommendations are revised by Col. Mullins. As a consequence the head regulator was constructed for both Cauvery and Vennar about 61 mt (200 feet) downstream of the Grand Anicut and right angles to the similar Vennar head. It got shifted downstream with the cause above being

consequently deserted. The plans and approximate value were authorized for Rs.6.88 lakhs.[9]

VI. Mukkombu or Upper Anicut

The construction of Upper Anicut was important to develop agriculture and related activities in Tiruchirappalli District. Moreover, it is useful for irrigation purposes as well as to control the flood around Tiruchirappalli. In the early time, there was no proper development here. But in 1834, the 150 yards Calingulah was built at a distance of about 3kms below the head of Sri Rangam Island, and a new six vent surplus was built at Perumal Kovil. The Calingulah consists of a wall of 1.22m (4 feet) high and 1.67m (51/2 feet) broad resting on the flooring of 0.91m (3 feet) thick founded on 1.83m (6 feet) wells. Originally there were rough store aprons 1.83m (6 feet) wide in front and (6.70m) in near. There is a bridge of 19 arches over it. Deducing for the bridge piers, the clear waterway is 118.57m (387 feet.

The problem of silting Cauvery could not be overcome by this work and with the purpose of eliminating this problem completely. Sir Arthur Cotton constructed the Upper Anicut in 1836 – 38 across the Coleroon arm, at the head of Sri Rangam Island. The Upper Anicut was the first large work that was constructed by the British after Thanjavur passed into their hands in 1800. This was planned to avoid the excess water from flowing down the Coleroon and to pass sufficient water into Cauvery. It was plain Anicut with a body wall and the common aprons.[10]

Some years afterward the anicut was enhanced introducing scour vents to pass the silt all along with flood flows. It was to reduce the silting consequence on river Cauvery. The Anicut was improved in two divisions, the north branch containing twelve spans varying from 10.21m (35.5 feet) to 10.74m (35.25 feet) and the south branch with fifty-seven spans varying from 9.15 to 1.35m (30 to 34 feet). In the north branch, there were eight under-sluices each 1.83m (6 feet) wide and 2.44m (8 feet) high. It is with screw gearing shutters. There were seventeen under sluices on the south branch of about the similar size. The crest of the north branch anicut was 1.58m (5.19 feet) above and that of the south branch 1.78m (5.70 feet) above the level of the zero gauges in the Cauvery arm.[11]

In the building of Upper Anicut, it was found that there was a trend for the Cauvery bed to scour itself with an excessive amount of water flowing downward during floods. This frequently resulted in profound floods being realized at Grand Anicut.

To prevent this complexity in 1845, the Cauvery dam was erected across Cauvery at the head of Sri Rangam Island methodically in line with the Upper Anicut. It consists of flooring of 0.91m (3 feet) thick, the upper part of which consists of cut stones. The floor rests on a double row of walls 1.37m (4½ feet) external diameter and 1.83m (6 feet) deep filled with concrete. The upstream and downstream aprons are of rough stone and 2.74m (9 feet) and 6.4m (21 feet) width respectively. This structure was successful in effecting a suitable and smooth division. The flow of water in Cauvery was not effectively controlled to regulate the irrigation of the delta area.[12]

VII. Channels in Tiruchirappalli

The noteworthy rivers in the district are the Cauvery and its tributaries, arriving the district at its western edge the Cauvery surge towards the east. The beginning of Cauvery delta is at the Upper Anicut 16 km west of Tiruchirappalli where the river separated into two huge divisions.[13] The northern branch is identified as Coleroon. It is remained chiefly a flood carrier, while the southern branch maintains the name Cauvery. Almost 36 percent of the net sown area in the district is utilizing well and tanks irrigation systems.[14]

There are 17 channels in Tiruchirappalli district, out of which 11 takes off on the right bank and 8 channels on the left bank of the river Cauvery[15] Kattuputhur channel, North Bank channel, Ayyan channel, Peruvalai channel, Sri Rangam Nattu Vaikkal and Pullambadi channel are the channels taking off from the left bank of river Cauvery and Pugalur channel, Vangal channel, Nerur channel, Krishnarayapuram channel, South Bank channel, Kattalai High-Level channel, New Kattalai High-Level channel, Uyyakondan channel, New Ayyan channel, Ramavathalai channel and Puduvathalai channel are taking off from the right bank of river Cauvery.[16] The Kattalai bed regulator across the river Aganda Cauvery is situated near the reservoir. The creation of the Kattalai bed regulator was started in 1931 and was finished by May 1935.[17] The bed regulator is intended to divert water for irrigation through channels and to provide supply to the south bank channel system.[18]

VIII. Conclusion

There are numerous dams, channels, and irrigational sources constructed by the native government agencies. But these are under the foundation of the works commenced by the Britishers. The foresightedness and visualisation of the Britishers in irrigational activities must be remembered fondly by the present generation. There should be technological alteration that happened at that time.

Such a transformation would continue the eco-friendly irrigational engineering technologies, which may serve the real principle of irrigational works. Another point is to be noted here about the safety and security of these structures. Most of them are under poor maintenance. Certain constructions are broken totally and a few are partly spoiled. The reason for the damages must be analysed with technical experts and these must be resolved as early as possible. Check dams may be erected in order to augment the agricultural areas.

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