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MYSORE-MADRAS CAUVERY ARBITRATION.

16TH JULY 1913 TO 13TH MAY 1914.

Exhibits filed by the Mysore Darbar.

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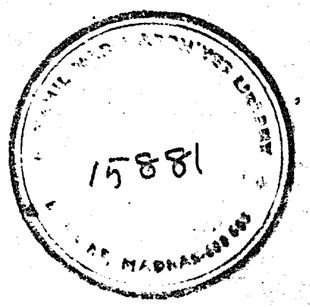

MYSORE-MADRAS ARBITRATION.

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SECRETARIAT LIBRARY MADRAS GOVT. 9 JUN 1927

Exhibit My. 1.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

Statement of case for Mysore for the consideration of the committee of Arbitration appointed by the Government of India, July 1913.

1. Preliminary.

The present understanding between the Madras and Mysore Governments in regard to the use of the waters of the Cauvery river is based on the agreement of 1892, which provides that Mysore may build storage reservoirs on condition that the prescriptive rights of Madras to the water supply for their irrigation, already acquired and actually existing, are not interfered with. In 1910, the Mysore Darbar proposed to start the construction of a reservoir of a capacity of of 41,500 million cubic feet. The project was objected to by the Madras Government at first but, eventually, after reference to the Government of India, permission was accorded to build a reservoir capable of storing about 11,000 million cubic feet. As the Mysore Government were pressed for a decision on account of the demand for power supply from the Kolar Gold Fields, they provisionally accepted the conditions laid down by Madras. But they stated that negotiations in connection with the larger reservoir would be renewed as they felt sure that sanction to the same would not be refused when the full case was submitted to the Government of India. They have accordingly commenced the construction of the reservoir with the wider foundations necessary for the full storage of 41,500 million cubic feet.

2. The question of regulating the river flow to meet the requirements of Madras irrigation has been under consideration and discussion between the two Governments from November 1910 and two distinct proposals were suggested by the Mysore Darbar for provisional adoption. But the Madras Government have not agreed to either and have preferred to resort to arbitration.

2. Prescriptive rights of Madras.

3. The agreement of 1892 provides that the Madras Government "shall be bound not to refuse their consent" for the construction of any new reservoir "except for the protection of the "prescriptive right, already acquired and actually existing, the existence, extent and nature of "such right, and the mode of exercising it being in every case determined in accordance with "the law on the subject of prescriptive right to use of water and in accordance with what is fair "and reasonable under all the circumstances of each individual case."

The Madras Government is accordingly entitled to water-supply for irrigation acquired by prescriptive right.

4. As this dispute began in 1910 and as 20 years' peaceful enjoyment is necessary for the acquisition of a prescriptive right, Madras is entitled under the agreement to a supply of water to the area irrigated, and the quantity of water actually used, about the year 1890.

In order to determine the prescriptive right of Madras, it is therefore necessary that detailed maps and statements should be prepared showing the actual extent of irrigation practised, say, three years before, and three years after, 1890. They will give a correct idea of the actual extent of the prescriptive right of Madras. This is the first question that will require the consideration of the Arbitration Committee.

3. Requirements of Madras irrigation.

5. The Madras Government contend that, in the exercise of their prescriptive right, they are entitled to utilise for their own use the entire river flow up to a depth of 7 feet on the Cauvery dam between the months of June and February, *i.e.*, for nine months in the year.

6. There are serious objections to granting this demand. In the first place, a depth of 7 feet was never reached in the first fortnight of June except on one occasion during the past twenty years. In the months of November and December, that depth was rarely ever reached In January and February, the limit was never reached except for two days in twenty years. There is therefore no sort of justification for a claim for 7 feet depth for five months out of nine.

7. Besides, in judging the quantities due, we have to be guided by the supply actually used about the year 1890 as explained above.

It would appear from the following extract taken from pages 3 and 4 of Volume I of the Madras Project that facilities for forcing an extra depth of one foot were obtained by the remodelling of the regulator at the Upper Anicut between the years 1899 and 1902 :—

"*Latest improvements.*—The question of water distribution and flood control has of late "received great attention. Several new regulators of a modern and powerful type have been "built. The Upper Anicut was cut down and rebuilt in 1899 to 1902 as an open dam with 55 "vents, 40 feet wide, fitted with lifting gates which allow a much freer passage for flood water "while enabling an extra one foot of depth to be forced into the Cauvery. The Lower Anicut "has also been converted into an open dam with 60 iron gates, each measuring 34′ × 6′, and "it is now capable of heading up water, when necessary, to a level of 2 feet higher than before "conversion."

This shows that till about 1899, the discharge passed down for irrigation was not 7 feet but somewhat less. There seems to be no justification to claim 7 feet under these circumstances.

8. The average fortnightly depths of water actually passed down for irrigation vary in different months of the year from 2·5 feet to 6·6 feet. In some months, it has never gone beyond 3 or 4 feet. For such months, a claim of 7 feet depth is altogether untenable.

The maximum during the same period never exceeded the limit of 7 feet except in July and August; *vide* columns 2 and 3 in the following table :—

Months.	Average depths corresponding to average fortnightly discharge.	Average depths corresponding to maximum fortnightly discharge.	Average depths now proposed by Madras in connection with their new project.
	FEET.	FEET.	FEET.
June .. 1st half.. ..	3·5	5·4	2·9
June .. 2nd half.. ..	5·1	6·4	2·9
July .. 1st half.. ..	5·7	7·0	6·1
July .. 2nd half.. ..	6·4	7·0	6·1
August .. 1st half.. ..	6·6	8·0	5·9
August .. 2nd half.. ..	6 0	7·0	5·9
September .. 1st half.. ..	5·6	6·7	5·8
September .. 2nd half.. ..	5·2	6·4	4·7
October .. 1st half	5·4	6·9	5·0
October .. 2nd half.. ..	5·4	6·6	4·2
November .. 1st half.. ..	5·0	6·6	3·8
November .. 2nd half.. ..	4·4	6·5	3·8
December .. 1st half.. ..	3 9	6·4	3 0
December .. 2nd half.. ..	3·0	5·1	1·7
January .. 1st half. ..	2·5	4·6	2·1

9. A larger depth may be allowed in the season of maximum demand, but in June, when irrigation is just starting or in September to February when the crops are being harvested or the natural flow of the river itself is low, the higher depth claimed is inadmissible.

Besides, allowance should be made for occasions when, on account of heavy local rainfall or storms in the delta, no supply is required in the canal. This factor has been taken into consideration by the Madras Engineers in the case of their Metur Project (*vide* paragraph 62, Volume I, page 17).

10. In proof of the soundness of these contentions, it may be observed that, in the Metur Reservoir Project of the Madras Government, the depths allowed for existing irrigation from fortnight to fortnight are all lower than 6·1 feet, being based on the actual flow of the past 20 years (*vide* column 4 of the table in paragraph 8 above).

This shows that a modification is necessary in the depth of 7 feet claimed. The depths should not be uniform in all the nine months. It is admitted that some allowance should be made on account of the uncertain flow of the river. An addition of about 25 to 30 *per cent.* to the supplies provided in the Metur Project should be sufficient as against the uniform depth of 7 feet claimed. The limitation only applies to the supply from the catchment above Kannambadi as supplies from 22,072 out of 26,172 square miles of catchment will be arriving unchecked even after the construction of the Mysore Reservoir.

11. Further, a claim is advanced to an extra supply for the Coleroon irrigation. This is untenable, because it is admitted in the Madras records that, under the present conditions, the Coleroon system is maintained from the leakage and waste from the delta irrigation without any special allowance from the river. Similarly, in the Metur Project, where lower depths are allowed for irrigation, no separate allowance is made for supply to the Coleroon system.

The following extract from page 2 of Volume I of the Metur Project will show why this is so :—

"The actual method by which the supplies to the area under this anicut, that is, the "flow in the Coleroon, below the Grand Anicut, is fed is not clearly traceable.

"The system of regulation in force at the Upper and Grand Anicuts only provides for passing "surplus water into the Coleroon and thus the flow in this river, except in flood time, is derived "from leakage through the Upper and Grand Anicuts and other surplus works, drainage from wet "cultivation, leakage and percolation from the marginal lands in which the water level is, in the "irrigation season, higher than the ordinary flow level in the Coleroon. It is found, as a fact, that "although no definite supply through works is being passed to the Coleroon, there is always an "adequate supply in that river for the Lower Anicut system when the supplies in the Cauvery "system are adequate. It is convenient to add here that allowance in the working tables of the new "reservoir has been made for the area under the Lower Coleroon Anicut system as well as for that "under Cauvery Delta system, and the area of 'existing irrigation in the delta,' constantly referred "to in the report, includes the area under both the systems."

12. In one of their latest communications, a claim is also put forward by the Madras Government for the replenishment of a tank known as Veeranam tank. This tank seems to have its own independent catchment and is also included in Coleroon irrigation, for which no special provision is made in the Madras Project.

In the same communication, a right to claim an additional supply for thirty days in any year has also been advanced. This is said to be based on the practice of recent years, that is, since remodelling of the Upper Anicut in the year 1902. Any practice of such recent origin will not constitute a prescriptive right.

These two claims have been put forward by Madras for the first time in a letter so recent as 11th June last.

13. It is, therefore, clear that a more equitable arrangement would be to fix the depths of supply due at the Cauvery dam separately for each fortnight or month, with due regard to the average depths actually utilised in the past as well as to those provided for in the Madras Irrigation Project.

This is the second important question requiring the special consideration of the Arbitration Committee.

4. Place of measurement of supply due to Madras.

14. The Madras Government have all along contended that the measurement of the supply due to them at the Cauvery dam should be actually given at the Sivasamudram Anicut or some other higher point including a special allowance for losses in transmission.

The only place, where the water used for the bulk of the irrigation in the Madras Presidency is fairly accurately gauged, is the Cauvery dam at the head of the delta. The flood discharges have also been properly measured here for a long time past.

The other two places where observations have been made are the Bhavāni Bridge, 75 miles above the Cauvery dam and Sivasamudram, 190 miles above the same point.

The observations at the Bhavāni Bridge do not appear to be correct, because in the Madras Cauvery Reservoir Project the maximum allowance made for waste weir discharge is only 250,000 cusecs. The proper allowance seems to be 50 to 75 *per cent.* more than what has been assumed. This shows that the gauging at the Bhavāni Bridge cannot be satisfactory. Also, discharges below 1,125 cusecs have not been gauged at all.

The Sivasamudram gauge was intended to measure only low discharges needed for purposes of power generation. For gauging high floods, the site is unsuitable and the past records of gauge readings are not reliable. These considerations show that, both for reasons of accuracy and for proximity to the bulk of the irrigated area, the Cauvery dam is the most suitable site at which to take measurements for the purpose of regulating the river supply.

15. The Madras Government have also advanced a claim to an addition of 10 *per cent.* to the discharges due to them at the Cauvery dam, if the measurements were given at the Sivasamudram gauge. Since the actual depths at the Cauvery dam represent the net supply after allowing for losses in transmission and needs of irrigation in the upper reaches, no such allowance is necessary if the measurements are taken at the dam itself. Even otherwise, the claim is untenable because the credit due to the additions to the river flow between Sivasamudram and the Cauvery dam is not a negligible quantity.

5. System of regulation.

16. We know, roughly at least, what discharge Madras was getting from the Cauvery dam 20 years before these negotiations began in 1910 and to which, as already stated, the Madras Government is now entitled. Those figures, when correctly ascertained, will also show to what extent Mysore is entitled to store.

No reservoir, however small, can be constructed which will not altogether interfere with the natural flow of the river.

The problem is to devise a "fair and reasonable" method by which, while allowing Madras irrigation its prescriptive supply, Mysore might not be prevented from impounding the surplus.

The mere fact of interference with the natural river flow cannot be considered a sufficient bar against reservoir construction in Mysore.

17. Another point which has to be considered in this connection is that it takes one to four or five days, depending upon the magnitude of the flood, for water to flow from the Kannambadi reservoir to the Cauvery dam at the head of the delta. In order to be able to store in Mysore all the water in excess of that to be given for irrigation at the Cauvery dam, the river supply has to be intercepted nearer the source one to five days earlier. It is difficult under these circumstances to determine the quantity to be impounded at the Kannambadi reservoir on any particular day. So, the impounding will have to be done under some system more or less conventional or arbitrary. In devising a system, it must be remembered that once the waters leave the site of the dam, they cannot be recalled, whereas, any excess storage impounded by miscalculation could be restored to the river and made available for irrigation in the next two or three days. A mistake or miscalculation in the one case means only postponement of supply by two or three days, whereas in the other, the entire excess supply is permanently lost and may be eventually wasted into the sea.

18. Since these negotiations began, the Mysore Government have suggested two methods of regulation. One is referred to in the Madras Government's letter No. R.O.C. 968/11-1, dated the 23rd November 1911, and the other in their letter R.O.C. No. 106-O/13-5, dated the 17th June 1913, to the address of the Honourable the Resident.

These proposals were put forward tentatively for adoption for a period of six years. Neither of these methods was proposed for permanent adoption without further test. They were both intended to be provisional till the needful correct data were collected. It may be observed that a further examination of the second proposal shows that the limit of discharge of 12,000 cusecs at Sivasamudram, proposed to be allowed to flow before any impounding is permitted at Kannambadi, would be unfavourable to Mysore. If the second proposal is accepted, the limit must be lowered and fixed separately for each fortnight. Subsequent examination of the gauge records at Sivasamudram has shown that the discharges there are overestimated.

19. The Madras Government have throughout assumed that it will take four days for the floods to flow from Kannambadi to Cauvery dam. This period means that the velocity of flow will be always $3\frac{3}{4}$ feet per second. But it will be readily admitted that during floods, particularly when the flood depth at Cauvery dam is 6 or 7 feet or more, the river velocity may be 5 to 10 feet per second. Taking a mean of, say, 7 feet, the average period of flow between the Kannambadi reservoir and Cauvery dam—a distance of 250 miles—will be two days. So the period will vary according to the intensity of flood. It will be nearer the truth to assume two days instead of four.

The heaviest rainfall months are July and August and, with simultaneous rainfall along the river, the local rainfall near Cauvery dam will produce floods there even earlier than the Kannambadi water could do so. All this will have to be allowed for in any final settlement.

20. If the discharges are correctly measured for five or six years with a view to collect the data required for this particular problem, it would be easy to determine the time the Kannambadi supply will take to travel to the Cauvery dam under any particular conditions. No insuperable difficulties therefore exist in calculating and allowing for the time required for water to flow from Kannambadi to the Cauvery dam.

6. Proposed regulation to be tentative.

21. Any arrangements now arrived at should be tentative.

The gaugings taken in the past have had no reference to the special requirements of the regulation now found necessary.

Any rules which may now be framed, on the basis of such imperfect data as we have at present, will be defective.

If any errors creep into the rules, they may seriously prejudice one side or the other.

It is suggested, therefore, that whatever rules are decided on now may be tested for a period of at least six years before the arrangement is confirmed. In the meantime, the gauging should be perfected and special arrangements should be made for observing the river discharges at three or four intervening points at frequent intervals, daily or even hourly, when necessary. Such a system of regulation has been suggested by the Madras Engineers in connection with their Metur Project (*vide* paragraph 62, Volume I, of Madras Cauvery Reservoir Project).

22. A few years' observation like this will enable the officer at Kannambadi to estimate the correct quantity to be impounded to a nicety. The same observations will eventually enable the two Governments to frame more accurate and acceptable rules for impounding in Mysore.

7. No outside interference with distribution of water.

23. The agreement of 1892 gives Mysore the freedom to utilise whatever supply is not required for Madras to satisfy actual existing prescriptive rights. This freedom exists as indubitably as the claim of Madras to demand the supply required for irrigation, for which it has a prescriptive right. Having allowed for this, there should be no interference with the internal distribution of water in Mysore territory and there is no necessity either.

If there are to be any restrictions, it is only fair they should apply to both parties.

8. Supply due to Mysore.

24. The area irrigated in Mysore at present is about 110,000 acres, of which 40,000 come below the site of the Kannambadi reservoir.

The area actually irrigated in Madras at present under the Cauvery and its tributaries is 1,225,500 acres. The irrigation in Mysore is therefore only about 8 *per cent.* of the whole.

This is the first time that Mysore has attempted to make a substantial addition to its slender irrigation facilities by means of river storage.

It is roughly computed that the average total quantity of water which passes through Mysore territory, as measured at Sivasamudram, is 330,000 million cubic feet. This amounts to as much as three-fourths of the total yield of the catchment above the Cauvery dam at the Upper Anicut.

If the present arrangements continue, Mysore will be held tied down, while Madras can go on extending its already disproportionately large irrigation. Madras can go on building reservoirs and, what is most detrimental to Mysore, accumulating further and new prescriptive rights of irrigation.

9. Creation of new prescriptive rights undesirable.

25. The agreement of 1892 was one-sided, because it tied the hands of the Darbar in the matter of irrigation extensions in Mysore without any *quid pro quo*. No corresponding restrictions of a material character were imposed on the liberty of Madras to extend their irrigation. Nor did it impose any reasonable obligations on the part of Madras to respect the rights of Mysore. The provisions of the proposed agreement were contested by the Mysore Darbar but were finally acquiesced in.

On that occasion the Madras Government wrote to the Government of India in the following terms :—

"I am therefore to solicit the interference of the Government of India in bringing such "pressure to bear on the Darbar as will secure the interests of Madras."

26. If Madras constructs a reservoir, the restrictions now sought to be imposed should be relaxed in favour of Mysore.

Also, should Madras extend irrigation in future, Mysore should not be made to submit to any further restrictions arising from rights to be acquired in future on that account without its previous consent.

It is therefore necessary that Mysore should be furnished with correct maps and statements of any future extensions that may be contemplated.

10. Other points for consideration.

27. The principal question for consideration is how to regulate the river flow so as not to interfere with the existing rights of Madras to a "tangible and material" extent, without at the same time imposing harassing and unjust restrictions as regards storage in Mysore.

28. The reason why the point of gauging should not be changed from Cauvery dam has already been explained in paragraph 14 above.

We have reason to think that the insistence of the Madras Government to have the gauging stations transferred to Mysore territory, *viz.*, to Sivasamudram (a point 190 miles above where it is due) or according to their latest demand 250 miles above the same point, arises from their anxiety to provide for storage for their proposed Metur reservoir.

29. Even after the completion of the reservoir the measurement may continue at the Cauvery dam, due allowance being made for the quantities daily impounded in and issued from, the Metur reservoir. Only, the rules now framed will have to be modified in favour of Mysore by a reduction of the depths due at the Cauvery dam.

30. Mysore cannot agree to measurements at Sivasamudram, because the Darbar will then be deprived of the storage due to a catchment of nearly 17,000 square miles, of which 5,000 is in Mysore territory itself. Some consideration may be given also to the fact that Madras should not be allowed to use water wastefully, while Mysore is arranging to store and use the same economically. There can be no prescriptive right to wasteful use. The floods in the month of June are mostly allowed to flow into the sea (*vide* paragraph 82, page 187, Volume I, of Madras Cauvery Reservoir Project).

31. Whatever regulation is decided on, no restrictions should be allowed which are based merely on the results of years of extremely unfavourable rainfall, for then, Mysore would be deprived of the use of the full advantage of the river. If calculations are based on the yield of the worst years only, few irrigation projects would be practicable in any part of India, including the Metur Project. It is necessary that Mysore should not be prevented from building new reservoirs in the Cauvery basin in Mysore territory for the extension of its irrigation.

32. Mysore should be given due credit for the increase in the cold weather flow, due to the stored water constantly given out for power generation. This will enable the Madras cultivators along the river banks to utilise the water for perennial crops like sugarcane. Eventually,

the discharge will be 1,000 cusecs or more, sufficient to irrigate about 60,000 acres and to give a revenue of perhaps 4 to 6 lakhs of rupees annually, without any expenditure for storing water on the part of the Madras Government.

11. Terms of reference and conclusion.

33. The considerations, set forth above, have led the Mysore Government to propose the terms of reference included in the printed note, already forwarded to the Committee of Arbitration through the Honourable the Resident.

34. It only remains to be stated here that, while objecting to the construction by the Mysore Darbar of a reservoir of 37,000 million cubic feet net capacity, the Madras Government have themselves proposed to construct a reservoir of more than double that capacity, just beyond the borders of Mysore. The construction of such a reservoir would have been justifiable if it had been solely intended to protect existing irrigation. But the Madras Government propose an extension of their present irrigation by about 355,000 acres, while objecting to an extension of less than 150,000 acres in Mysore.

35. From the commencement of these negotiations, the Mysore Government have willingly furnished all available information and arguments in support of their case, whereas according to their own recent statement (*vide* Madras Government letter R.O.C. No. 106-O 13-1, dated the 11th June 1913, to the address of the Government of India) "the reasons for which the "Madras Government have felt unable to assent to the construction of the Mysore reservoir have "not as yet been fully set forth." This statement has, therefore, had to be prepared without a full knowledge of the Madras view of the case.

Bangalore,
17*th July* 1913.

Karpur Shrinivasarav,
Offg. Secy. to the Govt. of Mysore, P.W.D.

Exhibit My. 1-a.

Terms of Reference to the Committee of Arbitration on the question of the utilisation of the Cauvery Waters in connection with the Kannambadi Reservoir.

On June 18th, the Resident informed the Darbar that, in the event of arbitration, the Government of India suggested the following terms of reference to the arbitrators;—

"(*a*) Whether, in view of the rules published with the Madras Government's G.O "No. 162 I., dated the 18th February 1892, the Mysore Government are entitled to impound "any part of the waters of the Cauvery over and above the amount agreed to in paragraph 2 of "the Madras Government's letter to the Resident in Mysore, dated the 23rd September 1911?

"(*b*) If so, what proportion of the available supply is the Mysore State entitled to "impound and on what conditions?"

The Resident had been requested to report whether the Darbar and the Madras Government accepted these terms.

2. The Darbar considered that the terms needed some revision. There was no question of the division of surplus waters; and the arrangement made by the Madras letter of 23rd September 1911 was provisional. Looking to the Agreement of 1892, the Darbar suggested that the terms of reference might be:—

"(i) What is the quantity of water required for the protection of the Madras Govern- "ment's prescriptive rights as already acquired and actually existing when the Agreement of "1892 was made?

"(ii) How the flow should be measured and regulated in order to secure the performance "of their obligations by the Darbar?

"(iii) In what manner can the protection of the Madras Government's prescriptive rights "be secured with the least injury to Mysore?"

The Resident communicated the views and suggestions of the Darbar to the Government of Madras in a letter No. C. 88, dated the 27th June 1913.

3. The position at this time was that certain proposals made by the Diwan at a meeting held at Ootacamund on 30th May 1913 were under consideration. The Resident informed the Madras Government unofficially on 27th June that the Darbar, after examining the Madras reply to these proposals, were of opinion that an agreement without arbitration might be reached, but were content to leave it to the Madras Government to decide whether recourse should or should not be had to arbitration.

4. On the 1st July, the Madras Government telegraphed that they were unable to accept the Diwan's proposals and preferred a reference to arbitration, adding that they understood Sir H. Griffin could commence proceedings on the 16th July.

5. On the 2nd July, the Resident, after consulting the Darbar, telegraphed to the Madras Government and the Government of India that, subject to agreement as to the terms of reference, the Darbar would be prepared for arbitration on the 16th July on the lines of the Diwan's letter No. 609, dated 22nd January 1913, and the Resident's letter No. C. 26, dated 1st May, as indicated in the telegram from the Foreign Department, No. 1301-I.B., dated June 3rd.

6. On the 4th July, the Resident received and communicated to the Darbar a telegram from the Madras Government, repeating the following terms which had been suggested to the Government of India:—

"(i) What is the quantity of water to which Madras is entitled for requirement of "existing irrigation both above and below Upper Anicut and which should during the different "months of the year be passed down by Mysore before impounding at Kannambadi reservoir?"

"(ii) In what manner and at what point of the river should measurement be made of the "discharge which is to be passed down before the Mysore Government begins to impound?"

"(iii) Does the decision of the foregoing points justify the refusal of the Madras "Government to assent to the construction of the reservoir as projected by the Darbar?"

The telegram added: "Proposal in item (i) of terms proposed by Mysore in Resident's "letter No. C. 88 of 27th June, limiting our rights to those existing at the time of the Agree- "ment of 1892 is an unwarrantable addition to the Agreement of 1892, and proposal in item "(3) is objectionable as it is not for the arbitrators to find best means for Mysore to utilise "water available. Proposed terms cannot, therefore, be accepted."

While the Madras suggestions were under consideration, the Resident informed the Darbar that he had received on 6th July a telegram from the Government of India stating that the precise terms of reference would be settled by the arbitration committee on the spot.

7. The Darbar find themselves unable entirely to accept the terms proposed by the Madras Government (paragraph 6 above) for the following reasons:—

In the first term—

(*a*) the word "existing" appears to the Darbar to be too wide. They consider that the Madras Government are only entitled to such rights as are given to them by the Agreement of 1892.

(*b*) The words "before impounding at Kannambadi" seem to be superfluous. Provided the rights of Madras are protected, the point at which the Darbar may impound is a subsidiary detail.

(*c*) For the same reason, the words "before the Mysore Government begins to impound," in the second term, appear to be superfluous, unless the expression is more clearly defined.

(*d*) The third term proposed by Madras seems to be superfluous, as the answers to the two preceding terms would settle the point.

8. The Darbar do not at present understand the objections taken by the Madras Government (paragraph 4 above) to the terms which the Darbar proposed.

(*a*) The prescriptive right of the Madras Government must, as it seems to the Darbar, be decided by the Agreement of 1892, and this view appears to be substantiated by the remarks contained in paragraph 23 of Sir J. Benton's note of the 12th May 1911 in (i) and (ii) of the sub-paragraphs which commence with the words "(i) The agreement is dated 18th February 1892";

(*b*) The Madras Government state that item 3 of the Darbar's proposed terms is objectionable "as it is not for the arbitrators to find the best means for Mysore to utilize water available." The third term proposed by the Darbar was; "In what manner can the protection of the Madras "Government's prescriptive rights be secured with the least injury to Mysore"? It seems to the Darbar that this suggestion was in accord with the final sentence of rule III of the Agreement of 1892.

9. After further consideration the Darbar now suggest that the terms of reference might be as in the attached draft.

10. The Darbar request that the Resident will kindly communicate copies of this note, with the attached draft simultaneously to Sir H. Griffin, the Madras Government, and the Government of India. The Darbar are prepared, should Sir H. Griffin so desire, to depute an officer to Ootacamund to give any further information which may be required of their views as to the terms of reference.

Bangalore,
12*th July* 1913.

Karpur Shrinivasarav,
Offg. Secretary to the Govt. of Mysore, P.W.D.

Terms of Reference now proposed.

1. What is the quantity of water required during the different months of the irrigation season for the protection of the Madras Government's prescriptive right already acquired and actually existing on the basis of the Agreement of 1892?

2. In what "fair and reasonable manner," according to the same agreement should the supply due to Madras be regulated and measured in order to protect the prescriptive rights of Madras while at the same time serving the Kannambadi reservoir, in the first stage, for the construction of which the consent of the Madras Government has been obtained?

3. Any reservoir constructed according to rule III of the Agreement of 1892 must interfere with the natural flow of the river to some extent, small or large. May not principles of regulation and measurement similar to those to be resorted to in the case of the smaller Kannambadi reservoir be adopted, with suitable modifications, if necessary, in connection with the larger reservoir also?

4. Whether in view of the fact that recorded measurements are not reliable as admitted by both parties, a term of years may not be fixed for the experimental working of any system of measurement and regulation that may now be decided upon ?

5. What are the difficulties likely to arise in future between the two Governments either in connection with the measurements and regulation of water, or the development of irrigation in either territory, and what precautionary rules are necessary, in addition to the Agreement of 1892, to provide against future difficulties and disagreements of this character ?

Exhibit My. 1-b.

Statement of information required from Madras.

(*a*) Detailed maps and statements showing the extent of irrigation on the Cauvery and its tributaries as it existed in 1891.

(*b*) Any new irrigation started after 1891 may be distinctly shown on the maps and in the statements.

(*c*) The daily discharge statements for the Grand Anicut showing the quantities actually passed into the Cauvery and Vennar regulators, as also the quantities that surplused into the Coleroon for the last twenty years.

(*d*) The Triennial Irrigation Revenue Reports for the year 1890 to 1905.

(*e*) Copy of Bhavāni Reservoir Project.

22*nd July* 1913.

KARPUR SHRINIVASARAV.

Exhibit My. 2.

As the Arbitration Committee has decided that rules for working the large Mysore Reservoir should be supplied, I have obtained permission to submit a set of provisional rules accordingly.

I am to add that the rules will require modification if the depths of water, assumed in rule 1 as due to Madras at the Upper Anicut, are found to be overstated, when the prescriptive right comes to be settled by the committee.

FERN-HILL,
Dated 26th July 1913.

KARPUR SHRINIVASARAV,
Offg. Secy. to the Govt. of Mysore, P.W.D.

ENCLOSURE.

PROVISIONAL RULES FOR WORKING THE MYSORE RESERVOIR.

The total flow in the river, up to the limits mentioned in the following table, shall be considered as the supply at the Cauvery dam across the Aganda Cauvery to which Madras is entitled during the irrigation season from 1st June to 31st January by prescriptive right according to rule III of the Agreement of 1892 :—

		Proposed depths in feet.	Daily discharge Million. cubic feet
June	1st half	3·5	450
	2nd half	5·1	1,060
July	1st half	6·9	2,230
	2nd half	6·7	2,090
August	1st half	6 6	2,020
	2nd half	6·6	2,020
September	1st half	6·2	1,755
	2nd half	5·2	1,120
October	1st half	5·4	1,240
	2nd half	5·4	1,240
November	1st half	5·0	1,000
	2nd half	4·4	696
December	1st half	3·9	538
	2nd half	3·0	370
January		2·5	290

2. Any flow in the river at the Upper Anicut in excess of the above limits shall be considered as available for storage in Mysore, that is, in the Kannambadi Reservoir.

3. From 1st February to 31st May the entire flow in the river shall be available for impounding within Mysore limits.

4. The supplies due to Madras from day to day shall be calculated from the actual discharge in the river determined in the following manner :—

(*a*) The total river discharge, at the Cauvery dam on any day in the second half of June and in July, August and September, shall be taken as the sum of the actual flow at the Cauvery dam on that day and the quantity of river water impounded at the Kannambadi Reservoir two days previously.

(*b*) During the remaining months of the irrigation season, the discharge at the Cauvery dam shall be computed in a similar way, but with an interval of three days instead of two.

(*c*) Necessary deductions shall be made in the quantity of discharges arrived at as above, for supplies passed down from the Mysore Reservoir two or three days (as the case may be) previously, for necessary adjustment of any excess storage in that Reservoir as provided in rule 5 below.

5. All excess quantity of water impounded in the reservoir, beyond the amount permitted by rule 2, shall be passed down into the river from day to day.

6. The gauges at the Cauvery dam and the reservoir shall ordinarily be read at least twice a day at 6 A.M. and 6 P.M., but during floods they shall be read every hour or at other intervals as may be required by Mysore, and the information communicated by telegram. The average daily discharge shall be calculated from such readings so as to give the closest approximation to actual discharge.

7. Gauges shall also be established at the stations named below :—

Within Mysore Territory.

(*a*) Hulhalli Anicut across the Kapini.
(*b*) Kalhalli Anicut across the Hemavati.
(*c*) Chamaraj Anicut across the Cauvery.
(*d*) Ayerhalli Anicut on the Lakshmanathirtha.
(*e*) Meke Datu on the Cauvery below the junction of the Arkavati.

Within Madras Territory.

(*f*) A station on the Cauvery below the junction of the Bhavāni.
(*g*) Do. at a station below the junction of the Noyel and the Amaravati.

8. The gauge-readings at the stations mentioned in rule 7 shall be telegraphed to the Officer at Kannambadi daily at suitable intervals to enable him to estimate, as nearly as possible, the correct quantity to be stored on any day, and impound accordingly.

9. The charges incurred in this connection by the Madras Government shall be borne by the Mysore Darbar.

10. Copies of the above gauge-readings shall be supplied to the Officer at the Cauvery dam.

11. The Officer in charge of the Cauvery dam shall have instructions to telegraph to the Officer in charge of the Kannambadi Reservoir, whenever, on account of rain in the delta or other reason, the entire flow in the river may be impounded in the reservoir.

12. Rule 4 above, fixing two and three days respectively in certain months as the interval required for water to travel from Kannambadi to Cauvery dam, shall be subject to revision, by mutual agreement between the two Governments, at the end of six years counting from the date the Mysore Reservoir comes into operation.

FERN HILL,
Dated 26th July 1913.

KARPUR SHRINIVASARAV,
Offg. Secy. to the Govt. of Mysore, P.W.D.

Exhibit My. 2-a.

From Colonel C. Bowen, R.E., Secretary to the Government of Mysore, Public Works Department, to the Assistant to the Resident, dated 4th January 1892, *No.* 3–1.

With his letter No. 1-A of 10th June 1890, the Diwan submitted to the Resident a memorandum on the subject of the restoration and construction of irrigation works in Mysore, the right to effect which without restriction had been disputed by the Madras Government. In that letter he urged the Resident to represent the matter in full to the Government of India in view to a settlement of the points at issue.

2. Colonel Sir Oliver St. John informed the Diwan in April last that the Government of India would prefer the matter to be settled, if possible, by some understanding between Madras and Mysore, and before leaving Ootacamund this year, he arranged for a conference between officers of the two Governments. Under such circumstances, the Darbar again made endeavours in conference with the Madras Government to arrive at an amicable understanding regarding our future irrigation operations, so that controversy might be obviated in regard of individual works,

and a sphere of operations declared in which Mysore projects should be absolutely untrammelled. At the same time, restrictions to be accepted by the Darbar, on certain classes of works on certain rivers and in certain valleys which might affect prejudicially Madras works beyond the frontier.

3. The rules and schedules which I now forward embody the arrangements which have been come to in an informal manner, by personal discussion, or by demi-official communications, and I am desired to request you will be good enough to move the Resident to now obtain from the Government of Madras their *formal* acceptance of the same. They will then be adopted by Mysore for future guidance of the Irrigation officers.

4. Annexed to the final rules and schedules is printed the demi-official correspondence which led to the modification of the rules after they were first framed and discussed at Ootacamund in May last. These letters will show that the general terms of the settlement have, with an exception, been informally agreed to by both Governments.

5. The exception I allude to is that referred to in the secondary clause to rule V. The decision of the Government of India will be necessary on that point, viz., the existence of a liability on the part of Mysore on account of three large reservoirs now actually under construction, and if such liability exists, the extent of it, but the definite acceptance by Madras of the rules and schedules as now drawn up is desirable before the controverted cases are specially referred.

Rules defining the limits within which no new Irrigation works are to be constructed by the Mysore State without previous reference to the Madras Government.

I. In these rules,

(1) "*New Irrigation Reservoirs*" shall mean and include such irrigation reservoirs, or tanks, as have not before existed, or having once existed, have been abandoned and been in disuse for more than thirty years past.

(2) A "New Irrigation Reservoir" fed by an anicut across a stream shall be regarded as a "*New Irrigation Reservoir across*" *that stream.*

(3) "Repair of Irrigation Reservoirs" shall include (*a*) increase of the level of waste weirs and other improvements of existing irrigation reservoirs or tanks, provided that either the quantity of water to be impounded, or the area to be irrigated, is not more than the quantity previously impounded or the area previously irrigated, by them; and (*b*) the substitution of a new irrigation reservoir for and in supersession of an existing irrigation reservoir but in a different situation, or for and in supersession of a group of existing irrigation reservoirs, provided that the new work either impounds not more than the total quantity of water previously impounded by the superseded works, or irrigates not more than the total area previously irrigated by the superseded works.

(4) Any increase of capacity other than what falls under "Repair of Irrigation Reservoirs" as defined above shall be regarded as a "New Irrigation Reservoir."

II. The Mysore Government shall not, without the previous consent of the Madras Government, or before a decision under rule 4 below, build (*a*) any "New Irrigation Reservoirs" across any part of the thirteen main rivers named in the appended Schedule A, or across any stream named in Schedule B below the point specified in column 5 of the said Schedule B, or in any drainage area specified in the said Schedule B; or (*b*) any "new anicut" across the minor streams of Schedule A, viz., 4 to 9, and 14 and 15, or across any of the streams of Schedule B, or across the following major streams of Schedule A, lower than the points specified hereunder:—

Across 1. Tungabhadra—lower than the road crossing at Honhalli,
,, 10. Cauvery—lower than the Ramaswami anicut, and
,, 13. Kabani—lower than the Rampur anicut.

III. When the Mysore Government desires to construct any "New Irrigation Reservoir" or any new anicut requiring the previous consent of the Madras Government under the last preceding rule, then, full information regarding the proposed work shall be forwarded to the Madras Government and the consent of that Government shall be obtained previous to the actual commencement of work. The Madras Government shall be bound not to refuse such consent except for the protection of prescriptive right already acquired and actually existing, the existence, extent and nature of such right, and the mode of exercising it being in every case determined in accordance with the law on the subject of prescriptive right to use of water and in accordance with what is fair and reasonable under all the circumstances of each individual case.

IV. Should there arise a difference of opinion between the Madras and Mysore Governments in any case in which the consent of the former is applied for under the last preceding rule, the same shall be referred to the final decision either of arbitrators appointed by both Governments, or of the Government of India.

V. The consent of the Madras Government is given to new irrigation reservoirs specified in the appended Schedule C, with the exception of the Srinivasasagara new reservior across the Penaar, the Ramasamudram new reservoir across the Chitravati, and the Venkatesasagara new reservoir across the Papaghni. Should, owing to the omission of the Mysore Government to make

or maintain these works in a reasonably adequate standard of safety, irrigation works in Madras themselves, in a condition of reasonably adequate safety, be damaged, the Mysore Government shall pay to the Madras Government reasonable compensation for such damage.

As regards the three new reservoirs excepted above, the admissibility of any compensation from Mysore to Madras on account of loss accruing to Madras irrigation works from diminution of supply of water caused by the construction of the said works, will be referred to the Government of India whose decision will be accepted as final, and should such compensation be decided to be admissible, the decision of the Government of India as to the amount thereof will be accepted, after submission to them of the claims of Madras which should be preferred in full detail within a period of five years after the completion of said works.

VI. The foregoing rules shall apply as far as may be to the Madras Government as regards streams flowing through British Territory into Mysore.

SCHEDULE A.

Main rivers.	Remarks.
1. Tungabhadra	.....
2. Tunga	Tributary of the Tungabhadra.
3. Bhadra	Do. do.
4. Hagari or Vedavati	Do. do.
5. Pennar or Northern Pinakini	.....
6. Chitravati	Tributary of the Pennar or the Northern Pinakini.
7. Papaghni	Do. do.
8. Palar	.....
9. Pennar or Southern Pinakini	.....
10. Cauvery	.....
11. Hemavati	Tributary of the Cauvery.
12. Lakshmantirtha	Do.
13. Kabani	Do.
14. Honhole (or Suvarnavati)	Do.
15. Yagachi, up to the Belur bridge	Tributary of the Hemavati.

Schedule B.

A list of the minor streams and catchments in Mysore territory on which no new irrigation reservoirs are to be built within the limits specified, without previous reference to the Madras Government.

Serial numbers in Schedule A.	Drainages.	Serial numbers.	Minor branches.	Defined limit on a stream below which, or defined drainage area within which no new irrigation reservoirs are to be built without previous reference to Madras Government.	Distance from frontier as measured up the stream (approximate).	Remarks.
1	2	3	4	5	6	7
I	Tungabhadra ..	1(a)	Choradi or Kumadvati.	Up to the bridge on this river on Honnali-Shikarpur Road.	10 miles ..	....
		1	Sulikere-halla ..	The bund of Sulikere tank.	46 do. ..	The Sulikere tank seldom discharges. This stream joins the Tungabhadra in Mysore territory.
		2	Sagali-halla ..	Up to the boundary line of the Channagiri taluk.	40 do. ..	Above this point there are numerous existing tanks, and the run-off from these smaller catchments are of no appreciable importance to floods in the Tungabhadra river.
		3	Sarati-halla ..	As far as the boundary line of the Kakkargola and Avargola villages.	9½ do. ..	A stream of insignificant importance to floods in the Tungabhadra river. This stream joins the Tungabhadra river in Mysore territory.
		4	Branch of Sarati-halla from east.	Up to Kadaji tank bund.	16½ do. ..	Catchment above the Kadaji tank small and insignificant.
		5	North Hagari ..	Up to boundary of Chitaldrug taluk.	12½ do. ..	There are no existing Madras works on this branch of the Tungabhadra.
		6	Branch of do.	Up to Anaji tank bund ..	10 do. ..	
		7	Sokke halla ..	Up to the Hoskere tank bund.	9 do. ..	No existing Madras works on this stream before it joins the North Hagiri. Catchments above Hoskere and Kyasenhalli tanks very small and insignificant.
		8	Branch of Sokke-halla.	Up to the Kyasenhalli tank bund.	9 do. ..	
		9	Jiganhalli tank (Madras) catchment.	The whole of the outlying bit of Mysore territory which drains into this Madras tank.	..	This is an outlying bit of Mysore territory in latitude 14–55′; longitude 76–38′.
		10	Anantapur tank (Madras) catchment.	The whole of the area of the extreme northern portion of the Molakalmuru taluk in Mysore which drains northwards into the Anantapur (Madras) tank catchment.	..	There are existing Madras tanks below, and the whole area which drains into such tanks is included.
IV	Vedavati or Hagari.	11	Chinna-Hagari ..	Up to where the stream crosses the frontier near Rangaiyandrug.	16 miles ..	No existing Madras works affected. This stream joins the main river about eight miles beyond the frontier.
		12	Sherikola-halla or Nagalapura tank (Madras) catchment..	The whole catchment area in Mysore territory.	..	Affects the supply to Madras tank below.
		13	Rangasamudram tank (Madras) catchment.	The whole area of catchment of the tank in Mysore territory.	..	The stream from this catchment leaves Mysore territory in latitude 14–37′–30″ and longitude 76–48′–30″.
		14	Yeradkere tank (Madras) catchment.	Do. do.	..	The Yeradkere in Madras is on latitude 14–30′; longitude 76–57′–3″.
		15	Main stream of the Talak drainage.	Up to the bridge over this stream on the Salem-Bellary Road.	15½ miles ..	The road is a convenient point for a limit. No Madras works affected. This stream joins the Vedavati river within Mysore limits.

Schedule B—*cont.*

Serial numbers in Schedule A.	Drainages.	Serial numbers.	Minor branches.	Defined limit on a stream below which, or defined drainage area within which, no new irrigation reservoirs are to be built without previous reference to Madras Government.	Distance from frontier as measured up the stream (approximate).	Remarks.
1	2	3	4	5	6	7
IV	Vedavati or Hagari—*cont.*	16	Main stream of the Dodderi drainage.	Up to the boundary of the Hosaballi village.	17½ miles ..	Latitude 14–21′: longitude 76–49′. No existing Madras works affected. This stream joins the Vedavati river within Mysore territory.
		17	Virapsamudram and Amarapur tank (Madras) catchments.	The whole area of catchment of this series in Mysore territory.	..	This area represents a large proportion of the Pavagada taluk of Mysore.
V	Pennar or Northern Pinakini.	18	Mulkalkara tank (Madras) catchment.	Do. do.	..	This Madras tank is situated in latitude 14-8′: longitude 77–26′–20″.
		19	Ruddam tank (Madras) catchment.	Do. do.	..	A considerable area in the north of the Maddagiri taluk of Mysore is on this catchment.
		20	Virapsamudram tank (Mysore) catchment.	Do. do.	..	This terminal tank is in south-east corner of the Pavagada taluk of Mysore, but there are some Madras tanks above in the Madaksira Tahsildari. The catchment excluded from Mysore operations is chiefly in the north of the Maddagiri taluk.
		21	Purghi tank (Madras) catchment.	The whole area of catchment of this series in Mysore territory.	..	The catchment excluded from Mysore operations is in the north of the Maddagiri taluk.
		22	Jayamangali river.	Up to its junction with the Garudachala stream.	28 miles ..	The river above this point is of minor importance to Madras.
		23	Suvarnamukhi branch of Jayamangali.	Up to site of Rampur anicut.	25	Joins the Jayamangali a few miles below this point.
		24	Kumadvati ..	Up to site of anicut feeding the Kadagatur and Gundagal tanks in Mysore.	9½	This stream joins the Pennar on the Mysore frontier.
		25	Chaulur tank (Madras) catchment.	The whole direct catchment of this tank in Mysore territory.	..	This Madras tank is on the west bank of the Pennar just outside Mysore territory.
		26	Western, or Thondebhavi branch of the Pennar or N. Pinakini.	Up to its source	27 to 30 miles.	....
		27	Central or Varvani branch of the Pennar or N. Pinakini.	Do.	25 miles ..	....
		28	Hindupur tank (Madras) catchment.	The whole area of catchment of this series in Mysore territory.	..	An important and large area of the Goribidnur taluk is here excluded from Mysore operations in a part where water for irrigation is much appreciated.
VI	Chitravati ..	29	Kushavati stream (Bukkapatna tank catchment in Madras).	Up to site of Daparti anicut.	10½ miles ..	The large Gudibanda tank in Mysore and the 20 smaller tanks above impound a very large proportion of the upper catchment already.
		30	Chitravati catchment (Bukkapatna tank catchment).	The whole area to the north of the Chelur-Bagenhalli road.	..	This portion of the Chitravati catchment being more hilly and barren, the run-off is greater than in the more cultivated and level catchment to the south of the Chelur-Bagenhalli road.

SCHEDULE B—*cont.*

Serial number in Schedule A.	Drainages.	Serial numbers.	Minor branches.	Defined limit on a stream below which, or defined drainage area within which, no new irrigation reservoirs are to be built without previous reference to Madras Government.	Distance from frontier as measured up the stream (approximate).	Remarks.
1	2	3	4	5	6	7
VII	Papaghni river..	31	Vandaman-halla.	Up to Naremadipalli tank.	9½ miles ..	No Madras works affected up to the junction of this stream with the Papaghni river.
		32	Guntapalli tank (Madras) catchment.	The whole area of catchment in Mysore territory.	..	This Madras tank is situated just above the large Vyasasamudram tank.
		33	Sadam tank (Madras) catchment.	The main stream up to its source.	17 to 18 miles.	This Madras tank, the waterspread of which is partly in Mysore territory, drains into the Papaghni river just above the Vyasasamudram tank.
		34	Kotagal branch of the Papaghni.	Up to Kotagal tank ..	Do	The catchment above Kotagal tank is comparatively small and unimportant with numerous small tanks already on it.
		35	Tippasamudram tank (Madras) catchment.	The Marasanpalli-Digavakote stream up to Digavakote-Pathacheruvu tank: and the Marasanpalli-Gundedu stream up to Gundedu tank.	9½ miles ..	These are the only two important streams on this catchment, and above these terminal tanks, there are a large number of small tanks on the small drainages.
					13 do. ..	These terminal tanks are only situated from 4 to 5 miles from the watershed of the Palar.
		36	Rangasamudram tank (Madras) catchment.	Adgal stream up to Adgal-Vasantanaikankere tank.	6½ do. ..	The Adgal tank is situated 6 miles from the watershed, and there are numerous tanks in this distance.
				Kurigepalli branch stream up to the Kurigepalli tank.	4½ do. ..	The Kurigepalli tank is only 4 miles from the watershed, and there are some 18 small tanks above it.
VIII	Palar river ..	37	Nangli (Mysore) tank drainage.	Main steam up to its source	17½ do. ..	There are 12 Mysore tanks situated on this main stream.
		38	Shettikal (Mysore) tank drainage	Do. do.	10 do. ..	There are about five existing Mysore tanks and one breached tank on this main stream.
		39	Malinayikanhalli (Mysore) drainage.	Do. do.	6½ do. ..	There are four existing Mysore tanks on this main stream.
		40	Vegmadgu (Mysore) drainage.	Do. do.	7 do. ..	There are four existing Mysore tanks on this main stream.
		41	Tailur tank (Mysore) drainage.	Do. do.	23 do. ..	There are ten Mysore tanks on this important branch of the Palar, the terminal tank being 12½ miles from the frontier.
IX	Pennar or South Pinakini.	42	Vedushuvavati river.	Main stream up to Koppa (or Kuppam) tank.	16 do. ..	There are 76 tanks above the Koppa tank which is only some 12 miles from the watershed.
		43	Budikote stream.	Main stream up to Timmanayakanhalli tank.	21 do. ..	There are 146 tanks above this terminal tank which is only about 12 miles from the watershed.
		44	Masti catchment.	The whole area of catchment in Mysore territory.	..	About 45·40 square miles in area in which there are 63 tanks in existence.
		45	Kadgodi drainage.	Main stream up to its source.	36 miles.	There are ten Mysore tanks on this main stream now in use, most of them of large size.

SCHEDULE C.

A LIST of works already in progress, and which are to be allowed to be completed, although they would be barred by the proposed rules for restriction of Mysore operations.

Serial number in Schedule A.	Main river drainage.	Serial number of stream or catchment in Schedule B.	Name of work in progress.	Date on which work was sanctioned.	Amount of estimate in rupees.	Expenditure incurred to end of March 1891.	Descriptive remarks.
1	2	3	4	5	6	7	8
I	Tungabhadra.	..	....	..	..	..	No works in progress on these catchments which are affected by the proposed rules submitted to Madras.
II	Tunga ..	..	....	..	..	..	
III	Bhadra ..	..	....	..	..	..	
IV	Hagari or Vedavati.	17	Restoration of the Arsikere-Hampaiyandurga tank.	May 1889.	4,362	..	The estimate provides for raising the weirs by 2 feet, and increasing capacity from 107 to 163 units. Work in abeyance owing to objection raised by Madras Government. But it is not intended to irrigate more than the area of land (189 acres) assessed as wet by the Revenue Survey.
		17	Restoration of the Arsikere-Gujjarappankere.	May 1899.	3,582	..	The estimate provides for raising the weir by 1 foot, and to increase the capacity from 149 to 186 units. The raising of the weirs by 1 foot will not do more than compensate for the silting up of the bed for years.
V	Pennar or Northern Pinakini.	Main stream.	New Reservoir (Srinivasasagara) across the river near Kotagaraballi.	July 1888.	99,206	66,696	This new masonry dam with earthen bund on flanks is two-thirds completed. No Madras works affected. The capacity of the tank will be 610 units, and it is intended to irrigate 800 or more acres. This work is referred to by Colonel H. Smalley, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation, Madras.
		28	Restoration and improvement of Myalya tank.	September 1887.	(Original estimate) 14,452	..	The capacity was increased from 95 units to 318 units, and the work is nearing completion.
				December 1889.	(Revised estimate) 17,168	13,130	This tank is on the Hindupur (Madras) tank catchment, but only has a catchment of 38·80 square miles of its own.
		28	Raising the weirs of the Mahamalesvara tank.	September 1890.	3,165	865	This is a small tank above the Myalya noted above. The estimate provides for increasing the capacity of the tank from 62 to 102 units, the former capacity having proved insufficient to irrigate the 198 acres of assessed wet lands. No increased area of irrigation is provided for. The total catchment above this tank is only 3 square miles.
		28	Restoring the Manivala tank.	February 1889.	4,094	2,860	The tank weir is to be raised 2 feet, and capacity increased from 139 to 211 units, but only in order to impound sufficient water to irrigate the tanks original atchkat of 350 acres.
VI	Chitravati ..	Main stream.	New Reservoir (Bamasamudram) near Periyasandra.	May 1888.	76,077	51,824	This reservoir is noticed by Colonel H. Smalley, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation. It is to have a capacity of 1,207 units to irrigate 1,200 acres. The catchment area above the tank is 47·61 square miles.

SCHEDULE C—*cont.*

Serial number in Schedule A.	Main river drainage.	Serial number of stream or catchment in Schedule B.	Name of work in progress.	Date on which work was sanctioned.	Amount of estimate in rupees.	Expenditure incurred to end of March 1891.	Descriptive remarks.
1	2	3	4	5	6	7	8
VI	Chitravati—*cont.*	30	Restoration of the Malsandra-Rachevar tank.	December 1888.	4,742	4,724	Weirs of the tank were raised 2 feet, increasing the capacity from 105 units to 159 units. It is not intended to increase the area originally irrigated, 258 acres. The capacity of the tank is even now insufficient unless the tank fills 1½ times in the year. Work is nearly completed.
VII	Papaghni river.	Main stream.	New reservoir (Venkatesasagara) near Devaganhalli.	June 1888.	60,985	28,423	This work is noticed by Colonel H. Smalley, R.E., in his No. 674, dated 10th June 1890, to Chief Engineer for Irrigation. The tank will impound 517 units as designed, and will perhaps irrigate 750 acres if it fills 1½ times. The catchment above the tank is 61 square miles.
		Do.	Restoring the Buradagunte anicut, channel and tank.	December 1888.	25,575	17,350	This work consists in (1) building a masonry anicut with the usual earth flank bunds across the main stream, (2) restoring the old channel therefrom, and (3) restoring the Buradagunte-Timmasani tank and increasing its capacity from 111 units to 167 units. This project is also noticed by Colonel Smalley in his report No. 674, dated 10th June 1890.
			Restoring the Timmenayakanhalli-Agrahar tank.	August 1888.	16,776	13,234	Noticed also in Colonel Smalley's letter above quoted. This is a restoration of an old breached tank 26 miles up the main stream and two miles above the Chintamani-Bagenhalli road. The tank is to impound 240 units and irrigate 250 acres as against its original atchkat (irrigable area) of 330 acres as per Revenue Survey maps. Work is nearing completion.
		35	Restoring Kotekallur tank.	April 1888.	6,564	5,690	This project consists in the restoration of a tank which breached in 1874, and for increasing its capacity from 25 to 80 units. It is six miles from the frontier on the Tippasamudram (Madras) tank catchment.
VIII	Palar river ..	37	Restoring the Byatnur-Nagavera tank.	September 1888.	14,300	8,102	This is the terminal tank of the series. The capacity being increased from 152 to 320 units, it is only intended to irrigate the original area of 365 acres included in the atchkat.
		37	Restoring Marandhalli tank.	March 1886, Revised estimate in July 1888.	5,345	5,254	The project provides for raising the weirs 3 feet and increasing the capacity from 121 to 186 units, to irrigate perhaps 250 acres. Work is nearing completion.

SCHEDULE C—*cont.*

Serial number in Schedule A.	Main river drainage.	Serial number of stream or catchment in Schedule B.	Name of work in progress.	Date on which work was sanctioned.	Amount of estimate in rupees.	Expenditure incurred to end of March 1891.	Descriptive remarks.
1	2	3	4	5	6	7	8
VIII	Palar river—*cont.*	41	Restoring Jagalkashti-Dodkere tank.	April 1888. Revised estimate in January 1890.	7,246	7,210	Project provides for raising the weirs 3 feet and increasing capacity from 50 to 107 units. Work is nearly completed. No Madras works affected
IX	Pennar or outhern Pinakini.	Main stream.	Restoring Bhadram tank.	April 1888.	21,689	15,033	The project provides for raising the weirs of this tank by 3 feet and increasing the capacity from 701 units to 1,225 units. The work to the tank itself is nearly completed and only channels have now to be extended.
		44	Restoration of Santehalli tank.	November 1889	7,480	4,076	This tank is in the Hasti catchment. The weirs are to be raised 3 feet, and capacity increased from 93 to 154 units. No Madras works are affected.

From the First Assistant to the Resident in Mysore to the Secretary to the Government of Mysore, Public Works Department, dated Bangalore, the 26th March 1892, *No.* 1022-346-90.

With reference to your letter No. 3/1, dated the 4th January 1892, I am directed to inform you that the Rules and Schedules in connection with the restoration and construction of irrigation works in Mysore, forwarded therewith, are accepted by the Madras Government.

* * * * *

MEMORANDUM.

Some misapprehension appears to exist regarding the object and scope of the "Rules "defining the limits within which no new "irrigation works are to be constructed by "the Mysore State without previous reference "to the Madras Government," which have been adopted by mutual agreement between the Governments of Madras and Mysore as per the marginally-noted correspondence.

1. Letter No. 3/1, dated 4th January 1892, from Secretary to Government of Mysore, Public Works Department, to the First Assistant to the Resident.
2. Letter No. 1022—346-90, dated 26th March 1892, from the First Assistant to the Resident, to Secretary to Government of Mysore, Public Works Department.

2. These rules are not intended to curtail in any way the rights of the State to utilize the waters within its territorial limits. Such rights must always be decided on the merits of each case, according to the accepted principles of law applicable to the subject. Regarding these rights, I still hold the opinion given in the following paragraph of my Memorandum, dated 10th June 1890, forwarded to the Resident in Mysore with my letter of the same date :—

"6. I may perhaps be permitted to add a few remarks on the question of the right to "the water in dispute.

"(*a*) The supply of water which we propose to store and use for irrigation and water-"supply is only casual, intermittent, and exclusively dependent upon the rain-"fall on Mysore land. We have a *natural* right to collect and dispose of all "water on the surface of our land, and though as between private owners, such "*natural* right would (subject to the exceptions hereafter to be noticed) be "restricted to water *not* flowing in a defined channel, the case of a State is, I "submit, very different. "It has to deal with large interests and establish "means of irrigation and water supply over extensive areas, and it cannot effec-"tually dispose of surface water before it enters some defined channel. And I

"submit that the question as affecting the State has to be decided on the higher "grounds of public welfare and general prosperity and not according to the "striot rules of law applicable only to private rights.

"(*b*) The State naturally would have greater right of control over water falling on the "surface of its own lands and gathering into a defined channel within its own "frontier, than it would in the case of a stream rising outside its frontier, and "merely flowing through it into the Madras districts; the obligations which "may exist in respect of a stream of the latter kind do not arise in any of the "cases under dispute. In all these cases, on the other hand, the works we "propose would tend to hold back river-floods running more or less to waste and "to establish more perennial streams flowing from Mysore into the Madras "districts.

"(*c*) If a right of easement by prescription is claimed on behalf of the Madras ryots, "I can only say (assuming that such a limiting right as an easement can at all "be acquired by Madras ryots against the Mysore State) that it is most difficult "to say what period of time would be reasonable for the acquisition of such a "right against the State. For obvious reasons the twenty years of the Ease-"ment Act would be too short a term, and in the case of Mysore, the fact of the "British administration of the Province during half a century has an important "bearing upon the question.

"Moreover, a right of easement can never be acquired by a mere *vermissive* user. "It cannot be said that Mysore never intended to store its rainfall for irrigation "and other purposes to a greater extent than it used to do at some remote "period. It is indeed more reasonable to infer that the user in question was "*permitted* to be in force only so long as the State did not wish or were not able "to store more water. As a matter of fact, the history of the Mysore Irrigation "Department, as already shown, bears ample testimony to the Mysore Govern-"ment having always intended to store and utilize as much of its rainfall as "possible, and the presumption of a grant from prescriptive enjoyment is "therefore most distinctly and expressly negatived in the case of all Mysore "streams, to the extent to which they may be capable of being utilized for "irrigation and other purposes within Mysore territory.

"It is also most important to remember that the so-called right by prescription "cannot be claimed either in the case of recent Madras works or recent enlarge-"ment of old Madras works: nor as regards water which now flows to waste "over existing Madras works, can any right whatsoever be claimed by Madras, "for, the essence of a prescriptive right is enjoyment and use, which cannot of "course be predicated of what is allowed to run to waste.

"And lastly, it is worthy of note that we have always impounded—in increasing "quantities as our works increased—as much of our rainfall as possible. This "increasing appropriation has, until recently, never been objected to by Madras. "This is not surprising if we remember that (as pointed out by Colonel Sankey "in his letter of 19th November 1866) the old Mysore tank system was so "perfect that, were all tanks in their normal condition, none of the drainage of "16,287 square miles commanded by the system could possibly escape, and "that, therefore, the so-called new works and new or increased storage of water "were, in reality, new methods of securing what the old system secured in a "different way.

"And (*d*) even in the case of private riparian owners, they have the natural right "to use the water flowing through their land in a defined channel for all "reasonable purposes, including the irrigation of land, *provided they do not* "*thereby destroy or materially diminish or affect the application of the water by* "*riparian owners below the stream*, either in exercise of their natural right or "right of easement. (See Embrey *v.* Owen, 6, Exch., 372, and XI Indian "Law Reports, Madras 19.) Assuming, for the sake of argument, that this "well-recognized principle of Municipal law is applicable to the case of two "neighbouring Provinces, I am sanguine that it would be found, upon investi-"gation, that Mysore is strictly within its right in carrying out the works to "which objection has been taken by the Madras Government."

3. The rules in question are intended for the guidance of our Engineers in the preparation of irrigation projects and to inform them as to the kind of new irrigation works regarding which the Durbar has undertaken to seek the previous consent of the Government of Madras, that Government on its own part agreeing "not to refuse such consent except for the protection of prescriptive "right already acquired and actually existing, the existence, extent and nature of such right, and "the mode of exercising it being in every case determined in accordance with the law on the "subject of prescriptive right to use of water, and in accordance with what is fair and reason-"able under all the circumstances of each individual case." In the case of a difference of opinion between the Governments of Madras and Mysore in any case, a reference to arbitration or the final decision of the Government of India is provided.

4. It is obvious from the above that the Madras Government cannot object on the ground of proposed or possible future new works in its own territory. Its objection must be on the ground of protection of rights already actually existing and not of rights hereafter by user and enjoyment.

5. Under such circumstances, in the case of any new irrigation work in Mysore, which comes under the class for which the rules in question provide a reference to the Madras Government, it is of the utmost importance to investigate beforehand, whether any "prescriptive right already acquired and actually existing" in Madras Territory is likely to be affected by the proposed Mysore work. Such investigation should include the collection of information as to the nature, extent and dimensions of any existing prescriptive right in Madras, when and how such right was acquired, how the same has been enjoyed, etc., *e.g.*, suppose a new work in Mysore (coming under the Rules) is at all likely to diminish the supply of water to an existing Madras tank, the information to be collected should include (1) when the Madras tank was constructed, or enlarged, (2) whether twenty years have elapsed since such construction or enlargement, (3) its capacity and the area which drains into it, (4) the area of actual irrigation under it, (5) whether the new Mysore tank is likely to cause any and what diminution of supply for the existing irrigation in Madras, and, if so, whether such diminution can be regarded as material or as causing any appreciable practical injury to such irrigation.

6. During my recent tour, the want of sufficient irrigation in Devangere taluk was strongly pressed upon my attention by the local officers. Some of the most eligible projects had not been investigated as being within the tract in which the rules in question have operation. They should be investigated on the lines above suggested.

7th September 1899. K. SHESHADRI IYER.

P.S.—In paragraph 2 of the rules "and 15" is a mistake, and no reference to the Madras Government should be necessary in respect of a new anicut across the Yagachi River.

K.S.

Exhibit My. 2-b.

The Representative of the Mysore Government, in reply to Col. Ellis, states, with reference to Rule 12 of the proposed rules, that the revision provided for therein has reference only to the interval of time required for water to travel from Kannambadi to the Cauvery dam.

The word "Provisional" in the heading of the rules has reference to the second paragraph of the covering letter and to Rule 12 as explained above.

FERN-HILL, *Dated 26th July* 1913.

KARPUR SHRINIVASARAV, *Offg. Secy. to Govt. of Mysore, P.W.D.*

Exhibit My. 3.

Papers handed over to the Madras Government.

A.—Fortnightly discharges statement at the Kannambadi dam site.
Statements I to V, with a statement of Mr. MacHutchin's factor.
Also an explanatory note and map.

B.—Map showing irrigation in the Cauvery basin.
Statement of areas irrigated.

29th July 1913. KARPUR SHRINIVASARAV.

Exhibit My. 3-a.

Explanatory note referred to in paragraph A of Exhibit My. 3.

STATEMENT No. I.

This statement gives the fortnightly discharges for the years 1896—1909 at Alalkatte anicut, computed from the daily gauge records already sent with the Darbar's No. 801/5230, dated 1st July 1913.

Column 1—shows the discharge at the anicut for each fortnight in each year, excluding the discharge through the channels.

Column 2—discharge through the channels.

Column 3—total discharge at the anicut for each fortnight.

STATEMENT No. II.

This statement gives the fortnightly discharges for the years 1893—1909 at Sriramdevar dam computed from the daily gauge records already sent with the Darbar's letter No. 801/5130, dated 1st July 1913.

Column 1—shows discharges at the dam for each fortnight through the channels.

Column 2—discharge through the channels.

Column 3—total discharge at the anicut for each fortnight.

Note.—Figures for the year 1903 have been computed from records recently found.

For periods for which figures are shown in red records are wanting and the discharges are arrived at by taking an average of the figures against such periods in other years which have a similar rainfall.

STATEMENT No. III.

This shows the discharges from the catchments A and B noted below where for A the actual discharges are taken from Statements I and II noted above and for B the annual discharge is computed as explained below (*vide* accompanying map for areas A and B).

This statement also fixes a proportion between the discharges from A and B.

The whole catchment up to the Kannambadi dam site may be divided into two portions A and B as detailed below :—

1. The catchment above Sriramdevar dam and Alalkatte anicut may be called A marked thus | | | | (in red ink) on map.

The total discharge for any year for A can be found out from the Discharge Statements I and II.

For example, take the calendar year 1905, the total for A would be calculated as under including the discharge through the channel sluices in each case :—

From Alalkatte anicut (*vide* Statement I, column 3)	73,620
From Sriramdevar dam (*vide* Statement II, column 3) ...	55,301
Total discharge ...	128,921

2. The rest of the catchment up to the dam to be called B and shown in the map as | | | | may be considered in three portions, viz.—

(*a*) The portion of Lakshmanthirtha in Coorg, viz., B_1 the Malnad portion.

(*b*) The rest of Lakshmanthirtha, viz., B_2 up to Hunsur.

(*c*) The portion of the common catchment of the three rivers Cauvery, Hemavati and Lakshmanthirtha up to the dam site marked B_3.

The discharge for each of these portions is computed as per specimen table shown below taking the rainfall figures for 1905 from Appendix C :—

Catchment.	Class in Mr. McHutchin's table.	Rainfall in inches for the year.	Percentage of run-off in Mr. McHutchin's tables.	Area in square miles.	Yield for the year in m.c. ft.
1	2	3	4	5	6
B_1	7	68·73	38·95	258	14,802
B_2	5	22·21	9·56	200	938
B_3	4	21·75	8·76	1,298	5,729
Total discharge ..	..	..	..	..	21,470

In the above table—

Column 1—refers to the areas B_1 B_2 B_3 defined above and marked in the sketch.

Column 2—refers to the particular class applying to the case depending upon the rainfall shown in column 3 above (*vide* accompanying statement of run-off percentages given by Mr. McHutchin). For rainfalls of over 60 inches a percentage of run-off proportionate to that of the 60 inch rainfall is taken.

Column 3—actual rainfall for the year 1905 (*vide* Appendix C already sent with the Darbar's No. 747/4929, dated 18th June 1913, to the Residency).

Column 4—gives the factors corresponding to the particular class noted under column (2) above from Mr. McHutchin's statement.

Column 5—gives the area in square miles.

Column 6—the product of 3, 4 and 5 reduced to million cubic feet.

Having found the total discharge for 1905 from A and B as shown, it will be observed that B is 0·1665 times A.

Such factors have been shown for each year in Statement III under item 8.

For purposes of calculation these have been reduced to the nearest approximate simple fractions such as $\frac{1}{4}$, $\frac{1}{5}$, etc., as shown in item 9 of Statement III.

STATEMENT No. IV.

This shows the discharge for catchment B for each fortnight deduced from Statements I and II and the factors as per Statement III.

The factor shown in item 9 in Statement III when multiplied by the known and measured discharge from the catchment A for any fortnight as per Statements I and II would give the corresponding discharge from B for the same fortnight.

Thus discharge for A for the first fortnight of July 1905 including those from channels in each case is as under :—

From Alalkatte anicut (*vide* Statement I, column 3)	6,656
From Sriramdevar dam (*vide* Statement II, column 3)	8,301
Total discharge ...	14,957

Therefore discharge from B for the same fortnight would be $\frac{1}{6}$ of above = 2,493 million cubic feet, where $\frac{1}{6}$ is a factor taken from Statement III, item 9.

In this manner discharges for other fortnights from catchment B are deduced and shown in column 4 for each year in Statement IV.

STATEMENT No. V.

This is simply a compilation from Statements I, II and IV.

From Statements I and II figures in column 1 excluding the discharge through the channels are extracted into this Statement V under columns 1 and 2 respectively and from Statement IV discharge for catchment B are taken from column 4 and entered in column 3 of this statement.

The total discharges at the Kannambadi dam site are shown for each fortnight in each year in column 4 of this statement.

Note 1.—The back readings for Alalkatte anicut are not recorded ; and consequently during the flood season the figures given represent rather too high discharges.

Note 2.—The Alalkatte anicut is about 30 miles from Kannambadi dam site and the Sriramdevar dam is about 60 miles. Also the Malnad area on the Lakshmanthirtha river for which there is a good discharge is about 30 miles from the Kannambadi site. Due allowance has to be made for evaporation in all the three cases to arrive at correct discharges at the dam site.

The exact allowance necessary under Notes I and II can be found by a few years' observations.

CAMP FERN HILL,
28*th July* 1913.

KARPUR SHRINIVASARAV,
Offg. Chief Engineer of Mysore.

Exhibit My. 4.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

Reply of the Madras Government to the statement of the Mysore case presented by Mysore to the Committee of Arbitration on the 21st July 1913.

(Exhibit Ma. 3.)

[*The parts and paragraphs referred to are those in the Mysore case.*]

PART I.—PRELIMINARY.

Paragraph 1.—The Mysore Darbar gave a distinct undertaking in letter No. 347-Pol., dated 26th October 1911, from the Diwan

Rejoinder by the Mysore Darbar to the reply presented by the Madras Government to the Committee of Arbitration on 29th July 1913.

It has been clearly stated in the previous correspondence that wider foundations would be laid. It is referred to here merely as a statement of fact and not as an argument.

(copy attached),* that the fact of the Darbar having built a dam of wider foundations than is necessary for the small reservoir of 11,030 million cubic feet capacity, shall not be brought forward in any future discussion as an argument for the construction of a larger reservoir. It is therefore submitted that the last sentence of this paragraph is entirely irrelevant and is introduced merely as a topic of prejudice.

PART II.—PRESCRIPTIVE RIGHTS OF MADRAS.

Paragraphs 3 and 4.—In the correspondence on the subject the discussion has hitherto been confined to the quantity of water which Madras required under the conditions existing in 1910, but the Madras Government accept the statement that they are entitled to the quantity to which in 1910 they had a prescriptive right.

* *Letter No. 347-Vol., dated 26th October 1911, from the Diwan of Mysore to the Honourable the Resident in Mysore.*

In continuation of my letter No. 328, dated the 19th October 1911, on the subject of the construction of a reservoir on the Cauvery at Kannambadi, I have the honour to inform you that, as desired by the Government of Madras, the Darbar definitely undertake that the fact of their having built a dam of wider foundations than are necessary for the small reservoir of 11,030 million cubic feet shall not be brought forward in any future discussion as an argument for the construction of a large reservoir.

REPLY OF MADRAS GOVERNMENT.

Under this admission of the Darbar Madras have a right to a larger quantity than they claimed originally and they now put forward the following as their claim in lieu of that given in paragraph II of Exhibit Ma. 1:—

"II. The proposals put forward by Madras "are that the regulation of water in the work- "ing of the Mysore Reservoir must be such as "to give to Madras yearly throughout the "period, June to February (inclusive), the "whole flow of the river up to the quantities "specified below:—

"(i) A discharge in the Aganda "Cauvery at the Upper Anicut sufficient to "secure a flow over the Cauvery dam of a depth "of 7 feet, under the conditions existing prior "to the remodelling of the Upper Anicut "between 1899 and 1902.

"(*Note.*—Such discharge under normal "conditions is computed as equivalent to 2,989 "million cubic feet in 24 hours made up of "2,300 million cubic feet passing over the "Cauvery dam and 689 million cubic feet pass- "ing over the old Upper Anicut under the "conditions of that work before remodelling.)

"(ii) This discharge to be measured on "the Cauvery and its tributaries, immediately "above the waterspread of Kannambadi Reser- "voir, and at a station on the Kabbani river "about forty miles above its junction with the "Cauvery.

"(iii) During the south-west monsoon "(June to September) an allowance of 25 *per* "*cent.* on the flow in Mysore to provide for "losses in transmission between Sivasamudram "and the Upper Anicut.

"(iv) During the period, March to May "inclusive, a supply of not less than 900 cusecs "passed without interruption through the left "branch of the river at Sivasamudram."

The modifications made in the demands of the Madras Government are wholly unwarranted. The statement claimed to be an admission by the Darbar is merely an explanation of what is meant by prescriptive right. If the Madras Government had not been enjoying any of the rights claimed continuously for 20 years after 1890, they have no claim to them now. If the Madras Government imply by the statement that more water was used before the remodelling of the Upper Anicut, they have lost the right to such supply since the remodelling took place. Similarly, any special right acquired by Madras after the remodelling cannot constitute a prescriptive right. They must prove that whatever quantity is claimed as due to them has been peacefully enjoyed without interruption for 20 years.

REJOINDER BY MYSORE DARBAR.

The claim to a uniform flow in all the months is untenable (*vide* paragraphs 5 to 13 of the Mysore statement).

The figures given seem to be arbitrary. If a quantity up to 2,300 million cubic feet would suffice for deltaic irrigation of about one million acres, the call for 689 million cubic feet for about one-tenth of this area seems disproportionate.

(ii) This would exclude the replenishment from all the rest of the catchment area measuring over 20,000 square miles out of a total of 26,172 square miles and therefore cannot be accepted by Mysore.

(iii) Mysore refuse to accept the proposal to measure at Sivasamudram or any higher point; so the question of this extra allowance does not arise.

(iv) No reasons have been given for this claim put forward for the first time. The Madras Government have repeatedly stated in the previous correspondence that the entire flow

REPLY OF MADRAS GOVERNMENT.

Under the conditions on which the above claims are formulated, the supply of the Veeraram tank and the lower anicut system is secured and no separate claim on this account is made, and the claim previously made under (II) (*c*) based on the actual existing practice is waived.

The Madras Government do not admit that the second part of paragraph 4 correctly represents the extent of their prescriptive rights. This is in no way limited to the actual extent of land irrigated, or amount of water used, in the three years before and three years after 1890.

PART III.—REQUIREMENTS OF MADRAS IRRIGATION.

Paragraph 5.—This is not a complete statement of Madras claims which are now formulated in the reply to Mysore paragraphs 3 and 4 above.

Paragraph 6.—The fact of the rare occurrence of a flow reaching the limit claimed in certain months, is no argument for depriving Madras of that limit flow when it is received.

Short freshes in the months of low supply have frequently been of the greatest service in saving the irrigated area from severe loss.

The prescriptive right of Madras during the months mentioned is to the whole flow of the river up to the limit claimed, and for this claim there is full justification, and proof of actual use and enjoyment can be adduced.

In the months of November and December a flow over the Cauvery dam at the Upper anicut up to, or exceeding, the limit depth claimed, has been realized on 64 days in the twenty years considered (1890 to 1909). It is thus not correct to say that the depth was "rarely ever reached."

Madras is entitled by prescriptive right to the limit flow claimed whenever available.

Paragraph 7.—The accuracy of the statement made in the first two lines is denied. The statement in the last sub-paragraph is also denied, and the record of discharges of the Cauvery dam fully supports such denial.

In the paragraph quoted from the Madras Cauvery Project report, there is an error in the original, and "one foot" at the end of the fifth line of the quotation should be altered to "two feet."

REJOINDER BY MYSORE DARBAR.

in the river from March to May is placed at the disposal of Mysore. It may be stated here that the summer flow in the river is not 900 cusecs, but is known to go down as low as 94 cusecs.

The new claims formulated have been shown to be untenable in the rejoinder against paragraphs 3 and 4.

It is not denied by Madras that these limits are only very rarely reached and thus are not dependable. Although occasional use may have been made of the extra water, it cannot be established that the ryots base their operations on such undependable supplies in the river. It cannot also be established that every occasional freshet has been actually utilised.

Even 64 (the correct number is 61) days out of 20 years (each of two months or 61 days) form only about five *per cent.* of the period and this cannot be called anything but "rare." In 12 out of these 20 years such a limit has not been reached at all. The Madras Government do not question the statement "that in "January and February the limit was never "reached except for 2 days in 20 years" and yet they do not give up their claim to 7 feet for those months.

The limit from the very nature of things cannot be the same for all the months. To arrive at a fair settlement of the case, it should be based more on general conditions of supply and use in each month than on rare, uncertain or exceptional freshes.

Vide rejoinder to Madras reply to paragraphs 3 and 4.

The quotation is admitted to be correct by Madras. The correction to "two feet" now made is accepted. It only strengthens the view already put forward, viz., that a much larger quantity is now forced down for irrigation than before the remodelling of the anicut in 1902.

Reply of Madras Government.	Rejoinder by Mysore Darbar.
Paragraph 8.—The Government of Madras do not admit that a claim for a certain maximum is untenable because the average is much below the maximum. If the maximum were lowered the average would also fall, and the fact that the average in certain months is very low furnishes an argument for raising, not for reducing, the maximum. The contention of Mysore that the supply of water to Madras should be restricted to, or regulated by, the fortnightly averages is entirely fallacious.	The maximum supply can never be usefully utilised on any particular day when the requirements for that day, say as estimated in the Metur reservoir project, are much less. In fact the requirements of a standing crop on any day are more or less settled and although such a crop may suffer when the supplies available are short, it cannot be established that all the excess over the standard quantity can be usefully utilised. Much of this must run to waste. If by maximum is meant, the maximum quantity really necessary and actually used, then the conclusion would be correct. But if the maximum due to the haphazard high flow is to be taken, then the average resulting from such abnormal flow connot all be useful to a crop. Hence the claim for all flood waters above the *normal maximum required* for a crop is untenable.
Paragraph 9.—The Government of Madras do not admit that their claims should be reduced in periods when the river supply is normally low; the fact that the limit of high supply flow is seldom available in certain months is not a valid reason for depriving Madras of the enjoyment of such a flow, when it does come. The Government of Madras do not admit that the harvest extends from September to February.	The depths of water required for the delta irrigation are based upon such averages in the Madras Metur project. The abnormal and occasional floods over the depths therein provided would be more or less wasted. To make up for the fluctuations, the limit of flow proposed, above which impounding is permissible, has already been taken at 25 to 30 *per cent.* more than the provision made in the Metur project. The point is when the higher floods are rare and uncertain, no real and useful enjoyment can be possible. It would not be "fair and reasonable" to claim such high and more or less unnecessary limits.
As regards allowances for rainfall, it was found impossible in connectien with the Madras Cauvery reservoir project to frame any rules for making allowances for rainfall in the irrigated area.	The passage in the Mysore statement is not correctly interpreted. It may be true that it would be difficult, to frame hard-and-fast rules beforehand. But in practice much can be done by a system of timely notice and regulation especially when the rainfall is more or less continuous as happens during the north-east monsoon. Such continuous rainfall often occurs in the months of October to December in the deltaic area. That this is possible has been recognised by the Madras Engineers themselves as already pointed out in paragraph 9 of the Mysore statement of case.
This area is two days' flow from the site of the proposed Metur dam, and another day is required to pass the water on to the fields; the site of the Mysore reservoir is double the distance of the proposed Madras reservoir from the Cauvery dam.	Although the effect of rainfall on any particular day may be difficult to allow for, still the condition of crops under a more or less continuous or heavy rainfall, as in the north-east monsoon, will indicate to what extent or period the supplies may be reduced in any particular week or ten-day period, and the benefit of the saving of water on such occasions should not be denied to Mysore. In describing the system of cultivation in the delta, the Madras Engineers have admitted that, if there are 4 inches of rainfall in a fortnight, the crops are independent of river

Reply of Madras Government.	Rejoinder by Mysore Darbar.
	supplies (*vide* paragraph 19, page 5, volume I of Metur project). The rainfall records show that there are many such fortnights during the north-east monsoon. If careful observations are made to this end for a term of years, it should be easy to frame rules to enable Mysore to store the supplies set free by rain in the irrigated area. Also, the period of flow, here arrived at by Madras, requires check and confirmation by careful observations for a term of years. But in the light of the above remarks concerning rainfall, the period of flow will not much matter.
The collection and transmission of rainfall statistics would take one day; six days would therefore elapse between the fall of rain and the time when the reduced supplies of water to be passed in consequence of the rainfall would reach the irrigated area. It is considered impracticable to frame rules for allowing a reduction in issue at the Mysore reservoir in consequence of rainfall in the irrigated area.	
Paragraph 10.—The table given in paragraph 8 of the Mysore statement is reproduced below with an additional column (No. 5) showing the depth of flow obtained half-monthly by increasing the allowances made for the Metur reservoir (shown in column 4) by 30 *per cent.* The Madras Government note with satisfaction the reasonable admission made by Mysore, that an addition of 25 to 30 *per cent.* in the quantities of water provided for in the Madras reservoir project (as shown in column 4) should be made on account of the uncertain and fluctuating nature of the supplies under a system of direct flow, and accept this admission which, it is hoped, will prove a great step *towards a settlement of the matter.*	A wrong construction has been put on the original statement. The rules proposed by Mysore make it unmistakably clear that Mysore never meant that they would undertake to supply the total volume due to a continuous flow equivalent to the average depths mentioned. They only agreed to allow a flow *up to that limit* whenever it was available in the river (*vide* clause 1 of the Mysore Rules—Ex. My. 2).

Table from Mysore case with column 5 added.

Months.		Average depths corresponding to average fortnightly discharge.	Average depths corresponding to maximum fortnightly discharge.	Average depths now proposed by Madras in connection with their new project.	Depths representing discharge 30 *per cent.* more than those of column 4.
1		2	3	4	5
June	1st half ..	3·5	5·4	2·9	3·5
	2nd half ..	5·1	6·4	2·9	3·5
July	1st half ..	5·7	7·0	6·1	6·8
	2nd half ..	6·4	7·0	6·1	6·8
August	1st half ..	6·6	8·0	5·9	6·6
	2nd half ..	6·0	7·0	5·9	6·6
September ..	1st half ..	5·6	6·7	5·8	6·5
	2nd half ..	5·2	6·4	4·7	5·1
October ..	1st half ..	5·4	6·9	5·0	5·5
	2nd half ..	5·4	6·6	4·2	4·7
November ..	1st half ..	5·0	6·6	3·8	4·3
	2nd half ..	4·4	6·5	3·8	4·3
December ..	1st half ..	3·9	6·4	3·0	3·6
	2nd half ..	3·0	5·1	1·7	2·0
January ..	1st half ..	2·5	4·6	2·1	2·5

The total quantity of water representing the flow at depths shown in column 5 has been worked out to be 255.628 millions cubic feet in the period 1st June to 15th January, as compared with the total of average flow, according to column 2, of 250,055 millions cubic feet.	
Thus, the average flow of the past twenty years, actually realized under the rules of regulation in force during the period, is between 25 and 30 *per cent.* greater than the supplies provided for in the Madras Cauvery project, and such flow is now admitted by Mysore to be reasonable.	This is not admitted (*vide* rejoinder above).

REPLY OF MADRAS GOVERNMENT.

Paragraph 11.—Mysore reject any claims for the supply of the Lower Coleroon Anicut system of irrigation on the authority of the statement quoted by them from paragraph 11, Volume I, Madras Cauvery Project report.

The fact that the system does not, under ordinary circumstances, receive *any regulated supply under existing conditions* and is dependent, to a great extent, on the surplus of freshes and floods is not inconsistent with a claim for specific supply, when it is proposed altogether to alter *the existing conditions* by impounding, in an ordinary year, a material part of the floods which now feed the system, and in a bad year, almost all the flood water surpluses now passed through the Upper Anicut. It is proposed to cut off the chief source of supply to the system, viz., the surplus water available after feeding the Cauvery Delta System, which is now passed through the Upper Anicut.

To these floods Madras have prescriptive right, and they are the chief source of supply of the Lower Coleroon Anicut System, especially of the Veeranam tank. To compensate for the losses of supply by impounding floods by Mysore, specific allowances for feeding the Lower Anicut System may reasonably be claimed.

A specific allowance was made for the Coleroon irrigation in the Madras Cauvery project * (*vide* the end of the paragraph quoted by Mysore), although no rules for regulation were formulated; the statement made that no allowance has been made is denied. Moreover, any flood impounded in a Madras Reservoir is held impounded at the call of Madras authorities and in the interests of the irrigated lands in the Cauvery and Coleroon deltas. In the case of the Mysore Reservoir the floods will be impounded and diverted to another area altogether.

Under the revised claim now made, a special allowance for the Lower Anicut System is not claimed in consideration of the different conditions on which the revised claim is based.

Paragraph 12.—The foregoing remarks are applicable to the case of the claim made for the Veeranam tank, which forms part of the Lower Anicut System.

The suggestions that the Veeranam tank ayacut, an area of 52, 400 acres, should depend on the catchment area of the Veeranam tank, an area of 95 square miles, is wholly untenable. Even if the catchment had a good south-west monsoon rainfall which it has not, it would require a catchment area of upwards of 1,000 square miles to feed such an area of irrigation and a capacity from five to six times its existing capacity of 1,490 million cubic feet.

The claim advanced by the Government of Madras for occasional additional supplies is fully covered by existing prescriptive right and based on existing practice and custom.

It is admitted that no claim has previously been advanced for a specific supply for the Lower Anicut System, but, the necessity for making such a claim was stated at a very early stage of the discussion—*vide* paragraph 3 of Note by the Chief Engineer for Irrigation, which accompanied letter No. R.O.C. 386 I./10 of 6th December 1910, from the Joint Secretary to the Government of Madras, Public Works Department, to the Resident in Mysore. This states "the Special Superintending Engineer's draw-off tables show "what water can be impounded by Mysore, "and the period during which it may be so "impounded by Mysore, but, as indicated in "his note, *no allowance has been made for Coleroon irrigation, and it will probably be necessary on this account to make a reduction in the quantity of water available.*"

While Mysore were contesting as excessive the tentative figures, based on the ordinary system of regulation, initially assumed for purposes of computation and as a basis for argument, it was obviously futile, and only leading to fruitless controversy, to propose that these should be enhanced.

Although it was known that some provision for the Lower Anicut System would be necessary, it is only, since the decision to submit the matter to arbitration, that the conditions of supply of the Veeranam tank and Lower Coleroon Anicut System have been made the subject of any real study and consideration, and it has therefore only now been possible to advance complete proposals. Under the revised claim now made, no special supply is claimed for the Veeranam tank and the claim to the additional occasional supply is waived.

Paragraph 13.—The Government of Madras do not admit the contention put forward in this paragraph which is based on the fallacy exposed in the reply to paragraph 8.

PART IV.—PLACE OF MEASUREMENT OF SUPPLY DUE TO MADRAS.

Paragraph 14.—The Government of Madra claim that the flow of the river should be measured above the water-spread of Kannambadi Reservoir and at a selected site on the

REJOINDER BY MYSORE DARBAR.

The interference with Coleroon irrigation will be much less under the Mysore Project than under the proposed Madras Metur Project. It is true that it is proposed to guarantee a continuous average flow under the Metur scheme while the Kannambadi Reservoir will give the depths contemplated only when there is a flow in the river. *Per contra*, the limits for impounding in the Mysore Reservoir as noted above are 25 to 30 *per cent.* more; and what is much more important, the interference with the natural flow by the Mysore Reservoir is very much less. For, the Mysore Reservoir will intercept only 4,100 square miles of catchment area while the Metur Reservoir will intercept about 15,700 square miles. Besides, under the Mysore scheme not more than 150,000 acres of new irrigation is contemplated, while under the Madras scheme the extent of new irrigation projected is 355,000 acres.

It is acknowledged in the report on the Madras Project that when the supplies to the Cauvery delta system are adequate, no *separate* allowance is necessary for Coleroon irrigation. If suitable provision for delta irrigation is made, it *ipso facto* covers the needs of Coleroon irrigation as well.

This refers to a claim made very recently by the Madras Government and now withdrawn. No explanation or comment seems necessary. It may, however, be observed that the Madras Government have, from the commencement, been asking for a percentage addition to the supply actually drawn off in the past at the Cauvery dam (Upper Anicut). But it is a noteworthy fact that the additional claim was at one time 10 *per cent.* This was suddenly raised to 25 *per cent.* with a further addition of 66 million cubic feet daily for the Veeranam tank, and from the figures now given (2,300 and 689 million cubic feet) it is nearly 30 *per cent.* The reasons for this extra claim have been variously stated at various times. First, it was stated that this was required for the lower irrigation. On another occasion, it was to cover transmission losses between Sivasamudram and Cauvery dam. Now, Veeranam tank has been brought in for the first time besides the Coleroon irrigation. Statements made on such shifting grounds cannot be admitted.

Mysore have done their best to meet the claim of Madras by suggesting methods of regulation. It is true that the limits of flow at the Cauvery dam, above which Mysore may impound, have been indicated with reference to the fortnightly averages, as this seems to be a fair and reasonable basis to go upon. As a set-off for the uncertainty of the supplies, the Darbar have proposed an addition of 25 to 30 *per cent.* to the project quantities to determine the limits. The fact must also be taken into consideration that although Mysore may be enabled to impound above the limits indicated at the Cauvery dam, yet the quantity that can be actually impounded would be limited to the flow available at Kannambadi. For, only one-seventh of the catchment area will be actually intercepted at Kannambadi and the flow from six-sevenths of catchment would be still available at the Cauvery dam. If the Madras claim to all rare and uncertain floods, as they actually came in, in the past, is to be admitted, there will not be much scope for any progress towards a settlement. Such a claim would render Rule III of the Agreement of 1892 inoperative. Besides, on an average, about 30 *per cent.* of the yield at the Cauvery dam admittedly goes to the sea; and Madras have not shown that they have been using it and they would not be justified in placing obstacles in the way of Mysore doing so.

The Mysore statement that the Bhavāni discharges are incorrect was only to the extent now admitted by the Madras Government themselves, namely, that the "records of flow

* Paragraph 11, Volume I, Madras Cauvery Project Papers

REPLY OF MADRAS GOVERNMENT.

Kabbani. Allowances of 25 *per cent.* for losses in transmission between Sivasamudram and the Upper Anicut are claimed during the south-west monsoon. The Madras discharge records of flow at Bhavāni Bridge are reliable, except for high floods and discharges below 1,000 cusecs. This is stated in paragraphs 29 and 30, Volume III, Madras Cauvery Project Report.

The bed of the river at Bhavāni Bridge is rocky and not liable to scour, and the discharges are liable.

The statement that the discharges are unreliable is now made by the Mysore Government for the first time and they are put to the proof of this statement.

It is noted that Mysore admit that the discharges at the Cauvery dam are reliable. Those at Bhavāni Bridge are equally reliable.

As regards the gaugings of discharge at Sivasamudram, a statement of these was furnished by the Darbar to the Madras Government, and put forward as accurate, except for flood discharges, as lately as the 31st March last, by the Diwan of Mysore in his letter No. 838-Pol. of 31st March 1913, paragraph 2, which runs as follows: "with "reference to paragraph 2 of the Madras "Government letter, I may point out that "there are accurate records of discharges both "at Sivasamudram and at Bhavāni Bridge for "more than nine years."

These discharges have been used as the basis of arguments throughout the discussions which have taken place, and are the only basis of the Mysore proposals, so far as concerns the safeguarding of Madras supplies.

They have also been used as the basis of the Madras case as regards comparison of discharge records for computing losses in transmission and show that the occasional losses are great.

It is now stated that for gauging "high floods" the site is unsuitable, and this is admitted.

It is, however, also stated in contradiction of everything previously put forward that "the past records of gauge-readings are unreliable." Such a statement appears to foreshadow a repudiation by Mysore of the discharges based on gauge-readings at Sivasamudram, that is, of all the discharges furnished to Madras, notwithstanding the Diwan's admission that these discharges were accurate except for high floods.

This sudden repudiation of gauge-readings as "not reliable" cannot be acquiesced in by Madras in view of the previous statements officially made by Mysore, that the discharges based on these gauge-readings are "accurate."

Paragraph 15.—The Madras claim is for a measurement of the flow of the Cauvery above Kannambadi, and on the Kabbani, with an allowance of 25 *per cent.* for *net* loss in transmission during the south-west monsoon.

REJOINDER BY MYSORE DARBAR.

"are reliable except for high floods and discharges below 1,000 cusecs." Correct *flood* records are a vital matter for purposes of the Mysore case.

Mysore admit that they were under the impression that the records of discharges both at Sivasamudram and Bhavāni Bridge were fairly accurate. But, on a recent examination of the figures, it has been found that the discharges at Sivasamudram were over-estimated, while those at Bhavāni Bridge are admittedly under-estimated for floods. In these circumstances, the inference to be drawn regarding the transmission losses may be the very reverse of what is assumed by the Madras Government. That Mysore have all along been consistent in their arguments will be clear from their reiterated demand that whatever decision may be arrived at now should be put to the test for a period of six years by reliable observations made for the purpose.

It may be pointed out that some of the contentions of the Madras Government in this paragraph are obviously self-contradictory.

The Madras claim being based on incorrect discharges both at Bhavāni Bridge and Sivasamudram, as admitted in their reply to paragraph 14 of the Mysore case will require material modification as stated already. An

REPLY OF MADRAS GOVERNMENT.

In working on the system proposed by Mysore based on measurements at the Upper Anicut, losses in transmission on compensation water, passed to make up excess balances impounded by Mysore, will still be necessary.

The percentage in this case is, however, not the same, and 30 *per cent.* on the quantity of compensation water would in such a case be required to provide for such loss.

PART V.—SYSTEM OF REGULATION.

Paragraph 16.—It is for Mysore to put before the Arbitrator the proposals and details of their project fully and clearly. So far as Madras is concerned, the most important item of the Mysore project, and the one which must be adjudicated on before all others, is the method of regulation.

It is for Mysore to state clearly and fully the system of regulation proposed for their project.

It is not for the Arbitrator to "devise" the system of regulation of the Mysore project, but to adjudicate on the system proposed by Mysore, or in the alternative on the proposal of the Government of Madras, making such amendments in matters of details as may appear to him necessary.

Paragraph 17.—It is denied that water ever passes from Kannambadi to the Cauvery dam in one day, which is equivalent to a mean velocity of 14 feet per second or 9·66 miles per hour.

In saying that Mysore should be enabled to store all water "in excess of that to be given "for irrigation at the Cauvery dam," the Darbar ignores the obligation to supply the 95,000 acres of Madras irrigation above the Upper Anicut. This area alone is about 65 *per cent.* of the area proposed to be irrigated under the Mysore project and is certainly not a negligible quantity.

Mysore may suffer from the circumstance which fixes the site of their reservoir at so great a distance up the river from the bulk of the Madras irrigation, but this is no ground for adopting a remedy which would entail continuous risk of loss, and not infrequent actual loss, to Madras.

Paragraph 19.—It is denied that, in a stage of river discharge which limits the maximum flow to a "depth of 6 or 7 feet" at the Cauvery dam, the mean velocity of flow is 7 feet a second (4·83 miles per hour), which is what is necessary for transmission of the supply in two days, and the Mysore Government are put to the proof of this.

REJOINDER BY MYSORE DARBAR.

examination may establish a conclusion quite the reverse of that drawn by Madras.

Whatever losses there may be when small quantities of water are sent down a river or a canal for purposes of irrigation when the bed is likely to be dry, the additions to the waters of a river, for the compensation referred to, cannot suffer material losses in transmission, considering that impounding is done during flood time when the river has a fairly good flow.

The function of the Arbitration Committee in the present case is quite clear from clauses III and IV of the agreement of 1892, viz., to determine "the existence, extent and nature "of such prescriptive right and *the mode of* "*exercising it*" consistently with what is "fair and reasonable." Having regard to this provision, the contention of the Madras Government cannot be sustained.

In high floods such as occurred in 1911 it is still believed that the velocity will be very high and that the time of flow will be nearer one day than two.

The rules for regulation already put forward make it clear that due allowance is automatically made for the intermediate irrigation since the depths measured at the Cauvery dam will represent the net supply after satisfying the needs of the irrigation above the Upper Anicut. This has been also made clear in paragraph 15 of the statement of Mysore case. The statement here advanced by Madras is clearly a misapprehension.

It may be here stated that the area of intermediate irrigation was first given as 61,500 acres, and the same figure is also mentioned in the Mettur project, and recently it has been raised to 95,000 acres.

The system of measurement at the Cauvery dam and the method of regulation already proposed by Mysore would be fair to both parties as all such alleged "not infrequent losses" can be effectively prevented. Due allowance would be made for all intermediate replenishment from the numerous tributaries flowing both in the Mysore and the Madras areas between the Kannambadi reservoir and the Cauvery dam.

The Mysore statement has not been correctly interpreted in this matter.

Reply of Madras Government.	Rejoinder by Mysore Darbar.
For the stages of flow which will rule when the Mysore reservoir is under regulation, allowance for time of transmission which will fairly meet the circumstances of the case is considered to be $3\frac{1}{2}$ days, and Madras is prepared to adduce evidence in support of this proposition.	The flow within Mysore territory is very rapid whatever it may be in Madras. The average assumed by Mysore is believed to be correct. But they have always favoured a period of test before the proposals are finally accepted.
The second part of this paragraph is not understood, but it is denied that in the months of July and August the local rainfall near the Cauvery dam produce floods.	The local floods referred to related to the copious flow coming from the Bhavāni and other streams producing floods in the south-west monsoon.
Part VI.—Proposed regulation to be tentative.	
Paragraphs 20, 21 and 22.—The Madras Government most strongly oppose a tentative settlement. They demand that rules for regulation at the Mysore reservoir and the water supplies to be passed to Madras should be settled now.	The Mysore Government agree that final settlement should, if possible, be arrived at on the present occasion. But as the data on which the Arbitrator has to form an opinion are admittedly insufficient and in some cases known to be incorrect, the decision should be subject to confirmation after a period of six years. This is as much in the interests of Madras as of Mysore.
Further, they demand full examination of the proposals for the larger project proposed by Mysore, and a decision regarding the refusal of assent by Madras to the proposals put forward. The Government of Madras press for a final decision as to whether the large reservoir proposed by Mysore may be built or not.	As regards the question whether the larger reservoir proposed by Mysore may be built or not, it is necessary to state that the question before the Arbitrator is not whether the reservoir should be large or small, or whether the reservoir should be built or not. The real question is what is the quantity of water available for impounding in Mysore after satisfying the prescriptive right of Madras already acquired and actually existing. This aspect of the case cannot be too strongly emphasised.
In the interests of Mysore as well as Madras a final settlement of this question is most desirable, so that it may be known definitely what dimensions are required for the dam at Kannambadi, on which work has already been commenced. The arbitration in progress has been ordered by the Government of India with a view to a definite and final settlement of the matters at issue. The Government of Madras demand that the decisions of the Arbitrator shall be a final and binding settlement of the questions involved.	
The Mysore Darbar have had this project in view for many years. In his letter No. 869, Pol. of 27th March 1911 to the Resident, a copy of which was forwarded to the Government of India with the Resident's letter No. 2053-E.I. of 3rd April 1911, the Diwan states as follows: "For many years the Mysore "Government have intended to construct a re-"servoir on the Cauvery for developing irriga-"tion in the valley."	
It was obviously under such circumstances the duty of Mysore to make suitable gaugings and measurements of discharge during these many years, and to some degree they appear to have done so. It is not open to Mysore to claim postponement of settlement on the ground of the inaccuracy of such measurements, until now described by them as accurate. On most of the points to be decided, postponement for six years would not result in production of any more relevant or reliable facts than will be now at the disposal of the Arbitrator, while *data* collected specially to prove one proposition or another would even, if sufficient, be open to suspicion.	Mysore do not admit that any further information to be collected will be open to *suspicion*.
On the matter of quantity of water to which Madras had in 1910 prescriptive right, evidence taken now must be better than evidence	There is no objection to the settlement of the prescriptive right now; but any hydraulic Engineer of experience will bear out the view

Reply of Madras Government.	Rejoinder by Mysore Darbar.
taken at the end of six years. Accordingly a final and binding decision is pressed for.	of the Darbar that such large questions connected with regulation of supplies cannot be settled finally without a correct observation of discharges and collection of the necessary data.
In six years' time there will be little or no more information available as a guide to drawing up rules for fixing the system of regulation.	The principles of regulation may be settled now and their application also provisionally; but a final confirmation should be deferred till their efficacy is duly tested.
The matter of losses in transmission is, it is admitted, a complex one, but such losses can only be computed on consideration of the results of bad years. The nine years, regarding which gaugings are available, include three bad years, and it is improbable that a period of six years would give better information in this respect.	
The Government of Madras ask for decisive, final, and binding decisions on the points at issue.	
Part VII.—No outside Interference with distribution of water.	
Paragraph 23.—The Government of Madras claim no right of interference with the "internal distribution" of water in Mysore territory, meaning by this the distribution of the water to the enjoyment of which it is decided that Mysore has a title.	The principles stated in the first two clauses are fully accepted by the Mysore Government provided that, after once the supplies due to Madras according to prescriptive right are settled, the Madras Government undertake to give full particulars whenever their irrigation is extended, necessitating additional draw-off from the river.
The Government of Madras do, however, insist on their right to such limited interference as may be necessary to secure that the rules for the regulation of impounding in and issues from Kannambadi reservoir are duly observed.	
The Government of Madras, however, claim that full detail of the scope and character of the project proposed by Mysore shall be communicated to them and laid before the Arbitrator.	
The points on which information is required in addition to what is included in the printed book describing the Mysore project are noted below:—	
(*a*) A statement of the proposed half-monthly "draw-off" for all irrigation channels taking off from the reservoir.	(*a*) A rough statement as far as it could be compiled at this stage has been already supplied (*vide* No. 239, dated 10th September 1911, from the Diwan to the Honourable the Resident in Mysore).
(*b*) A statement of the proposed half-monthly "draw-off" of each of the Mysore channels below the dam existing or proposed which will be fed from water issued from the reservoir sluices.	(*b*) Existing irrigation below Kannambadi dam for which no regular draw-off tables are maintained amounts to about 40,000 acres. Due allowance will be made in the calculations for discharge through the sluices for any increase in this area.
(*c*) A "duty table" showing draw-off per acre proposed half-month by half-month for the channels— (i) taking off from the reservoir; (ii) taking off below the reservoir and fed from the reservoir sluices.	(*c*, *d* & *f*) This information will be supplied before additional irrigation is actually begun.
(*d*) Statement of areas, and seasons of "draw-off," as regards each of the above channels separately stated with respect to— (i) Monsoon crop. (ii) Dry season crop. (iii) Crops requiring perennial supply.	

Reply of Madras Govt.	Rejoinder by Mysore Darbar.
(*e*) Areas and details of any proposed extension of irrigation above the reservoir, rendered practicable by supplying existing irrigation below the reservoir from it.	(*e*) According to the terms of 1892 Mysore has full freedom to extend irrigation by anicuts unless such irrigation is directly fed by a reservoir.
(*f*) The maximum discharge which each new channel taking off from the reservoir is to be designed to carry.	
(*g*) Rules for regulation of the reservoir regarding issue of water to Mysore irrigation and restrictions imposed so as to absolutely secure an uninterrupted full supply to the power installation.	(*g*) Mysore reserves full power to alter the quantities issued for power or irrigation according to the relative exigencies of demand.
(*h*) Full details of allowance made for reduction in reservoir capacity by deposition of silt, and of the number of years it is computed such allowance will enable the original effective capacity to be maintained unimpaired.	(*h*) This is not a matter in which Madras is concerned.
(*i*) Tables of daily discharges past Kannambadi as such are necessary for investigating the effect of the Mysore "Rules for Regulation of the Reservoir" on the Madras existing irrigation.	(*i*) Daily discharges based on actual daily gauging at the dam site are not available. But fortnightly discharges calculated from the gauge-readings, available, have been supplied, with full details explaining the methods of computation.
Full details of the methods of computation of the discharges and data on which these tables are based should be furnished, the details being sufficient to enable all such computations to be verified by Madras officers and by the Arbitrator.	
(*j*) The Darbar should also furnish full engineering particulars concerning the dam, its sluices, surplus works and all works which may affect Madras, and designs of the same.	(*j*) All that is really needed is given in the printed project already.
As regards the last lines of the Mysore statement, paragraph 23, it is not clear to what restrictions Mysore is referring.	
As already stated, the Madras Government do not wish to interfere with the distribution of the water which Mysore may be held by the Arbitrator to be entitled to use.	
As regards the construction of reservoirs or other irrigation works, Rule VI of the agreement of 1892 imposes on Madras similar restrictions with reference to streams flowing through Madras territory into Mysore.	The restrictions as per agreement are really effective only as against Mysore. Mysore being generally a table-land situated on a higher level than Madras, the restrictions against Madras in the agreement are merely nominal.
Part VIII.—Supply due to Mysore.	
Paragraph 24.—The statements in this paragraph are irrelevant to the matter at issue.	The statements are relevant to this extent, viz., that Mysore cannot submit to restrictions while Madras is left free to extend its already disproportionately large irrigation. No agreement can be considered equitable which enforces obligations and restrictions on one party, while the other is not only not hampered but is left free to extend its prescriptive rights.
Part IX.—Creation of new Prescriptive Rights undesirable.	
Paragraph 25.—The statements are irrelevant.	The relevancy has been pointed out in the rejoinder to the previous paragraph.
Paragraph 26.—The Government of Madras entirely repudiate the suggestion put forward in the first two lines.	It has already been pointed out in the rejoinder to paragraph 20 above that the agreement is onesided as it leaves Madras free to do what it likes in the way of irrigation extensions which will eventually tend to render all future extensions in Mysore impossible. The Mysore

Reply of Madras Government.	Rejoinder by Mysore Darbar.
	Government have therefore specifically raised an issue on this matter for decision by the Arbitration Committee.
Paragraphs 25 and 26 introduce matters which are altogether outside the scope of the present reference and should therefore be dismissed from consideration.	
Part X.—Other points for consideration.	
Paragraph 27.—The Government of Madras claim that no infringement whatever of Madras existing rights shall be permitted.	Mysore has no intention of infringing the existing prescriptive rights of Madras; but they are most anxious that the Madras Government shall not be allowed to indefinitely trench upon their natural rights to the use of water in their own territory.
Paragraph 28.—The statement made is denied.	This statement is based on a communication from the Joint Secretary (Irrigation) to the Government of Madras, dated the 12th November 1910, to the Honourable the Resident; extract from which runs as under:— "Also, as the British Cauvery Project is completely worked out and just about to be submitted to the Government of India, the Madras Government desire, before submitting it, to know the probable effect of the Mysore Project upon it."
Paragraph 29.—The fact that Madras may possibly construct a reservoir at Metur hereafter is wholly irrelevant to the arbitration. The Madras Government deny that the construction of such a reservoir would afford just ground for reducing the amount of water to which they are now entitled. The Madras Government have full liberty to deal as they please with the water to which they have a prescriptive right, and it cannot for a moment be admitted that the Mysore Darbar has any right to benefit by works constructed by the Madras Government. Moreover, construction by Madras of works on the Cauvery below the Mysore frontier is not covered by the agreement of 1892 and is wholly irrelevant to this arbitration.	The reason why Mysore claim a modification in their favour when the Metur Reservoir is constructed, is that the conditions under which the prescriptive right is claimed will be changed. Madras is entitled to the supply of water for its existing irrigated area, and when a reservoir comes to be built, this supply would naturally be less than what it is under the present conditions.
Paragraph 30.—It is denied that the flow realised in the month of June up to the limit of flow claimed is "mostly allowed to run into "the sea." In the Madras Cauvery Project, to which reference is given, the remarks alluded to are made by a revenue officer who had not access to the water registers and who qualified the whole paragraph with the initial remark "I have heard it said."	This denial is contradicted by the following extract taken, not from a Revenue Officer's statement, but from one made by Col. Ellis, Special Superintending Engineer in charge of the Madras Cauvery Reservoir Project:— "The seed beds are usually watered either by early freshes in the river or "water is obtained for them by baling from "wells or spring channels. Any water in the "river in excess of what is necessary for the "seed beds before the time of transplantation "*generally runs to waste* as the ryots object to "using it on their fields or wetting them until "just before transplantation. They prefer the "ground to remain dry and get thoroughly "ærated." And Col. Ellis proceeds to say in the next paragraph that transplanting the double crop area of only about 90,000 acres is taken up after the early freshes which generally commence on the 18th June and that transplantation in the single crop area of about 900,000 acres is taken up in July or August.

REPLY OF MADRAS GOVERNMENT.

Paragraph 31.—This appears to be a plea to respect the prescriptive rights of Madras in certain years when water is plentiful, and to ignore them in bad years. The Madras Government altogether repudiate such a suggestion, and insist that Mysore must be bound by her obligations to respect Madras prescriptive rights throughout every year, no matter what its character.

PART XI.—TERMS OF REFERENCE AND CONCLUSION.

Paragraph 34.—The statements in this paragraph are irrelevant.

Should the Government of Madras undertake the construction of a reservoir on the Cauvery, such construction will in no way diminish their prescriptive rights, or their title to whatever water may now be decided to be justly due to them.

Paragraph 35.—Sufficient reasons for refusing assent to the Mysore Reservoir have been given to the Government of Mysore with the original refusal. The further reasons subsequently put forward strengthen the Madras case.

The Government of Madras believe that they have furnished ample justification of their refusal to assent to the construction of the proposed work.

If the water to which they are entitled is passed down, there is strong reason to believe, from the data so far available, that the Mysore project must fail, and the Darbar should therefore not be allowed to carry it into execution.

The existence of such a work would be a serious menace to the Madras Irrigation of over one million acres, since in years of short supply there would be risk of a breach of the rules for the regulation of impounding, owing to the pressure which is bound to be brought to bear on those controlling the impounding.

CONCLUSION.

The Government of Madras do not admit any statement in the Mysore case which has not been expressly admitted above.

REJOINDER BY MYSORE DARBAR.

The remark "I have heard it said," attributed to a Revenue Officer, applies to quite a contrary statement. The passage establishes that the early freshes in June are really wasted as stated by Mysore.

The Darbar wish to repeat that it is nowhere usual in designing such reservoirs to limit their capacity to the yield of the worst years only. Also, it must be clearly stated that when once the rules for regulation are framed with due reference to the prescriptive right of Madras, they will be strictly adhered to, whether in good or bad years. The Darbar repudiate the insinuation here made by Madras.

The Darbar wish to bring to the notice of the Arbitration Committee that the existing irrigation rights enjoyed and the rights conferred by the Agreement of 1892 are unduly favourable to Madras at the expense of Mysore.

The Government of Mysore are fully satisfied that their reservoir project will not fail if proper arrangements are made for storing water not required by Madras by prescriptive right.

The statement that the Mysore Government would allow a breach of the rules under pressure or otherwise is wholly unwarranted. When a decision is finally accepted by them, the Darbar are fully resolved to carry out their share of obligations to the letter.

CONCLUSION.

The considerations set forth in the rejoinder but strengthen the following conclusions and recommendations in the original statement of the Mysore case:—

(1) The first question for the Arbitration Committee to decide is the prescriptive right of Madras, *i.e.*, the area of irrigation which is entitled to a supply from the river.

(2) The second question is the determination or fixing of the depths of water required in each fortnight or month for the existing irrigation to which Madras may be considered to have a prescriptive right as in (1) above.

(3) The third point is the manner in which the river supply should be controlled and regulated to secure the supply due to Madras, as determined by (1) and (2) above, while affording facilities for impounding the remaining river supply in Mysore.

REPLY OF MADRAS GOVERNMENT.

Reply of Madras as regards "Provisional Rules for working the Mysore Reservoir" handed in to the Arbitration Committee on 26th July 1913 (*Exhibit My.* 2).

1. The Madras Government cannot assent to the proposals in paragraph 1 of the Mysore rules.

The flow limits at the Cauvery dam which Mysore suggest as the supply which will satisfy the existing prescriptive rights of Madras are altogether inadequate and do not give to Madras irrigation a supply even approaching in volume that admitted by Mysore to be reasonable in paragraph 10 of the "Statement of the Case for Mysore."

2. The system of control of regulation described in the Mysore rules 2, 3, 4, 5, 6, and 7 is exactly similar to that proposed by the Diwan of Mysore in his letter No. 11-Camp of 10th May 1912 (Exhibit Ma. 1-*a*) alluded to in the Madras Statement of Case (Exhibit Ma. 1) with the exception that the limit supplies, instead of being 26,700 cusecs, are as shown in paragraph 1 of the new rules, while the period during which Mysore is to be permitted to impound all flow is now fixed as commencing on the 1st February instead of on the 1st March as proposed in the previous rules above specified. Both these deviations are open to still greater objection than the rules originally proposed.

These rules are as regards Madras supplies much more unfavourable than those referred to and rejected in the Madras statement (Exhibit Ma. 1), and cannot, for reasons already given in Exhibit Ma. 1, be accepted by Madras.

3. The effect of paragraph 8 of the rules is to give to the Mysore Officer in charge of the works at Kannambadi extensive discretionary powers to depart from the rules for impounding.

The Madras Government object to any discretionary power being given to deviate from any rules which may be decided on for ensuring the passing of suitable supplies to Madras.

REJOINDER BY MYSORE DARBAR.

(4) The fourth point is to consider for what period the decision under (3) above should be tentative for purposes of verifying the data on which the decision may be based.

The Mysore Government earnestly hope that the decision of the Arbitration Committee may, as far as practicable, have the vital element of finality. The rules defining the respective rights should be simple and effective, and framed on broad lines, so that opportunities of friction and disagreement between the two Governments in the future might be minimised, or avoided altogether, and that each party may be left unfettered to develop its natural resources.

If, in this view, it be found necessary to modify the Agreement of 1892, the Arbitration Committee should not, it is submitted, hesitate to suggest and recommend the necessary modifications in that document.

1. This has now been fully explained in the Rejoinder against paragraphs 3 and 4.

2. These objections have been fully explained in the Rejoinder.

The change from 1st February to 1st March in the rules of May 1912 was made by Madras.

3. The discretion extends only to the quantity that is available at the Kannambadi Reservoir site and one of the effects of the telegraphic communication would be to prevent excess storage, a factor favourable to Madras.

No deviation from the rules will be allowed.

REPLY OF MADRAS GOVERNMENT.

4. In addition to the objections above stated, the rules are considered impossible to work either smoothly or efficiently and are also open to the other objections set forth in the reply of Madras to the Mysore statement of their case (Exhibit My. 1) submitted on the 21st July.

W. M. ELLIS, COL., R.E.,
Representative of the Government of Madras.

REJOINDER BY MYSORE DARBAR.

4. All this is fully answered in the Rejoinder.

KARPUR SRINIVASARAV,
Offg. Secy. to the Govt. of Mysore, P.W.D.

Exhibit My. 5.

Cauvery Reservoir Project Report of Mysore (not printed separately with these exhibits).

Exhibit My. 6.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

PART I.—THE TRUE INTERPRETATION OF THE AGREEMENT OF 1892.

SECTION I.—PRELIMINARY.

Previous history.—Before discussing in detail what is the exact interpretation to be put on the Agreement of 1892, it seems necessary to indicate, however briefly it may be, the circumstances which led to that agreement.

After the province was taken over under British management in 1831 and during the fifty years of British Administration thereafter, an active Public Works policy was pursued. In the year 1854, the Court of Directors strongly urged the execution of "such works of unusual magnitude and importance as might appear calculated to promote, in the largest degree, the development of the resources of the country."

Following the above advice, a regular Public Works Department was soon after organized and a scheme for developing the irrigation of the State formulated in 1866. As a result of the active policy then inaugurated, many old tanks were restored and new ones constructed, up to the great famine of 1876-77, when, on account of the disastrous effects of the famine on the general resources of the State, it became necessary to put a stop for a time to all but the most insignificant works.

The policy of restoring old tanks and constructing new ones was revived by the Darbar after the Rendition, in pursuance of the fulfilment of the original intentions of the British Government. It was after the commencement of the construction of three new tanks was undertaken in the Kolar district that serious difficulties were raised about the year 1889 by the officers of the Madras Government.

2. *Agreement of 1892.*—A preliminary conference of the Madras and Mysore officers was then held at Ootacamund in 1890. The officers of the Madras Government having assumed an uncompromising attitude by stating that every irrigation work in Mysore of any consequence required their previous consent, all hope of an amicable settlement had to be given up. It was then that the late Sir K. Seshadri Ayyar appealed to the Government of India by forwarding a memorandum explaining the whole case with his letter, dated the 10th June 1890 (Appendix A). After protracted correspondence and discussion, the Government of India preferred that the matter should be settled, if possible, by some understanding between Madras and Mysore. The Darbar again made endeavours in conference with the Madras Government to arrive at an amicable understanding regarding future irrigation operations, so that "controversy might be obviated in respect of individual works and a sphere of operations declared, in which Mysore projects would be absolutely untrammelled." The Agreement of 1892 embodies the result of this understanding.

3. *Sir K. Seshadri Ayyar's Memorandum.*—With a view to explain clearly the object and scope of the agreement, Sir K. Seshadri Ayyar drew up a further memorandum on the subject in 1899. This has already been submitted to the Arbitration Committee as Mysore exhibit (My.-2A). The memorandum of June 1890 with the forwarding letter to the Resident and the note of 1899 present a very complete and cogent exposition of the Agreement of 1892 and the Darbar submit that the opinions expressed by one who took a prominent part in framing the agreement cannot but be entitled to great weight at the hands of the Arbitration Committee in arriving at a correct interpretation of that document.

A perusal of these papers will show that the main object of the Agreement of 1892 was to allow the State to proceed unhampered in the development of their irrigation schemes by securing "*an arrangement best calculated to avert the consequences of serious loss to the British Government without checking the legitimate and reasonable progress of the irrigation works of Mysore*". It is in this spirit that the various clauses of the agreement have to be considered and interpreted.

4. *Recent irrigation developments.*—Recently, in accordance with the recommendations of the Irrigation Commission in 1903, the possibilities of constructing large storage reservoirs to impound the rainfall from the Western Ghauts and make it available for irrigation in regions of scanty rainfall, have been systematically investigated in Mysore, as in other parts of India, and the Cauvery Reservoir Project has been selected as one demanding the first attention.

But the Agreement of 1892 acts somewhat as a bar against Mysore adopting the policy laid down by the Irrigation Commission, while it gives free scope to Madras to develop her reservoir schemes on the Cauvery or other connected rivers. The agreement has already subjected Mysore to inconvenient and harassing restrictions. What is more, every project pushed on and completed by the Madras Government creates additional prescriptive rights *for them and against Mysore*, so much so, that if no effective steps are taken immediately by the Darbar to utilize its natural advantages to the fullest extent now possible, the hope of building any large reservoirs in future will have to be given up. While each British province would be free to follow the policy laid down by the Irrigation Commission in 1903, Mysore alone would be left in the background, because an agreement brought about eleven years previous to that date would be quoted as a bar against every reasonable development.

5. *Correct interpretation of agreement.*—From the very outset it has been recognised that the relative rights of the two Governments cannot be decided on purely legal and technical grounds. It was with this view that clause 3 of the agreement lays down that disputes connected with individual works should be settled "in accordance with what is fair and reasonable under all the circumstances of each individual case." As already stated in paragraph 23 of the Mysore case, the Agreement of 1892 gives Mysore full freedom to utilize whatever supply is not required by Madras to satisfy actually existing prescriptive rights. It is for the Arbitration Committee to devise a method by which this freedom can be exercised by Mysore without materially infringing on the rights of Madras.

SECTION II.—EXAMINATION OF THE LEGAL ARGUMENTS OF MADRAS.

6. *Law of prescription.*—As regards the legal aspects of the case, it is agreed on both sides that the Agreement of 1892 should be the basis of decision. Many of the arguments advanced and the views urged in the statement of legal arguments put forward by Madras are therefore of little importance, and in some cases merely of academic value.

7. Mysore do not dispute the position taken up in paragraph 4 of the Madras case, namely, that it would be sufficient to determine the rights of Madras as legally acquired and actually existing in 1910.

8. In paragraph 6, some remarks are made about the relative importance of the two questions which have to be decided by the Arbitration Committee. As it is conceded that both the questions have to be decided, the distinction made is not of much significance. Whether as a subordinate or a principal question, the extent of the rights of Madras has to be determined, as on it depends the answer to the question whether Madras is right in objecting to the construction of the new reservoir.

9. The observations in paragraph 7, about the meaning of the terms in rule III of the Agreement of 1892, put a strained construction on the passage which Mysore do not accept. Even in deciding the exact meaning of an agreement and in interpreting law, which is fair and reasonable cannot be disregarded

The contention of Mysore is that the extent of the prescriptive rights of Madras must be decided on the bases of (1) the law of prescription and (2) what is fair and reasonable. Both these are laid down in clause III of the Agreement of 1892 and there is no warrant for arbitrarily distributing the two parts of the expression, namely,—

> "being in every case determined in accordance with the law on the subject of prescriptive right to use of water and in accordance with what is fair and reasonable under all the circumstances of each individual case,"

between two parts of the previous phrase, namely,—

> "the existence, extent and nature of such right" and "and the mode of exercising it."

Such an interpretation is opposed to the ordinary rules of grammatical construction, and the framers would easily have used more suitable phraseology, if their meaning was what the Madras case suggests. It is further most important to remember that the question of the extent of a right is one of *mixed law and fact*, the province of each of them being separate. The test of "what is fair and reasonable" has to be applied in determining the question of fact on which the extent of the prescriptive right depends and this can be done without coming into conflict with law. Hence the question raised in paragraph 7 by Madras, "what is to happen if the two criteria differ," need not be seriously considered.

10. Mysore do not rely on any unlimited natural right at all in this particular case, as the Agreement of 1892 is the basis on which this controversy has to be decided. It is therefore considered unnecessary to notice in detail the observations and arguments contained in paragraphs 9 to 16 of the Madras case. Though there is no statute in force dealing with easements generally, sections 26 and 27 of the Limitation Act dealing with the subject of acquisition of easements by prescription have long been in force in Mysore also and there can be little doubt that this fact was in the mind of the framers of the agreement in question.

After the Agreement of 1892, it is of little use to consider what the rules of International Law and the law of Riparian Rights are on this question, whatever their force, if the question had to be decided independently.

That the "law of prescription" was meant to be the governing principle is clearly shown by the course of previous controversy that led to the agreement in its final form. The Government of Madras wished to eliminate from the original draft the expression "in accordance with the law on the subject of prescriptive right to use of water." But the Mysore Government replied that "to eliminate from rule III the words 'in accordance with the law on the subject of prescriptive right to use of water' would be to acknowledge that the Madras Government in considering the existence, extent and nature of a prescriptive right to be possibly affected by a proposed Mysore work could set aside or refuse to be guided by the law on the subject." (Extracted from demi-official letter, dated 30th July 1891, from the Secretary, Public Works Department, Mysore, to the Secretary, Public Works Department, Madras.) The retention of this passage was thereupon agreed to by Madras in a demi-official letter, dated 6th August 1891, from the Secretary, Public Works Department, Madras.

11. It should also be noted that the rules deduced from the usage of countries in which irrigation is of no account cannot be applied without qualification to this country, where it is of such paramount importance.

The argument that Madras had rights prior to 1892, and that all their rights were not acquired only by a 20 years' prescriptive user has no practical significance. We are solely concerned with the interpretation of the precise terms employed in the Agreement of 1892, and any indefinite claim, which had long been abandoned and of which the existence or extent cannot be proved or ascertained, cannot now for the first time be introduced under its terms. It may be conceded that a mere occasional non-user without an intention of abandoning the user permanently can have no effect on an acquired prescriptive right. But in deciding the extent of the right itself, the question of user cannot be ignored and is most important.

12. What is it exactly to which Madras has acquired a prescriptive right? It cannot evidently be the whole of the water in the river flowing towards the sea. If that were the case, Mysore can never use any more water, however little than it has been using, and the Agreement of 1892 becomes quite meaningless. Madras can thus acquire a right by prescription only to what they have been utilizing for irrigation in their territory. This view is admitted in paragraph 32 of the Madras case and cannot indeed be controverted. The following reasons also justify the position :—

Rule III uses the terms "prescription" and "prescriptive right" with reference to "use of water" and not to "flow of water." Immediately after agreement of 1892 was concluded, the Madras Government put forward a claim under its terms in connection with the construction of the Marikanave reservoir by Mysore. Madras then claimed, not a right to any flow of water independent of existing irrigation but a "level required to give a full supply to the (Kistna) delta" (*vide* the note of Mr. G. T. Walch, Chief Engineer for Irrigation, Madras, No. 58 I., dated 17th March 1892). At the conference of 1890 between Mysore and Madras, the contention raised for Mysore was that "the Madras rights extend only to the supply which has been actually turned to account for irrigation," while, on the other side, it was urged that the Madras right to the flow in the rivers was not limited to the amount actually turned to account for irrigation, but that Madras was entitled by prescription to the whole flow allowed to pass the frontier, at which point Mysore lost all right to or interest on it.

The terms of the Agreement of 1892 show that the Madras Government abandoned the extreme position taken up by them at the conference in 1890.

13. It is therefore not a sufficient answer to the Mysore case to urge that a certain quantity of water was always flowing over a particular anikat in Madras. The difficulties of interpretation noticed in paragraph 31 are merely the result of hypercriticism, and the test of S. 25 of the Easements Act would make the user of the right the determining factor in this case. Mysore have not the slightest intention of interfering, or asserting that they have a right to interfere, with the right of Madras to have as much water flowing down as is required to irrigate the area that they have been irrigating in accordance with their prescriptive right or to utilize as much water as they have been using for the purpose of enjoying such prescriptive rights. Madras cannot claim to interfere with the construction of any works in Mysore territory or with Mysore impounding or using more water therein for the benefit of the State, so long as they do not thereby materially diminish the supply required for the protection of the prescriptive rights of Madras.

14. *Application of the law to the present case.*—The legal position taken up by Mysore in regard to each of the points (paragraphs 21 to 46 of Madras) relevant to the present dispute is stated below.

15. Mysore do not admit the statement that the flow of one foot over the Upper Anikat (644 *m. c. ft.*) was either necessary or utilized for the purpose of irrigation. This flow is stated to have been indispensable for the purpose of securing 7 feet flow on the Cauvery dam before the remodelling of the anikat. Assuming that this flow was so enjoyed as to mature into a prescriptive right for that purpose, it amounted in law to an easement of necessity, and became extinct when the necessity thereof ceased as a consequence of the remodelling of the anikat in 1899—1902. (*Vide* Sections 41 and 42 of the Easements Act.)

An easement created for a particular object is extinguished when the object of its existence ceases as in this case. Compare the principle laid down in *National Guaranteed Manure Co.* v. *Donald* (1859), 4 Hurlstone and Norman's English Exchequer Reports, 8.

This flow of 1 foot which comes as a consequence of the flow of 7 feet claimed as necessary under the old conditions of the Cauvery delta irrigation, cannot legally be used for any purpose not connected with such lands or such irrigation (*vide* Sections 4 and 21 of Easements Act and *Harris* v. *Flower & Sons* (1908) 91 Law Times Reports 816, quoted on page 470, Peacock's Tagore Law Lectures, 1899).

The present contention of Madras amounts, from the standpoint taken here, to a right to impose a new burden on Mysore. The test to be applied for determining it is the effect of the way in which the dominant owner has used and now seeks to use the proposed easement. What was formerly a *dependent* right of easement is now sought to be made an *absolutely independent* one, as the purpose of the right is also sought to be changed to irrigation under the Lower Anikat. This is legally inadmissible (*vide* I.L.R. 23 Bombay, page 595).

16. The alterations made in 1899—1902 clearly show that Madras intended to cease to enjoy the easement (in future) and the right should therefore be deemed to have been lost by abandonment (see Section 38 and illustrations thereto of the I. E. Act). Since 1899—1902 this particular flow has not been used for the purpose for which it is now claimed and this circumstance alone is sufficient to make the rule of *Halve* v. *Oldroyd* inapplicable (see observations on p. 294 in *Crossly & Sons* v. *Lightowler*, equity cases 1866).

Mysore contend that the intent to abandon the right has to be inferred from the long period of non-user and the permanent alteration of the anikat rendering the user unnecessary.

17. *Extent and mode of enjoyment of rights.*—Mysore admit the use of water for irrigation by Madras only up to the limit of 6 feet at the Cauvery dam. The limit of 7 feet, first mentioned in the rules of 1896 cannot be claimed as a prescriptive right as the increase is not yet 20 years old (*vide* Section 26 of the Limitation Act and Section 15 of the Easements Act). It is abundantly shown by the various statements of Madras officers themselves, made independently of this controversy, that 6 feet flow over the Cauvery dam was quite sufficient for all the delta irrigation that was being carried on (see Part II of our reply).

Both the extent and mode of enjoyment of the right must be fixed with reference to the probable intention of the parties as embodied in the agreement, the purpose of the prescriptive right determined with reference to all surrounding circumstances at the time of the agreement and the accustomed user of such right consistently with the terms thereof.

It is in this connection that the Memoranda of Sir K. Seshadri Iyer referred to in paragraphs 8 to 10 of the Madras case will be particularly useful.

18. *Nature of user.*—In this case, water is used in periodically fluctuating quantities dependent upon the varying flow in the river and the varying needs of irrigation. These variations can be mapped out by guage readings, and the requirements of irrigation and general rules deduced.

19. *Reciprocal rights of Madras and Mysore.*—Under the Agreement of 1892, Mysore undoubtedly possess the right to dam the Cauvery and to construct a reservoir within their territories, subject to the sole condition that such construction does not affect the prescriptive right of Madras to the use of water. Hence, any system of calculation and measurement of the flow in the river that may be devised should satisfy two conditions, *viz.*, it should not prejudice such right of Mysore and it should also be conducive to the protection of the prescriptive rights of Madras. In other words, Mysore have the right to impound all the excess over the flow due to Madras for prescriptive irrigation.

20. *Place of measurement.*—The first question to be decided is where the supply due to Madras is to be measured. The suggestion of Madras that it should be ascertained above the Kannambadi reservoir is open to the serious objection that it seeks to shift the customary and proper place of the measurement so as to unduly increase the burden on Mysore by throwing out of account the several intermediate flows up to the Cauvery dam, that go to make up the total prescriptive right of Madras. In this way, the Madras proposal fetters the right of Mysore under the agreement, without, at the same time, being necessary "for the protection of the prescriptive right of Madras already acquired and actually existing."

The suggestion of Madras conflicts also with the well-known principles of law that the dominant owner must exercise his right in the mode which is least onerous to the servient owner (*vide* Section 22 of the Easement Act and the several cases quoted in page 471, Peacock) and that if he, at any time, alters the mode and place of enjoying the easement, he should not thereby impose any additional burden on the servient heritage. (*Vide* Section 23 of the Easements Act, and the numerous cases quoted on pages 472 and 484 of Peacock's Tagore Law Lectures, 1899).

21. *Mysore proposal.*—It is claimed that the alternative now put forward by Mysore equally serves the interests of both parties. The proposal is to the effect that the waste should be determined at the place where it customarily and actually issues as waste, *i.e.*, at the Upper Anikat itself. This has the merit of being natural and simple as it preserves intact the conditions from which the prescriptive right of Madras has sprung and as it provides for the due protection of Madras prescriptive right already acquired and actually existing.

22. *Disturbance of easement not material, hence Mysore proposal suitable.*—As the right of Mysore to construct the proposed reservoir subject to the prescriptive right of Madras must be admitted, it follows that some disturbance of the existing conditions of the river flow is inevitable. It is impossible to maintain the present conditions if a reservoir, however small, is to be built, and the consent given by the Madras Government to the first stage of the reservoir concedes this by implication, though to a limited extent. It is not every disturbance that interferes with the protection of the prescriptive rights of Madras, for the law does not concern itself with an obstruction which is trivial or immaterial—*De minimis non curat lex.* In order to amount to a disturbance legally cognizable, the act complained of must be capable of causing *substantial* damage and the act must be such as to *materially* interfere with the lawful enjoyment of the easement, as may be seen from the following :—

1. I.L.R. 2 Bombay 133.
2. I.L.R. 14 Calcutta 839.
3. Nine Calcutta W. N. 543.
4. Ankerson *v* Connelly (1906), 2 Chapter 544.
5. Five Madras High Court Rept. 6.
6. I.L.R. 2 Madras 46.
7. Five Calcutta L. R. 97 (Privy Council).

Exhibit My.-7.

PART II.—PRESCRIPTIVE RIGHTS.

23. The question of the prescriptive rights of Madras has to be considered under two heads :—

(1) The area or extent of irrigation for which the Madras Government have acquired such prescriptive rights.

(2) The limit flow of water necessary to ensure a proper supply for the above area at the point at which the supplies are being drawn off.

Section (i)—Area of Madras Irrigation.

24. *Area of irrigation.*—The total area of irrigation under the Cauvery system in Madras for which water can be claimed as a prescriptive right may be considered in two parts : —

(*a*) Area in the delta system including that irrigated from the Lower Coleroon Anikat and the Veeranam tank.

(*b*) Area irrigated from the Cauvery above the Upper Anikat and from the tributaries, the Bhavani, the Amaravati and the Noyel.

25. *Variations in area.*—It is essential that the question of areas should be thoroughly threshed out to arrive at the extent of the prescriptive rights. The correct area is evidently that represented by the extent which enjoyed irrigation facilities about the year 1890, as the present negotiations were started in 1910. It follows therefore that any rights claimed should not include lands newly brought under irrigation subsequent to 1890.

But there are instances where additional areas appear to have come under irrigation in recent years as shown below :—

Locality.	Area previously given by Madras.	Area now given.	Remarks.
Under the Cauvery and tributaries above the Upper Anikat.	176,331	208,628	Originally given as 160,000.
Above the Upper Anikat on the main river..	61,500	96,500	Again increased to 99,500.
Lower Anikat	108,000	112,000	
Veeranam tank	45,000	52,000	Obtained from the Madras G.O. No. 400 I., dated 24th September 1909.

From the above it is clear that there have been considerable additions to the area since 1890.

26 *Area above the Upper Anikat.*—The area of irrigation in the Cauvery basin above the Upper Anikat was given as 160,000 acres by the Madras Government in a note furnished to the Darbar in November 1910. But the statement recently given by Madras shows that 176,334 acres were cultivated prior to 1890 and increased to 208,628 acres in 1910. The increased area of 32,289 acres cannot claim water as a prescriptive right and due allowance for this extra cultivation will have to be made from the limits of flow that may be fixed as necessary for the delta irrigation. Taking a duty of 40 acres in the south-west monsoon and 60 in the north-east, the quantity required for this extra area will be 70 m. c. ft., per day, during the south-west and 46 m. c. ft., during the north-east monsoon. These quantities will have to be deducted from the limits that may be fixed as due for the delta area.

27. *The delta area.*—As regards the delta area, the figure given in the recent Madras case, namely, 890,000 acres, excluding Coleroon irrigation, is accepted.

Section (ii)—Quantity of Water required for Madras Irrigation.

28 *Quantity of water required.*—The Madras Government have now put forward a definite claim as under :—

A flow up to 7 feet at the Cauvery dam under the conditions existing *prior to the remodelling of the Upper Anikat* between 1899 and 1902. This quantity would measure 2,944 m. c. ft., in 24 hours, made up of 2,300 m. c. ft., passing over the Cauvery dam and 644 m. c. ft., passing over the old Upper Anikat under the conditions of that work before remodelling.

29. The concession shown by Madras in paragraph 9 of Part III of their case in claiming 2,944 m. c. ft., only, instead of 3,041 m. c. ft., is in reality no concession at all ; for, under the higher claim, the quantity required for the *delta irrigation* is only 1,950 m. c. ft., connoted by a gauge of 6·5 feet on the Cauvery dam against 7 feet now claimed. It will be presently shown that Madras cannot put forward any claim whatever for the balance of 1,091 m. c. ft., as it would only be wasted into the sea through the Coleroon.

30. The quantity demanded at the Upper Anikat may be examined under two heads :—

(*a*) The limit of flow claimed for the delta irrigation, viz., 2,300 m. c. ft., and

(*b*) that claimed for the Coleroon irrigation, viz., 644 m. c. ft.

Requirements of the Delta proper.

31. *Delta requirements.*—Madras have stated that this claim for a limit of 7 feet flow at the Cauvery dam is put forward under the conditions existing prior to the remodelling of the Upper Anikat. Also, Mysore are concerned only with those conditions. It is now necessary to examine with the help of available records, as required, and with reference to the conditions which prevailed at the time at the Upper and the Grand Anikats, whether this 7 feet limit really represented the full supply flow for delta irrigation during that period.

32. It may be stated at the outset that Madras have been demanding a 7 feet limit, whereas Mysore have been denying the claim on the ground that only a lower limit is permissible as a prescriptive right. But the 7 feet limit was accepted provisionally, only in connection with the first stage of the project which had to be started urgently for generating additional electric power.

In the provisional rules framed for working the first stage of the reservoir, 7 feet limit was taken as the basis. From this no inference can be drawn as to the unqualified consent of Mysore to the 7 feet limit, as indicated in paragraph 27, Part III of the Madras case. The provisional rules did not reach anything beyond the discussion stage. Such a limit cannot evidently apply to the second stage of the reservoir.

33. *Six feet represents correct limit.*—The Darbar have pointed out at a very early stage of the negotiations that Mr. Larminie, a former Chief Engineer for Irrigation, Madras, had distinctly stated that 6 feet was the limit of flow necessary for the deltaic irrigation. But Sir John Benton referring to certain statements in the Madras reservoir project, tried to explain this by assuming that this 6 feet limit was on a higher gauge, which had subsequently been lowered. The Darbar accepting at the time the interpretation given by that officer consented to the 7 feet limit provisionally in connection with the first stage of the project, as noted above. But a further examination of the records recently obtained from Madras through the Arbitration Committee and personal inspection of the conditions at the Cauvery dam by the Darbar officers, have disclosed the fact that the 6 feet limit adverted to by Mr. Larminie is with reference to the same gauge as the one on which 7 feet is now claimed.

34. *Evidence from the Bhavani reservoir project.*—A project for the construction of a reservoir across the Bhavani seems to have been prepared some years ago and, in discussing the effects of such a reservoir on the delta supply, conflicting opinions prevailed.

The case of the Mysore reservoir seems analogous to this Bhavani project so far as its effect on the delta irrigation is concerned. Mr. Hughes who favoured the Bhavani project seems to have put the requirements of the delta at a standard limit of 4·8 feet on the gauge at the Cauvery

dam and he has stated that, if this quantity were guaranteed, the Bhavani project could not be objected to. On the other hand, Mr. Larminie maintained that the interests of the delta irrigation would suffer by the reduced limit of 4·8 feet proposed by Mr. Hughes and that a full *supply limit of* 6 *feet* necessary for the delta system could not be tampered with in any way in favour of the Bhavani project. Colonel Smart agreed with Mr. Larminie's view.

35. As regards the lowering of the gauge alluded to by Sir John Benton, it has been ascertained that the requirements of the delta have been settled with reference to the gauge fixed at the northern end of the Cauvery dam since its construction. There is, besides, a distinct statement (paragraph 3, page 3, Vol. III) in the Madras Metur project in support of the fact. This statement runs as follows:—

"It is known as the 'Cauvery dam' and the water levels of the Cauvery at the Upper Anikat are usually referred to the reading of *the gauge at the north end of the Cauvery dam.* The readings of the Cauvery dam, north gauge, are constantly referred to in the correspondence and reports for many years regarding the floods and irrigation supplies to the Cauvery delta, andthe officers, who were experienced with the delta works, go to know, by experience, the effect, as flood or supply, of the readings of *this gauge.*

"In the correspondence regarding the adequacy of seasonal supplies which passed some years ago between Colonel Smart and Mr. Hughes, and, in the reports of Mr. Moss on his reservoir scheme, it is the depth of water on *this gauge*, that is the standard of supply and not any specific discharge in cusecs."

This quotation shows that the gauge referred to by Mr. Larminie, Colonel Smart and Mr. Hughes was identically the same as the one on which the Madras Government is now claiming 7 feet.

36. *Reference to Bhavani project seems essential.*—It has been noted above that proposed Bhavani reservoir project is very similar to the Mysore reservoir now contemplated, in so far as its effects on the delta irrigation are concerned. The Darbar are led to infer that the question of the definite requirements of the delta irrigation must have been thoroughly considered in that project by able and competent engineers and their opinions must have been based on their experience of the delta irrigation and also on reliable records. These opinions cannot but prove to be very valuable in the present controversy regarding the limits of the prescriptive rights of Madras. As the Darbar's request to be supplied with a copy of the report has not been complied with by the Madras Government, it is urged that the Arbitration Committee may call for a copy and verify for themselves whether the depth of 6 feet or less, on the Cauvery dam, was not really recognised as the maximum limit for deltaic irrigation under the conditions prior to the remodelling of the Upper Anikat.

37. *Evidence from the Upper Anikat conditions.*—The conditions of the Cauvery dam and the Upper Anikat before the remodelling of the latterjin 1899–1902 clearly show that the crest of the Upper Anikat was not more than 6 feet above the sill of the Cauvery dam; and that this height was fixed for the purpose of giving the full supply limit of 6 feet required for the delta irrigation, is proved by the following extract, from paragraph 35, page 8, Vol. I, Madras Cauvery Reservoir Report:—

"*He (Mr. Larminie) pointed out that the recognised full supply for the delta in the south-west monsoon is 6 feet on the gauge at the Cauvery aam (Upper Anikat). The Upper Anikat was built to provide that full supply in the Cauvery* and the Tanjore cultivators have a right to expect it whenever it comes naturally and that it should not be interfered with by any arrangements for storage. Nothing should be held back *except the surplus over the 6 feet discharge which now runs to waste over the Upper Anikat.*"

The portions now shown in italics deserve special notice.

38. This significant opinion was expressed so late as 1900 by Mr. Larminie and, coming as it does from one who specially took up a position in favour of the delta cultivators, is very pertinent to the settlement of the matter now at issue. It conclusively establishes that the limit of flow of full supply for deltaic irrigation is 6 feet and not 7 feet as claimed by Madras; and any excess over the 6 feet limit that might have passed over the Cauvery dam inthe flood season owing to the want of controlling arrangements should have been wasted into the Coleroon. The above is not to be considered merely as the opinion of an individual officer, because further independent proofs are forthcoming.

39. *Effect of remodelling of the Upper Anikat.*—In the Metur project report, it is mentioned that the top of the Upper Anikat shutters across the Coleroon is now fixed at 2 feet higher than the previous crest level, *i.e.*, 8 feet higher than the sill of the Cauvery dam and that facilities for forcing 2 feet extra supplies are provided. This proves also that (8—2=) 6 feet must have been the previous recognised limit of full supply.

40. *Rules of Regulation of* 1882.—The Madras Government rely on rules of regulation (Appendix B) as evidence of their prescriptive right to 7 feet; but, in interpreting *these rules*, it is essential to remember that the full supply to the delta system is represented, *not* by the levels at which the undersluices *are opened*, but by the particular limiting level at which the sluices are to be *closed*. In this light, 6 feet at the Cauvery dam, or the crest level of the northern branch of the Upper Anikat, viz., 5·9 feet on the gauge mentioned in rule 2, represents the limit of the full supply to the delta. This is a very important point to which special attention is solicited.

The reason why the higher level mentioned in rule 1 has to be maintained sometimes is this. The low sill levels of the 25 undersluices would naturally require, when water is standing at 6 feet above the sill of the Cauvery dam, a large quantity of water for scouring, which, if attempted at that level, would very soon lower it. To avoid such a contingency, therefore, the 6½ feet limit was specified in rule 1 as the level of water at which it was permissible to open the undersluices in ordinary seasons.

The water thus held up to be used for scouring, would tend to maintain the requisite level of 6 feet in ordinary times whenever there was a necessity for such scouring; hence it was that 6½ feet limit was fixed in rule 1 and not 6 feet; the latter figure would have meant the lowering of the water level even below 6 feet, the required full supply level.

41. It should be noticed that 7 feet mentioned in rule 3 refers to periods when the water in the river is low and the accumulation of sand naturally great, requiring also a larger head to wash out and this loss of water would have brought the level to the required 6 feet very soon.

Also, on account of the large accumulation of sand referred to above, the flow in the river would be much less than what it would have been at the indicated gauge under normal conditions in the absence of such a deposit of sand. This must also account for the increased depth mentioned in the rules.

In fact, these rules have reference more to the scouring requirements than to the higher limits of supply required for the delta.

42. *Rules of Regulation of* 1896.—The precise reason why the limit of 6 feet in the rules of 1882 was raised to 7 feet in 1896 is given in paragraph 31, Part II, of the Madras case. Colonel Smart, who was responsible for this change, was of opinion "that the danger of overflooding being gone, it was better to risk accumulation of sand than to take a risk of not passing sufficient supplies to the Cauvery delta lands."

As he was so prepared to meet the extra sand deposits, it was natural that he should have arranged to allow a little more head of water not only to clear out sand when necessary, but also to make up for the reduction of effective head and the area of flood section

As the requirements of irrigation between 1880 and 1896 were practically the same, the quantity that sufficed in 1882 must have also sufficed in 1896. So the higher limit of 7 feet fixed in the rules of 1896 cannot be taken to indicate a larger quantity of flow than what was represented by 6 feet in 1882; the extra limit of 7 feet can only have been fixed to make up for the extra accumulation of sand. Calculation shows that the effect of opening the undersluices even at 7 feet would bring down the level to about 6½ feet; so the higher limit was fixed to make up for the very probable 6 inches of extra sand deposit. It has been admitted by Madras in paragraph 30, Part II, of their case, that the effect of opening the undersluices is to keep down the level of water by about half a foot, showing that 6 feet was really the limit of flow intended for the delta irrigation after making due allowance for scouring. The 6½ feet provided for in the rules of 1882 was for preventing the sudden lowering of the usual full supply limit which would be caused by opening the sluices.

43. *Non-operation of rules.*—The rules have distinctly specified that at definite levels the sluices should be opened. No significance can be attached to non-operation of the rules mentioned by Madras in the same paragraph. If really more water was required than the rules provided for, the rules themselves would have been changed.

It has been shown that the 7 feet mentioned in the rules of 1896 was really due to the silting up of the bed and not to increased requirements. Even if such increased requirements could be established by these rules, the claim is not of 20 years' standing.

44. *Proof from the 150 yards kalingula.*—The crest of the 150 yards kalingula, a surplus escape, was built at such a level as would allow water to escape into the Coleroon when the Cauvery dam gauge reading exceeded 5½ feet. There will be a flow of 492 cusecs on the kalingula when the Cauvery dam gauge reads 6 feet, connoting a discharge of 18,850 cusecs. The resulting flow at the Grand Anikat would be (18,850 – 492=) 18,358 cusecs, thus closely coinciding after making allowance for transmission losses, with the flow of 17,344 cusecs or 1,498 m. c. ft. per day, fixed at the Grand Anikat as "full and ample supply" in the rules of 1888. These rules (Appendix C) for regulating the water at the Grand Anikat were in force up to the year 1894.

45. *Proofs from the Grand Anikat conditions.*—The two rivers, the Cauvery and the Vennar, form the head of the delta system and, any limit flow fixed at the head regulators of these two rivers should, therefore, represent the full requirements of the whole of the delta system. Thus runs clause 1 of the rules of 1888 referred to above:—

"A *full and ample* supply to the delta is considered to be passing when there is a discharge of 11,240 cubic feet per second into the Cauvery and 6,104 cubic feet per second into the Vennar."

This means a total of 17,344 cusecs or 1,498 m. c. ft. per day and represents a depth of 5·8 feet on the Cauvery dam, which is very close to 6 feet insisted upon by Mr. Larminie. The small difference may be accounted for by transmission losses and the discharge over the 150 yards kalingula, already referred to.

46. *Meaning of the expression "full and ample" in the rules of 1888.*—If this supply was to be considered an average supply as now attempted to be explained by Madras in paragraph 45, Part II, of their case, the words "full and ample" would not both have been used when the single word "average" would have conveyed the meaning. The combination of the words, "full and ample," cannot but denote the limit supply.

47. *Interpretation of other clauses.*—As regards the interpretation of the rules 2, 3, 4 and 5, it should be remembered that there was no control over the floods at the Cauvery dam when it rose above 6 feet on the gauge and rule 2 lays down what should immediately be done when the flow varied within certain limits. In a rising river, the figures, 15,000 cusecs and 8,104 cusecs mentioned in rule 2, indicate permissible discharges into the Cauvery and the Vennar in the initial stages. But if the water should still rise, as is indicated in rules 3, 4 and 5, still higher discharges have been specified for the Cauvery and the Vennar, until a maximum difference of 4½ feet between the rear and the front gauges is reached.

Even in the rules of 1905 and 1909, the levels at which the gauges are to be maintained, if possible, for full supply, are indicated as 4·5 feet in the Cauvery and 7 feet in the Vennar. This is equivalent to a discharge of 13,000 cusecs in the Cauvery and 7,830 cusecs in the Vennar represented by a flow of 6½ feet on the Cauvery dam, after allowing for a discharge on the 150 yards kalingula and possible losses on the way. It is admitted by Madras that, after remodelling, greater facilities have been given to force large quantities of water into the delta and, therefore, previous to the improvement, the limits must have been smaller.

48. *Clause 1 of the rules of 1888 is not merely an opinion.*—It is urged by Madras that the first rule of 1888 has no executive value and gives no executive direction. So far, it is easy to agree with Madras, because, even if it had been of an executive nature, it could not have secured such supplies from day to day. But Madras proceed to say that this was only of the nature of an expression of opinion. If it was meant that it is the opinion of the Madras Government in the Public Works Department, *i.e.*, of the Chief Engineer for Irrigation in his official capacity, who has approved of these rules, then surely even such an opinion is tantamount to an authoritative order by the Government of Madras regarding the maximum supply considered necessary for the delta irrigation. In matters of regulating discharges, the Chief Engineer usually represents Government and Madras cannot now go behind their own rules.

49. *Madras explanation of rules rebutted.*—The Madras Government add with reference to rule 1 that the "full and ample" supply referred to therein "did not imply that the maximum useful supply of the very fluctuating flow available was at this rate but the average supply to be aimed at was based on these duties which connote 44 and 66 acres per cusec respectively." In the same paragraph, a passage from the Madras Cauvery project is quoted, which says that such low duties were contemplated for transplantation season only. If the flow due to such duties should be confined to that season only, there is no necessity for aiming at this duty in such a season, for they could have easily got even much lower duties if they had cared to keep the regulators open. On the other hand, if these duties of 44 and 66 acres per cusec were to be aimed at throughout the irrigation season, this would have meant a constant flow of 17,344 cusecs through the regulators, which could never have been secured, as already noted; and hence this figure can only be reasonably construed as the maximum flow necessary to give a full and ample supply to the delta irrigation and not the average flow. Other proofs adduced in this connection are corroborative of this conclusion.

50. *Rules of 1905 refer to flood season.*—It is distinctly admitted by Madras that the rules for the regulation of the Grand Anikat, dated 1905, chiefly refer to the action to be taken in times of floods. The fact that the supplies into the Cauvery and the Vennar have been fixed at 4½ and 7 feet. respectively, even in such a season although much larger quantities are available, clearly indicates that these are the maximum limits considered necessary. Even this corresponds to only 6½ feet over the Cauvery dam.

But it has been admitted that much greater facilities have been created to pass excess waters into the delta system by the remodelling of 1902, than existed formerly, indicating that the previous limit was really represented by the 6 feet gauge. As the Madras Government base their prescriptive rights on the conditions that prevailed previous to such remodelling, it may be taken as fully established that the "full and ample" supply limits mentioned in rule 1 of 1888 represented the limit flow which can be claimed as a prescriptive right against Mysore.

51. *Explanation of excess discharges through regulators.*—Appendex II put in by Madras shows occasions between the years 1900—1908 when the supplies in the Cauvery and the Vennar were passed in excess of the full supply limits specified in the rules. But the rules which are intended for regulation during floods, distinctly provide for passing large quantities of water into the delta system when there is too much of it flowing at the Grand Anikat. These extra quantities must have been intentionally passed down the Cauvery delta system with the special object of reducing the flow into the Coleroon, as far as practicable, to safeguard the Lower Anikat Regulators.

52. *Safety of Lower Anikat.*—In fact, rule 3 of 1909 distinctly lays down that, in times of danger to the Lower Anikat, the limits of 4½ feet and 7 feet on the Cauvery and the Vennar, should be maintained even though the requisitions were for smaller quantities. These limits had naturally to be further increased whenever the flow in the Coleroon exceeded 13 feet

on the Lower Anikat gauge, and, so, the mere fact that larger quantities were let down the Cauvery and the Vennar beyond the equivalent of 6 feet on the Cauvery dam, does not lend support to the contention that extra supplies were really wanted for the delta irrigation. The inference drawn by Madras from Appendix II, Parts II and III, of their case, cannot be accepted in the face of other more direct and unmistakable evidence, detailed above.

53. *Major Oakes' statement.*—Major Oakes has, in the year 1874, stated that, with 6 feet of flood at the Cauvery dam, the water begins to pass over the crest of the Grand Anikat. The discharge above the head of the two regulators, the Cauvery and the Vennar, would then be 17,600 cusecs. This also coincides with what was considered "full and ample supply" to the delta according to the Rules of 1888, *viz.*, 11,240 into the Cauvery and 6,104 into the Vennar.

Any additional flow that might have been rendered possible by means of planks or falling shutters could not be depended upon, and therefore proper regulating shutters were provided in 1886. Even after this, the full supply considered sufficient was 17,344 mills. cubic feet (*vide* Rules of 1888).

54. *Excess quantity admitted during floods is no criterion of actual requirements.*—It has been admitted that too much flood water was flowing into the Cauvery and Vennar prior to 1899, and much damage and loss was sometimes occasioned by water passing down them in excess of what those rivers were intended to carry. And so the regulation Rules of 1902 show the necessity for cutting off excess floods. But if the floods had been cut off to the exact requirements, *viz.*, 17,344 cusecs, the heading up at the Grand Anikat would have endangered the safety of the regulators and hence certain restrictions had to be placed for maintaining a definite maximum difference between the front and rear of the regulators. By this method more water than was necessary might have been purposely forced down the two rivers. But it was not required for irrigation; neither could it, from the nature of things, create a prescriptive right.

55. *Varying limits during the irrigation season.*—Having thus established that 6 feet represents the maximum limit requirements of the deltaic irrigation, the question remains to be examined, whether this maximum limit can be obtained during the whole of the irrigation season, June to January, or whether the varying conditions of cultivation, really require the same 6 feet limit flow throughout the period.

56. *Value of Metur Project Report.*—It is noteworthy that the Metur reservoir project does not provide for a uniform flow throughout the irrigation period. The provision varies presumably according to the actual requirements of the crop, from a flow of 2·9 feet in June to 6·1 feet in July, gradually going down to 1·7 feet in December. Such a reduction is not due to any corresponding improvement in the distributary system and the consequent economical use of water. There is no provision for any such improvement in the project. If higher limits of flow be allowed as now claimed by Madras, a greater portion of it must be wasted.

Regarding paragraph 43, Part III of the Madras case, it is conceded that the forecasts in the project may or may not be realised in actual practice. But the project report makes references to important facts and statements by responsible officers with long and varied experience of the system and conditions of delta irrigation; and these cannot but be accepted as throwing valuable light on the question as to what limit flow is necessary in the height of the season and what variations may be reasonably made from month to month for meeting the really varying requirements of irrigation.

57. *Low Limit of supplies considered sufficient for June.*—It has already been shown in the statement of the Mysore case (Exhibit My. 1) that practically no water is required for irrigation in the early part of June. The only new fact brought forward regarding the requirements of the supplies in June, is in connection with the water required for the first crop of the double crop area. But this area is very limited, being about 80,000 acres, and the quantity of water required for this would be 173 mills. cubic feet at a duty of 40 acres and the allowance made by Mysore would be more than sufficient to meet this as well as transmission losses in the canals and distributaries. At all events, there is no justification for demanding the same limit in the month of June as in the months of July and August.

The tables given by the Madras Government on pages 13 and 14, Part III, of their case, have been developed by adding one more column and noting therein the surplus at the Lower Anikat on the respective dates. These tables (Appendix D) show that, in the first half of June, very much more water was wasted below the Lower Coleroon Anikat than that surplused at the Upper or Grand Anikat, though matters are somewhat improved in the second half as should be expected. It is also evident that all excess water admitted into the system has found its way into the Coleroon and the same will be the case in the future. From this it is clear that Mysore are justified in saying that the floods of June are mostly allowed to run to waste into the sea.

58. *Limits for other fortnights.*—For two other fortnights during the south-west monsoon, *viz.*, the second half of June and the second half of September, the requirements are also limited for reasons given in the Mysore Statement (Exhibit My. 1). It is only in the remaining five fortnights, from 1st July to 15th September, that the 6 feet gauge at the Cauvery dam is allowable. This will be quite in agreement with the limits shown in the rules discussed above for regulation at the Upper and the Grand Anikats.

59. *Limits in the north-east monsoon.*—Mysore claim that whatever limits are fixed for different fortnights in the south-west monsoon, cannot, for obvious reasons, be made applicable to the north-east monsoon. The average duty obtainable in the south-west monsoon is about 50 acres, whereas the duty for the same area generally runs up to 200 acres in the north-east monsoon.

During the north-east monsoon, in the months of October to January, rainfall is much more abundant in the delta than in Mysore and the actual requirements of irrigation are also very much less than during the south-west monsoon months, as the transplantation season wil have passed. In fact, Mr. Larminie has distinctly stated that the limit of 6 feet was to apply to only the south-west monsoon (*vide* passage quoted in paragraph 37 *ante*). Remissions have often been given for loss of crops due to too much water and consequent flooding during the north-east monsoon.

60. *Fair limits of flow suggested.*—The limits as now shown in the table below may, for these reasons, be accepted for the several fortnights, as against those previously proposed in the provisional rules presented to the Arbitration Committee. The limits except for the period, July to 15th September, are, as already stated in the Mysore statement of case, fixed by allowing 25 to 30 per cent. over the Madras project supplies. And, as they were based on a consideration of the demand for 7 feet, they are doubly favourable to Madras, as it has now been proved that 6 feet really represents the limit supply and not 7 feet.

	M.C.FT.		M.C.FT.
June	450	October	1,240
	1,060		1,240
July	1,625	November	1,000
	1,625		696
August	1,625	December	538
	1,625		290
September	1,625	January	290
	1,120		290

A table has been attached to the rules (**Appendix** E) to show how the above limits are arrived at.

61. *Actual fortnightly averages compared.*—In this connection, a reference is requested to Appendix II of Sir John Benton's Note, dated the 12th May 1911 (Madras Exhibit Ma. 8 a), which shows, first, that the fortnightly averages in many years have fallen much below the supplies allowed in the Metur project, and, secondly, that the fortnightly averages in other years are higher and, in many instances, go to as much as 2 to 6 times the project supplies. From this it will be seen that too much water has been thrown on the fields and wasted in the latter case; while, in the former, a much shorter supply than the project limits, though of a fluctuating nature, has not materially affected the area irrigated. Hence, the limits now allowed in the rules, with an extra provision of 25 to 30 per cent. over the project limits as noted above, must be considered ample for all practical purposes.

62. *Total annual supplies and irrigated areas.*—Also, from Appendix VI of the same Exhibit (Ma. 8 a) it will be seen that the supply passed down the Cauvery dam varied from 157,199 mills. cubic feet to 349,395 mills. cubic feet during the 20 years ending 1909–10 Notwithstanding an extreme variation of nearly 200,000 mills. cubic feet which is equivalent to a full year's average supply, no great fluctuations are observed in the area irrigated which ranges from 940,000 acres to 1,010,000 acres. It is significant that, in the whole period of these 20 years, the largest area of cultivation, *viz.*, 1,010,000. has been secured with the very limited supply of 204,000 mills. cubic feet only, while in a year, in which the supply was the largest, *viz.*, 349.000 mills. cubic feet the area irrigated actually stood the lowest in the range, *viz.*, 929,819 acres, *vide* Appendix F. No better proof than this is necessary to show that an abnormal quantity of water is being thrown on the fields on account of the exigencies of flood regulation. This goes to swell the annual averages although no real benefit is secured.

Hence, the average of 210,920 mills. cubic feet which the Mysore figures give according to the Madras computations (paragraph 25, Part III), compares very favourably with the actual requirements and would maintain irrigation intact without unnecessary waste of water. So the statement made by Madras that "disastrous results would necessarily follow the acceptance of the limit proposed by Mysore" is altogether exaggerated.

63. *Results in bad years.*—The Metur reservoir project provides for an annual average supply of 190,000 mills. cubic feet for the delta area. But, in the year 1899–1900, only 157,199 mills. cubic feet was actually used as shown in Appendix VI of Sir John Benton's note. So the limits must be fixed more with reference to the quantity of 157,199 mills. cubic feet actually used than with reference to the 190,000 mills. cubic feet that might be used. If it is shown that, even in a bad year, the withdrawal is confined to what runs to waste into the sea and that the limit flow fixed as necessary is not interfered with, there should be no objection against such abstraction.

If, before the remodelling of the Upper Anikat, the conditions of flow in some years were such as to necessitate remissions being given on account of insufficient supplies, the Madras Government should be prepared to give similar remissions in similarly bad years and should not

demand from Mysore high limits of flow in order to avoid such remissions. Even in the worst year on record, *viz.*, 1899–1900, 45,000 mills. cubic feet had to be "involuntarily surplused" at the Cauvery dam although remissions were given on account of the insufficient supplies. Mysore wish to utilize only such waters as must be more or less wasted every year, including the very bad years, by devising suitable rules and methods for impounding.

64. *Computed flow due to suggested fortnightly limits.*—Fuller tables have now been prepared showing the daily and fortnightly flow that would have been available, under the limits proposed by Mysore, for the twenty years ending 1909–10. An abstract of these tables (Appendix G) has now been put in showing the fortnightly discharges that would have passed into the delta system, under the limits proposed by Mysore, as compared with those due to a limit of 6 feet throughout the season.

The annual quantities that have been actually used for the delta irrigation, according to Appendix V of Sir John Benton's Note (Madras Exhibit Ma.-8-a), have been shown in the same tables. It will be seen that the total flow due to the limits proposed by Mysore is, in all years, except one prior to remodelling, greater than the quantity actually used. Only in the year 1896–97, there is a reduction of less than one per cent. Even after remodelling, when avowedly larger quantities of water are being used, the quantities due to Mysore limits do not vary appreciably from those actually used. This fact is sufficient to show that Madras interests will be adequately safeguarded by the limits of flow now proposed by Mysore.

65. *Allowance for rainfall.*—Madras admit that actual reductions of supply have been made on account of long continued floods or heavy local rain. In the months of July and August, such floods are frequent and, in the north-east monsoon, there is more or less continuous and heavy rainfall. During these periods, the claim for the full limit made by Madras is obviously untenable.

It is stated by Madras that six to eight days is the limit of time that a single fall of rain of about 2 inches will render the canal supply unnecessary. If there should be another fall of rain within this interval, it will carry on to another period of six or seven days. From the rainfall statistics it can be shown that there are many such days when canal water would not be required. All that Mysore urge is that daily information should be given to them in the irrigation season, so that they may, on the basis of a quarter inch depth of water for each day, be able to regulate the discharge from the Kannambadi reservoir. This will be useful to Mysore without any loss to Madras. Any slight mistakes made in extra impounding will only affect the supply from a very small portion of the catchment area above the Kannambadi reservoir. The effect of such extra impounding will be still less in the north-east monsoon, when the rainfall on the reservoir catchment is very low, as compared with that on the delta area. Madras admit in paragraph 29, Part III, that certain substantial concessions due to rainfall may be given to Mysore in the north-east monsoon, but immediately withdraw the concession on the ground that it would not have been useful to Mysore in bad years. This may be true, but that is no reason why the benefit of really substantial storage in the north-east monsoon, should be denied to Mysore in good years, as such storage would be very useful for the hot weather supply in Mysore, as also to meet the demand of a possible succeeding bad year.

With some modifications due to the greater distance, the allowance for rainfall considered possible in the case of the Metur reservoir project, can also be conceded in the case of the Mysore reservoir.

Viewed in this light, the advantage of rainfall can be easily given to Mysore and a few years' observations specially conducted for the purpose will enable definite rules to be framed. But, as Madras insist that definite rules may be put in, a set of rules (Appendix H) is now suggested for examination and improvement by the Arbitration Committee. This is a matter in which the decision of the Arbitration Committee may be tentative.

Requirements of the Coleroon system.

66. *Requirements of Coleroon irrigation.*—Next, as regards the daily supply limit of 644 mills. cubic feet for the Coleroon irrigation, it may be stated at the outset that this quantity was allowed to flow over the Upper Anikat, not because it was required for irrigation, but because there was no means of controlling the flow in the river beyond 6 feet over the Cauvery dam. The Cauvery dam itself had been designed and built to secure this depth of flow which was considered sufficient to meet the full requirements of the delta irrigation. That the quantity above the 6 feet limit was going to waste has been clearly stated by Mr. Larminie—*vide* passage quoted in paragraph 37 above.

67. *The flow of* 1 *foot over the Upper Anikat unavoidable.*—This statement is corroborated by the fact that, after remodelling in 1902, the quantity of 644 mills. cubic feet representing the equivalent of 1 foot flow over the Upper Anikat which was unavoidably running into the sea, has been effectively stopped. This shows that no good purpose would be served by passing this quantity into the Coleroon now. Also, it has been shown that the limit of 6 feet is all that is required for the delta and, with this limit at the Upper Anikat, there would have been no flow into the Coleroon before remodelling. The claim for 644 mills. cubic feet, now put forward, cannot therefore arise at all. It will also be presently shown that there is always ample flow at the Lower Anikat for all Coleroon irrigation whether or not any specific flow is allowed at the Upper Anikat.

68. *General considerations against the claim.*—The demand is also untenable having regard to the following considerations :—

(1) The total irrigation of the Coleroon system including the Veeranam tank is 110,000 acres, against nearly one million acres under the delta system; and if, as shown already, a limit of 1,498 mills. cubic feet per day is enough for the larger area, one-ninth of this limit or 166 mills. cubic feet per day, must represent the limit flow required for the Coleroon irrigation, if there were no other sources of supply to this system. It has been admitted by Madras in various passages in their own project report, already quoted in the Mysore statement of case (Exhibit My. 1, page 3, paragraph 11), that there is always an adequate supply in the Coleroon for the Lower Anikat system when the supplies in the Cauvery system are sufficient. Accordingly, the Metur project, even with its limited discharges, does not make any separate provision for the Coleroon irrigation.

(2) The accompanying statement (Appendix K) giving the comparative discharges of the Coleroon at the Upper, Grand and Lower Anikats, shows that, even in the worst years 1899 and 1905, although no water was admitted directly into the Coleroon at either of the two higher anikats during certain months, still the flow at the Lower Anikat was quite considerable. This could only be attributed to the excessive amount of water thrown into the delta system and the leakage finding its way into the Coleroon (*vide* columns 8, 11 and 13 of Appendix K).

(3) The full supply capacity of all the channels taking off at the Lower Anikat comes to 190 mills. cubic feet per day, which is very close to what was shown to represent the maximum requirements of the Coleroon irrigation, *viz.*, 166 mills. cubic feet. The demand for four times this supply is therefore obviously untenable.

69. *No special supply needed under altered conditions.*—The Madras Government admit in paragraph 13, Part III of their case, that what they want is a flow in the Coleroon "which will, under the *altered conditions*, fully secure the supply of their irrigation."

It is significant that Madras themselves recognise "that the conditions of supply of the Veeranam tank are not such as to conduce to economy." It will be abundantly shown that any special allowance, in addition to the leakage which already finds its way into the Coleroon and the surplus at the two higher anikats, will be actually wasted.

Although this quantity of 644 mills. cubic feet and more might have been unavoidably passed into the Coleroon to maintain the levels at the Lower Anikat before remodelling, shutters have since been specially designed and provided to prevent such unnecessary wastage. There is now no justification to subject Mysore to this wasteful burden, so long as it does not benefit the Lower Anikat system to any extent.

If this quantity of 644 mills. cubic feet *per diem*, claimed simply because it was unavoidably included in the 7 feet limit before the remodelling of the Upper Anikat, did not, as admitted by Madras, help in replenishing the Veeranam tank previously, no claim can arise for such a flow now, particularly in the face of the evidence that it is not wanted at all under the altered conditions of the Lower Anikat.

Further, it is distinctly admitted that the old conditions at the Upper Anikat had grown so bad that they necessitated the remodelling. On account of the changes brought about by such remodelling, any right which might have existed before remodelling and which has not been exercised since, cannot now be claimed, to the prejudice of Mysore. The extra 644 mills. cubic feet now claimed as necessary for the Coleroon irrigation, was not used prior to remodelling for the purpose for which it is claimed now.

70. *Interception of floods by the Mysore reservoir immaterial.*—Madras have stated that this flow of 644 mills. cubic feet, when available, is necessary for the Coleroon irrigation, because the Mysore reservoir will materially intercept the floods that at present contribute to the Coleroon flow. The Mysore reservoir is expected to utilize about 51,000 mills. cubic feet per annum. This will be equivalent to about 35,000 mills. cubic feet at the Lower Anikat making allowance for transmission losses. This is less than one-third of the average surplus at the Upper Anikat (*vide* Appendix VI of Sir John Benton's Note). Thus, the disturbance of the flood conditions at the Lower Anikat will be very inappreciable. It is true that in bad years the surplus allowed into the Coleroon is not much. Even in such years the comparatively large amount of leakage from the delta area into the Coleroon cannot be prevented; and this would be more than ample for the existing Coleroon irrigation. Also, Madras admit that the computations of discharges at the Agunda Cauvery are quite under-estimated so far as high floods are concerned. If due allowance is made for this, it will be seen that there would be no shortage of supply into the Coleroon on account of the Mysore reservoir even in bad years. In fact, the Metur reservoir which is more than double the capacity of the Mysore reservoir (90,000 mills. cubit feet against 41,000 mills. cubic feet) and intended to irrigate nearly three times the area contemplated under that reservoir, would stop practically all the surplus into the Coleroon. Also, the leakage from this new area to be irrigated by the Metur project being situated so far south of the delta area, would not be available for the Coleroon replenishment. With all this, no special provision, such as the 644 mills. cubic feet now demanded, has been made in the Metur project for the Coleroon irrigation. Much cannot be made of the contention that the quantity impounded in the Metur reservoir

would be at the call of the Coleroon irrigation, as such a call must necessarily mean that other lands directly dependent on the reservoir will be deprived of their regular supply. The natural inference from all this is that no separate supply is really needed for the Coleroon irrigation.

71. *Detailed examination of claim.*—The merits of this claim may now be discussed in detail. The total area under the Coleroon is distributed as shown below :—

	ACS.
(*a*) Under the Vadavar channel	10,600
(*b*) Under the Veeranam tank partly fed by the Vadavar	52,000
(*c*) Under other channels	50,000

The claim for 644 mills. cubic feet is made chiefly on the ground that it is wanted to replenish the Veeranam tank through the Vadavar, even under the altered conditions prevailing after the remodelling of the Lower Anikat. It is therefore necessary to examine the question with special reference to the conditions of the Veeranam tank.

72. *Replenishment from the Veeranam tank catchment.*—The catchment area of the tank is 256 sq. miles. The average rainfall in the catchment is at least 36 inches, being the annual rainfall at Srimustnam, which lies at the head of the catchment, though there is a larger rainfall in the lower reaches of the area. Taking this as falling under class, designated "bad," Mr. Nethersole's curve shows an yield of about 15 mills cubic feet per sq. mile, which gives a total annual supply of 3 890 mills. cubic feet. This will irrigate about 15,000 acres, allowing 4 acres per mill. cubic feet, if there were no other source of supply to the irrigated area. But there is abundant rainfall, averaging up to about 54 inches per annum in the area fed by the tank. It is well known that rice crop flourishes on natural rainfall, that is, without any storage facilities, if the annual rainfall is 60 inches or more. If due allowance is made for this, the replenishment from the catchment would be sufficient for at least double the area or 30,000 acres. The total irrigation of the Veeranam tank being 52,000 acres, the balance of about 22,000 acres can easily get its supply from the Vadavar. The Vadavar has to maintain 10,600 acres by direct irrigation; the irrigation dependent on the channel will then amount to 32,600 acres.

73. *Net supply needed through the Vadavar.*—Taking an average duty of 70 in consideration of the heavy rainfall, the flow required for this area of 32,600 acres is 465 cusecs against 450 cusecs, the capacity of the Vadavar at the crest level of the Lower Anikat before it was remodelled. But the anikat crest level has been raised by 2 feet by means of shutters and the discharging capacity increased to 1,070 cusecs. So a discharge equal to about two and a half times the quantity actually required to meet all irrigation demands, including that under the Veeranam tank, can be passed through the Vadavar without the necessity for lifting the gates of the anikat, as indicated in the table on page 14 of Part II of the Madras case.

74. *Interpretation of rules.*—Even in the rules in force for the regulation of the Lower Anikat prior to remodelling in 1899–1902, the full supply level was recognised as being at 1·5 feet over the crest of the Lower Anikat. This corresponded to a flow of 935 cusecs. This quantity is increased to 1,070 cusecs after remodelling. There can therefore be no doubt that all the water needed for the Vadavar could be easily secured without the unnecessary waste of water which would be caused by lifting the gates, as argued in paragraphs 37 to 42, Part II of the Madras case.

75. *Irrigation will be unaffected whether the tank filled or not.*—It may be argued that the capacity of the tank is small and it cannot take in all the water from the catchment although the yield is sufficient to fill the tank about four times. The capacity of the tank is no criterion to meet the irrigation dependent on it as it fills many times over in the year and acts merely as a balancing reservoir, taking in occasional floods as they come in and giving out the same for direct irrigation as required. A reference to appendix IV attached to Part II of the Madras case makes this quite clear.

From this it will be seen that the contention of Madras that the area of irrigation depends mainly on the replenishment from the south-west monsoon cannot be sustained. An abstract of Appendix IV put in by Madras is attached (Appendix L), showing very clearly that, in some years such as 1893–94, 1894–95, 1906–07, 1907–08, when the tank is not shown to have filled in the south-west monsoon, the irrigation did not suffer. In fact, even if any small replenishment is necessary through the Vadavar, the leakage water available in the Coleroon would be more than sufficient for all such requirements (*vide* columns 8, 11 and 13 of Appendix K).

76. *Inferences from certain Madras statements.*—According to their statement in paragraph 38, Part II of the Madras case, a supply of 25,674 cusecs was required in the Coleroon before impounding into the Veeranam tank could begin. This quantity connotes a depth of 7·6 feet on the Cauvery dam gauge. So the total flow in the river should then be 25,674 cusecs over the Upper Anikat and 31,598 cusecs on the Cauvery dam, or a total of 57,272 cusecs (4,938 m. c. ft. per day). Under these conditions, the number of days in which the Veeranam tank could have got its supply is 46 in 1903, a good year, and only four days in 1905, a bad year.

Another striking statement made in connection with the Vadavar flow is that the Veeranam tank requires 107 days to fill, when the Coleroon discharge is 31,048 cusecs. This corresponds to a gauge reading of 8·2 feet on the Cauvery dam and a total discharge in the Agunda Cauvery of 68,000 cusecs (5,335 m. c. ft. per day). Even in the best year on record such a large quantity

of flow was obtained for only 40 days, against 107 days stated to be required to fill the Veeranam tank through the Vadavar. From all this it is clear that the claim put forward for an extra flow of 644 m. c. ft., *per diem*, mainly on the ground that it is required for filling the Veeranam tank, is quite untenable.

77. *Every remodelling has tended to reduce replenishment from floods.*—In the second remodelling of the Lower Anikat, the sill of the regulating gates was lowered by 2 feet. The alterations effected made it more difficult for water to pass through the Vadavar with the same levels as before remodelling. The lowering was done to create facilities to pass down high floods. If such high floods were really necessary for replenishing the Veeranam tank through the Vadavar, this remodelling would have been done by raising the regulator sills instead of by lowering them.

In fact, every remodelling of, or improvement to, the Grand Anikat or the Upper Anikat, tended to reduce the ordinary supplies into the Coleroon and, as admitted in paragraph 41, Part II of the Madras case, the remodelling has also created facilities for passing down the flood water at a considerably lower level than before. This shows that, neither in the flood season nor at other times, was any special allowance made, nor was found necessary, for the replenishment of the Vadavar at a high level. The inference from all this is that no direct flow into the Coleroon is necessary to replenish the Veeranam tank and what little may be required occasionally, is all obtained from leakage.

Section III.—Use of the Hot Weather Flow.

78. *Use of the hot weather flow.*—The claim for a constant flow of 900 cusecs in the hot weather, that is, from March to May, now put forward by Madras, is not based on any prescriptive right. The natural flow has been known to go down as low as 90 cusecs near Sivasamudram. It will be perfectly open to Mysore to utilize the hot weather supply for any purpose needed by them, whether for power or for irrigation. There is no hot weather irrigation in the Madras portion of the river at present. The Madras Government have, in the previous correspondence, definitely and without reservation, waived their claim to the hot weather flow. This attitude is also confirmed by a statement made in paragraph 2 of a note, dated 15th November 1911, by the Superintending Engineer on special duty, Madras. Even if the waiver is now withdrawn, they are only entitled to the natural flow of the river after the customary Mysore requirements are satisfied. But the interception, at the reservoir, of the small flow in the hot weather will be more than compensated for by the artificial increase of the river flow below Sivasamudram, which will be caused by the power works as well as by the tail water from new irrigation.

Exhibit My.-8.

PART III.—PLACE AND MODE OF MEASUREMENT.

Section i.—Three alternative sites for measurement discussed.

79. *Place and Mode of Measurement.*—Any rules that might be framed for the proper regulation of the supply to which Madras has a prescriptive right, must have reference to—

(1) the place where such measurement may be rightly and justly made, and

(2) the actual method of regulation and adjustment of the supplies.

80. As regards the place of measurement, three alternatives have been considered :—

(*a*) At Sivasamudram as originally demanded by Madras when negotiations were first opened with that Government.

(*b*) At the three anikats across the Cauvery, the Hemavati and the Lakshmanatirtha above the site of the proposed Mysore reservoir and on the Hulhalli anikat across the Kabbini.

(*c*) At the Cauvery dam (Upper anikat).

81. The Sivasamudram anikat has been condemned by the Inspector-General of Irrigation and Assessor as being quite unsuitable for gauging flood discharges accurately, and need not be further considered; and, even if any other anikat could be improved or constructed in the vicinity and made suitable for such a purpose, it would deprive the Durbar of the credit due to them in respect of the ample replenishment from about 5,000 square miles of catchment, comprised in the Arkavati and the Shimsha basins in their own territory; and it will also raise the question of the further allowance due to the Durbar on account of intermediate replenishments up to the Cauvery dam. The latter can never be solved to the satisfaction of both the parties.

82. The second alternative now put forward by Madras will render matters still more unfavourable to the interests of Mysore.

The catchment area of the Cauvery basin above the four anikat sites proposed for gauging is 4,500 square miles, which is only about three-sevenths of the total catchment comprised in the Province (11,500 square miles) and one-sixth of that at the Cauvery dam (27,000 square

miles). It would be most unfair to demand from this small catchment the full flow due at the Cauvery dam from six times that area. This single reason, if nothing else, puts this proposal out of court. The injustice of such a demand is intensified when Madras asks in addition to the discharge represented by the seven feet limit, a high percentage addition for transmission losses due to various causes, as if there was absolutely no replenishment in the river valley below, at least to make up for such losses.

83. *Replenishment from the intermediate catchment.*—The question of the intermediate replenishment from the several more important tributaries may now be closely examined.

First, taking the Arkavati and the Shimsha rivers, in a printed note forwarded to the Madras Government through the Honourable the Resident in March last, it has been clearly shown, from the computed discharges at Sivasamudram and the Bhavani bridge, that, even in the very worst seasons, there is a replenishment equal to 1·5 per cent. of the total contents of the Mysore reservoir, and in a good year the reservoir would fill nearly 1¾ times out of the flow of the two rivers, the Arkavati and the Shimsha. It should be remembered that the catchment area of the two rivers is only about 5,000 square miles with a rainfall of less than 30 inches.

It has recently come to notice that the discharges at Sivasamudram were much over-estimated on account of the weirs not being suitable for gauging flood discharges. The recent velocity observations below the Dhanakere anikat have confirmed this fact. Also, it is understood that the Bhavani discharges, in high floods, are under-estimated. With this fresh information, the computations based on the excess of the Bhavani discharges over the Sivasamudram discharges would make this intermediate replenishment from the Arkavati and the Shimsha much higher than what has been indicated above.

84. *The Bhavani, the Amaravati and the Noyel.*—So also as regards the replenishment from the comparatively large rivers, the Bhavani, the Amaravati and the Noyel, no definite information was previously available for Mysore, and the Madras Government merely stated then that these rivers did not contribute any appreciable replenishment during bad years. It has been admitted by Madras that, in the north-east monsoon, the Cauvery flow is mostly dependent on the plain catchment in the Madras area and also on the catchments of the Bhavani and the Amaravati. The Bhavani gets a fairly good supply from both monsoons. From the discharge statements appended (Appendix M), it will be seen that even in a very bad year, like 1905, the total contribution from these three tributaries came to 79,993 m. c. ft., out of a total supply at the Cauvery dam of 241,344 m. c. ft. This represents about one-third of the total flow in the Cauvery basin and twice the capacity of the proposed Mysore reservoir. And here it may be mentioned that the anikat referred to on the Bhavani is about 40 miles, that on the Amaravati, 30 miles, and that on the Noyel, 80 miles, above their respective points of confluence with the main river; and if account be taken of the additional replenishment due to the lower areas, the total supply from these tributaries would really be a very considerable quantity.

Year 1905.		
Bhavani	76,131	m. c. ft.
Amaravati	2,954	,,
Noyel	908	,,
Total	79,993	,,

To this must be added the replenishment direct into the Cauvery from all the rest of the catchment area both in Mysore and Madras territories, below the four higher anikats selected for measurement by Madras to gauge the discharges.

85. *Measurement at Cauvery dam, the only solution.*—The Madras proposal cannot therefore be accepted as it would be highly unjust to Mysore to deny the benefit of all the material intermediate flow contributing to the total discharge at the Cauvery dam. The same remarks would more or less apply to the selection of any point for measurement higher than the Cauvery dam, where the supplies to the delta are due.

These considerations make it clear that the third and last alternative, *viz.*, fixing the place of measurement at the Cauvery dam, is the only suitable solution having regard to all the circumstances of the case. The gauging operations at the dam have been carried on for many years past, and the exact limits of gauge reading required for full supply during the several fortnights can be definitely ascertained. In paragraph 23 of Part III of their case, Madras have given the precise reasons why the gauging point for measuring their supplies should in the opinion of Mysore be made at the Upper Anikat.

And what is more, the replenishments from the large catchment between the Upper Anikat and the Kannambadi dam can only be exactly accounted for at the Upper Anikat. For, the difficulty of computing the gains due to such replenishment has been admitted to form the most complex problem for solution by the Arbitration Committee, so much so that it may either make or mar the stability of the Madras irrigation, or ensure or destroy the success of the Mysore Reservoir (paragraph 35, Part IV of Madras case).

86. An independent check to verify the quantity actually passed down will be needed, as the Cauvery dam was built merely as a grade wall in the bed of the Cauvery. Its crest is often silted up with varying depths of sand from day to day. It therefore follows that the quantity of flow indicated by the same gauge reading on different days will be dissimilar. Certain empirical rules appear to have been framed (as the result of velocity observations made in the year 1909) for determining the actual flow on any day according to the state of flood in the river.

The computation of the exact quantity of flow each day, even according to these rules, will require to be checked from time to time by further observations. But the necessity for this is obviated by the existence of the Grand Anikat, 20 miles below, where the head works of the two main branches, the Cauvery and the Vennar, feeding the whole delta, are situated and the actual discharges from day to day and from fortnight to fortnight can be easily measured at the regulators of these canals. This practical and ready means of verifying the actual discharges may therefore be adopted.

87. It is admitted that the flow from the Western Ghauts in the south-west monsoon forms a good portion of that at the Cauvery dam. Although the exact flow on any particular day cannot be predicted with accuracy, the proportionate flow of the western area, say at the Kannambadi reservoir, to that at the Cauvery dam, can be fixed for the south-west monsoon with some degree of approximation, and the proportion may be used in formulating rules. These rules with working tables are dealt with in the sequel.

SECTION ii.—NECESSITY OF TREATING PROPOSED RULES AS TENTATIVE.

88. *Proposed rules to be tentative.*—It is impossible to evolve satisfactory rules at once from the incomplete data in the possession of the two parties. Also, these data were not collected with the particular end in view. For this reason, the Durbar have been consistently maintaining that any rules framed now may be only tentative for some years, so that they may be improved with the benefit of experience gained in the interval. The tentative period suggested by the Durbar was only six years, while Sir John Benton thought that the term was too short considering the difficulty and complexity of the operations involved, and advised that twenty years might be adopted. It is open to the Committee to fix any period they think reasonable for the purpose. Gauging stations as provided in the rules may be established with a view to determine the relation of the discharges at the various points in the course of the river.

With this information and with special telegraphic facilities, there will be no difficulty in regulating the supply from the Mysore Reservoir to a nicety.

89. *Remarks on Part IV of the Madras case.*—The Madras Government also agree that the rules must be tentative in the first instance, although they have, in Part IV of their case, attempted to make some approximate computations, regarding transmission losses and the time of transmission. These of course cannot be held as conclusive, and further observations are necessary. Some general remarks are offered below regarding the more important points raised in this part of the Madras case.

Transmission losses.—Paragraphs 36 to 56 deal only with transmission losses between Sivasamudram and Cauvery dam; but this question has been very much complicated by mixing up the draw-off for intermediate irrigation with the real transmission losses. If due allowance be made for this factor, the real transmission losses will be found to be much less.

Madras computations for transmission losses—Paragraphs 56 to 62.—Computations for real transmission losses have been based on the result of the observations taken at the Dhanakere anicut for the short period of about 50 days. This is by no means sufficient or conclusive. Mysore are agreeable to continue these observations to arrive at correct results. These observations should be made between several reaches of the river mentioned in the Mysore rules, so that the total gain or loss in transmission between Kannambadi and the Cauvery dam may be ascertained as correctly as practicable.

Time of transmission—Paragraphs 64 to 71.—No definite observations have been made with the special purpose of finding the exact time required for the Kannambadi water to reach the Cauvery dam, and any inferences drawn from the existing data collected for quite a different purpose cannot be expected to give satisfactory results. Here also, special observations are necessary, and it is hoped that the velocity and discharge observations suggested in the Mysore rules, if carefully computed and plotted on proper diagrams, would easily settle this question.

90. *Points to be held tentative.*—The Mysore Government agree that the question of prescriptive rights of Madras should be finally settled now. The principle of measurement and the rules for working the reservoir and the limits of water necessary for meeting the prescriptive rights of Madras should also be definitely determined now.

91. The factors affecting the working of the rules which may be held tentative, are enumerated below:—

(*a*) The proportion which the flow at the Kannambadi reservoir bears to that at the Cauvery dam in the south-west and north-east monsoons, respectively.
(*b*) The percentage, if any, to be allowed for transmission losses.
(*c*) The interval of time necessary for the flow at Kannambadi to reach Cauvery dam.
(*d*) The quantity of water required for intermediate irrigation.
(*e*) The replenishment from all the intermediate catchment area.

These must be ascertained after careful observation and any figures which may now be fixed for any of these items, should be held tentative and subject to revision after the results of the special observations, now to be started, have been determined and accepted by both the parties. The methods by which such computations have to be made from the data collected, may now be settled to avoid any possible future differences.

SECTION iii:—REMARKS ON THE MODE OF MEASUREMENT PROPOSED BY MADRAS.

92. The Madras Government have considered all the three systems of working the reservoir hitherto put forward, namely:—

(*a*) System proposed by Mysore.
(*b*) Do. do. by Madras.
(*c*) Do. do. by the Assessor.

At the outset it should be stated that, with the additional information now available, Mysore have slightly modified the system of water regulation previously proposed and upon which the Madras Government have based their remarks in Part IV of their case.

The defects shown by Madras in the working of the Mysore system have arisen from the omission of the admittedly "difficult question concerning loss in transmission on compensation water;" and taking the losses into account, a new set of tables on the basis of table N put in by Madras has now been prepared (Appendix N). From this it will be seen that most of the defects pointed out in the Madras case can be eliminated, while the storage facilities to Mysore have also been improved.

93. The system proposed by Madras gives prominence to the losses in transmission. Although the gains are also admitted, no account is taken of them in fixing the quantity due to Madras. It leaves out of consideration the abundant replenishment from a large portion of the catchment area, both in Mysore and Madras, lying between Kannambadi and Cauvery dam, which will be very serviceable for impounding in Mysore. Mysore will not get under this system the supply they are justly entitled to under the agreement of 1892, and no further remarks are therefore called for.

94. The third system depends upon the proportion which the flow at Kannambadi bears to that at the Cauvery dam, an assumed figure; the impounding at Kannambadi is to be confined to the excess flow over the quantity due at the Cauvery dam reduced in that proportion. By this method, the facilities for impounding are unnecessarily restricted as will be shown under section IV below.

95. *New irrigation above the Cauvery reservoir.*—In paragraphs 76-77, Part IV of their case, Madras have made some remarks on the proposed new irrigation above the Kannambadi reservoir.

It may be stated that such irrigation is only proposed under the existing anicuts, and the agreement of 1892 gives full power to Mysore to do so. But Madras apprehend that this will be indefinitely extended by the help of the reservoir and the way in which such help would be given to the upper area has been ingeniously conceived by Madras. They consider that, as the quantity of natural flow above the reservoir site is limited, it is insufficient to meet all the existing irrigation and therefore there is no scope for any further extension.

96. This is not a fact. It is true that, during the past ten years, Mysore has not been able to extend the river irrigation; but that was due to the demand for water for power when the river is low, just at the time when the standing crop also requires a supply. As the reservoir fully provides all the water needed for power supply, the conservation of water for power purposes would no longer be necessary and it would be possible to extend irrigation out of the water so set free.

Also, Kannambadi reservoir in its second stage submerges about 8,000 acres of wet land, and the water thus set free becomes available for extension of irrigation above the reservoir.

It is expected that the water from these two sources would be sufficient for the extension of irrigation above the reservoir now proposed. There is no room for thinking that all the natural flow required for 40,000 acres of irrigation below the reservoir would be substituted by the supply from the reservoir, and that the natural flow thus set free would be utilised in indefinitely extending the irrigation above the reservoir site.

When, however, any extension becomes necessary after the reservoir is built, beyond the limits possible out of the natural flow, the extra water due to such extension will be duly allowed for, and added to, the quantity drawn off from the reservoir. With this assurance, there need not be any apprehension regarding the extension of irrigation above the reservoir against the interests of Madras. This also answers the point raised in paragraph 77 of the Madras case, Part IV.

97. It must be remarked that Mysore would be similarly put to unnecessary loss if Madras increase the area of irrigation in the Cauvery basin above the Upper anicut directly on the Cauvery or on any of its tributaries, for this would increase the transmission losses now tentatively calculated on a basis of 96,000 acres of such intermediate irrigation. It is therefore necessary that due allowance should be made in favour of Mysore for the water consumed by such extension of irrigation, and that limit flows that may be now settled as due at the Cauvery dam will have to be correspondingly reduced.

Section iv.—Mode of measurement proposed by Mysore.

98. The Arbitration Committee have desired that information on the following point may be collected:—

"What proportion of the volume of water measured at the Upper anicut may reasonably be assumed to be due to that portion of the whole catchment area which would be intercepted by the Kannambadi reservoir?"

99. This question has been examined by Colonel Ellis in a note accompanied by diagrams. He has also furnished, to the assessor, a further note with working tables showing how this proportion between the total flow at the Kannambadi reservoir to that at the Cauvery dam, can be applied, to regulate impounding in the Kannambadi reservoir. He has shown that the system may prove acceptable to Madras under certain conditions. This of course is irrespective of the interests of Mysore, as the tables he has prepared show that the Mysore reservoir will not fill. He has also suggested that a proportion of 0·8 might be tried for the south-west monsoon and a smaller proportion, 0·5 for the north-east monsoon.

100. It will now be examined how this mode of impounding will affect Mysore interests; and how the proportion of the flow at Kannambadi to that at Cauvery dam can be made applicable in the present case to secure the interests of both the parties. Even if a proportion more favourable to Mysore were taken, or if the average proportion, say for 5 or 10 years, instead of that for the worst year, be fixed, the impounding conditions cannot be improved. If a limit flow up to, say 6 feet (1,625 m.c.ft. per day), is to be fixed as the standard demand at the Cauvery dam, and if Mysore is asked to reserve a proportionate flow, say 0·6 of 1,625 m.c.ft., or 975 m.c.ft., every day, and store only the excess quantity available at the Kannambadi dam site, Mysore would still be placed in a very unfavourable situation. It has been found that there would be very few days when the discharge from the limited catchment area above the Kannambadi dam site would exceed 975 m.c.ft., particularly in bad years; in the year 1899, there were only 26 such days and in 1905—37 days. The limitation of impounding to so few days will really prove very unfavourable to Mysore.

101. To show this, a specimen working table (Table I, Appendix P) has been prepared for 1905–1906, which was one of the bad years, with limits of flow for the different fortnights allowable at the Cauvery dam as provided in the rules proposed by Mysore. Column 7 of the table shows that, in the month of July alone, as much as 25,275 m.c.ft., would have been wasted into the sea even after satisfying the requirements of Madras. The whole or a greater portion of this could have been stored without the least injury to Madras, as the flow at the reservoir site was quite abundant, being 60,968 m.c.ft., against only 24,082 m.c.ft., stored according to this method. Also, it will be observed from column 8 that, even with such a restriction on storage and so much waste of water into the sea, the Madras supplies have fallen short of the requirements on 2 out of 31 days, while no compensation is due from Mysore for such a shortage. This shows that the system of proportionate storage would not prove entirely acceptable to Madras, and much less to Mysore, as so much water reserved out of the Kannambadi flow would be wasted.

102. The effect of such restriction on Mysore will become quite apparent if the question is viewed in the light of the irrigation requirements. The demand that Mysore should reserve at Kannambadi 0·6 of the flow required for the delta irrigation is tantamount to saying that the flow above Kannambadi should be made responsible for the irrigation of 0·6 of 1,100,000 acres, *i.e.*, for 660,000 acres, before Mysore would be allowed to impound. Mysore propose to irrigate by their reservoir, in its ultimate stage, about 150,000 acres which is less than one-fourth of the above area, *viz.*, 660,000 acres, for the water-supply of which Mysore would be made responsible to Madras. In fact, this would mean that Mysore will be allowed to build their reservoir, provided they can show that there is sufficient water at the reservoir site, not for the 150,000 acres which the reservoir is intended to irrigate, but for more than five times this extent, *viz.*, 660,000+150,000 or 810,000 acres. Such a restriction will obviously prove detrimental to Mysore interests, particularly as a very large quantity of water not made available for impounding in the reservoir would run to waste into the sea.

103. But the avowed object of the Mysore reservoir is to utilise all such wastage without interfering with the Madras prescriptive rights in any way. Some means will have to be devised so as to make it possible for Mysore to store and utilise the flood waters as far as practicable, as the right of Mysore to such waters is admitted on all hands.

To show the possibility of doing this, the accompanying Table II of Appendix P has been prepared. According to this, the quantity of flow up to the prescribed limits each day will be left intact. When the discharge exceeds these limits, the balance, which only runs to waste, is considered available for storage in the reservoir. This quantity is converted into its equivalent at the Mysore reservoir site by adding for transmission losses. The impounding at the reservoir is limited to this quantity, if available, at Kannambadi. A comparision of the Tables I and II makes it quite clear that the method indicated in Table II is more favourable to

Mysore than that of Table I, without the least prejudice to the prescriptive rights of Madras. The following comparative figures for the month of July 1905–06 are given from the two tables for ready reference:—

	Table I. M. C. FT.	Table II. M. C. FT.
Total quantity of flow at the Kannambadi dam site ..	60,968	60,968
Quantity available for storage	34,082	50,147
Do. wasted into the sea	25,275	13,306
Number of days of shortage in Madras supply ..	2	*Nil.*

These figures speak for themselves. In Table II the quantity wasted into the sea is remarkably reduced by fully 50 per cent. while the quantity available for impounding in Mysore is increased by as much as 16,000 m.c.ft,, or 40 per cent. of the total capacity of the reservoir. By this method the interests of Madras are left perfectly intact, while those of Mysore are also safeguarded by affording facilities for storing more of the excess flood waters than under the first method.

104. The only difficulty that may arise in actually working out the system of impounding as shown in Table II, would be due to the fact that the quantity of flow at the Cauvery dam each day will not be known beforehand at the time of impounding in the Kannambadi reservoir. Here the information called for by the Arbitration Committee regarding the proportion which the flow at Kannambadi bears to that at the Cauvery dam, would be really serviceable.

By multiplying the known flow at Kannambadi on any day by the ratio determined, as noted above, the corresponding flow at the Cauvery dam 2 or 3 days later can be approximately found, and this figure may be taken for computing the surplus at the Cauvery dam above the Madras requirements. This surplus quantity converted into its equivalent at Kannambadi by adding for the transmission losses, would be taken as permissible for impounding on that day in the reservoir. On this principle, Table III of Appendix P has been prepared. A reference to it will make it clear that this gives a working basis to the system shown in Table II. It will be seen that for the same month, July 1905–1906, the total quantity made available for storage is 49,693 m.c.ft., against 50,147 m.c.ft., accroding to Table II; and the total flow wasted into the sea would be 14,833 m.c.ft., against 13,306 m.c.ft., as per Table II. There are only two days in this month in which a disturbance within the limits due to Madras has at all occurred. The quantity affected by this disturbance is only 1,078 m.c.ft., against a total flow of 91,688 m.c.ft., at the Cauvery dam. In fact the quantity of compensation water due to Madras is confined to a minimum of only 1·1 per cent. of the flow, and so the effect of the delay of two or three days in transmission is only felt on this limited quantity.

105. The same Table III has been worked out for the whole year 1905–1906, and the results derived from this are worth noting. The number of days in which impounding is at all possible is only 54 in the whole year and so any disturbance in the incidence of flow at the Cauvery dam would only be confined to this limited period; on all other days, the quantity received into the reservoir would be let down immediately. Even out of these 54 days in which the flood conditions have been disturbed, impounding above the permissible surplus quantities has been made during 23 days only. Also, the total quantity of water requiring adjustment on these days is only 6,632 m.c.ft; of this, the quantity actually adjustsd (amounting to 3,503 m.c.ft., or half of the quantity disturbed) really proves beneficial on 15 days to Madras, as it goes to enhance the natural flow at the Cauvery dam when it is below the required limit. So the balance that really affects the incidence of flow is (6,632—3,503=) 3,129 m.c.ft This is only 1·3 per cent. of the total flow at the Cauvery dam in the irrigation season and is confined to only eight days in the whole period. This small disturbance cannot be considered as in any way affecting the irrigation conditions of the delta system.

106. Similar Tables I, II and III, have been worked out for the current year 1913, with the correct observed discharges, and it will be seen that they also confirm the above conclusions.

In both these sets of tables, the proportion of Kannambadi flow to the Cauvery dam flow is taken as 0·625 for the south-west monsoon and 0·33 for the north-east monsoon. These ratios are based on the actual discharges for the five most unfavourable years in each season respectively.

107. *Conclusion.*—Thus, by approximately computing the daily discharges at the Cauvery dam from the observed discharges at Kannambadi, a method of utilising as far as possible the surplus waters at the Cauvery dam for impounding at Kannambadi has been devised as per Table III by the help of the proportion which the flow at one place bears to the other. It is also shown how the information called for by the Arbitration Committee about this proportion will prove useful in determining the principles and rules for impounding, at the Kannambadi reservoir, the wasted floodwaters at the Cauvery dam, in a way fair to both the parties—to Madras, in leaving both the quantity and incidence of flow undisturbed—to Mysore, in allowing facilities for impounding all surplus waters which now run to sea and to which they have the first right by common consent.

APPENDIX A.

No. 1—A.

OFFICE OF THE DEWAN OF MYSORE,
Camp Guindy, Madras, 10th June 1890.

From

K. SESHADRI AYYAR, Esq., C.S.I.,
Dewan of Mysore.

To

COL. SIR OLIVER ST. JOHN, K.C.S.I.,
Resident in Mysore.

SIR,

With reference to the previous correspondence on the subject of the restoration and construction of irrigation works in the Mysore State, commencing with your office letter No. 2963—818 of 31st August 1888, and ending with your office letter No. 1275 of 19th April last, regarding the Jailodu tank, I have the honour to submit herewith the accompanying Memorandum, which embodies the views of the Durbar regarding the storage of water in Mysore territory.

2. Very early in the present century, exception appears to have been taken by the Government of Madras to the utilization by the Mysore Government of the waters of the river Cauvery and its tributaries. See letter dated, Fort St. George, 14th February 1807, from the Chief Secretary, to Major Wilks, then Acting Resident at Mysore, and latter's reply dated 27th March of the same year. In this correspondence, the rights of Mysore to the improvement of their river-works, so far as the same should not prove detrimental to the then existing irrigation in the Tanjore Delta, would appear to have been recognized.

3. And it is believed that, about the year 1870 or 1871, controversy again arose in regard to the extension of the Cauvery channels in Mysore, such extensions conflicting with the claims of the Madras raiyats irrigating lands lower down the banks of the river. The correspondence that then ensued cannot, however, be traced in the records of this office, though it is believed that the dispute was settled in favour of the Mysore raiyats.

4. But, be that as it may, it is clear that, from the year 1866, a policy was inaugurated by the British Government which aimed not only at the complete restoration of all the ancient irrigation works, which covered the Mysore plateau, but at their improvement and extension on a great scale, so as to fully secure the whole of the territory against drought and famine.

5. The restoration of the so-called "Tank-system" of Mysore, embracing, as it did, the utilization of the maximum of rainfall over the country, so far as the same could be economically ensured, was, as the records show, fully approved by the Government of India and Her Majesty's Secretary of State, and was never objected to, so far as the Durbar are aware, by the Madras Government.

6. This far-reaching scheme was unfortunately, but very partially, carried out from various causes, chief amongst which was the disastrous famine of 1877–78, which put a stop for a time to all but the most insignificant and least costly public works. The incomplete tank-scheme was left as a legacy to the Government of His Highness the Maharaja, and the irrigation works, which the Durbar have been carrying forward during the last ten years, are but the fulfilment of the original intentions of the British Government.

7. Through your kind instrumentality, a Conference between the Madras Government and the Durbar was recently attempted, the object being to establish a basis on which all tank and channel questions could be settled as they arose, in fairness to Madras raiyats on the one side, and in justice to those of Mysore on the other. It was the earnest desire of the Durbar that such an arrangement should be arrived at as would be best calculated to avert the consequence of serious loss to the British Government, without checking the legitimate and reasonable progress of the irrigation works of Mysore. Unfortunately, the conditions put forward verbally at the Conference on behalf of the Madras Government, with the object of limiting the rights of Mysore, appeared to be such as would preclude all but the most insignificant works of restoration and improvement, and would, in fact, absolutely prevent the protection of the country from drought and famine by means of the extension of our existing irrigation system. The restrictive limits proposed were, in the opinion of the Durbar, unreasonable and could not be accepted.

8. Under these circumstances, a representation to the Government of India has become necessary, and I am to express the hope of His Highness the Maharaja that you will be so good as to urge, on behalf of the people of Mysore, the cogency of the reasons set forth in the accompanying memorandum, and to obtain for the State reasonable liberty to carry out its irrigation works and to complete its system of irrigation as early as possible. The works so far undertaken, or now under projection, by the Durbar, will not, it is believed, materially affect

existing irrigation works beyond the frontier. Objections from Madras authorities have always received, and will always continue to receive, due and respectful consideration from the Durbar; but it is desirable that some definite rules should be prescribed by the Government of India for the guidance of both parties, any difference of opinion regarding the application of those rules to individual cases being reserved for the final arbitration of the British Resident in Mysore, who naturally would be the best judge when there is a conflict between the interests of Mysore and British India.

9. Should any definite scheme be put forward by the Madras Government, I beg that I may be afforded an opportunity of submitting my observations thereon, with the object of inviting attention to points affecting the interests of Mysore in a prejudicial manner.

I have the honour to be,
Sir,
Your most obedient servant,

K. SESHADRI AYYAR,
Dewan.

MEMORANDUM.

There are two classes of works now being actually carried out or being projected in Mysore, to which objection is taken by the Madras Government, *viz.*:—

(1) Restoration and improvement of old works, and
(2) New works.

In the first class, the most ordinary works involve some increase to the level of the waste-weir of the tanks being dealt with, so as to make up for the loss of capacity due to silting, as also to impound more water in order to meet the increasing irrigational requirements of the country.

In the second class, the works generally are intended to supersede old tanks or anikats more or less in ruin, to supply more permanent irrigation and also to bring additional land under cultivation.

2. In dealing with this question, it is important to bear in mind the greatly undulating character of the country and our precarious rainfall, conditions which make the case of Mysore somewhat different from that of other Provinces:—

First.—The cost of storage of water and the risk of accident to the works are much greater than elsewhere, and it is not possible, on financial grounds, to repair at once all our breached tanks and anikats. We have scarcely a square mile of country which is flat. In the more open and level parts, the slope is never less than 10 or 20 feet per mile, while, elsewhere, it is 60 or 80 feet, not to mention the hilly tracts. To control and retain for use the flood water flowing in the valleys is therefore often a matter of exceptional difficulty and expense in Mysore.

Secondly.—The process of silting is much more rapid than in most Madras districts, and periodical raising of the level of our waste-weirs is therefore inevitable.

And *Thirdly.*—Our tanks are required not only for agriculture, but for the very existence of our population, as, without them, the greater part of the Province, especially the north and north-east, would be an uninhabitable waterless tract, for, unless the underground springs are fed by our tanks, it would be impossible in many places to get water even in wells for domestic purposes and for cattle.

3. In the northern parts of Chitaldrug, the rainfall is most scanty and varies between 10 and 20 inches in the year and, on an average we have about one tank for every 3 square miles, and the average cultivation under each tank is about 2½ acres. In the northern taluks of the Kolar district, where some of the works now under dispute are situated, we have about one tank per square mile, and each tank irrigates about 10 acres. These tracts are in a state of chronic suffering from drought, and the best resources of the Government have constantly to be directed towards storing in them as much of our rainfall as possible. Towards this end, we are now merely continuing the policy inaugurated and partly carried out during the British Administration of the Province, and I would beg to invite attention to some of the more important orders of the British Government relating to that policy.

4. In their letter of March 22nd, 1866, Circular No. 25, P.W, the Government of India impressed upon the then Chief Commissioner of Mysore the necessity of executing remunerative irrigation works calculated "to prevent the recurrence or mitigate the severity, of drought or famine."

In his letter No. 3828 of 19th November 1866, Major Sankey, then Chief Engineer, in pursuance of those instructions, reported on the irrigation works of the Province. He stated in para. 12 that, out of a total area of 27,269 square miles of Mysore territory, 16,287 (exclusive of the Western Ghats, where no irrigation is required) have been brought in some remote time under the tank system, and that none of the drainage of these 16,287 square miles should, with

proper attention, be allowed to escape, were all existing works in their normal condition. It was, however, found that the tanks generally had greatly deteriorated and that they could not, for that reason, be expected to do the work they were originally capable of doing.

Under such circumstances, Major Sankey proposed an extensive system of tank restoration and enlargement, at an outlay of one million sterling.

Again, on the 22nd June 1872, with Under Secretary's letter No. 134—1610, I, the Chief Commissioner submitted a Memorandum by the Superintending Engineer, giving full details of the scheme proposed, which aimed at the following main objects :—

First.—To store up in reservoirs, adjacent to the gathering grounds, the portion of the rainfall that may run off the ground, in order that it may be utilized for purposes of irrigation and water-supply, instead of swelling river floods and running away uselessly to the sea.

Secondly.—The point on any main drainage, below which it is inexpedient to construct a reservoir, being determined, to construct at that point a new tank or to improve an old tank if one be existing.

And *Thirdly.*—To accept, as a first principle, "*if it will pay for storage, it is inadvisable that any water running off should be allowed to escape.*"

On the 20th August 1872, in their letter No. 705 I., the Government of India approved of the scheme described above. Para. 4 of that order is important, as it can be inferred from it that the Government of India did not object to the intention of the Mysore Public Works Department, to intercept and retain as much of the rainfall as they possibly could, and the Government of India were only doubtful whether the run-off to be intercepted should not have been assumed at three-fourths of the rainfall as in other parts of India, instead of only at one-fourth, as proposed by the Mysore Public Works Department.

The scheme also received the approval of the Secretary of State in his despatch No. 97 of the 9th October 1872.

5. It was originally intended that the restoration scheme above referred to should be completed before His Highness the Maharaja attained his majority. Owing to various causes, it was found impossible to execute it completely before the Rendition; it was, however, actually carried out for parts of the Province, and then the famine intervened, and what was left undone for other parts of the Province was left to be done by His Highness the Maharaja, whose Government are now doing their best to complete the scheme thus partly carried out during the British Administration, and who may naturally ask that objections on the part of the Madras raiyats, which were never raised before the Rendition, may not now be allowed to be raised against the completion of the scheme inaugurated and partly executed by the British Government.

6. I may perhaps be permitted to add a few remarks on the question of the right to the water in dispute.

(*a*) The supply of water which we purpose to store and use for irrigation and water-supply is only casual, intermittent and exclusively dependent upon the rainfall on Mysore land. We have a *natural* right to collect and dispose of all water on the surface of our land, and though, as between private owners, such *natural* right would (subject to the exceptions hereafter to be noticed) be restricted to water *not* flowing in a defined channel, the case of a State is, I submit, very different. It has to deal with large interests and establish means of irrigation and water-supply over extensive areas, and it cannot effectually dispose of surface water, before it enters some defined channel. And I submit that the question, as affecting the State, has to be decided on the higher grounds of public welfare and general prosperity, and not according to the strict rules of law applicable only to private rights.

(*b*) The State naturally would have greater right of control over water falling on the surface of its own lands and gathering into a defined channel within its own frontier, than it would in the case of a stream rising outside its frontier and merely flowing through it into the Madras Districts; the obligations which may exist in respect of a stream of the latter kind do not arise in any of the cases under dispute. In all these cases, on the other hand, the works we propose would tend to hold back river-floods running more or less to waste and to establish more perennial streams flowing from Mysore into the Madras districts.

(*c*) If a right of easement by prescription is claimed on behalf of the Madras raiyats, I can only say (assuming that such a limiting right as an easement can at all be acquired by Madras raiyats against the Mysore State) that it is most difficult to say what period of time would be reasonable for the acquisition of such a right against the State. For obvious reasons, the 20 years of the Easement Act would be too short a term, and, in the case of Mysore, the fact of the British Administration of the province during half a century has an important bearing upon the question.

Moreover, a right of easement can never be acquired by a mere *permissive user*. It cannot be said that Mysore never intended to store its rainfall for irrigation and other purposes to a greater extent than it used to do at some remote period. It is indeed more reasonable to infer that the user in question was *permitted* to be in force only so long as the State did not

wish or were not able to store more water. As a matter of fact, the history of the Mysore Irrigation Department, as already shown, bears ample testimony to the Mysore Government having always intended to store and utilize as much of its rainfall as possible, and the presumption of a grant from prescriptive enjoyment is therefore most distinctly and expressly negatived in the case of all Mysore streams, to the extent to which they may be capable of being utilized for irrigation and other purposes within Mysore Territory.

It is also most important to remember that the so-called right by prescription cannot be claimed either in the case of recent Madras works or recent enlargement of old Madras works; nor, as regards water which now flows to waste over existing Madras works, can any right whatsoever be claimed by Madras, for, the essence of a prescriptive right is enjoyment and use, which cannot of course be predicated of what is allowed to run to waste.

And lastly, it is worthy of note that we have always impounded—in increasing quantities as our works increased—as much of our rainfall as possible. This increasing appropriation has, until recently, never been objected to by Madras. This is not surprising if we remember that (as pointed out by Colonel Sankey in his letter of 19th November 1866) the old Mysore tank system was so perfect that, were all tanks in their normal condition, none of the drainage of 16,287 square miles commanded by the system could possibly escape, and that, therefore the so-called new works and new or increased storage of water were, in reality, new methods of securing what the old system secured in a different way.

And (*d*) Even in the case of private riparian owners, they have the natural right to use the water flowing through their land in a defined channel for all reasonable purposes, including the irrigation of land, *provided they do not thereby destroy or materially diminish or affect the application of the water by riparian owners below the stream*, either in exercise of their natural right or right of easement. (See Embrey *vs.* Owen, 6, Exch., 372 and XI Indian Law Reports, Madras 19). Assuming, for the sake of argument, that this well-recognized principle of Municipal Law is applicable to the case of two neighbouring Provinces, I am sanguine that it would be found, upon investigation, that Mysore is strictly within its right in carrying out the works to which objection has been taken by the Madras Government.

7. Taking, for instance, the case of the Chitravati Tank, about which we have already collected full information, *no reasonable* objection can be urged against its construction. The raiyats of Bukkapatam in Madras complain on the ground of an apprehended diminution of supply to their tank. Their complaint is obviously groundless for the following principal reasons: —

First.—The area of Mysore country, drained by the Chitravati and its tributary, Kushavati, is about 581 square miles (Chitravati 476 and Kushavati 105). Of this large area, the new Mysore tank will but partially intercept the drainage of 48 square miles. Assuming the run-off at only one-fourth of the rainfall (though we may not unreasonably assume half for so steep a part of the country), we still leave a large quantity of water unintercepted by the new tank, about a * third of what runs off the gathering ground of 48 square miles and is not already intercepted by existing tanks. In the calculations in the margin, I take no account of the Valasanhalli Ryankere (with a catchment area of 15·04 square miles) for which we have recently substituted an anikat, thus releasing for storage in the new tank what formerly was storable in Valasanhalli.

*Rainfall .. 24 inches.		
Run-off at about 6 in. on 48 square miles		Units. =2,560
Already intercepted by—		
(1) Four large tanks	526	
(2) Minor works (assumed)	274	
		1800
Remaining		1,760
To be stored in new tank ..		1,200
Remaining ..		560

†The storage capacity of existing tanks above was (in letter to Assistant Resident, dated 25th December 1889) roughly assumed at 1,000 units. The Executive Engineer assumed it at 800 units at a rough guess giving details for only 526.

Unit = 10,000 cubic yards.

Secondly.—Again, from the site of the new tank, the length of the course of the Chitravati in Mysore Territory is 18 miles, and from the frontier to the Bukkapatam tank is 32 miles. Total length from the new tank to Bukkapatam tank is thus about 50 miles, and in a straight line the distance between the two tanks is 40 miles. It is, I think, unreasonable to contend that the supply to Bukkapatam tank can be sensibly affected by a new work situated at such great distance from it.

Thirdly.—Moreover, at the site of the new Mysore tank, the Chitravati is an insignificant stream, dry throughout the greater part of the year. The new tank is so near its source that the volume of the stream which it intercepts is but a very small fraction of its volume when it leaves Mysore.

Fourthly.—The Bukkapatam tank not only receives this large stream and its tributary (draining 581 square miles of Mysore Territory), but it also receives the drainage of a large tract of British Territory, some 850 square miles roughly calculated from the Atlas sheet. This tract is full of tanks which, I understand, have been enlarged to a greater or less extent from time to time, thus presumably diminishing the supply to the Bukkapatam tank. No information is furnished as regards the magnitude or age of such enlargements, and it is therefore impossible to say to what extent the claim of the Bukkapatam raiyats is professed to be supported by actual enjoyment during a lengthened period. Indeed, the Bukkapatam raiyats have done

ittle more than take an objection to the proposed Mysore work upon the general ground of an apprehended diminution of supply to their own tank, as raiyats everywhere are only too prone to do. No grounds whatever for any such apprehension are yet shown to exist, though the burden of proving a material and injurious diminution is upon the Bukkapatam raiyats who seek to limit a natural right vested in Mysore. On the other hand, the facts I have briefly stated above go to show that no reasonable grounds exist for apprehending any injurious diminution of supply of water to the Bukkapatam tank. But, apart from the question of diminution or no diminution, the Mysore work proposes to do no more than make a reasonable use of the rainfall gathering on Mysore land and this by itself is, I submit, a sufficient answer to the objection raised by the Madras Government.

And *Fifthly*.—It is shown that, below the new Mysore tank, there are no less than 15 anikats in various degrees of disrepair. If we maintain them in that state of repair and progressive improvement (our right to do which cannot, I think, be denied) we would, in that way, intercept more of the Chitravati waters than the new tank is calculated to do The new tank also supersedes some old ones which actually existed, but it is naturally on a much larger scale on economic grounds.

8. Setting aside, however, the purely legal aspect of the case which has been briefly discussed in the preceding paragraphs, and which is obviously incapable of satisfactory application to the relations existing between the Mysore State under the protection of the British Government on the one side, and the Madras Districts directly administered by the Paramount Power on the other, it is mainly, I contend on the higher ground of the interests of the people that a favourable view should be taken of the efforts of the Durbar to utilize to the utmost the rainwater falling on the surface of the country. To what extent such efforts should be limited would seem to be a question beyond the domain of ordinary law, and one specially for the consideration and decision of the Government of India. That Government, owing to its administration of Mysore during 50 years including several periods of drought and famine, is intimately acquainted with our large and important requirements for storage of water, with our special system of tanks and with the past history and present development of our irrigation policy. The claim of Madras is very general and far-reaching in its character, and embraces all Mysore works, large and small, the nearest as well as the most remote. We have not as yet been furnished with any definite statement of the claim thus made, though, at the Conference recently held at Ootacamund, the general proposition was put forward that, as a matter of right, Mysore could not intercept any portion of the water, which, during the past 20 years, has been allowed to run down into Madras Districts, and that, therefore, every irrigation work in Mysore required the previous consent of the Madras Government, who, however, were prepared to waive their objection as regards petty works calculated to irrigate 100 or 200 acres. I have already endeavoured to show that Mysore possesses very extensive rights in respect of the water under dispute, and I may here add that such rights could not be extinguished by mere lapse of time however long. It may be that, owing to causes beyond control, the Mysore Government have not hitherto been able to exercise their rights to the fullest possible extent and have allowed their tanks and other works to fall into disrepair, while the Madras Government went on improving their resources and enlarging their irrigation. But this, I submit, cannot have the effect of destroying the natural rights of the State to a beneficial enjoyment of its waters. It is also important to remember that it has not yet been shown that any of our proposed works is likely materially to diminish the water-supply to the Madras Presidency. Not only would any such diminution be most unlikely, but there would still be left a large volume of water to be annually carried uselessly to the sea by the Mysore rivers, and Madras can help its raiyats more by utilizing these waters, than by endeavouring to stop the works undertaken by the Mysore Government. If, indeed, no work calculated to intercept any portion of the waters of the Mysore rivers is hereafter to be undertaken by Mysore without the consent of Madras, it is only fair that the obligation should be reciprocal. At any rate, Mysore should have due notice from time to time of the creation of new works and enlargement of old works in Madras, in respect of which a right by way of prescription would be claimed at some future time. And I will only add that if every Mysore work of any consequence is to be objected to by Madras, the investigation necessary for the final settlement of each case would be unduly prolonged and involve an examination of the irrigation history of large drainage areas in Mysore as well as in Madras, during a long series of years. Under such circumstances unless some general rules defining exactly the rights of Mysore in regard of the preservation and extension of its irrigation system are laid down by the Government of India, I apprehend the most serious interruption to the progress of all irrigation works in Mysore. The Durbar are most anxious to adopt some plan which, while it leaves them unhampered to complete their own irrigation system at an early date, would, at the same time, afford protection to the real interests of the raiyats in the neighbouring districts of Madras. A scheme somewhat on the following lines would, in my opinion, effectually protect all interests.—

A. Streams supplied exclusively by the drainage of Mysore Territory.

1. Any old tank, anikat, or channel, within a distance of 5 miles from the frontier can be repaired or restored, provided such repair or restoration does not irrigate more land than can be shown to have been formerly irrigated. The distance to be measured from the tank waste-weir to the frontier down the natural drainage of the tank or other work. Within the distance of 5 miles measured as above, no new works to be undertaken.

2 The same rule to hold good as regards old tanks, anikats or channels within a distance (measured as above) of ten miles from the frontier, but it will be permissible to substitute new works on engineering and economical grounds for such old ones, provided the total areas to be so irrigated will not exceed the formerly irrigated areas to a greater extent than 25 per cent.

3. Beyond the distance of 10 miles and within a distance of 40 miles from the frontier (measured as above), Mysore to be at liberty to restore all old works or construct new ones, so as to utilize not more than one-fourth of the average rainfall as calculated from the surfaces drained and the available recorded rainfall observations.

4. When, as is sometimes the case, a drainage traverses Madras or Bombay territory before entering Mysore, the one-fourth of the rainfall to be intercepted to be calculated only over the drainage area appertaining to Mysore. The same rule to hold good in regard of irrigation operations undertaken by Madras or Bombay across drainages partially affecting Mysore.

5. Beyond the distance of 40 miles from the frontier (measured as above), Mysore operations to be absolutely unrestricted.

B. Streams which rise outside the frontier of Mysore and flow through Mysore territory into British territory.

6. Within a distance of 40 miles from the frontier (measured as above), Mysore to be at liberty to construct new works or repair old works, so long as there is no material diminution of the volume of water passing into British territory during the dry months from December to April.

7. Beyond a distance of 40 miles from the frontier (measured as above), Mysore operations to be absolutely unrestricted.

C. General.

8. Where the main stream of a drainage is coincident with the frontier, the distance of a work in its valley from the frontier to be computed from the point at which the channel leaves or separates from the frontier line.

9. Should there arise any difference of opinion between the Madras and Mysore authorities, in the application of the above rules to any individual case, such difference to be submitted to the arbitration of two officers, one to be deputed by each Government with the British Resident as Umpire.

GUINDY,
10*th June* 1890.

K. SESHADRI AYYAR,
Dewan of Mysore.

APPENDIX B.

Rules for the Regulation of water at Upper Anikat.

(*i*) *Rules for the guidance of the Superintendent, Upper Coleroon Anikat.*

I. Except after periods of scarcity, the sluices of north and south branches will be opened when water rises to 6·5 feet on the Cauvery dam gauge.

II. The sluices of the south branch will be closed when water falls to 6·0 feet on the Cauvery dam gauge and those of the north branch when water falls to crest level.

III. After a period of scarcity, that is, when during the previous week the water level has not exceeded 6·0 feet at the Cauvery dam, the sluices of both branches will not be opened until water rises to 7·0 feet on the Cauvery dam gauge.

IV. In opening the sluices, the Superintendent should begin with the middle ones, and in closing with the end ones.

In the south branch, numbering the sluices from the south end, the following will be the order for opening them: 4, 3, 5, 2, 6, 1, 7; and for closing, the reverse order: 7, 1, 6, 2, 5, 3, 4, Numbering similarly the vents in the north branch, they will be opened in the order 4, 5, 3, 6, 2, 7, 1, 8; and closed in the order 8, 1, 7, 2, 6, 3, 5, 4.

NOTE.—The Cauvery dam gauge to which levels are referred is the enamelled iron gauge at the north end of dam.

J. BEATTY, COL., R.E.,
27*th July* 1882. *Superintending Engineer, VI Circle.*

Approved by the Chief Engineer for Irrigation in Memorandum No. VI—2-T.J., dated 19th February 1882.

APPENDIX C.

Rules for Regulation at Cauvery-Vennār Regulators.

A full and ample supply to the delta is considered to be passing when there is a discharge of 11,240 c.ft. per second into the Cauvery and 6,104 c.ft. per second into the Vennār.

2. When there are no local floods in the delta, the Vennār regulator is to be kept open as long as water does not rise to above 7 feet on the front gauge and shutters of the Cauvery regulator adjusted so as to give proportionate discharges into the two rivers, according to the following table:—

Depth above regulator.	Cauvery.		Vennār.	
	C. yds. per acre, per hour.	Total discharge c.ft. per second.	C. yds per acre per hour.	Total discharge c.ft. per second.
6	4	15,000	2⅔	8,140
5	3	11,240	2	6,104
	2½	9,370	1⅔	5,080
4	2	7,492	1⅓	4,070
4	1½	5,620	1	3,050
3	1	3,746	⅔	2,030
2	½	1,873	⅓	1,015

Note.—Intermediate readings to be inte rpolated.

3. When water reaching the regulator is more than will give the discharges stated in rule 2, water will be admitted to Cauvery up to 7 feet on the rear gauge.

4. If water still continues to rise, it will be passed into the Vennār until the rear gauge reads 8 feet unless the Superintendent has received information that the Vennār is in danger from local drainage, in which case the water should be reduced to 6·5 feet. On orders from the Executive Engineer, the Vennār regulator may be closed entirely.

5. If water in front of the regulator rises above the level required to give gauge depths stated in rules 3 and 4, 7½ feet may be admitted to the Cauvery, and if the rise continues, the shutters of the Cauvery regulator must be raised so that the difference in level in front and rear shall not exceed 4½ feet.

The above rules were formulated on 27th April 1888 and sent by the Superintending Engineer to the Executive Engineer for introduction with letter No. 750-T.J., dated 2nd July 1888.

These rules remained in force till 1894 when the old Vennār head was closed and revised rules approved by the Chief Engineer for Irrigation in V. 80-T.J. of 28th August 1894, were introduced. They are as below:—

Cauvery-Vennar Regulators.

RULES REVISED.

1. If the water rises above 7 feet on the front gauge, open Cauvery shutters till the rear gauge of Cauvery reads 6·2. Cauvery and Vennār shutters will now be fully open.

2. If water still rises, keep on opening both regulators exceeding with no exception 9 feet on Vennār rear gauge or 6·5 feet on the Pillai Voikal gauge and as a rule 7·5 on the Cauvery rear gauge.

3. But if the rise still continues, let water down the Cauvery shutters taking care that the difference in front and rear levels of water does not exceed 4½ feet.

4. If you see heavy rain in the south-east of Grand Anikat, reduce rear gauge of Vennār to 6·5. Reduce still further if you receive reports that the Vennār is in danger from local drainage.

5. If the cross bank at the Vennār old head breaches, act according to former printed rules.

APPENDIX D.

Table of discharges in *m.c.ft.* in the month of June for the years 1890 to 1909.

Years.	First-half of June.					Second-half of June.					Remarks.
	Discharge at the Cauvery dam.	Discharge into the Coleroon over the Upper Anikat.	Grand Anikat discharge.	Combined discharges of the Cauvery and the Vennār.	Discharge at Lower Anikat.	Discharge at the Cauvery dam.	Discharge into the Coleroon over the Upper Anikat.	Grand Anikat discharge.	Combined discharges of the Cauvery and the Vennār.	Discharge at Lower Anikat.	
1	2	3	4	5	6	7	8	9	10	11	12
1890	5,224			2,257	2,015	9,133			7,948	770	(i) During the first-half of June, in fifteen years out of twenty, discharges at the Lower Anikat are far in excess of the surpluses at the Upper and Grand Anikats. (ii) During the second-half of June, in nine years out of twenty, the discharges at the Lower Anikat are similarly higher than the surpluses at the two higher anikats.
1891	6,346			3,520	669	6,130			3,246	472	
1892	8,082			4,048	2,055	11,758	308		6,826	506	
1893	13,741	362	4	11,233	1,730	30,106	9,342	35	24,807	12,488	
1894	6,807					18,081	2,020	698		965	
1895	3,306			175	12	28,372	18,316		19,361	20,468	
1896	4,250			822	227	40,094	41,154	8,689	24,799	32,549	
1897	5,662			2,920	1,158	35,447	27,861	19,378	26,799	33,496	
1898	4,030				146	21,402	6,080	8,435		8,646	
1899	4,096		1,572	129	4,173	24,183	11,880		15,828	14,305	
1900	3,979			1,694	20	20,903	6,200	3,374	31,443	1,438	
1901	4,910			3,272		20,753	4,791	96	22,652	2,335	
1902	3,568		1,727	288	808	8,402	92		7,174	154	
1903	5,786			3,441	1,984	9,568			8,161	3,411	
1904	16,207		3,702	7,138	9,581	31,637	27,211	11,403	19,855	42,895	
1905	4,335			2,292	4,630	8,246			7,569	1,091	
1906	692			343		4,076	656		2,818		
1907	5,066		2,594	1,198		14,807		1,516	10,410	1,611	
1908	2,382			2,817	2,787	5,270			6,704	3,363	
1909	21,577	20,722	6,659	16,803	4,769	15,447	8,897	2,852	16,974		

APPENDIX E.

Provisional Rules for working the Mysore Reservoir.

N.B.—For ready reference to the working tables, No. III of Appendix P. the corresponding columns thereof have been noted under the several clauses of these rules.

1. The total flow in the river, up to the limits mentioned in the following table (Col. 16), shall be considered as the supply at the Cauvery Dam across the Aganda Cauvery to which Madras is entitled during the irrigation season from 1st June to 31st January by prescriptive right according to Rule III of the Agreement of 1892: —

		Proposed depths in feet.	Daily discharge M. c.ft.
June	1st half	3·5	450
	2nd „	5·1	1,060
July	1st „	6	1,625
	2nd „	6	1,625
August	1st „	6	1,625
	2nd „	6	1,625
September	1st „	6	1,625
	2nd „	5·2	1,120
October	1st „	5·4	1,240
	2nd „	5·4	1,240
November	1st „	5·0	1,000
	2nd „	4·4	696
December	1st „	3 9	538
	2nd „	3·0	370
January	1st „	2·5	290

2. Any flow in the river at the Upper Anikat in excess of the above limits shall be considered as available for storage in Mysore, that is, in the Kannambadi Reservoir, with due increase for losses in transmission.

The transmission factor is taken as three-fourths between Kannambadi and the Cauvery Dam, *i.e.*, a flow of 100 at the Kannambadi Reservoir would be $\frac{3}{4} \times 100 = 75$ at the Cauvery Dam and a flow of 75 at the Cauvery Dam would be $75\frac{3}{4} = 75 \times \frac{4}{3} = 100$ at the Kannambadi Reservoir. *Vide* Cols. 2c & 2d ; 2e & 4 ; 4 & 6.

3. From 1st February to 31st May, the entire flow in the river shall be available for impounding within Mysore limits.

4. The officer at Kannambadi shall compute the quantity to be impounded in any day in the reservoir in the following manner :—

(*a*) First, he will ascertain the exact flow into the Kannambadi Reservoir. (Col. 2a.)

(*b*) The approximate flow at Cauvery Dam corresponding to the flow at Kannambadi on any day shall be taken as $\frac{8}{5}$th or 1·6 times the Kannambadi flow during the months of June to September and three times the Kannambadi flow during the months of October to January. (Col. 2b.)

(*c*) The excess of the flow at the Cauvery Dam over the limit of flow fixed in Rule 1 (Col. 16) above, would be available for impounding ; and this, converted into its equivalent at Kannambadi as provided under Rule 2, shall be taken as the quantity permissible for impounding on that day. (Col. 2d.)

(*d*) This quantity or the flow at Kannambadi, if less, will be stored in the reservoir. (Col. 2e.)

5. (*a*) The total river discharge (Col. 3) at the Cauvery Dam on any day in the irrigation season 1st June to 31st January, shall be taken as the sum of—

(i) the actual flow at the Cauvery Dam on that day (Col. 7) ;

(ii) equivalent at the Cauvery Dam of the quantity of water impounded at the Kannambadi Reservoir three days previously (Col 4) ;

(iii) less compensation water, if any, being the equivalent of the water passed down from the Kannambadi Reservoir 3 days previously, for necessary adjustment of excess storage as provided in Rule 6 below :—(Col. 6.)

Thus Col. 3 = Col. (7) + Col. (4)—Col. (6) 3 days previous.

6. The quantity of compensation water due to Madras shall be computed thus :—

(*a*) The actual flow at Cauvery Dam (Col. 7) less the quantity of compensation water Col. (6) if any, received on that day, shall be considered as the net flow, Col. (5), at Cauvery Dam.

(*b*) If the total discharge arrived at under Rule 5, Col. (3), be higher than the limit fixed in Rule 1 (Col. 16), the excess of the limit flow over the net flow determined under Rule 6 (a), shall be the compensation water due to Madras from the Kannambadi Reservoir. Col. (16)—Col. (5).

(*c*) If, on the other hand, the said total discharge, Col. 3, be less than the limit, Col. 16, e excess of this discharge over the said net flow shall be the compensation water due to adras from the Kannambadi Reservoir. Col. (3) — Col. (5).

7. The gauges at the Cauvery Dam and the reservoir shall ordinarily be read at least twice a day at 6 A.M. and 6 P.M., but during floods they shall be read every hour or at other intervals as may be required by Mysore, and the information communicated by telegram. The average daily dicharge shall be calculated from such readings so as to give the closest approximation to actual discharge.

8. Gauges shall also be established at the stations named below :—

Within Mysore Territory.

(*a*) Hulhalli Anikat across the Kapini.

(*b*) Kalhalli Anikat across the Hemavati.

(*c*) Chamaraj Anikat across the Cauvery.

(*d*) Ayerhalli Anikat on the Lakshmanthirtha.

(*e*) Meke Datu on the Cauvery below the junction of the Arkavati.

Within Madras Territory.

(*f*) A station on the Cauvery below the junction of the Bhavani.

(*g*) A station at a point below the junction of the Noyel and the Amaravati.

9. The gauge readings at the stations mentioned in Rule 8 shall be telegraphed to the officer at Kannambadi daily at suitable intervals.

10. The charges incurred in this connection by the Madras Government shall be borne by the Mysore Durbar.

11. Copies of the above gauge readings shall be supplied to the officer at the Cauvery Dam.

12. The Officer in charge of the Cauvery Dam shall have instructions to telegraph to the officer in charge of the Kannambadi Reservoir, whenever, on account of rain in the delta or other reason, the entire flow in the river may be impounded in the reservoir.

13. The following items shall be considered as tentative, subject to due alteration after a period of test extending to 6 years.

(1) The percentage of losses in transmission noted in Rule 2.

(2) The time of transmission noted in Rule 4.

(3) The ratios of the Cauvery Dam flow to that at Kannambadi noted in Rule 5 during the south-west and north-east monsoon periods respectively.

TABLE showing how the limits in the rules have been fixed.

Periods.	Projects limits.		25 per cent. above projects limits.		Depths corresponding to average fortnightly discharge.	Limits proposed in rules, Col. 5 or Col. 6 which-ever is greater subject to 6-feet limit.
	Discharge.	Depths.	Discharge.	Corresponding depths.		
1	2	3	4	5	6	7
June .. 1st half	356	2·9	445	3.5	13·5	3·5
June .. 2nd „			..	..	5·1	5·1
September .. 2nd „	815	4·7	1,060	5·1	5·2	5·2
October .. 1st „	1,009	5·0	1,261	5·4	5·4	5·4
October .. 2nd „	635	4·2	794	4·6	5·4	5·4
November .. 1st „	508	3·8	635	4·2	5·0	5 0
November .. 2nd „			..	..	4·4	4·4
December .. 1st „	371	3·0	464	3·6	3·9	3·9
December .. 2nd „	150	1·7	188	1·9	3·0	3·0
January .. 1st „	216	2·1	270	2·4	2·5	2·5
January .. 2nd „						

N.B.—The full limits of 6 feet is allowed for the five fortnights, July, August, and first half of September.

APPENDIX F.

STATEMENT showing areas irrigated as compared with supplies, (*a*) due to 7-feet limit discharges, (*b*) supplies actually used, and (*c*) supplies that would be available with the limits proposed by Mysore, for the twenty years ending 1909–10.

Year.	Delta area.	Supply due to 7-feet limit.	Actual supply at head-works.	Supply as per limits in rules.	Remarks.
1	2	3	4	5	6
1890-91	1,013,344	204,209	129,078	163,431	
1891-92	1,008,059	234,892	128,398	175,896	
1892-93	1,012,049	246,637	143,184	204,940	
1893-94	996,055	209,513	179,123	225,374	
1894-95	989,891	207,779	125,501	184,354	
1895-96	987,103	273,365	164,005	210,742	
1896-97	977,123	310,678	227,560	225,999	
1897-98	989,808	299,394	205,990	220,527	
1898-99	994,118	315,730	173,508	210,491	
1899-00	954,123	157,199	117,312	132,123	
1900-01	993,588	270,580	229,671	210,753	
1901-02	994,220	303,263	204,624	219,432	
1902-03	941,261	263,964	173,109	191,965	
1903-04	929,813	349,395	223,146	224,944	
1904-05	945,748	216,300	128,933	162,033	
1905-06	993,616	176,636	165,265	158,659	
1906-07	983,106	223,131	185,701	183,140	
1907-08	994,209	241,750	236,777	197,405	
1908-09	996,950	194,762	177,068	163,995	
1909-10	1,003,649	272,464	252,337	221,747	

APPENDIX G.

TABLES showing quantities of flow that would have been available for Madras irrigation with the limits proposed by Mysore as compared with the quantities due to a uniform limit of 6 feet for the twenty years ending 1909–10.

Months.	1890-1891.		1891-1892.		1892-1893.		1893-1894.	
	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.
June .. 1st half ..	5,048	5,224	5,392	6,345	6,286	8,032	6,654	12,835
2nd ,, ..	9,077	9,113	6,130	6,130	10,269	11,201	13,780	22,930
July .. 1st ,, ..	12,524	12,524	16,985	16,985	16,451	16,451	21,197	21,197
2nd ,, ..	21,733	21,733	22,807	22,807	26,000	26,000	22,258	22,258
August .. 1st ,, ..	24,126	24,126	24,375	24,375	24,375	24,375	24,013	24,013
2nd ,, ..	21,727	21,727	22,872	22,872	26,000	26,000	17,807	17,847
September .. 1st ,, ..	12,358	12,358	18,135	18,135	24,375	24,375	23,023	23,023
2nd ,, ..	7,572	7,572	8,800	8,800	15,630	16,819	13,536	13,936
October .. 1st ,, ..	12,654	12,795	15,700	16,845	16,350	16,530	17,970	22,002
2nd ,, ..	10,140	11,295	19,840	25,031	18,148	21,206	19,840	26,864
November .. 1st ,, ..	15,000	23,853	14,244	17,257	8,398	8,398	13,142	16,691
2nd ,, ..	8,010	9,283	7,658	7,746	4,702	4,702	10,440	24,307
December .. 1st ,, ..	5,740	5,740	3,864	3,804	2,718	2,718	8,048	12,027
2nd ,, ..	4,530	4,546	5,546	6,254	2,850	2,850	5,824	6,478
January .. 1st ,, ..	1,192	1,192	3,756	3,900	1,614	1,614	4,350	4,878
2nd ,, ..	..	..	1,754	1,754	774	774	3,492	3,508
Total ..	163,431	175,108	175,896	184,037	204,940	212,045	225,374	273,784
Total actual supply to delta area.	129,078		128,398		143,184		179,123	
Total actual supply including supply to Coleroon.	143,420		142,659		159,093		199,025	

Months.	1894–1895.		1895–1896.		1896–1897.		1897–1898.	
	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.
June .. 1st half ..	6,446	6,807	3,304	3,304	4,250	4,250	5,640	5,662
2nd ,, ..	30,946	17,405	11,520	17,170	13,259	17,344	13,760	19,833
July .. 1st ,, ..	8,869	8,869	22,872	22,872	24,019	24,019	15,801	15,801
2nd ,, ..	24,225	24,225	25,569	25,569	26,000	26,000	25,819	25,819
August .. 1st ,, ..	21,647	21,647	24,375	24,375	24,375	24,375	24,375	24,375
2nd ,, ..	26,000	26,000	25,568	25,568	26,000	26,000	26,000	26,000
September .. 1st ,, ..	16,644	16,644	12,504	12,504	23,318	23,318	24,337	24,337
2nd ,, ..	11,754	11,814	11,356	12,871	15,956	17,665	16,641	22,055
October .. 1st ,, ..	6,050	6,050	18,174	22,086	18,120	21,404	18,600	24,214
2nd ,, ..	17,369	21,001	19,720	22,868	11,568	11,568	17,006	19,693
November .. 1st ,, ..	13,710	17,371	14,338	20,948	6,324	6,324	11,472	11,712
2nd ,, ..	7,198	7,198	7,148	7,148	10,066	17,639	6,474	6,474
December .. 1st ,, ..	6,254	6,276	5,486	5,486	8,070	15,691	5,724	5,724
2nd ,, ..	3,636	3,636	4,476	5,731	6,016	14,281	3,972	3,972
January .. 1st ,, ..	606	606	4,332	8,250	4,350	5,690	2,700	2,700
2nd ,, ..	..	..	..	..	4,298	4,394	2,206	2,206
Total ..	184,354	195,549	210,742	236,750	225,999	259,962	220,527	260,577
Total actual supply to delta area.	125,501		164,005		227,560		205,990	
Total actual supply including supply to Coleroon.	139,445		182,238		252,845		228,878	

APPENDIX G—*cont.*

Months.		1898–1899.		1899–1900.		1900–1901.		1901–1902.	
		Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules	Net quantity realised up to the uniform limit of 1625	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625
June	1st half	4,030	4,030	4,696	4 696	3,979	3,979	4,888	4,910
	2nd ,,	14,552	20,147	13,093	17,168	12,670	16,823	13,550	17,676
July	1st ,,	14,154	14,154	22,179	22,179	24,375	24,375	18,454	18,454
	2nd ,,	17,106	17,106	15,648	15,648	26,000	26,000	25,948	25,948
August	1st ,,	24,194	24,194	6,889	6,889	24,375	24,375	24,375	24,375
	2nd ,,	15,876	15,876	10,538	10,538	25,962	25,962	24,510	24,510
September	1st ,,	17,977	17,977	16,277	16,277	23,338	23,338	13,292	13,292
	2nd ,,	16,800	24,375	15,054	18,641	15,026	17,560	16,104	19,874
October	1st ,,	18,600	18,600	7,340	7,340	12,894	14,366	18,600	23,787
	2nd ,,	19,442	23,983	10,321	10,321	15,842	17,887	16,553	19,048
November	1st ,,	15,000	24,176	5,830	5,830	7,954	7,954	14,838	21,038
	2nd ,,	10,440	21,251	1,504	1,504	5,452	6,452	10,338	17,408
December	1st ,,	8,070	16,561	938	938	3,244	3,244	7,520	8,679
	2nd ,,	5,550	10,667	482	482	4,116	4,116	5,744	6,064
January	1st ,,	4,350	9,065	782	782	2,718	2,990	4,350	6,832
	2nd ,,	4,350	5,504	552	552	2,798	2,846	4,568	5,000
Total		210,491	274,879	132,123	139,785	210,753	221,267	219,432	236,895
Total actual supply to delta area		173,508		117,312		229,671		204,624	
Total actual supply including supply to Coleroon		192,775		129,043		255,190		227,360	

Months.		1902–1903.		1903–1904.		1904–1905.		1905–1906.	
		Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625 .	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.
June	1st half	3,568	3,568	5,478	5,786	6,750	15,035	4,336	4,336
	2nd ,,	7,706	8 544	9,392	9,558	15,900	24,082	7,261	8,246
July	1st ,,	10,425	10,425	7,161	7,161	24,375	24,375	21,784	21,784
	2nd ,,	26,000	26,000	26,000	26,000	26,000	26,000	19,539	19,539
August	1st ,,	19,928	19,928	24,375	24,375	23,081	29,533	18,318	18,318
	2nd ,,	10,876	10,876	26,000	26,000	19,181	19 181	14,509	14,509
September	1st ,,	20,784	20,784	24,142	24,142	5,940	5,940	19,779	19,779
	2nd ,,	15,984	20,014	16,800	24,115	13,065	14,741	9,950	10,600
October	1st ,,	12,326	14,251	18,600	23,855	6,674	6,674	11,193	13,118
	2nd ,,	17,390	20,980	19,840	25,675	13,505	14,089	14,574	17,269
November	1st ,,	14,526	20,894	15,000	21,694	5,002	5,002	4,438	4,338
	2nd ,,	9,472	13,987	10,440	24,074	1,424	1,424	5,142	5,142
December	1st ,,	8,070	19,984	8,070	22,975	322	322	4,376	4,376
	2nd ,,	5,920	17,395	5,920	11,492	282	282	1,974	1,974
January	1st ,,	4,350	6,550	4,350	10,308	240	240	230	230
	2nd ,,	4,640	5,636	3,376	3,808	292	292	1,376	1,376
Total		191,965	239,716	224,944	291,018	162,033	180,760	158,659	164,934
Total actual supply to delta area		173,109		223,146		128,933		165,265	
Total actual supply including supply to Coleroon		192,343		247,940		148,248		183,628	

APPENDIX G—*concld.*

Months.		1906–1907.		1907–1908.		1908–1909.		1909–1910.	
		Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.	Net quantity realised up to the limits proposed in the rules.	Net quantity realised up to the uniform limit of 1625.
June	1st half	692	692	5,066	5,066	2,382	2,382	6,382	16,629
	2nd ,,	4,479	4,733	11,477	13,976	5,270	5,270	14,008	18,149
July	1st ,,	5,479	5,479	18,194	18,194	18,515	18,515	24,375	24,375
	2nd ,,	19,988	19,988	16,784	16,784	25,430	25,430	26,000	26,000
August	1st ,,	24,062	24,062	24,375	24,375	24,375	24,375	24,375	24,375
	2nd ,,	26,000	26,000	26,000	26,000	24,139	24,139	24,778	24,778
September	1st ,,	22,757	22,757	22,756	22,756	17,552	17,522	24,375	24,375
	2nd ,,	15,300	16,737	11,909	13,349	5,964	5,964	16,800	23,958
October	1st ,,	14,004	17,015	14,584	17,279	6,374	6,374	18,600	23 958
	2nd ,,	16,338	20,188	11,046	12,124	11,969	11,969	17,578	21,553
November	1st ,,	7,493	7,493	9,484	11,680	9,461	11,659	11,666	14,451
	2nd ,,	7,286	9,340	8,330	9,133	2,546	2,546	4,698	4,698
December	1st ,,	6,042	6,098	5,070	5,070	1,334	1,334	3,882	3,882
	2nd ,,	5,632	8,190	5,696	5,856	1,696	1,696	3,270	3,270
January	1st ,,	4,350	5,216	3,300	3,332	4,218	12,235	700	700
	2nd ,,	3,238	3,238	3,334	3,462	2,770	2,802	260	260
Total		183,140	197,226	197,405	208,436	163,995	174,212	221,747	255,348
Total actual supply to delta area		185,701		236,777		177,068		252,337	
Total actual supply including supply to Coleroon		206,334		263,086		195,632		280,373	

APPENDIX H.

Tentative rules for making allowance for rainfall.

1. Daily telegrams should be sent to the officer at Kannambadi between the months of June to January from each of the rain gauge stations in the delta area including the Coleroon system at about 8 A.M. every day.

2. If the rain gauge stations are not telegraph stations, the gaugings may be telephoned to the nearest telegraph station for transmission to the officer at Kannambadi.

3. Allowance shall be made only for falls of $1\frac{1}{4}''$ and over.

4. The proportion of reduction in the limits due at the Cauvery dam corresponding to the intensity and distribution of rainfall will be as under :—

Rainfall.	Rainfall over whole area.		Rainfall over three-fourths area.		Rainfall over one-half area.	
	Number of days to which the reduced limit applies.	Proportion of reduction in limit.	Number of days to which the reduced limit applies.	Proportion of reduction in limit.	Number of days to which the reduced limit applies.	Proportion of reduction in limit.
Inches.				Per cent.		Per cent.
$1\frac{1}{4}$	1	Full	..	..	..	..
$1\frac{1}{2}$	2	Do.	1	75	..	..
$1\frac{3}{4}$	3	Do.	2	75	1	50
2	4	Do.	3	75	2	50
$2\frac{1}{4}$	5	Do.	4	75	3	50
$2\frac{1}{2}$	6	Do.	5	75	4	50

5. Any costs incurred in this connection shall be borne by the Mysore Government.

APPENDIX K.

STATEMENT of discharges in the Coleroon showing the quantities used for irrigation of the Lower Anicut system.

Month.	Fortnights.	Upper anicut into Coleroon.	Grand anicut into Coleroon.	Discharge over the 150 yards Kalingula.	Total of columns 3, 4 and 5.	Total observed discharge at lower anicut.	Quantity due to leakage, etc.	Lower anicut into Coleroon.	Net quantity used for Irrigation (col. 7—col. 9).	Quantity passed through Vadavar.	Quantity required for direct Irrigation m. c. ft. per day.	Net flow to Veeranam tank (col. 11—col. 12)	Average equivalent flow per day through the Vadavar.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1899-1900.													
June 1899	1st half ..	..	1,568	..	1,568	4,173	2,605	4,172	1	..	..	..	..
	2nd ,, ..	11,880	3,372	1,550	16,802	14,305	1,361	8,203	6,102	608	219	389	41
July 1899	1st ,, ..	17,555	4,305	2,533	24,393	19,741	372	18,389	1,352	873	297	576	58
	2nd ,, ..	497	..	168	665	2,018	1,353	1,078	940	263	160	103	17
August 1899 ..	1st ,, ..	239	..	70	309	361	341	..	361	60	60	..	4
	2nd ,, ..	62	..	30	92	924	852	52	872	144	136	8	9
September 1899 ..	1st ,, ..	1,927	..	540	2,467	4,202	2,222	2,872	1,330	418	241	177	28
	2nd ,, ..	5,127	..	912	6,039	7,084	2,298	5,640	1,444	579	297	282	39
October 1899 ..	1st ,, ..	..	..	..	..	821	821	..	821	85	81	4	6
	2nd ,, ..	..	..	..	..	6,004	6,004	6,141	764	497	288	199	31
November 1899 ..	1st ,, ..	..	..	..	..	956	956	204	752	190	181	9	13
	2nd ,, ..	..	..	..	..	427	427	..	427	44	44	..	3
December 1899 ..	1st ,, ..	..	..	..	..	591	591	78	513	59	55	4	4
	2nd ,, ..	..	..	..	..	264	264	..	264	8	8	..	1
January 1900 ..	1st ,, ..	..	..	..	..	72	72	..	72	..	..	..	..
	2nd ,, ..	..	..	..	..	75	75	..	75	..	..	..	..
1904-05.													
June 1904	1st half ..	..	2,933	219	3,152	9,581	6,823	9,486	95	..	..	..	..
	2nd ,, ..	27,237	11,402	1,947	40,467	42,895	5,626	41,616	1,279	884	240	644	59
July 1904	1st ,, ..	38,736	17,439	2,166	61,494	82,954	24,284	81,030	2,813	1,432	300	1,132	95
	2nd ,, ..	3,212	1,432	5,315	7,125	12,010	4,785	9,563	2,447	1,200	320	880	75
August 1904 ..	1st ,, ..	9,610	4,063	2,489	15,534	18,216	4,017	15,741	2,475	889	300	589	59
	2nd ,, ..	233	2,274	1,661	3,329	7,532	4,203	6,138	1,931	920	320	600	58
September 1904 ..	1st ,, ..	..	..	822	..	823	823	..	823	354	167	187	24
	2nd ,, ..	..	..	..	225	3,679	3,542	1,908	1,771	891	262	629	59
October 1904 ..	1st ,, ..	..	..	225	..	1,759	1,759	..	1,759	573	250	323	38
	2nd ,, ..	..	2,629	..	2,774	7,506	4,747	5,269	2,237	1,180	320	860	74
November 1904 ..	1st ,, ..	..	..	145	..	1,021	1,021	..	1,021	244	134	110	16
	2nd ,, ..	..	..	..	..	406	406	..	406	50	50	..	3
December 1904 ..	1st ,, ..	..	..	..	..	385	385	..	385	21	21	..	1
	2nd ,, ..	..	..	..	..	555	555	..	555	178	117	61	11
January 1905 ..	1st ,, ..	..	..	..	..	304	304	..	304	20	20	..	1
	2nd ,, ..	..	..	..	..	354	354	..	354	6	6	..	..
1905-06.													
June 1905	1st half ..	..	..	..	..	4,630	4,630	4,619	11	..	..	..	..
	2nd ,, ..	..	..	120	120	1,091	971	981	110	10	10	..	1
July 1905	1st ,, ..	7,091	7,733	1,613	16,437	15,034	2,463	12,198	2,836	929	300	629	62
	2nd ,, ..	23,916	11,142	2,278	37,345	47,162	11,445	43,031	4,131	841	226	615	46
August 1905 ..	1st ,, ..	444	1,322	991	2,757	6,264	3,507	3,982	2,282	679	267	412	45
	2nd ,, ..	..	..	63	63	1,643	1 579	..	1,642	449	228	221	28
September 1905 ..	1st ,, ..	2,488	4,470	465	8,823	6,469	1,552	4,051	2,418	1,073	300	773	72
	2nd ,, ..	..	..	27	27	1,495	1,468	..	1,495	324	166	158	22
October 1905 ..	1st ,, ..	6,902	6,288	120	13 310	21,576	8,266	20,043	1,533	448	177	271	30
	2nd ,, ..	14,509	11,296	416	26,221	38,439	11,584	34,567	2,872	408	207	201	25
November 1905 ..	1st ,, ..	..	..	..	..	1,239	1,239	..	1,239	418	157	261	28
	2nd ,, ..	..	..	..	..	1,866	1,866	460	1,406	875	300	575	58
December 1905 ..	1st ,, ..	..	..	..	..	976	976	..	976	142	121	21	9
	2nd ,, ..	..	..	..	..	743	743	..	743	12	12	..	1
January 1906 ..	1st ,, ..	..	..	..	..	769	769	..	769	8	8	..	1
	2nd ,, ..	.	..	..	..	1,381	1,381	408	973	227	131	96	14
1906-07.													
June 1906	1st half ..	..	..	..	..	..	..	..	.	..	..	..	..
	2nd ,, ..	657	..	657	..	..	..	..	..	..	..	..	..
July 1906	1st ,, ..	..	..	..	..	397	397	..	397	47	47	..	3
	2nd ,, ..	31,744	14,160	3,293	49,197	67,140	18,123	64,902	2,238	716	143	573	45
August 1906 ..	1st ,, ..	9,476	1.955	1,383	12,814	16,071	4,905	12,953	3,118	1,220	300	920	81
	2nd ,, ..	41,070	15,877	2,668	59,615	48,544	10,243	45,370	3,174	1,511	320	1,191	94
September 1906 ..	1st ,, ..	11,058	1,673	1,438	14,169	15,942	2,674	13,144	2,798	1,055	289	766	70
	2nd ,, ..	..	..	66	66	1,910	1,814	..	1,910	664	273	391	44
October 1906 ..	1st ,, ..	8,280	..	1,142	9,422	10,901	2,520	9,015	2,086	742	261	481	50
	2nd ,, ..	24,335	..	332	24,667	38,250	14,947	35,579	2,668	1,407	320	1,087	88
November 1906 ..	1st ,, ..	..	..	..	..	11,881	11,88:	10,006	1,875	789	294	495	53
	2nd ,, ..	5,204	..	99	5,303	26,632	22,244	24,595	2,018	766	200	566	51
December 1906 ..	1st ,, ..	..	..	..	..	6,486	6,486	5,537	949	548	226	322	36
	2nd ,, ..	..	..	42	42	4,626	4,584	2,608	1,929	706	287	419	44
January 1907 ..	1st ,, ..	..	..	..	..	1,437	1,437	..	1,437	194	172	122	20
	2nd ,, ..	..	..	..	..	857	857	..	857	121	89	32	8

APPENDIX L.

ABSTRACT OF APPENDIX IV OF MADRAS CASE.

Showing the conditions of the Veeranam tank and the area irrigated under the Coleroon for the twenty years ending 1909–10.

Year.	S. W. Monsoon.			N. E. Monsoon.			Total.			Area irrigated.	Remarks.
	D	C	D & C	D	C	D & C	D	C	D & C		
1	2	3	4	5	6	7	8	9	10	11	12
1890-91	..	1	..	..	3	..	..	4	..	113,336	
1891-92	..	..	..	..	7	..	..	7	..	105,669	
1892-93	1	1	..	..	..	..	1	1	..	111,217	
1893-94	..	..	..	..	5	1	..	5	1	112,666	
1894-95	..	..	..	..	3	..	..	3	..	111.666	
1895-96	..	2	..	..	9	..	..	11	..	111,251	
1896-97	1	..	..	..	6	..	1	6	..	106,844	
1897-98	3	..	3	1	..	3	4	..	6	111,267	
1898-99	..	..	..	..	5	6	..	5	6	117,724	
1899-00	..	..	..	..	4	..	..	4	..	99,301	
1900-01	4	1	3	..	4	..	4	5	3	110,568	
1901-02	..	2	..	..	4	3	..	6	3	108,686	
1902-03	1	..	1	..	9	4	1	9	5	108,057	
1903-04	1	1	1	1	6	6	2	7	7	109,237	
1904-05	2	1	..	..	4	..	2	5	..	109,385	
1905-06	..	1	..	..	4	1	..	5	1	109,443	
1906-07	..	..	2	..	3	2	..	3	1	111,197	
1907-08	..	..	..	..	5	1	..	5	1	111,201	
1908-09	..	3	..	..	2	1	..	5	1	114,738	
1909-10 ..	2	1	4	1	..	..	3	1	4	113,961	

APPENDIX M.

Discharges of the river Bhavani at the Kodiveri Anicut (in millions of cubic feet).

Years.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total for anicut and head sluice in m. c.ft. for the year.	Total for the year in m. c.ft.
	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.		
	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.		
1890 ..	59	875 338	1,383	270 90	1,849	.. ..	356	713 281	400	739 271	1,791	836 321	7,752	1,295 792	5 387	1,287 576	2,339	1,116 472	4,414	1,161 514	3,266	1,137 456	865	1,045 379	10,474 29,861 4,490	44,825
1891 ..	412	648 214	2,281	672 238	1,769	253 159	543	194 103	10	480 163	238	853 332	26,985	1,313 902	8,816	1,313 675	2,433	1,156 664	22,936	1,459 912	5,936	1,264 428	1,681	1,087 436	10,722 71,040 5,226	89,988
1892 ..	190	920 416	752	186 67	232	.. ..	392	286 58	295	781 296	1,857	1,009 440	23,211	1,491 836	9,342	1,468 814	4,387	1,199 480	5,027	1,270 585	1,482	1,038 416	274	911 357	10,559 47,441 4,765	62,765
1893 ..	..	642 230	663	166 75	6,634	.. ..	1,757	179 42	212	821 320	9,021	1,177 724	5,033	1,253 500	7,289	1,297 503	4,851	1,225 492	11,562	1,440 561	17,297	1,570 558	3,529	1,190 480	10,960 67,848 4,485	83,293
1894 ..	971	1,035 413	660	424 155	592	.. ..	760	250 59	110	729 272	4,989	1,166 454	10,670	1,367 519	6,834	1,360 550	3,249	1,144 463	3,882	1,197 471	2,522	1,098 449	359	906 358	10,676 35,588 4,163	50,427
1895 ..	..	571 197	50	175 19	381	.. ..	2,342	451 176	114	554 187	15,352	967 350	9,572	1,328 594	12,358	1,353 576	2,279	1,097 438	7,745	1,392 559	4,393	1,093 471	593	940 383	9,921 55,179 3,950	69,050
1896 ..	958	956 376	..	296 102	..	..	..	97 16	..	258 51	24,845	1,003 390	9,257	1,648 570	22,834	1,716 610	5,858	1,285 506	5,451	1,293 511	4,772	1,198 333	6,713	1,337 441	11,087 80,718 3,906	95,711
1897 ..	979	995 412	949	208 77	553	.. ..	732	252 127	176	631 228	11,470	1,240 463	18,238	1,518 568	20,947	1,725 568	7,121	1,358 542	6,432	1,334 534	2,425	1,102 442	513	999 396	11,362 70,265 4,357	85,984
1898 ..	31	745 278	1,686	114 38	134	.. ..	210	375 ..	118	573 200	7,037	1,088 406	9,900	1,336 503	3,440	1,211 470	5,946	1,283 518	10,600	1,405 524	7,730	1,219 527	2,668	1,125 460	10,474 49,500 3,924	63,898
1899 ..	475	704 396	409	180 180	..	175 40	2,956	481 102	..	691 258	7,182	1,075 420	6,877	1,316 510	1,728	1,086 435	4,067	1,184 463	2,477	1,136 359	368	886 351	408	721 268	9,635 26,947 3,782	40,364
1900 ..	717	596 176	..	236 45	82	126 ..	210	114 58	273	291 153	10,615	976 358	25,143	1,761 609	33,286	1,740 593	7,749	1,379 555	9,088	1,416 527	4,586	1,135 481	1,448	1,070 429	10,840 93,197 3,984	1,08,021

APPENDIX M—*cont.*

Discharges of the river Bhavani at the Kodiveri Anicut (in millions of cubic feet).

Years.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total for anicut and head sluice in m. c. ft. for the year.	Total for the year in m. c. ft.
	Over anicut.	Through head sluice.	Over anicut.	Through head sluice	O ver anicut.	Through head sluice.	Over anicut.	Through head sluice	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.	Over anicut.	Through head sluice.		
	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT	M. CFT.	M. CFT	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT.	M. CFT	M. CFT.	M. CFT.	M CFT.	M. CFT.	M. CFT.	M. CFT.		
1901 ..	2,450	881 508	785	334 111	1,822	.. ..	770	242 107	395	792 239	7,305	1,041 383	16,906	1,538 946	6,706	1,370 540	6,655	1,212 504	11,423	1,413 719	5,011	1,227 636	3,157	1,173 473	11,223 63,385 5,226	79,834
1902 ..	2,670	1,063 441	654	261 93	1,346	.. ..	625	253 81	417	791 306	1,378	855 328	285 69	1,478 490	6,366	1,313 531	9,351	1,378 530	7,576	1,245 467	9,590	1,152 451	17,839	1,230 531	11,019 86,281 4,249	1,01,549
1903 ..	2,157	855 425	146	399 251	..	474 173	279	235 73	1,213	851 359	3,078	1,035 406	39,525	1,560 870	15,785	1,439 678	8,931	1,413 636	11,034	1,262 603	12,267	1,085 615	4,509	1,178 462	11,786 98,924 5,551	1,16,261
1904 ..	1,883	938 388	488	393 235	..	445 ..	..	297 105	1,292	891 320	19,909	1,389 548	15,230	1,540 459	9,659	1,419 533	7,053	1,384 578	4,908	1,359 154	1,491	1,076 410	322	917 355	12,048 62,235 4,035	78,318
1905 ..	100	702 271	621	198 61	..	363 215	7	280 98	472	660 242	8,442	1,055 449	15,518	1,498 665	4,671	1,271 501	6,628	1,278 495	16,656	1,332 890	5,195	1,240 483	2,041	1,091 437	10,973 60,351 4,807	76,131
1906 ..	794	544 994	514	297 274	2,161	.. ..	121	39 147	..	117 372	2,097	281 783	16,169	692 1,601	16,578	670 1,396	5,897	526 1,213	5,531	527 1,346	2,632	466 1,163	4,080	462 1,130	4 621 56,574 10,452	71,646
1907 ..	1,616	341 695	169	75 217	936	35 ..	235	332 261	..	201 569	504	534 1,133	1,667	692 87	2,637	888 672	380	495 1,226	674	563 1,317	713	511 1,308	274	483 1,214	5,160 9,805 8,699	23,654
1908 ..	814	664 632	104	250 246	96	.. ..	1,178	157 290	389	231 628	2,214	301 797	16, 198	742 1,424	11,238	604 1,381	2,543	417 1,056	6,001	552 1,084	2,460	441 1,048	148	318 838	4,677 43,383 9,424	57,484
1909 ..	6,879	1,066 684	879	500 178	65	.. ..	402	237 271	5,292	754 642	15,663	792 1,223	20,314	855 1,411	8,666	684 1,439	5,609	557 1,285	5,917	556 1,316	2,805	454 1,143	1,803	496 1,099	6,851 74,234 10,691	91,776
1910 ..	1,078	358 707	1,144	215 192	..	.. ..	..	47 159	213	221 608	6,220	463 902	14,465	738 1,267	15,859	754 1,512	5,607	537 1,502	11,886	782 1,294	16,265	749 1,048	2,914	474 1,148	5,338 75,651 10,139	91,128
1911 ..	904	376 753	1,020	110 204	639	.. ..	361	102 242	14	224 678	28,382	1,105 1,209	26,621	1,516 1,831	4,441	544 1,293	1,426	415 1,066	3,861	602 1,267	4,582	501 1,122	3,573	548 1,256	6,043 75,824 10,921	92,788

APPENDIX M--*cont.*

Discharges of the river Amaravathi at Pallapalayam Anicut (in millions of cubic feet).

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
1902	1,086·75	..	..	..	248·90	..	1,139·28	17·71	17·71	4,790·57	3,561·77	8,933 68	19,796·37
1903	141·68	..	..	..	232·73	..	3,258·95	2,632·08	1,242·97	686·92	1,289·89	5,268·78	14,754·00
1904	1,140·93	..	..	..	963·84	1,567·19	2,536·17	654·13	67·73	707·26	..	..	7,637·25
1905	..	..	..	..	184·54	418·08	637·18	..	88·55	1,264·38	361·81	..	2,954·54
1906	..	..	..	..	..	202·35	1,273·31	1,599 04	16·24	717·49	3,778·30	2,901·52	10,488·25
1907	219·92	..	..	..	265·86	148·66	1,488·19	737·87	17·75	816·13	2,400·90	..	6,045·28
1908	..	49·92	..	..	67·09	..	..	..	..	..	..	..	117·01
1909	..	..	..	..	85·75	948·84	1,005·04	589·42	309·15	1,527·23	85·02	35·60	4,586·05
1910	..	..	..	..	150·94	447·97	980 52	1,874·86	424·35	2,277·92	3,179·27	141·68	9,477·51

Discharge of the river Noyal at Chitrachavadi Anicut (in millions of cubic feet).

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Remarks.
1890	..	..	11·68	23·36	..	4·97	177·15	25·17	..	238·10	57·38	..	537·81	
1891	..	..	..	..	..	..	753·00	54·00	..	350·00	19 00	..	1,176·00	
1892	..	..	..	..	..	..	606·33	..	..	..	..	..	606·33	
1893	..	..	..	..	..	59·51	..	..	..	227·82	1,220·50	..	1,507·83	
1894	..	101·60	..	..	..	152·41	210·33	..	..	..	..	..	464 34	
1895	..	..	..	67·06	..	1,251·79	90·52	201·17	..	..	..	..	1.610·54	
1896	..	..	..	..	..	1,132·28	1,891·11	1,727·72	29·92	79·33	74·98	78 95	5,014·29	
1897	16·26	..	..	..	..	472·68	863·80	1,117·99	67 73	..	..	..	2,528·46	
1898	..	..	..	..	..	230·11	236·23	..	..	648·84	91·45	..	1,206·63	
1899	..	..	..	..	..	126·49	53·54	..	18·30	108·66	..	..	306·99	
1900	..	..	..	3·18	2·11	1,147·78	2,268·22	3,711·57	61·58	465·67	198·70	8·38	7,867·19	
1901	0·38	19·26	..	..	..	156 89	740·50	19·18	4·43	0·78	260·12	105·50	1,307 04	
1902	163·97	..	..	22·03	..	20·74	1,312·08	..	122·34	764·98	510·62	1,413·93	4,330·69	
1903	205·38	..	..	24·62	..	1·14	2,119·52	659·15	242·27	377·87	105·57	2·12	3,737·64	
1904	21·70	..	..	..	..	1,332·88	996·53	108·34	..	345·94	..	..	2,805·39	
1905	..	..	..	..	..	62·88	509·24	..	..	329 22	6·99	..	908·33	
1906	..	..	..	..	..	..	272·31	456 72	..	..	..	107·43	836·46	
1907	..	..	..	4·48	..	287·94	217·35	228·87	4·04	140·86	36·92	143·17	1,063·63	
1908	..	..	4·47	..	..	32·40	60·31	142·46	..	516·85	..	..	756·49	
1909	53·06	..	..	7·33	441·50	734·28	398·76	10·57	..	28 23	..	..	1,674·03	
1910	..	..	..	..	..	93·17	544·53	1,056·90	..	76·71	98·05	..	1,869·36	

APPENDIX N.

Madras Table N. Improved.

Column 1, Month and date.

Column 2, Gives the flow at Kannambadi in m. c. ft., corresponding to the date in Column 1. This also gives the quantity to be impounded day after day.

Columns 3 to 15 correspond to columns 3 to 15 respectively, described under Table III—Appendix P.

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (⅔ of col. 2).	Net flow at Cauvery Dam (col. 3—col. 4) + ⅔ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, i.e., ⅔ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
June 1905. 1	..	322	..	322	..	322	..	..	10,000	..	43	..	43	9,957	
2	..	272	..	272	..	272	..	..	9,957	..	43	..	43	9,914	
3	..	272	..	272	..	272	..	..	9,914	..	43	..	43	9,871	
4	..	218	..	218	..	218	..	..	9,871	..	43	..	43	9,828	
5	..	370	..	370	..	370	..	..	9,828	..	43	..	43	9,785	
6	..	322	..	322	..	322	..	..	9,785	..	43	..	43	9,742	
7	..	290	..	290	..	290	..	..	9,742	..	43	..	43	9,699	
8	1	236	1	235	1	235	..	..	9,700	..	43	..	43	9,657	
9	1	236	1	235	1	235	..	..	9,658	..	43	..	43	9,615	
10	1	200	1	199	1	199	..	..	9,616	..	43	..	43	9,573	
11	1	218	1	217	1	218	..	..	9,574	1	43	..	44	9,530	
12	95	254	71	183	71	181	..	..	9,625	1	43	..	44	9,581	
13	641	200	481	281	481	− 280	..	..	10,222	1	43	..	44	10,128	
14	151	158	113	45	113	46	..	..	10,329	1	43	..	44	10,285	
15	33	130	25	105	25	176	..	..	10,318	95	43	..	138	10,180	
	..	..	..	..	694	..	..	..	..	..	..	..	..	..	
16	132	186	99	87	99	568	..	..	10,312	641	152	..	793	9,519	
17	132	186	99	87	99	200	..	..	9,651	151	152	..	303	9,348	
18	138	158	103	55	103	80	..	..	9,486	33	152	..	185	9,301	
19	160	130	120	10	120	109	..	..	9,461	132	152	..	284	9,177	
20	1,447	594	1,085	−491	594	−302	..	..	10,624	132	152	..	284	10,340	
21	1,268	538	947	−409	538	−306	..	..	11,608	138	152	..	290	11,316	
22	210	1,818	158	1,660	158	1,780	..	..	11,523	160	152	..	312	11,211	
23	177	1,287	133	1,154	133	1,748	..	..	11,388	792	152	..	944	10,444	
24	144	851	108	743	108	1,281	..	..	10,588	717	152	..	869	9,719	
25	135	662	101	561	101	719	..	..	9,854	210	152	..	362	9,492	
26	328	594	246	348	246	481	..	..	9,820	177	152	..	329	9,491	
27	328	754	246	508	246	616	..	..	9,819	144	152	..	296	9,523	
28	405	1,579	304	1,275	304	1,376	..	..	9,928	135	152	..	287	9,641	
29	569	3,697	427	3,270	..	3,516	1,216	246	10,210	328	152	..	480	9,730	
30	723	3,638	542	3,096	..	3,342	1,042	246	10,453	328	152	..	480	9,973	
	..	..	..	..	2,819	..	..	..	..	..	..	..	..	..	

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days latter.	Value of Kannambadi flow first impounded at Cauvery Dam (⅔ of col. 2).	Net flow at Cauvery Dam (col. 3—col. 4) + ⅔ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross Storage at Kannambadi col. 2 + previous day's balance in col 15.	Compensation water converted to Kannambadi, i.e., ⅔ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
July 1905. 1	1,141	3,802	856	2,916	..	3,250	950	304	11,114	405	156	..	561	10,553	
2	1,172	3,680	879	2,801	..	2,801	501	..	11,725	..	156	..	156	11,569	
3	1,044	2,834	783	2,051	249	2,051	..	..	12,613	..	156	..	156	12,457	
4	855	2,020	641	1,379	641	1,379	..	..	13,312	..	156	..	156	13,156	
5	676	1,495	507	988	507	988	..	..	13,832	..	156	..	156	13,676	
6	612	1,000	459	541	459	890	..	..	14,288	332	156	..	188	13,800	
7	584	730	438	292	438	933	..	..	14,384	855	156	..	1,011	13,373	
8	2,714	730	2,036	— 1,306	730	— 799	..	..	16,087	676	156	..	832	15,255	
9	2,804	4,077	2,303	1,974	326	2,433	133	133	18,059	612	156	..	768	17,291	
10	1,991	3,161	1,492	1,668	632	2 106	..	..	19,282	584	156	..	740	18,542	
11	795	2 160	596	1,564	596	2,294	..	..	19,337	974	156	..	1,130	18,207	
12	631	1,625	473	1,152	473	1,478	..	..	18,838	435	156	..	591	18,247	
13	654	1,240	490	750	490	1,382	..	..	18,901	843	156	..	999	17,902	
14	573	892	429	463	429	1,059	..	..	18,475	795	156	..	951	17,524	
15	534	628	400	228	400	701	..	..	18,058	631	156	..	787	17,271	
	..	..	..	..	6,370	..	437	..	..	..	..	..	..	..	
16	556	538	417	121	417	611	..	..	17,827	654	156	..	810	17,017	
17	556	472	417	55	417	484	..	..	17,573	573	156	..	729	16,844	
18	556	516	417	99	417	499	..	..	17,400	534	156	..	690	16,710	
19	1,233	628	928	— 297	628	120	..	..	17,943	556	156	..	712	17,231	
20	1,802	3,657	1,351	2,306	..	2,723	423	417	19,032	556	156	..	712	18,321	
21	4,017	7,516	3,003	4,503	..	4,920	2,620	417	22,338	556	156	..	712	21,626	
22	5,921	7,859	4,441	3,418	..	4,046	1,746	628	27,550	837	156	..	993	26,557	
23	6,695	8,003	5,021	2,982	..	2,982	682	..	33,252	..	156	..	156	33,096	
24	6,005	6,516	4,504	3,411	..	3,411	1,111	..	39,101	..	156	1,865	2,021	37,080	
25	3,606	4,664	2,704	4,548	..	4,548	2,248	..	40,686	..	156	3,450	3,606	37,080	
26	2,770	4,585	2,077	4,394	..	4,394	2,094	..	39,850	..	156	2,614	2,770	37,080	
27	2,486	4,180	1,864	4,016	..	4,016	1,716	..	39,566	..	156	2,330	2,486	37,080	
28	2,173	4,033	1,630	4,016	..	4,016	1,716	..	39,253	..	156	2,017	2,173	37,080	
29	2,029	3,046	1,522	2,899	..	2,899	599	..	39,109	..	156	1,873	2,029	37,080	
30	1,958	2 698	1,469	3,135	..	3,135	835	..	39,038	..	156	2,542	1,958	37,080	
31	1,821	2,650	1,366	2,533	..	2,533	233	..	38,901	..	156	1,665	1,821	37,080	
	..	..	..	..	1,879	..	1,462	..	..	..	..	..	..	..	

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (4 of col. 2).	Net flow at Cauvery Dam (col. 3—col. 4) + 4 of surplus in col 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + 6: three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, i.e., 3 of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
August 1905. 1	1,382	2,440	1,037	2,333	..	2,333	..	..	38,462	..	156	1,226	1,382	37,080	
2	1,733	2,222	1,300	2,105	117	2,105	..	..	38,813	..	156	1,577	1,733	37,080	
3	1,676	2,074	1,257	1,957	117	1,957	..	..	38,756	..	156	1,520	1,676	37,080	
4	994	1,859	745	1,742	117	1,742	..	..	38,074	..	156	838	994	37,080	
5	649	1,573	412	1,339	234	1,456	..	..	37,629	156	156	237	549	37,080	
6	709	1,222	532	988	234	1,105	..	..	37,789	156	156	397	709	37,080	
7	666	981	500	747	234	864	..	..	37,746	156	156	354	666	37,080	
8	592	803	444	452	351	686	..	..	37,672	312	156	124	592	37,080	
9	595	662	446	311	351	545	..	..	37,675	312	156	127	595	37,080	
10	561	594	421	243	351	477	..	..	37,641	312	156	93	561	37,080	
11	561	560	421	139	421	490	..	..	37,641	468	156	..	624	37,017	
12	658	538	494	44	494	395	..	..	37,675	468	156	..	624	37,051	
13	545	516	409	107	409	458	..	..	37,596	468	156	..	624	36,972	
14	379	594	482	312	282	733	..	..	37,351	561	156	..	717	36,634	
15	565	784	424	360	424	854	..	..	37,199	658	156	..	814	36,385	
	..	..	..	..	4,136	..	..	..	..	..	..	..	..	..	
16	556	628	417	211	417	620	..	..	36,941	545	156	..	701	36,241	
17	731	538	548	—10	538	272	..	..	36,972	376	156	..	532	36,440	
18	731	516	548	—32	516	392	..	..	37,171	565	156	..	721	36,450	
19	731	696	548	48	548	465	..	..	37,181	556	156	..	712	36,459	
20	689	851	517	334	517	872	..	..	37,168	717	156	..	873	36,285	
21	768	1,116	572	544	572	1,060	..	..	37,048	688	156	..	844	36,204	
22	1,124	1,116	850	266	850	814	..	..	37,338	721	156	..	877	36,431	
23	1,304	1,116	978	138	978	655	..	..	37,765	689	156	..	845	36,920	
24	922	1,062	692	370	692	942	..	..	37,842	765	156	..	919	36,923	
25	1,094	1,116	820	296	820	1,146	..	..	38,017	1,133	156	..	1,289	36,728	
26	1,534	1,170	1,150	20	1,150	998	..	..	38,262	1,304	156	..	1,460	36,802	
27	1,059	1,345	794	551	794	1,243	..	..	37,861	922	156	..	1,078	36,783	
28	985	1,345	741	604	741	1,424	..	..	37,768	1,094	156	..	1,250	36,518	
29	1,057	1,696	793	903	793	2,053	..	..	37,575	1,534	156	..	1,690	35,885	
30	1,074	1,696	806	890	806	1,684	..	..	36,959	1,059	156	..	1,215	35,744	
31	981	1,755	736	1,019	736	1,760	..	..	36,725	988	156	..	1,141	35,584	
	..	..	..	..	11,468	..	..	..	..	..	..	..	..	..	

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam 4 of col. 2).	Net flow at Cauvery Dam (col. 3 – col. 4) + 4 of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, i.e., 3 of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
September 1905. 1	879	1,755	659	1,096	659	1,889	..	..	36,463	1,057	156	..	1,213	35,250	
2	782	1,170	586	584	586	1,390	..	..	36,032	1,074	156	..	1 230	34,802	
3	750	851	562	289	562	1,025	..	..	35,552	981	156	..	1,137	34,415	
4	847	892	635	257	635	916	..	..	35,262	879	156	..	1,035	34,227	
5	584	838	438	400	438	986	..	..	34,811	782	156	..	938	33,873	
6	869	784	652	132	652	694	..	..	34,742	750	156	..	906	33,836	
7	1,163	838	872	—34	838	601	..	..	34,999	847	156	..	1,003	33,996	
8	1,392	1,536	1,044	490	1,044	928	..	..	35,388	584	156	..	740	34,648	
9	1,503	2,220	1,127	1,193	1,107	1,845	..	..	36,161	869	156	..	1,025	35,126	
10	1,471	2,089	1,103	986	1,103	1,824	..	..	36,597	1,163	156	..	1,319	35,278	
11	1,136	1,798	852	946	852	1,990	..	..	36,414	1,392	156	..	1,548	34,866	
12	1,035	1,495	776	719	776	1,826	..	..	35,901	1,476	156	..	1,632	34,269	
13	997	1,300	747	553	747	1,656	..	..	35,266	1,471	156	..	1,627	33,639	
14	646	1,060	484	576	484	1,428	..	..	34,285	1,136	156	..	1,292	32,993	
15	616	1,365	462	903	462	1,679	..	..	33,609	1,035	156	..	1,191	32,418	
	..	..	..	..	10,945	..	..	..	..	..	..	..	..	..	
16	457	730	343	387	343	1,134	..	..	32,875	997	156	..	1,153	31,772	
17	431	662	323	339	323	823	..	..	32,153	646	156	..	802	31,351	
18	383	1,365	287	1,078	287	1,540	..	..	31,734	616	156	..	772	30,962	
19	374	730	280	450	280	793	..	..	31,336	467	156	..	613	30,723	
20	355	594	266	328	266	651	..	..	31,078	431	156	..	587	30,491	
21	300	494	225	269	225	556	..	..	30,791	383	156	..	539	30,252	
22	290	450	217	233	217	513	..	..	30,542	374	156	.	530	30,012	
23	278	434	208	226	208	492	..	..	30,290	356	156	..	511	29,779	
24	238	386	178	208	178	433	..	..	30,017	500	156	..	456	29,561	
25	238	364	178	176	178	393	..	..	29,799	290	156	..	446	29,353	
26	267	338	200	138	200	346	..	..	29,620	278	156	..	434	29,186	
27	268	338	201	137	201	323	..	..	29,444	238	156	..	394	29,050	
28	217	338	163	175	163	352	..	..	29,277	238	156	..	394	28,883	
29	206	338	154	185	154	385	..	..	29,089	267	156	..	423	28,666	
30	145	322	109	113	109	306	..	..	28,811	268	156	..	424	28,387	
	..		..	..	3,532	..	..	..	..	..	..	..	..	..	

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (¾ of col. 2).	Net flow at Cauvery Dam (col. 3—Col. 4)+¾ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + 6 : three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, ¾ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
October 1905.															
1	142	322	107	215	107	378	..	..	28,529	217	156	..	373	28,156	
2	142	322	107	215	107	369	..	..	28,298	206	156	..	362	27,936	
3	174	333	130	208	130	417	..	..	28,110	145	156	..	301	27,809	
4	237	1,062	178	884	178	991	..	..	28,046	142	156	..	298	27,748	
5	201	628	151	477	151	584	..	..	27,949	142	156	..	298	27,651	
6	214	472	160	312	160	442	..	..	27,865	174	156	..	330	27,535	
7	237	851	178	673	178	851	..	..	27,772	237	156	..	393	27,379	
8	196	3,336	147	3,189	..	3,340	1,040	151	27,575	201	156	..	357	27,218	
9	181	2,346	146	2,200	100	2,360	60	60	27,399	214	156	..	370	27,029	
10	159	3,140	119	3,021	..	3,199	899	178	27,188	237	156	..	393	26,795	
11	258	2,178	193	1,985	193	1,985	..	..	27,053	..	156	..	156	26,897	
12	595	2,192	446	1,746	446	1,846	..	..	27,492	133	156	..	289	27,203	
13	914	4,892	685	4,207	..	4,207	1,907	..	28,117	..	156	..	156	28,061	
14	1,245	3,879	909	2,970	..	3,163	863	193	29,306	258	156	..	414	28,892	
15	2,761	3,870	2,071	1,799	501	2,245	..	..	31,653	595	156	..	751	30,902	
..	..	..	..	..	2,251	..	..	582	..	..	..	..	..	..	
16	1,415	4,190	1,061	3,129	..	3,129	829	..	32,317	..	156	..	156	32,161	
17	912	3,001	684	2,317	..	2,317	17	..	33,073	..	156	..	156	32,917	
18	726	2,305	544	1,761	539	2,262	..	..	33,643	601	156	..	757	32,886	
19	559	2,353	419	1,934	366	1,934	..	..	33,445	..	156	..	156	33,289	
20	750	1,048	562	486	562	486	..	..	34,039	..	156	..	156	33,883	
21	493	1,000	370	630	370	1,169	..	..	34,376	719	156	..	875	33,501	
22	414	838	310	528	310	894	..	..	33,915	488	156	..	644	33,271	
23	348	662	261	401	261	963	..	..	33,619	750	156	..	906	32,713	
24	278	560	208	352	208	722	..	..	32,991	493	156	..	649	32,342	
25	205	516	154	362	154	672	..	..	32,547	414	156	..	570	31,977	
26	207	450	155	295	155	556	..	..	32,184	662	156	..	818	31,366	
27	174	418	130	288	130	496	..	..	31,540	278	156	..	434	31,106	
28	139	402	104	298	104	452	..	..	31,245	205	156	..	361	30,884	
29	139	370	104	266	104	421	..	..	31,023	207	156	..	363	30,666	
30	146	354	109	145	109	275	..	..	30,806	174	156	..	330	30,476	
31	114	338	85	253	85	357	..	..	30,362	139	156	..	295	30,067	
..	..	..	..	..	3,457	..	..	..	..	..	..	..	..	..	

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (¾ of col. 2).	Net flow at Cauvery Dam (col. 3—col. 4)+¾ of surplus in col. 13.)	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi *i.e.*, ¾ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance is Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
...ber 1905.															
														30,067	
1	112	322	84	238	84	342	..	..	30,179	139	156	..	295	29,884	
2	112	306	84	222	84	331	..	..	29,996	145	156	..	301	29,695	
3	93	218	70	148	70	233	..	..	29,785	113	156	..	269	29,516	
4	93	272	70	202	70	286	..	..	29,609	112	156	..	268	29,341	
5	97	236	73	163	73	247	..	..	29,438	112	156	..	268	29,170	
6	97	236	73	163	73	233	..	..	29,267	93	156	..	249	29,018	
7	97	236	73	163	73	233	..	..	29,115	93	156	..	249	28,866	
8	126	236	95	141	95	214	..	..	28,992	97	156	..	253	28,739	
9	117	236	88	148	88	221	..	..	28,856	97	156	..	253	28,603	
10	89	254	67	187	67	260	..	..	28,692	97	156	..	253	28,439	
11	89	402	67	335	67	430	..	..	28,528	127	156	..	283	28,245	
12	89	322	67	255	67	343	..	..	28,334	117	156	..	273	28,061	
13	76	306	57	249	57	316	..	..	28,137	89	156	..	245	27,892	
14	76	306	57	249	57	316	..	..	27,968	89	156	..	245	27,723	
15	64	272	48	224	48	281	..	..	27,787	89	156	..	245	27,542	
	1,427	4,160	..	..	..	..	..	..	..	..	..	..	..	..	
16	65	254	49	205	49	262	..	..	27 607	76	156	..	232	27,375	
17	71	290	53	237	53	294	..	..	27,446	76	156	..	232	27,214	
18	71	370	53	317	53	365	..	..	27,285	64	156	..	220	27,065	
19	71	338	53	285	53	334	..	..	27,136	65	156	..	221	26,915	
20	71	322	53	269	53	322	..	..	26,986	71	156	..	227	26,759	
21	71	322	53	269	53	322	..	..	26,830	71	156	..	227	26,603	
22	69	322	52	270	52	323	..	..	26,672	71	156	..	227	26,445	
23	69	322	52	270	52	323	..	..	26,514	71	156	..	227	26,287	
24	69	338	52	286	52	339	..	..	26,356	71	156	..	227	26,129	
25	69	560	52	508	52	560	..	..	26,198	69	156	..	225	25,973	
26	84	434	63	371	63	423	..	..	26,057	69	156	..	225	25,832	
27	145	386	109	277	109	329	..	..	25,977	69	156	..	225	25,752	
28	190	354	143	211	143	263	..	..	25,942	69	156	..	225	25,717	
29	177	338	133	205	133	268	..	..	25,894	84	156	..	240	25,654	
30	93	322	70	252	70	361	..	..	25,747	145	156	..	301	25,446	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

1	Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.			Remarks.
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery Dam (col. 3 — col. 4) + $\frac{3}{4}$ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2. + previous day's balance in col. 15	Compensation water converted to Kannambadi, *i.e.*, $\frac{1}{3}$ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
	December 1905.															
1		128	338	96	242	96				26,574	191	150		347	25,446	
2		71	354	53	361	53				26,298	177	156		333	25,227	
3		71	338	53	285	53				25,030	88	156		244	24,965	
4		70	322	52	270	52				24,862	128	156		284	24,792	
5		76	322	57	266	57				24,654	71	156		227	24,578	
6		83	290	62	228	62				24,610	71	156		227	24,427	
7		67	272	50	222	50				24,350	70	156		226	24,124	
8		61	264	46	203	46				24,185	70	156		226	24,124	
9		61	236	46	190	46				24,018	83	156		239	23,957	
10		58	218	44	174	44				23,837	67	156		223	23,779	
11		58	218	44	174	44				23,672	61	156		217	23,614	
12		58	200	44	166	44				23,518	61	153		214	23,455	
13		58	186	44	142	44				23,364	58	156		214	23,296	
14		58	186	44	142	44				23,198	59	156		214	23,140	
15		58	180	44	142	44				23,042	59	156		214	22,984	
		1,036	3,920	..	..	..	..	..	..	..	..	..	..	..	22,823	
16		56	186	42	144	42				22,884	59	156		214	22,670	
17		60	172	45	127	45				22,730	59	156		214	22,516	
18		12	158	9	140	9				22,528	59	156		214	22,314	
19		12	158	9	149	9				22,326	60	156		212	22,114	
20		265	144	199	—55	199				22,379	60	156		216	22,163	
21		265	144	199	—55	199				22,428	12	156		168	22,260	
22		265	93	199	—101	199				22,525	12	156		168	22,357	
23		..	82	..	..	..				22,357	265	156		421	21,936	
24		..	82	..	..	..				21,936	265	156		421	21,515	
25		..	50	..	..	..				21,515	266	156		421	21,094	
26		..	66	12	32	12				21,094	..	156		156	20,938	
27		16	44	12	32	12				20,951	..	156		156	20,798	
28		16	32	12	20	12				20,814	..	156		156	20,658	
29		..	32	12	20	12				20,674	..	156		156	20,518	
30		16	32	12	20	12				20,534	16	156		172	20,382	
31		23	26	17	9	17				20,395	16	156		172	20,213	

1	Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi,			Remarks.
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery Dam (col. 3 — col. 4) + $\frac{3}{4}$ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col 15.	Compensation water converted to Kannambadi, *i.e.*, $\frac{1}{3}$ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
	January 1906.															
1		14	20	11	9	11				20,247	16	156		172	20,213	
2		20	20	15	5	15				20,075	16	156		172	19,903	
3		20	20	15	5	15				19,923	23	156		179	19,744	
4		20	16	15	1	15				19,764	14	156		170	19,594	
5		20	16	15	—7	15				19,614	20	156		176	19,438	
6		20	8	16	—11	16				19,468	20	156		187	19,271	
7		25	8	19	—11	19				19,296	20	167		187	19,109	
8		25	8	19	—11	19				19,134	20	167		187	18,947	
9		14	8	11	—3	11				18,961	20	167		187	18,774	
10		14	8	11	—3	11				18,788	26	167		193	18,596	
11		136	4	102	—98	102				18,732	25	167		192	18,540	
12		27	4	20	—16	20				18,567	14	167		181	18,386	
13		28	4	21	—17	21				18,414	14	167		181	18,233	
14		44	8	33	—25	33				18,277	136	167		303	17,974	
15		301	16	226	—210	226				18,275	27	156		183	18,092	
		728	168	..	..	..	..	..	..	..	..	..	..	..	..	
16		301	12	..	..	..				20,247	28	49		77	18,016	
17		301	12	..	..	..				20,075	44	49		93	17,922	
18		301	16	..	..	..				19,923	301	49		350	17,572	
19		301	338	..	..	..				19,764	..	49		49	17,523	
20		301	200	..	..	..				19,614	..	49		49	17,474	
21		64	172	..	..	..				19,468	..	49		49	17,425	
22		64	144	..	..	..				19,296	..	49		49	17,376	
23		64	114	..	..	..				19,134	..	49		49	17,301	
24		55	98	..	..	..				18,961	..	49		49	17,252	
25		49	66	..	..	..				18,788	..	49		49	17,203	
26		49	82	..	..	..				18,732	..	49		49	17,154	
27		35	50	..	..	..				18,567	..	49		49	17,105	
28		35	41	..	..	..				18,414	..	49		49	17,056	
30		27	44	..	..	..				18,277	..	49		49	17,007	
31		27	38	..	..	..				18,275	..	49		49	16,968	
		2,022	1,474	..	..	..	..	..	..	..	..	..	..	..	16,909	

Limit 2,300 m.c.ft. Madras Table N. Improved—*cont.* 1905-06.

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.				Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery Dam (col. 3 — col. 4) + $\frac{3}{4}$ of surplus in col 13.	Compensation water due to excess storage col. 3, if less or limit — col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15	Compensation water converted to Kannambadi, *i.e.*, $\frac{4}{3}$ of col. 6.	Draw off for irrigation, etc.	Surplus when reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
February 1906.															
1	28	38	21								49		49	16,860	
2	23	32	17								49		49	16,811	
3	23	32	17								49		49	16,762	
4	23	32	17								49		49	16,713	
5	23	20	17								49		49	16,664	
6	60	20	17								49		49	16,615	
7	65	20	46								54		54	16,561	
8	65	20	49								68		68	16,507	
9	65	20	49								80		80	16,439	
10	25	20	19								80		80	16,359	
11	26	20	20								80		80	16,279	
12	26	20	20								80		80	16,199	
13	3	2	2								80		80	16,119	
14	3	2	2								80		80	16,039	
15	3	2	2								80		80	15,959	
16	3													15,879	
17	3													15,799	
18	3													15,719	
19	8													15,639	
20	8		6								85		85	15,554	
21	8		6								85		85	15,469	
22	8		6								86		86	15,383	
23	8		6								96		96	15,287	
24	8		6								92		92	15,195	
25	8		6								80		80	15,115	
26	8		6								80		80	15,035	
27	8		6								80		80	14,955	
28											80		80	14,875	
	419	274													
	73														

Limit 2,300 m.c.ft. Madras Table N. Improved—*cont.* 1905-06.

Month and date.	Conditions at Cauvery Dam.								Conditions at Kannambadi.				Remarks.
	Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery Dam (col. 3 — col. 4) + $\frac{3}{4}$ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit — col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, $\frac{4}{3}$ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
March 1906.															
1	8										80		80	14,795	
2	8										85		85	14,710	
3	8										84		84	14,626	
4	7										88		88	14,538	
5	7										92		92	14,446	
6	7										97		97	14,349	
7	8										88		88	14,261	
8	10										88		88	14,173	
9	10										94		94	14,079	
10	9										100		100	13,979	
11	9										104		104	13,875	
12	9										105		105	13,770	
13	9										114		114	13,656	
14	9										114		114	13,542	
15	9										114		114	13,428	
16	9										102		102	13,326	
17	9										104		104	13,222	
18	9										105		105	13,117	
19	9										106		106	13,011	
20	5										106		106	12,905	
21	6										108		108	12,797	
22	18										110		110	12,687	
23	17										110		110	12,577	
24	17										112		112	12,465	
25	6										110		110	12,355	
26	9										110		110	12,245	
27	8										112		112	12,133	
28	6										112		112	12,021	
29	6										113		113	11,908	
30	8										114		114	11,794	
31	5										114		114	11,680	
	160														
	127														

Month and date.		Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (¾ of col 2.)	Net flow at Cauvery Dam (col. 3 – col. 4)+¾ of surplus in col 13.	Compensation water due to excess storage col. 3, if less or limit – col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, ¾ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
April 1906.	1	5	..	..	..	..	..	..	..	..	..	116	..	116	11,680 11,564	
	2	5	..	..	..	..	..	..	..	..	..	117	..	117	11,447	
	3	5	..	..	..	..	..	..	..	..	..	117	..	117	11,330	
	4	5	..	..	..	..	..	..	..	..	..	117	..	117	11,213	
	5	5	..	..	..	..	..	..	..	..	..	117	..	117	11,096	
	6	5	..	..	..	..	..	..	..	..	..	118	..	118	10,978	
	7	5	..	..	..	..	..	..	..	..	..	118	..	118	10,860	
	8	5	..	..	..	..	..	..	..	..	..	120	..	120	10,740	
	9	5	..	..	..	..	..	..	..	..	..	120	..	120	10,620	
	10	5	..	..	..	..	..	..	..	..	..	116	..	116	10,504	
	11	5	..	..	..	..	..	..	..	..	..	118	..	118	10,386	
	12	5	..	..	..	..	..	..	..	..	..	118	..	118	10,268	
	13	36	..	..	..	..	..	..	..	..	..	120	..	120	10,148	
	14	35	..	..	..	..	..	..	..	..	..	120	..	120	10,028	
	15	21	..	..	..	..	..	..	..	..	..	121	..	121	9,907	
		152	..	..	..	..	..	..	..	..	..	..	..	..	..	
	16	23	..	..	..	..	..	..	..	..	..	124	..	124	9,783	
	17	8	..	..	..	..	..	..	..	..	..	124	..	124	9,659	
	18	5	..	..	..	..	..	..	..	..	..	122	..	122	9,537	
	19	8	..	..	..	..	..	..	..	..	..	121	..	121	9,416	
	20	8	..	..	..	..	..	..	..	..	..	121	..	121	9,295	
	21	8	..	..	..	..	..	..	..	..	..	121	..	121	9,174	
	22	8	..	..	..	..	..	..	..	..	..	120	..	120	9,054	
	23	8	..	..	..	..	..	..	..	..	..	120	..	120	8,934	
	24	8	..	..	..	..	..	..	..	..	..	120	..	120	8,814	
	25	8	..	..	..	..	..	..	..	..	..	121	..	121	8,693	
	26	8	..	..	..	..	..	..	..	..	..	121	..	121	8,572	
	27	8	..	..	..	..	..	..	..	..	..	121	..	121	8,451	
	28	..	..	..	..	..	..	..	..	..	..	121	..	121	8,330	
	29	..	..	..	..	..	..	..	..	..	..	121	..	121	8,209	
	30	..	..	..	..	..	..	..	..	..	..	121	..	121	8,088	
		108	..	..	..	..	..	..	..	..	..	..	..	..	..	

Month and date.		Conditions at Cauvery Dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	Flow at Cauvery Dam in m. c. ft. 3 days later.	Value of Kannambadi flow first impounded at Cauvery Dam (¾ of col. 2.)	Net flow at Cauvery Dam (col. 3 – col. 4)+¾ of surplus in col. 13.	Compensation water due to excess storage col. 3, if less or limit – col. 5.	Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, ¾ of col. 6.	Draw off for Irrigation, etc.	Surplus when Reservoir is full.	Total of cols. 11, 12 and 13.	Balance in Reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
May 1906.	1	..	..	..	..	..	..	..	..	..	..	121	..	121	7,967	
	2	..	..	..	..	..	..	..	..	..	..	122	..	122	7,845	
	3	..	..	..	..	..	..	..	..	..	..	122	..	122	7,723	
	4	..	..	..	..	..	..	..	..	..	..	122	..	122	7,601	
	5	..	..	..	..	..	..	..	..	..	..	122	..	122	7,479	
	6	..	..	..	..	..	..	..	..	..	..	122	..	122	7,357	
	7	..	..	..	..	..	..	..	..	..	..	122	..	122	7,235	
	8	..	..	..	..	..	..	..	..	..	..	122	..	122	7,113	
	9	..	..	..	..	..	..	..	..	..	..	122	..	122	6,991	
	10	..	..	..	..	..	..	..	..	..	..	122	..	122	6,869	
	11	..	..	..	..	..	..	..	..	..	..	122	..	122	6,747	
	12	..	..	..	..	..	..	..	..	..	..	121	..	121	6,626	
	13	..	..	..	..	..	..	..	..	..	..	118	..	118	6,508	
	14	..	..	..	..	..	..	..	..	..	..	105	..	105	6,403	
	15	..	..	..	..	..	..	..	..	..	..	89	..	89	6,314	
		..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	16	..	..	..	..	..	..	..	..	..	..	49	..	49	6,265	
	17	..	..	..	..	..	..	..	..	..	..	49	..	49	6,216	
	18	..	..	..	..	..	..	..	..	..	..	49	..	49	6,167	
	19	8	..	..	..	..	..	..	..	..	..	61	..	61	6,106	
	20	8	..	..	..	..	..	..	..	..	..	61	..	61	6,045	
	21	8	..	..	..	..	..	..	..	..	..	77	..	77	5,968	
	22	8	..	..	..	..	..	..	..	..	..	49	..	49	5,919	
	23	8	..	..	..	..	..	..	..	..	..	61	..	61	5,858	
	24	7	..	..	..	..	..	..	..	..	..	77	..	77	5,781	
	25	7	..	..	..	..	..	..	..	..	..	78	..	78	5,703	
	26	7	..	..	..	..	..	..	..	..	..	78	..	78	5,625	
	27	7	..	..	..	..	..	..	..	..	..	78	..	78	5,547	
	28	5	..	..	..	..	..	..	..	..	..	85	..	85	5,462	
	29	5	32	..	..	..	..	..	..	..	..	88	..	88	5,374	
	30	5	32	..	..	..	..	..	..	..	..	88	..	88	5,286	
	31	5	32	..	..	..	..	..	..	..	..	93	..	93	5,193	
		88	96	..	..	..	..	..	..	..	..	..	..	..	..	

June 1906.

1 Month and date.	Conditions at Cauvery Dam. 2 Flow at Kannambadi in m. c. ft. corresponding to date in col. 1.	3 Flow at Cauvery Dam in m. c. ft. 3 days later.	4 Value of Kannambadi flow first impounded at Cauvery Dam ($\frac{3}{4}$ of col. 2).	5 Net flow at Cauvery Dam (col. 3—col. 4) + $\frac{3}{4}$ of surplus in col. 13.	6 Compensation water due to excess storage col. 3, if less or limit —col. 5	7 Resulting flow at Cauvery Dam col. 5 + col. 6; three days previous.	8 Quantity running to waste above limit.	9 Quantity running to waste out of compensation water.	Conditions at Kannambadi. 10 Gross storage at Kannambadi, col. 2 + previous day's balance in col. 15.	11 Compensation water converted to Kannambadi, *i.e.*, $\frac{1}{3}$ of col. 6.	12 Draw off for Irrigation, etc.	13 Surplus when Reservoir is full.	14 Total of cols. 11, 12 and 13.	15 Balance in Reservoir.	16 Remarks.
1	6	32	:	:	:	:	:	:	:	:	:	:	:	:	
2	6	44	:	:	:	:	:	:	:	:	:	:	:	:	
3	6	44	:	:	:	:	:	:	:	:	:	:	:	:	
4	6	44	:	:	:	:	:	:	:	:	:	:	:	:	
5	6	38	:	:	:	:	:	:	:	:	:	:	:	:	
6	6	130	:	:	:	:	:	:	:	:	:	:	:	:	
7	48	60	:	:	:	:	:	:	:	:	:	:	:	:	
8	89	60	:	:	:	:	:	:	:	:	:	:	:	:	
9	:	44	:	:	:	:	:	:	:	:	:	:	:	:	
10	:	38	:	:	:	:	:	:	:	:	:	:	:	:	
11	:	44	:	:	:	:	:	:	:	:	:	:	:	:	
12	:	50	:	:	:	:	:	:	:	:	:	:	:	:	
13	:	98	:	:	:	:	:	:	:	:	:	:	:	:	
14	:	200	:	:	:	:	:	:	:	:	:	:	:	:	
15	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
16	172	944	:	:	:	:	:	:	:	:	:	:	:	:	
17	1	158	:	:	:	:	:	:	:	:	:	:	:	:	
18	5	130	:	:	:	:	:	:	:	:	:	:	:	:	
19	4	98	:	:	:	:	:	:	:	:	:	:	:	:	
20	4	66	:	:	:	:	:	:	:	:	:	:	:	:	
21	486	44	:	:	:	:	:	:	:	:	:	:	:	:	
22	353	66	:	:	:	:	:	:	:	:	:	:	:	:	
23	3,208	364	:	:	:	:	:	:	:	:	:	:	:	:	
24	2,974	386	:	:	:	:	:	:	:	:	:	:	:	:	
25	1,708	333	:	:	:	:	:	:	:	:	:	:	:	:	
26	633	1,814	:	:	:	:	:	:	:	:	:	:	:	:	
27	477	803	:	:	:	:	:	:	:	:	:	:	:	:	
28	469	628	:	:	:	:	:	:	:	:	:	:	:	:	
29	316	494	:	:	:	:	:	:	:	:	:	:	:	:	
30	209	402	:	:	:	:	:	:	:	:	:	:	:	:	
	165	364	:	:	:	:	:	:	:	:	:	:	:	:	
	11,402	5,635	:	:	:	:	:	:	:	:	:	:	:	:	

1	10	11	12	13	14	15	16
1	100	100	75	:	75	3,598	
2	100	100	77	:	77	3,521	
3	100	90	77	:	77	3,444	
4	90	92	79	:	79	3,365	
5	92	87	78	:	78	3,287	
6	87	87	78	:	78	3,209	
7	87	94	78	:	78	3,131	
8	94	101	6	:	6	3,125	
9	101	105	6	:	6	3,119	
10	105	109	6	:	6	3,113	
11	109	111	6	:	6	3,107	
12	111	111	6	:	6	3,101	
13	111	111	6	:	6	3,095	
14	111	115	6	:	6	3,089	
15	115	118	6	:	6	3,083	
16	118	3,673	:	:	:	:	
17	3,791	4,906	4,017	4,128	4,237	4,342	4,443
18	4,906	4,017	4,128	4,237	4,342	4,443	4,537
19	4,017	4,128	4,237	4,342	4,443	4,537	4,624
20	4,128	4,237	4,342	4,443	4,537	4,624	4,711
21	4,237	4,342	4,443	4,537	4,624	4,711	4,803
22	4,342	4,443	4,537	4,624	4,711	4,803	4,893
23	4,443	4,537	4,624	4,711	4,803	4,893	4,993
24	4,537	4,624	4,711	4,803	4,893	4,993	5,093
25	4,624	4,711	4,803	4,893	4,993	5,093	5,198
26	4,711	4,803	4,893	4,993	5,093	5,198	5,298
27	4,803	4,893	4,993	5,093	5,198	5,298	5,398
28	4,893	4,993	5,093	5,198	5,298	5,398	5,498
29	4,993	5,093	5,198	5,298	5,398	5,498	5,598
30	5,093	5,198	5,298	5,398	5,498	5,598	5,698
	5,198	5,298	5,398	5,498	5,598	5,698	5,798

June 1913.

Month and date. 1	Flow at Kannambadi in m.c.ft. corresponding to date in col. 1. 2	Flow at Cauvery dam in m c.ft. three days later. 3	Value of Kannambadi flow first impounded at Cauvery dam ($\frac{3}{4}$ of col. 2). 4	Conditions at the Cauvery dam. Net flow at Cauvery dam (col. 3 — col. 4) + $\frac{3}{4}$ of surplus in col. 13), if any. 5	Compensation water due to excess storage col. 3, if less or limit — col. 5. 6	Resulting flow at Cauvery dam col. 5 + col. 6; three days previous. 7	Quantity running to waste above limit. 8	Quantity running to waste out of compensation water. 9	Gross storage at Kannambadi, col. 2 + previous days' balance in col. 15. 10	Conditions at Kannambadi. Compensation water converted to Kannambadi, *i.e.*, $\frac{1}{3}$ of col. 6. 11	Draw-off for irrigation, etc. 12	Surplus when reservoir is full. 13	Total of cols. 11, 12 and 13 14	Balance in reservoir. 15	Remarks. 16
1	157	539	118	421	118	:	:	:	10,000	:	43	:	43	10,114	
2	110	618	83	535	83	:	:	:	10,157	:	43	:	43	10,181	
3	124	286	93	193	93	:	:	:	10,224	:	43	:	43	10,262	
4	118	172	89	83	89	:	:	:	10,305	:	43	:	43	10,180	
5	132	517	99	418	99	:	:	:	10,380	:	43	:	43	10,159	
6	146	786	110	676	110	:	:	:	10,312	:	43	:	43	10,138	
7	120	661	90	471	90	:	:	:	10,305	:	43	:	43	10,097	
8	97	539	73	466	73	:	:	:	10,258	:	43	:	43	10,019	
9	286	436	215	220	215	:	:	:	10,191	:	43	:	43	10,116	
10	720	371	540	— 169*	540	:	:	:	10,305	:	43	:	43	10,673	
11	702	419	527	— 108*	527	:	:	:	10,836	:	43	:	43	10,236	
12	688	1,123	516	607	516	:	:	:	11,375	:	43	:	43	11,140	
13	1,163	1,029	872	757	872	1,297	:	:	11,923	:	43	:	43	11,594	
14	1,438	3,333	1,079	2,254	46	2,781	481	:	12,757	:	43	:	43	11,594	
15	1,100	5,459	826	2,631	:	3,150	860	:	13,432	:	43	:	43	12,687	
	7,101	14,787	:	:	2,671	:	1,331	1,607	13,787	:	43	:	43	13,056	
16	712	2,791	534	2,257	43	3,124	829	43	13,768	:	152	:	152	12,463	
17	578	1,973	434	1,539	434	1,686	:	:	13,031	1,163	152	:	152	12,818	
18	471	786	353	433	353	433	:	:	13,289	61	152	:	152	13,137	
19	330	698	248	450	248	493	:	:	13,467	:	152	:	152	13,468	
20	316	595	236	359	236	793	:	:	13,673	57	152	:	152	12,843	
21	262	495	194	301	194	664	:	:	13,105	578	152	:	152	12,482	
22	274	436	161	274	161	522	:	:	12,698	471	152	:	152	12,214	
23	122	387	92	296	92	531	:	:	12,386	330	152	:	152	12,869	
24	160	355	75	280	75	474	:	:	11,969	315	152	:	152	11,565	
25	128	323	96	227	96	388	:	:	11,683	262	152	:	152	11,317	
26	303	307	227	80	227	172	:	:	11,620	214	152	:	152	11,043	
27	218	307	186	121	186	196	:	:	11,291	122	152	:	152	11,039	
28	472	273	364	— 81	273	15	:	:	11,611	100	152	:	152	11,231	
29	996	355	747	— 392*	355	165	:	:	12,227	128	152	:	152	11,772	
30	669	356	427	— 72*	356	114	:	:	12,341	248	152	:	152	11,941	
	5,820	..	..	..	..	..	..	..	12,921	4,362	..	..	..	..	
	12,921	..	..	..	5,999	..	2,160	1,050	..	7,762	..	..	..	..	

When net flow in col. 5 is negative, compensation is given for the actual discharge in col. 3.

Month and date.		Conditions at the Cauvery dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m.c.ft. corresponding to date in col. 1.	Flow at Cauvery dam in m.c.ft. three days later.	Value of Kannambadi flow first impounded at Cauvery dam (¾ of col. 2).	Net flow at Cauvery dam (col. 3 — col. 4) + ¾ of surplus in col. 13, if any.	Compensation water due to excess storage col. 3, if less or limit — col. 5.	Resulting flow at Cauvery dam col. 5 + col. 6; three days previous	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi, col. 2 + previous days' balance in col. 15.	Compensation water converted to Kannambadi, i.e., ¾ of col. 6.	Draw-off for irrigation, etc.	Surplus when reservoir is full.	Total of cols. 11, 12 and 13.	Balance in reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
July 1913.	1	494	1,243	370	873	370	..	..	..	12,435	364	156	..	520	11,915	
	2	387	1,629	290	1,339	290	..	..	..	12,302	473	156	..	629	11,673	
	3	444	1,325	333	992	333	..	..	..	12,117	473	156	..	629	11,488	
	4	425	1,563	319	1,244	319	1,614	..	..	11,913	494	156	..	650	11,263	
	5	500	1,002	376	626	376	916	..	..	11,764	387	156	..	543	11,221	
	6	757	732	568	164	568	497	..	..	11,978	444	156	..	600	11,378	
	7	627	810	469	371	469	690	..	..	12,605	425	156	..	581	11,424	
	8	576	948	432	516	432	892	..	..	12,000	501	156	..	657	11,343	
	9	498	786	373	413	373	981	..	..	11,841	757	156	..	913	10,928	
	10	530	698	398	300	398	769	..	..	11,458	627	156	..	783	10,675	
	11	636	663	477	186	477	618	..	..	11,311	576	156	..	732	10,579	
	12	674	840	506	334	506	707	..	..	11,253	498	156	..	654	10,599	
	13	586	732	439	294	439	691	..	..	11,185	530	156	..	686	10,449	
	14	584	698	438	260	438	737	..	..	11,083	636	156	..	792	10,291	
	15	541	948	406	542	406	1,048	..	..	10,832	674	156	..	830	10,002	
		8,259	..	..	..	6,194	..	..	..	..	7,859	..	..	..	..	
	16	1,616	4,824	1,212	3,612	..	4,051	1,716	439	11,618	586	156	..	742	10,876	
	17	5,267	14,027	3,950	10,077	..	10,516	8,216	438	16,143	584	156	..	740	15,403	
	18	8,262	12,038	6,197	5,841	..	6,247	3,947	406	23,665	541	156	..	697	22,968	
	19	8,345	11,282	6,259	5,023	..	5,023	2,723	..	31,313	..	156	..	156	31,157	
	20	7,623	10,347	5,717	5,815	..	5,815	3,515	..	38,780		156	1,544	1,700	37,080	
	21	5,672	7,009	4,254	6,892	..	6,892	4,592	..	42,752		156	5,516	5,672	37,080	
	22	3,166	4,979	2,374	4,863	..	4,863	2,963	..	40,246	..	156	3,010	3,166	37,080	
	23	1,944	3,734	1,458	3,617	..	3,617	1,317	..	39,024	..	156	1,788	1,944	37,080	
	24	1,590	3,010	1,192	2,894		2,394	594	..	38,670	..	156	1,434	1,590	37,080	
	25	1,275	2,165	956	2,048	117	2,048	..	..	38,865	..	156	1,119	1,275	37,080	
	26	1,372	1,889	1,029	1,772	117	1,772	..	..	38,452	..	156	1,216	1,372	37,080	
	27	1,467	2,095	1,100	1,978	117	1,978	..	..	38,547	..	156	1,311	1,467	37,080	
	28	1,453	2,095	1,090	1,861	234	1,978	..	..	38,533	156	156	1,141	1,453	37,080	
	29	1,616	2,235	1,211	2,001	234	2,118	..	..	38,695	156	156	1,303	1,615	37,080	
	30	3,225	6,132	2,419	5,898	..	6,015	3,715	117	40,305	156	156	2,913	3,225	37,080	
	31	4,396	7,167	3,297	6,741	..	6,975	4,675	234	41,476	312	156	3,828	4,396	37,080	
		58,288	..	..	..	819	..	37,671	1,634	..	2,491	..	26,123	..	..	
		66,547	..	..	..	7,013	..	37,671	1,634	..	10,350	..	26,123	..	..	

Month and date.		Conditions at the Cauvery dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m.c.ft. corresponding to date in col. 1.	Flow at Cauvery dam in m.c.ft. three days later.	Value of Kannambadi flow first impounded at Cauvery dam (¾ of col. 2).	Net flow at Cauvery dam (col. 3 col. 4) + ¾ of surplus in col. 13, if any.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi, col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, i.e., ¾ of col. 6.	Draw-off for irrigation, etc.	Surplus when reservoir is full.	Total of cols. 11, 12 and 13.	Balance in reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
August 1913.	1	4,786	7,287	3,589	6,917	..	7,151	4,851	234	41,866	..	156	4,318	4,786	37,080	
	2	4,981	7,167	3,736	6,668	..	6,618	4,318	..	42,061	..	156	4,825	4,981	37,080	
	3	5,125	5,663	3,844	5,546	..	5,546	3,246	..	42,205	..	156	4,969	5,125	37,080	
	4	4,472	5,883	3,354	5,766	..	5,766	3,466	..	41,552	..	156	4,316	4,472	37,080	
	5	4,235	4,877	3,175	4,755	..	4,755	2,455	..	41,315	..	156	4,079	4,235	37,080	
	6	3,106	3,884	2,329	3,768	..	3,763	1,468	..	40,186	..	156	2,950	3,106	37,080	
	7	2,817	4,012	2,113	3,895	..	3,895	1,595	..	39,897		156	2,661	2,817	37,080	
	8	2,057	3,526	1,543	3,409	..	3,409	1,109	..	39,137	..	156	1,901	2,057	37,080	
	9	1,997	2,656	1,498	2,539	..	2,539	239	..	39,077	..	156	1,841	1,997	37,080	
	10	1,691	2,375	1,268	2,258	42	2,258	..	..	38,771	..	156	1,535	1,691	37,080	
	11	1,331	2,095	998	1,978	117	1,978	..	..	38,411	..	156	1,175	1,331	37,080	
	12	1,212	1,824	909	1,707	117	1,707	..	..	38,292	..	156	1,056	1,212	37,080	
	13	1,036	1,629	777	1,470	159	1,512	..	..	38,116	56	156	824	1,036	37,080	
	14	814	1,429	610	1,196	233	1,313	..	..	37,894	156	156	502	814	37,080	
	15	744	1,243	558	1,009	234	1,126	..	..	37,824	156	156	432	744	37,080	
		40,404	..	..	..	902	..	22,747	234	..	368	..	37,384	..	..	
	16	704	1,183	528	907	276	1,066	..	..	37,784	212	156	336	704	37,080	
	17	643	1,123	482	773	350	1,006	..	..	37,723	311	156	176	643	37,080	
	18	599	1,002	449	651	351	885	..	..	37,679	312	156	131	599	37,080	
	19	674	894	506	501	393	777	..	..	37,754	368	156	150	674	37,080	
	20	618	894	464	430	464	780	..	..	37,698	467	156	..	623	37,075	
	21	675	840	506	334	471	720	..	..	37,750	468	156	46	670	37,080	
	22	670	1,002	503	499	503	892	..	..	37,750	524	156	..	680	37,070	
	23	992	1,063	744	504	559	968	..	..	38,062	580	156	246	982	37,080	
	24	1,216	1,563	912	1,004	559	1,475	..	..	38,296	589	156	471	1,216	37,080	
	25	1,133	1,563	850	943	620	1,446	..	..	38,213	671	156	306	1,133	37,080	
	26	1,307	1,325	980	650	675	1,209	..	..	38,387	745	156	406	1,307	37,080	
	27	1,140	1,629	855	953	676	1,512	..	..	38,220	745	156	239	1,140	37,080	
	28	892	1,429	669	760	669	1,380	..	..	37,972	775	156	..	931	37,041	
	29	802	1,123	602	521	602	1,196	..	..	37,843	900	156	..	1,056	36,787	
	30	934	1,002	700	302	700	978	..	..	37,721	901	156	..	1,057	36,664	
	31	809	1,123	607	516	607	1,185	..	..	37,473	892	156	..	1,048	36,425	
		13,808	..	..	..	8,475	..	..	..	..	9,460	..	2,507	..	..	
		54,212	..	..	..	9,377	..	22,747	234	..	9,828	..	39,891	..	..	

Month and date.		Conditions at the Cauvery dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m.c.ft. corresponding to date in col. 1.	Flow at Cauvery dam in m.c.ft. three days later.	Value of Kannambadi flow first impounded at Cauvery dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery dam (col. 3 − col. 4) + $\frac{3}{4}$ of surplus in col. 13, if any.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery dam col. 5 + col. 6; three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi, col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, $\frac{4}{3}$ of col. 6.	Draw-off for irrigation, etc.	Surplus when reservoir is full.	Total of cols. 11, 12 and 13.	Balance in reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
September 1913.	1	758	1,002	569	433	569	1,035	..	..	37,183	803	156	..	959	36,224	
	2	874	894	656	238	656	938	..	..	37,098	933	156	..	1,089	36,009	
	3	946	1,123	710	413	710	1,020	..	.	36,955	809	156	..	965	35,990	
	4	910	1,429	683	746	683	1,314	..		36,900	758	156	..	914	35,986	
	5	863	1,303	647	656	647	1,312	..	..	36,849	875	156	..	1,031	35,818	
	6	785	1,063	589	474	589	1,184	..	..	36,603	947	156	..	1,103	35,500	
	7	687	948	515	433	515	1,116	..	..	36,187	910	156	..	1,066	35,121	
	8	671	840	503	337	503	984	..	..	35,792	863	156	..	1,019	34,773	
	9	500	664	375	289	575	878	..	..	35,273	785	156	..	941	34,322	
	10	448	629	336	293	336	808	..	..	34,780	687	156	..	843	33,937	
	11	394	562	296	266	296	769	..	..	34,331	671	156	..	827	33,504	
	12	357	518	268	250	268	625	..	..	33,861	500	156	..	656	33,205	
	13	293	473	220	253	220	589	..	..	33,498	448	156	..	604	32,894	
	14	222	451	167	284	167	580	..	..	33,116	394	156	..	550	32,566	
	15	296	419	222	197	222	465	..	..	32,862	357	156	..	513	32,349	
		9,004	..	..	..	6,756	..	.	.	..	10,710	..	..	..	..	
	16	268	419	201	218	201	438	..	..	32,617	293	156	..	449	32,168	
	17	253	419	190	229	190	396	..	..	32,421	222	156	..	378	32,043	
	18	255	451	191	260	191	482	..	..	32,298	296	156	..	452	31,846	
	19	255	451	191	260	191	461	..	..	32,101	268	156	..	424	31,677	
	20	287	1,498	215	1,283	215	1,473	..	..	31,964	253	156	..	409	31,555	
	21	320	1,183	240	943	240	1,134	..	..	31,875	255	156	..	411	31,464	
	22	316	732	237	495	23	686	..	..	31,780	255	156	..	411	31,369	
	23	318	1,063	239	824	239	1,039	..	..	31,687	287	176	..	443	31,244	
	24	284	1,243	213	1,030	213	1,470	..	..	31,528	220	156	..	476	31,052	
	25	446	1,325	335	990	335	1,227	..	..	31,498	316	156	..	472	31,026	
	26	415	4,796	311	4,485	..	4,724	2,424	239	31,414	318	156	..	474	30,967	
	27	571	2,759	428	2,331	..	2,544	244	213	31,538	284	156	..	440	31,098	
	28	361	1,824	271	1,553	271	1,888	..	..	31,459	446	156	..	602	30,857	
	29	600	1,954	450	1,704	450	1,504	..	..	31,457	.	156	..	156	31,301	
	30	675	2,408	506	1,902	398	1,902	..	..	31,976	..	156	.	156	31,820	
		5,624	..		..	3,371	..	2,668	452	..	3,813	..	..	..	..	
		14,628	..	..	..	10,127	..	2,668	452	..	14,553	..	..	..	..	

Month and date.		Conditions at the Cauvery dam.								Conditions at Kannambadi.						Remarks.
		Flow at Kannambadi in m.c.ft. corresponding to date in col. 1.	Flow at Cauvery dam in m.c.ft. three days later.	Value of Kannambadi flow first impounded at Cauvery dam ($\frac{3}{4}$ of col. 2).	Net flow at Cauvery dam (col. 3 − col. 4) + $\frac{3}{4}$ of surplus in col. 13, if any.	Compensation water due to excess storage col. 3, if less or limit—col. 5.	Resulting flow at Cauvery dam col. 5 + col. 6, three days previous.	Quantity running to waste above limit.	Quantity running to waste out of compensation water.	Gross storage at Kannambadi, col. 2 + previous day's balance in col. 15.	Compensation water converted to Kannambadi, *i.e.*, $\frac{4}{3}$ of col. 6.	Draw-off for irrigation, etc.	Surplus when reservoir is full.	Total of cols. 11, 12 and 13.	Balance in reservoir.	
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
October 1913.	1	638	2,504	479	2,025	275	2,296	..	..	32,458	361	156	..	517	31,820	
	2	673	2,923	505	2,418	..	2,868	568	450	32,614	600	156	..	756	31,941	
	3	631	3,901	476	3,425	..	3,823	1,523	398	32,492	531	156	..	687	31,805	
	4	714	2,432	536	1,896	404	2,171	..	..	32,519	367	156	..	523	31,996	
	5	704	3,368	528	2,840	.	2,840	540	..	32,700	..	156	..	156	32,544	
	6	632	2,483	474	2,009	291	2,009	..	..	33,176	..	156	..	156	33,020	
	7	845	2,305	634	1,671	629	2,075	..	..	33,865	539	156	..	695	33,170	
	8	979	2,746	734	2,012	288	2,012	..	..	34,149	..	156	..	156	33,993	
	9	804	2,165	603	1,562	603	1,853	..	..	34,737	388	156	..	544	34,253	
	10	692	1,967	519	1,452	519	2,081	..	..	34,945	839	156	..	995	33,950	
	11	503	1,303	377	926	377	1,214	..	..	34,453	384	156	..	540	33,913	
	12	529	1,629	397	1,232	397	1,835	..	..	34,442	804	156	..	960	33'482	
	13	1,107	4,193	830	3,363	..	3,882	1,582	519	34,589	692	156	..	848	33,741	
	14	3,220	6,396	2,415	3,981	..	4,358	2,058	377	36,961	503	156	..	659	36'302	
	15	3,373	5,615	2,530	4,517	..	4,914	2,614	397	39,675	529	156	1,910	2,595	37,080	
		..	..	..	..	..	..	8,885	1,293	..	..	..	1,910	..	..	
	16	2,301	4,555	1,726	4,438	..	4,438	2,138	..	39,381	..	156	2,145	2,301	37,080	
	17	1,299	3,332	974	3,215	..	3,215	915	..	38,379	..	156	1,143	1,299	37,080	
	18	1,005	2,095	754	1,978	117	1,978	..	..	38,085	..	156	849	1,005	37,080	
	19	775	1,694	581	1,577	117	1,577	..	..	37,855	..	156	619	775	37,080	
	20	620	1,429	465	1,312	117	1,312	..	..	37,700	..	156	464	620	37,080	
	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	27	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
		..	..	..	..	..	..	3,053	..	..	..	..	5,220	..	..	
		..	..	..	..	..	..	11,938	1,293	..	..	..	7,130	..	..	

APPENDIX P.

Working Tables.

Explanations of the columns of the working tables.

Table I.

Column 1.—Month and date.

Column 2.—Discharges at Kannambadi in m.c.ft. corresponding to date in column 1.

Column 3.—Gives excess over N × limit of flow at Cauvery dam or quantity permissible for storage at Kannambadi. N being $\frac{5}{8}$ths during months of June to September and $\frac{1}{3}$rd during October to January.

Column 4.— Equivalent of column 3 at the Cauvery dam allowing for transmission losses, *i.e.*, $\frac{3}{4}$ of column 3.

Column 5.—Discharges in m.c.ft. at Cauvery dam corresponding to three days later than the date in column 1.

Column 6.—Discharges at Cauvery dam as affected after storage at Kannambadi, column 5—column 4.

Column 7.—Quantity in excess of the limit flow required at the Cauvery dam running to waste even after the impounding at the Kannambadi reservoir.

Column 8.—Deficit in Madras supplies due to the impounding at the Kannambadi reservoir.

Table II.

Column 1.—Month and date.

Column 2.—Discharges at Cauvery dam in m.c.ft. corresponding to three days later than the date in column 1.

Column 3.—Gives quantity in excess of the limit of flow at Cauvery dam.

Column 4.—Gives quantity in column 3 as it would be at the Kannambadi reservoir site after adding for the transmission losses at 75 m.c.ft. at the Cauvery dam representing 100 at the Kannambadi site.

Column 5.—Discharges at Kannambadi dam in m.c.ft., corresponding to date in column 1.

Column 6.—Quantity available for storage at Kannambadi, column 5 or column 4 whichever is less.

Column 7.—Gives equivalent of column 6 at Cauvery dam, *i.e.*, $\frac{3}{4}$ × column 6.

Column 8.—Gives the discharges at Cauvery dam in m.c.ft., as affected after storage at Kannambadi.

Column 9.—Gives quantity running to waste at Cauvery dam after storage at Kannambadi.

Table III.

Column 1.—Month and date.

Column 2.—Approximations for finding out the quantity that could be impounded at Kannambadi dam as detailed below.

2 (*a*) Flow at Kannambadi in m. c. ft., corresponding to the date in column 1 as gauged at the three higher anicuts on the three rivers, Cauvery, Hemavati and Lakshmanthirtha.

2 (*b*) Gives the probable flow at Cauvery dam on the assumption that during the months of June to September, the flow at Kannambadi is $\frac{5}{8}$ths of the flow at the Cauvery dam ; this figure $\frac{5}{8}$ths being derived by comparing the flow at the two places during the above months in the five worst years on record.

During the months of October to January the proportion is $\frac{1}{3}$rd computed as above for the worst five years for those months.

2 (*c*) Gives the probable excess over the limit of flow required at the Cauvery dam, *i.e.*, column 2 (*b*)—limit in column 16.

2 (*d*) Gives the value of the quantity in column 2 (*c*) converted to Kannambadi dam, on the assumption that the transmission losses from Kannambadi to Cauvery dam amount to 25 per cent. on the Kannambadi flow. This gives the permissible quantity for storage at Kannambadi.

2 (*e*) Gives the quantity that could be impounded at Kannambadi ; column 2 (*d*) or 2 (*a*) whichever is less.

(*Columns 3 to 9 show the conditions at the Cauvery dam.*)

Column 3.—Flow at Cauvery dam in m.c.ft., three days later than the date in column 1.

Column 4.—Value of column 2 (*e*) *i.e.*, the quantity that could be impounded, at Kannambadi, converted to what it would be at the Cauvery dam, *i.e.*, $\frac{3}{4}$ × column 2 (*e*).

Column 5.—Net flow at Cauvery dam before compensation water reaches, *i.e* , column 3—column 4 + $\frac{3}{4}$ of surplns (at Kannambadi, if any).

Column 6.—Gives compensation water called at the Cauvery dam, column 3 if less than limit or limit—column 5.

Column 7.—Resulting flow at Cauvery dam after compensation water reaches, column 5 + column 6, three days previous.

Column 8.—Quantity running to waste above the required limit in column 16 at the Cauvery dam after the Kannambadi dam begins to operate.

Column 9.—Gives quantity running to waste out of the compensation water.

(*Columns 10 to 15 show conditions at Kannambadi dam.*)

Column 10.—Gives gross storage in the reservoir, column 2 (*e*) *plus* previous day's balance in reservoir in column 15.

Column 11.—Gives quantity of compensation water called at Cauvery dam converted to what it would be at the Kannambadi dam, *i.e.*, $\frac{4}{3}$ × column 6.

Column 12.—Gives quantity of draw off for irrigation, etc., from the reservoir.

43 m.c.ft., daily for summer irrigation from 16th January to 15th June, *plus* whatever is required for Power based on Sivasamudram discharges.

152 m.c.ft., daily for full irrigation and evaporation during second half of June.

156 m.c.ft., daily for full irrigation and evaporation from 1st July to 15th January.

Column 13.—Gives the quantity of surplus at Kannambadi dam when reservoir is full.

Column 14.—Gives totals of columns 11, 12 and 13. Total expenditure from the storage water.

Column 15.—Gives daily balance in reservoir, column 10—column 14.

Column 16.—Gives limits of flow at Cauvery dam as per proposed rules.

LIMIT OF RULES. TABLE I. 1905–1906.

Month and date.		Discharges at Kannambadi in m.c.ft.	Excess over limit or quantity permissible for storage limit = ⅔ × col. 9 from June to September and ⅓ × col. 9 from October to January.	Equivalent of col. 3 at Cauvery dam allowing for transmission losses ¼ of col. 3.	Discharges at Cauvery dam.	Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limit of flow allowed at Cauvery dam.
1		2	3	4	5	6	7	8	9
June 1905.	1	..	..	..	322	322	..	..	450
	2	..	..	..	272	272	..	..	
	3	..	..	..	272	272	..	..	
	4	..	..	..	218	218	..	..	
	5	..	..	..	370	370	..	..	
	6	..	..	..	322	322	..	..	
	7	..	..	..	290	290	..	..	
	8	1	..	..	236	236	..	..	
	9	1	..	..	236	236	..	..	
	10	1	..	..	200	200	..	..	
	11	1	..	..	218	218	..	..	
	12	95	..	..	254	254	..	..	
	13	641	360	270	200	— 70*	..	..	
	14	151	..	..	158	158	..	200	
	15	33	..	..	130	130	..	..	
		663	360	270	..	..	..	200	
	16	132	..	..	186	186	..	..	1,060
	17	132	..	..	186	186	..	..	
	18	138	..	..	158	158	..	..	
	19	160	..	..	130	6	..	588	
	20	1,447	784	588	594	88	..	450	
	21	1,263	600	450	538	538	..	..	
	22	210	..	..	1,818	1,818	..	..	
	23	177	..	..	1,287	1,287	..	..	
	24	144	..	..	851	851	..	..	
	25	135	..	..	662	662	..	..	
	26	528	..	..	594	594	..	..	
	27	328	..	..	754	754	..	..	
	29	405	..	..	1,579	1,579	..	..	
	28	569	..	..	3,697	3,697	..	..	
	30	723	60	45	3,638	3,593	2,533	..	
		..	1,444	1,083	..	..	2,533	1,038	
		..	1,804	1,353	..	..	2,533	1,238	
July 1905.	1	1,141	125	94	3,802	3,708	2,083	..	1,625
	2	1,172	156	117	3,680	3,563	1,938	..	
	3	1,044	28	21	2,834	2,813	1,188	..	
	4	855	..	..	2,020	2,020	..	..	
	5	676	..	..	1,495	1,495	..	..	
	6	612	..	..	1,000	1,000	..	..	
	7	584	..	..	730	730	..	..	
	8	2,714	1,698	1,273	730	— 543*	..	..	
	9	2,804	1,788	1,341	4,077	2,736	1,111	730	
	10	1,992	976	732	3,161	2,429	804	..	
	11	795	..	..	2,160	2,160	..	..	
	12	631	..	..	1,625	1,625	..	..	
	13	654	..	..	1,240	1,240	..	..	
	14	573	..	..	892	892	..	..	
	15	534	..	..	628	628	..	..	
		..	4,771	3,578	..	..	7,124	730	
	16	556	..	..	538	538	..	..	1,625
	17	556	..	..	472	472	..	..	
	18	556	..	..	516	516	..	..	
	19	1,233	217	163	628	465	..	163	
	20	1,802	786	589	3,667	3,078	1,453	..	
	21	1,417	3,001	2,251	7,516	5,265	3,640	..	
	22	5,924	4,908	3,681	7,859	4,178	2,553	..	
	23	6,595	5,679	4,259	8,003	3,744	2,119	..	
	24	6,005	4,989	3,742	6,516	2,774	1,149	..	
	25	3,606	2,590	1,942	4,564	2,722	1,097	..	
	26	2,770	1,754	1,315	4,585	3,270	1,645	..	
	27	2,486	1,470	1,102	4,133	3,031	1,406	..	
	28	2,173	1,157	868	4,133	3,265	1,640	..	
	29	2,029	1,013	760	3,046	2,286	661	..	
	30	1,958	942	706	2,698	1,942	367	..	
	31	1,821	895	604	2,650	2,046	421	..	
		..	29,311	..	..	..	18,151	163	
		..	34,082	..	..	..	25,275	893	

* When col. 6 is negative, natural flow is entered in deficit col. 8.

Limit of Rules. Table I—*cont.* 1905–06.

Month and date.		Discharges at Kannambadi in m.c.ft.	Excess over limit or quantity permissible or storage limit = ⅔ × col. 9 from June to September and ⅓ × col. 9 from October to January.	Equivalent of col. 3 at Cauvery dam allowing for transmission losses. ¾ of col. 3.	Discharges at Cauvery dam.	Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limits of flow allowed at Cauvery dam.
1		2	3	4	5	6	7	8	9
August 1905.	1	1,382	366	275	2,440	2,165	540	..	1,625
	2	1,733	717	538	2,222	1,684	59	..	
	3	1,676	660	495	2,074	1,579	..	46	
	4	994	..	..	1,859	1,859	..	..	
	5	549	..	..	1,573	1,573	..	..	
	6	709	..	..	1,232	1,232	..	..	
	7	666	..	..	981	981	..	..	
	8	592	..	..	803	803	..	..	
	9	595	..	..	662	662	..	..	
	10	561	..	..	594	594	..	..	
	11	561	..	..	560	560	..	..	
	12	658	..	..	538	538	..	..	
	13	545	..	..	516	516	..	..	
	14	379	..	..	594	594	..	..	
	15	565	..	..	784	784	..	..	
		..	1,743	1,308	..	..	607	46	
	16	556	..	..	628	628	..	..	1,625
	17	731	..	..	538	538	..	..	
	18	731	..	..	576	576	..	..	
	19	731	..	..	696	696	..	..	
	20	689	..	..	851	851	..	..	
	21	763	..	..	1,116	1,116	..	..	
	22	1,134	118	88	1,116	1,028	..	88	
	23	1,304	288	216	1,116	900	..	216	
	24	922	..	..	1,062	1,062	..	..	
	25	1,094	78	58	1,116	1,058	..	58	
	26	1,534	518	388	1,170	782	..	388	
	27	1,059	43	32	1,345	1,313	..	32	
	28	985	..	..	1,345	1,345	..	..	
	29	1,057	41	31	1,696	1,665	40	..	
	30	1,074	58	43	1,696	1,653	28	..	
	31	984	..	..	1,755	1,755	..	..	
		..	1,144	856	..	..	68	782	
		..	2,887	2,164	..	..	675	828	
September 1905.	1	879	..	..	1,755	1,755	..	..	1,125
	2	782	..	..	1,170	1,170	..	..	
	3	750	..	..	851	851	..	..	
	4	847	..	..	892	892	..	..	
	5	584	..	..	838	838	..	..	
	6	869	..	..	784	784	..	..	
	7	1,163	147	110	838	728	..	110	
	8	1,392	376	282	1,536	1,254	..	282	
	9	1,503	487	365	2,320	1,955	330	..	
	10	1,471	455	241	2,089	1,848	223	..	
	11	1,136	120	90	1,798	1,708	83	..	
	12	1,035	19	14	1,495	1,481	..	14	
	13	997	..	..	1,300	1,300	..	..	
	14	646	..	..	1,060	1,060	..	..	
	15	616	..	..	1,365	1,365	..	..	
		..	1,604	1,102	..	..	636	406	
	16	457	..	..	730	730	..	..	1,120
	17	421	..	..	662	662	..	..	
	18	383	..	..	1,365	1,365	..	..	
	19	374	..	..	730	730	..	..	
	20	355	..	..	594	594	..	..	
	21	300	..	..	494	494	..	..	
	22	290	..	..	450	450	..	..	
	23	278	..	..	434	434	..	..	
	24	238	..	..	386	386	..	..	
	25	238	..	..	354	354	..	..	
	26	267	..	..	338	338	..	..	
	27	268	..	..	338	338	..	..	
	28	217	..	..	338	338	..	..	
	29	206	..	..	338	338	..	..	
	30	145	..	..	322	322	..	..	
		..	..	..	..	..	..	..	
		..	1,604	1,102	..	..	636	406	

Limit of Rules. Table I—*cont.* 1905–06.

Month and date.	Discharges at Kannambadi in m.c.ft.	Excess over limit or quantity permissible for storage limit = ⅔ × col. 9 from June to September and ⅓ × col. 9 from October to January.	Equivalent of col. 3 at Cauvery dam allowing ¼ for transmission losses. ¼ of col 3.	Discharges at Cauvery dam.	Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limits of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9
October 1905. 1	142	..	..	322	322	..	..	1,240
2	142	..	..	322	322	..	..	
3	174	..	..	338	338	..	..	
4	237	..	..	1,062	1,062	..	..	
5	201	..	..	628	628	..	..	
6	214	..	..	472	472	..	..	
7	237	..	..	851	851	..	..	
8	196	..	..	3,336	3,336	..	..	
9	181	..	..	2,346	2,346	..	..	
10	159	..	..	3,140	3,140	..	..	
11	258	..	..	2,198	2,198	..	..	
12	595	182	136	2,192	2,056	816	..	
13	914	501	376	4,892	4,516	3,276	..	
14	1,245	832	624	3,879	3,255	2,015	..	
15	2,761	2,348	1,761	3,870	2,109	869	..	
	..	3,863	2,897	..	..	6,976	..	
16	1,415	1,002	751	4,190	3,439	2,199	..	1,240
17	912	499	374	3,001	2,627	1,387	..	
18	726	318	235	2,305	2,070	850	..	
19	559	146	109	2,353	2,244	1,004	..	
20	760	347	260	1,048	788	..	260	
21	498	80	60	1,000	940	..	60	
22	414	1	1	838	837	..	1	
23	348	..	..	652	652	..	..	
24	278	..	..	560	560	..	..	
25	205	..	..	516	516	..	..	
26	207	..	..	450	450	..	..	
27	174	..	..	418	418	..	..	
28	139	..	..	402	402	..	..	
29	129	..	..	370	370	..	..	
30	146	..	..	354	354	..	..	
31	114	..	..	338	338	..	..	
	..	2,338	1,790	..	..	5,420	321	
	..	6,251	4,687	..	..	12,396	321	
November 1905. 1	112	..	..	322	322	..	..	1,600
2	112	..	..	306	306	..	..	
3	93	..	..	218	218	..	..	
4	98	..	..	272	272	..	..	
5	97	..	..	236	236	..	..	
6	97	..	..	236	236	..	..	
7	97	..	..	236	236	..	..	
8	126	..	..	236	236	..	..	
9	117	..	..	236	236	..	..	
10	89	..	..	254	254	..	..	
11	89	..	..	402	402	..	..	
12	89	..	..	322	322	..	..	
13	76	..	..	306	306	..	..	
14	76	..	..	306	306	..	..	
15	64	..	..	272	272	..	..	
	..	..	..	..	..	..	..	
16	65	..	..	254	254	..	..	696
17	71	..	..	290	290	..	..	
18	71	..	..	370	370	..	..	
19	71	..	..	338	338	..	..	
20	71	..	..	322	322	..	..	
21	71	..	..	322	322	..	..	
22	69	..	..	322	322	..	..	
23	69	..	..	322	322	..	..	
24	69	..	..	338	338	..	..	
25	69	..	..	560	560	..	..	
26	84	..	..	434	434	..	..	
27	145	..	..	386	386	..	..	
28	190	..	..	354	354	..	..	
29	177	..	..	338	338	..	..	
30	93	..	..	322	322	..	..	
	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	

Limit of Rules. Table I—*cont.* 1905–06.

Month and date.	Discharges at Kannambadi in m.c.ft.	Excess over limit or quantity permissible for storage limit = ⅔ × col. 9 from June to September and ⅓ × col. 9 from October to January.	Equivalent of col. 3 at Cauvery dam allowing for transmission losses. ¼ of col. 3.	Discharges at Cauvery dam.	Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limits of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9
December 1905. 1	128	..	..	338	338	..	..	538
2	71	..	..	354	354	..	..	
3	71	..	..	338	338	..	..	
4	70	..	..	322	322	..	..	
5	76	..	..	322	322	..	..	
6	83	..	..	290	290	..	..	
7	67	..	..	272	272	..	..	
8	61	..	..	254	254	..	..	
9	61	..	..	236	236	..	..	
10	58	..	..	218	218	..	..	
11	58	..	..	218	218	..	..	
12	58	..	..	200	200	..	..	
13	58	..	..	185	185	..	..	
14	58	..	..	186	186	..	..	
15	58	..	..	186	186	..	..	
	..	..	..	..	..	..	..	
16	56	..	..	186	186	..	..	370
17	60	..	..	172	172	..	..	
18	12	..	..	158	158	..	..	
19	12	..	..	158	158	..	..	
20	265	142	107	144	37	..	107	
21	265	142	107	144	37	..	107	
22	265	142	107	98	— 9*	..	98	
23	..	..	..	82	82	..	..	
24	..	..	..	82	82	..	..	
25	..	..	..	50	50	..	..	
26	..	..	..	66	66	..	..	
27	16	..	..	44	44	..	..	
28	16	..	..	32	32	..	..	
29	16	..	..	32	32	..	..	
30	16	..	..	32	32	..	..	
31	23	..	..	26	26	..	..	
	..	426	321	..	..	..	312	
	..	426	321	..	..	..	312	
January 1906. 1	14	..	..	20	20	..	..	290
2	20	..	..	20	20	..	..	
3	20	..	..	20	20	..	..	
4	20	..	..	16	16	..	..	
5	20	..	..	16	16	..	..	
6	20	..	..	8	8	..	..	
7	25	..	..	8	8	..	..	
8	25	..	..	8	8	..	..	
9	14	..	..	8	8	..	..	
10	14	..	..	8	8	..	..	
11	136	39	29	4	— 25*	..	4	
12	27	..	..	4	4	..	..	
13	28	..	..	4	4	..	..	
14	44	..	..	8	8	..	..	
15	301	204	151	16	— 135*	..	16	
	..	243	..	..	180	..	20	
16	301	204	151	12	— 139	..	12	290
17	301	204	151	12	— 139	..	12	
18	301	204	151	16	— 135	..	16	
19	301	204	151	338	187	..	103	
20	301	204	151	200	49	..	151	
21	64	..	..	172	172	..	..	
22	64	..	..	144	144	..	..	
23	64	..	..	114	114	..	..	
24	55	..	..	98	98	..	..	
25	49	..	..	65	65	..	..	
26	49	..	..	82	82	..	..	
27	35	..	..	50	50	..	..	
28	35	..	..	44	44	..	..	
29	27	..	..	44	44	..	..	
30	28	..	..	44	44	..	..	
31	27	..	..	38	38	..	..	
	..	1,020	755	..	..	..	294	
	..	1,263	936	..	..	..	314	

* When col. 6 is negative natural flow is entered in deficit col. 8.

Limit of Rules. Table II. 1905-06.

Month and date.	X = Discharges at Cauvery dam three days later.	X-Z = Surplussing to waste. Z = col. 10.	$\frac{X-Z}{C}$ = Equivalent of col. 3 at Kannambadi dam allowing for transmission losses $C = \frac{3}{4}$.	Y = Discharges at Kannambadi dam.	Storage at Kannambadi.	Equivalent of col. 6 at Cauvery dam $\frac{3}{4}$ of col. 6.	Cauvery dam discharges as affected.	Quantity running to waste at Cauvery dam after storage at Kannambadi.	Limit of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9	10
June 1905. 1	322	..	..	..	..	..	322	..	
2	272	..	..	..	..	..	272	..	
3	272	..	..	..	..	..	272	..	
4	218	..	..	..	..	..	218	..	
5	370	..	..	..	..	..	370	..	
6	322	..	..	..	..	..	322	..	
7	290	..	..	..	..	..	290	..	
8	236	..	..	1	..	..	236	..	450
9	236	..	..	1	..	..	236	..	
10	200	..	..	1	..	..	200	..	
11	218	..	..	1	..	..	218	..	
12	254	..	..	95	..	..	254	..	
13	200	..	..	641	..	..	200	..	
14	158	..	..	151	..	..	158	..	
15	138	..	..	33	..	..	138	..	
	..	..	..	..	..	..	..	..	
16	186	..	..	132	..	..	186	..	
17	186	..	..	132	..	..	186	..	
18	158	..	..	138	..	..	158	..	
19	130	..	..	1,160	..	..	130	..	
20	594	..	..	1,447	..	..	594	..	
21	538	..	..	1,263	..	..	538	..	
22	1,818	758	1,010	210	210	157	1,661	..	
23	1,287	227	303	177	177	133	1,154	..	1,060
24	851	..	..	144	..	..	851	..	
25	662	..	..	135	..	..	662	..	
26	594	..	..	328	..	..	594	..	
27	704	..	..	328	..	..	704	..	
28	1,579	519	692	405	405	304	1,275	..	
29	3,697	2,639	3,519	569	569	427	3,270	..	
30	3,638	2,578	3,434	723	723	542	3,096	..	
	..	..	8,958	..	2,084	..	..	..	
	..	..	..	..	..	..	..	..	
July 1905. 1	3,802	2,177	2,903	1,141	1,141	856	2,946	1,321	
2	3,680	2,055	2,740	1,172	1,172	879	2,801	1,176	
3	2,834	1,211	1,615	1,044	1,044	783	2,051	426	
4	2,020	395	527	855	527	393	827	..	
5	1,495	..	..	676	..	..	1,495	..	
6	1,000	..	..	612	..	..	1,000	..	
7	730	..	..	584	..	..	730	..	
8	730	..	..	2,714	..	..	730	..	1,625
9	4,077	2,452	3,269	2,804	2,804	2,103	1,974	349	
10	3,161	1,536	2,048	2,991	2,048	1,536	1,625	..	
11	2,160	535	713	795	713	535	1,625	..	
12	1,625	..	..	631	..	..	1,625	..	
13	1,240	..	..	654	..	..	1,240	..	
14	892	..	..	573	..	..	892	..	
15	628	..	..	534	..	..	628	..	
	..	..	..	..	9,449	..	..	3,272	
16	538	..	..	556	..	..	538	..	
17	472	..	..	556	..	..	472	..	
18	516	..	..	556	..	..	516	..	
19	628	..	..	1,233	..	..	628	..	
20	3,657	2,032	2,709	1,802	1,802	1,326	2,331	706	
21	7,516	5,891	7,855	4,017	4,017	3,013	4,503	2,878	
22	7,859	6,234	8,312	5,924	5,924	4,468	3,391	1,766	
23	8,003	6,378	8,501	6,695	6,695	5,021	2,982	1,357	1,625
24	6,516	4,891	6,521	6,005	6,005	4,504	2,012	387	
25	4,664	3,039	4,052	3,606	3,606	2,704	1,960	335	
26	4,585	2,960	3,946	2,770	2,770	2,077	2,508	883	
27	4,133	2,508	3,344	2,486	2,486	1,864	2,269	844	
28	4,133	2,508	3,344	2,173	2,173	1,630	2,503	878	
29	3,046	1,421	1,895	2,029	1,895	1,421	1,625	..	
30	2,698	1,073	2,097	1,958	1,958	1,448	1,250	..	
31	2,650	1,025	1,367	1,821	1,367	1,025	1,625	..	
	..	..	..	..	..	..	..	..	
	..	..	..	..	50,147	..	..	13,306	

Limit of Rules. Table II—*cont.* 1905-06.

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Month and date.	X = Discharges at Cauvery dam three days later.	X-Z = Surplussing to waste. Z=col. 10.	$\frac{X-Z}{C}$ = Equivalent of col. 3 at Kannambadi dam allowing for transmission losses $C = \frac{3}{4}$.	Y = Discharges at Kannambadi dam	Storage at Kannambadi.	Equivalent of col. 6 at Cauvery dam $\frac{3}{4}$ of col. 6.	Cauvery dam discharges as affected.	Quantity running to waste at Cauvery dam after storage at Kannambadi.	Limit of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9	10
August 1905. 1	2,440	815	1,087	1,382	1,087	815	1,625	..	
2	2,222	597	796	1,733	796	597	1,625	..	
3	2,074	449	665	1,676	665	499	1,625	..	
4	1,859	234	312	994	312	234	1,625	..	
5	1,573	..	..	549	..	..	1,573	..	
6	1,232	..	..	709	..	..	1,232	..	
7	981	..	..	666	..	..	981	..	
8	803	..	..	592	..	..	803	..	1,625
9	662	..	..	595	..	..	662	..	
10	594	..	..	561	..	..	594	..	
11	560	..	..	561	..	..	560	..	
12	538	..	..	658	..	..	538	..	
13	516	..	..	545	..	..	516	..	
14	594	..	..	379	..	..	594	..	
15	784	..	..	565	..	..	784	..	
	..	..	..	..	2,860	..	..	..	
16	628	..	..	556	..	..	628	..	
17	538	..	..	731	..	..	538	..	
18	516	..	..	731	..	..	516	..	
19	696	..	..	731	..	..	696	..	
20	851	..	..	689	..	..	851	..	
21	1,116	..	..	763	..	..	1,116	..	
22	1,116	..	..	1,134	..	..	1,116	..	
23	1,116	..	..	1,304	..	..	1,116	..	
24	1,062	..	..	922	..	..	1,062	..	1,625
25	1,116	..	..	1,094	..	..	1,116	..	
26	1,170	..	..	1,534	..	..	1,170	..	
27	1,345	..	..	1,059	..	..	1,345	..	
28	1,345	..	..	985	..	..	1,345	..	
29	1,696	71	95	1,057	95	71	1,625	..	
30	1,696	71	95	1,074	95	71	1,625	..	
31	1,755	130	173	981	173	130	1,625	..	
	..	..	..	..	363	..	..	..	
	..	..	..	..	3,223	..	..		
September 1905. 1	1,755	130	140	879	..	..	1,755	..	
2	1,170	..	..	782	..	..	1,170	..	
3	851	..	..	750	..	..	851	..	
4	892	..	..	847	..	..	892	..	
5	838	..	..	584	..	..	838	..	
6	784	..	..	869	..	..	784	..	
7	838	..	..	1,163	..	..	838	..	
8	1,536	..	..	1,392	..	..	1,536	..	1,625
9	2,320	695	927	1,503	927	718	1,402	..	
10	2,089	461	615	1,471	615	461	1,628	3	
11	1,798	173	321	1,136	321	241	1,557	..	
12	1,498	..	..	1,035	..	..	1,498	..	
13	1,300	..	..	997	..	..	1,300	..	
14	1,060	..	..	646	..	..	1,060	..	
15	1,365	..	..	616	..	..	1,365	..	
	..	..	..	..	1,863	..	..	3	
16	730	..	..	457	..	..	730	..	
17	662	..	..	431	..	..	662	..	
18	1,365	245	327	383	327	245	1,120	..	
19	730	..	..	374	..	..	730	..	
20	594	..	..	355	..	..	594	..	
21	494	..	..	300	..	..	494	..	
22	450	..	..	290	..	..	450	..	
23	434	..	..	278	..	..	434	..	1,120
24	386	..	..	238	..	..	386	..	
25	354	..	..	238	..	..	354	..	
26	338	..	..	267	..	..	338	..	
27	338	..	..	268	..	..	338	..	
28	338	..	..	217	..	..	338	..	
29	338	..	..	206	..	..	338	..	
30	322	..	..	145	..	..	322	..	
	..	..	..	..	327	..	..	..	
	..	..	..	..	2,190	..	..	3	

Limit of Rules. Table II—*cont.* 1905-06.

Month and date.	X = Discharges at Cauvery dam three days later.	X-Z = Surplusing to waste Z = col. 10.	$\frac{X-Z}{C}$ = Equivalent of col. 3 at Kannambadi dam allowing for transmission losses C = ¾.	Y = Discharges at Kannambadi dam.	Storage at Kannambadi.	Equivalent of col. 6 at Cauvery dam ¾ of col. 6.	Cauvery dam discharges as affected.	Quantity running to waste at Cauvery dam after storage at Kannambadi.	Limit of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9	10
October 1905. 1	322	..	..	142	..	..	322	..	
2	322	..	..	142	..	..	322	..	
3	338	..	..	174	..	..	338	..	
4	1,062	..	..	234	..	..	1,062	..	
5	628	..	..	201	..	..	628	..	
6	472	..	..	214	..	..	472	..	
7	851	..	..	237	..	..	851	..	
8	3,336	2,096	2,795	196	196	147	3,189	1,949	1,240
9	2,346	1,106	1,475	181	181	136	2,210	970	
10	3,140	1,900	2,533	159	159	119	3,021	1,781	
11	2,178	938	1,251	258	258	193	1,985	745	
12	2,192	952	1,269	595	595	446	1,746	506	
13	4,892	3,652	4,869	914	914	685	4,207	2,967	
14	3,879	2,639	3,519	1,245	1,245	934	2,945	1,705	
15	3,870	2,630	3,507	2,761	2,761	2,071	1,789	549	
	..	..	..	..	6,609	..	..	11,172	
16	4,190	2,950	3,933	1,415	1,415	1,061	3,129	1,889	
17	3,001	1,761	2,348	912	912	684	2,317	1,077	
18	2,305	1,065	1,420	726	726	544	1,761	521	
19	2,353	1,113	1,484	559	559	419	1,934	694	
20	1,048	..	..	760	..	..	1,048	..	
21	1,000	..	..	493	..	..	1,000	..	
22	838	..	..	414	..	..	838	..	
23	662	..	..	348	..	..	662	..	
24	560	..	..	278	..	..	560	..	1,240
25	516	..	..	205	..	..	516	..	
26	450	..	..	207	..	..	450	..	
27	418	..	..	174	..	..	418	..	
28	402	..	..	139	..	..	402	..	
29	370	..	..	139	..	..	370	..	
30	354	..	..	146	..	..	354	..	
31	338	..	..	114	..	..	338	..	
	..	..	..	..	3,612	..	..	4,181	
	..	..	..	..	10,221	..	..	15,353	
November 1905. 1	322	..	..	112	..	..	322	..	
2	306	..	..	112	..	..	306	..	
3	218	..	..	93	..	..	218	..	
4	272	..	..	93	..	..	272	..	
5	236	..	..	97	..	..	236	..	
6	236	..	..	97	..	..	236	..	
7	236	..	..	97	..	..	236	..	
8	236	..	..	126	..	..	236	..	
9	236	..	..	117	..	..	236	..	1,000
10	254	..	..	89	..	..	254	..	
11	402	..	..	89	..	..	402	..	
12	322	..	..	89	..	..	322	..	
13	306	..	..	76	..	..	306	..	
14	306	..	..	76	..	..	306	..	
15	272	..	..	64	..	..	272	..	
	..	..	..	..	..	..	..	..	
16	254	..	..	65	..	..	254	..	
17	290	..	..	71	..	..	290	..	
18	370	..	..	71	..	..	370	..	
19	338	..	..	71	..	..	338	..	
20	322	..	..	71	..	..	322	..	
21	322	..	..	71	..	..	322	..	
22	322	..	..	69	..	..	322	..	
23	322	..	..	69	..	..	322	..	
24	338	..	..	69	..	..	338	..	696
25	560	..	..	69	..	..	560	..	
26	434	..	..	84	..	..	434	..	
27	386	..	..	145	..	..	386	..	
28	354	..	..	190	..	..	354	..	
29	338	..	..	177	..	..	338	..	
30	322	..	..	93	..	..	322	..	
	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	

Limit of Rules. Table II—*cont.* 1905-06.

Month and date.	X = Discharges at Cauvery dam three days later.	X-Z = Surplussing to waste Z = col. 10.	$\frac{X-Z}{C}$ = Equivalent of col. 3 at Kannambadi Dam allowing for transmission losses C = ¾.	Y = Discharges at Kannambadi dam.	Storage at Kannambadi.	Equivalent of col. 6 at Cauvery dam ¾ of col. 6.	Cauvery Dam discharges as affected.	Quantity running to waste at Cauvery dam after storage at Kannambadi.	Limit of flow allowed at Cauvery dam.
1	2	3	4	5	6	7	8	9	10
December 1905. 1	338	..	..	128	..	..	238	..	
2	354	..	..	71	..	..	354	..	
3	338	..	..	71	..	..	338	..	
4	322	..	..	70	..	..	322	..	
5	322	..	..	76	..	..	322	..	
6	290	..	..	83	..	..	290	..	
7	272	..	..	67	..	..	272	..	
8	254	..	..	61	..	..	254	..	538
9	236	..	..	61	..	..	236	..	
10	218	..	..	61	..	..	218	..	
11	218	..	..	58	..	..	218	..	
12	200	..	..	58	..	..	200	..	
13	185	..	..	58	..	..	185	..	
14	186	..	..	58	..	..	186	..	
15	186	..	..	58	..	..	186	..	
	..	..	..	..	..	..	..	..	
16	186	..	..	56	..	..	186	..	
17	172	..	..	60	..	..	172	..	
18	158	..	..	12	..	..	158	..	
19	153	..	..	12	..	..	158	..	
20	144	..	..	265	..	..	144	..	
21	144	..	..	265	..	..	144	..	
22	98	..	..	265	..	..	98	..	
23	82	..	..	..	..	..	82	..	370
24	82	..	..	..	..	..	82	..	
25	50	..	..	..	..	..	50	..	
26	66	..	..	..	..	..	66	..	
27	44	..	..	16	..	..	44	..	
28	32	..	..	16	..	..	32	..	
29	32	..	..	16	..	..	32	..	
30	32	..	..	16	..	..	32	..	
31	26	..	..	23	..	..	26	..	
	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	
January 1906. 1	20	..	..	14	..	..	20	..	
2	20	..	..	20	..	..	20	..	
3	20	..	..	20	..	..	20	..	
4	16	..	..	20	..	..	16	..	
5	16	..	..	20	..	..	16	..	
6	8	..	..	20	..	..	8	..	
7	8	..	..	25	..	..	8	..	
8	8	..	..	25	..	..	8	..	290
9	8	..	..	14	..	..	8	..	
10	8	..	..	14	..	..	8	..	
11	4	..	..	136	..	..	4	..	
12	4	..	..	27	..	..	4	..	
13	4	..	..	28	..	..	4	..	
14	8	..	..	44	..	..	8	..	
15	16	..	..	301	..	..	16	..	
	..	..	..	..	..	..	..	..	
16	12	..	..	301	..	..	12	..	
17	12	..	..	301	..	..	12	..	
18	16	..	..	301	..	..	16	..	
19	338	..	..	301	..	..	338	..	
20	200	..	..	301	..	..	200	..	
21	172	..	..	64	..	..	172	..	
22	144	..	..	64	..	..	144	..	
23	114	..	..	64	..	..	114	..	290
24	98	..	..	55	..	..	98	..	
25	65	..	..	49	..	..	65	..	
26	82	..	..	49	..	..	82	..	
27	50	..	..	85	..	..	50	..	
28	44	..	..	35	..	..	44	..	
29	44	..	..	27	..	..	44	..	
30	..	..	..	28	..	..	44	..	
31		..	..	27	..	..	38	..	
	..	..	..	..	..	..	..	..	..
	..	..	..	..	..	..	..	..	..

Month	Date	2 (a)	2 (b)	2 (c)	2 (d)	2 (e)	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		Approximations for quantity to be impounded.					Conditions at the Cauvery dam.							Conditions at the Kannambadi dam.						
Month and date		Y = Flow at Kannambadi in m.c.ft.	NY = Probable flow at Cauvery dam. $N = \frac{8}{5}$ from June to September. N = 3 from October to January.	NY-z = Probable excess over the limit at Cauvery dam; Z = limit in col. 16.	$\frac{NY-Z}{c}$ = Value of col. 2 (c) at Kannambadi dam, i.e., $\frac{3}{4}$ of col. 2 (c).	Quantity to be impounded at Kannambadi dam, col. 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery dam in m.c.ft. three days later.	Value of col. 2 (e) at Cauvery dam = $\frac{3}{4}$ of col. 2 (e).	Net flow at Cauvery dam, col. 3 — col. 4 + $\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, col. 3, if less than Z or Z — col. 5, Z = limit in col. 16.	Resulting flow at Cauvery dam, col. 5 + col. 6, three days previous.	Quantity running to waste at Cauvery dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, col. 2 (e) + previous day's balance in col. 15.	Compensation water converted to Kannambadi reservoir, $\frac{3}{4}$ of col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery dam.
June 1905.	1	..	..	..	..	..	322	..	322	..	322	..	..	10,000	..	43	..	43	9,957	
	2	..	..	..	..	..	272	..	272	..	272	..	..	9,957	..	43	..	43	9,941	
	3	..	..	..	..	..	272	..	272	..	272	..	..	9,914	..	43	..	43	..	
	4	..	..	..	..	..	218	..	218	..	218	..	..	..	..	43	..	43	..	
	5	..	..	..	..	..	370	..	370	..	370	..	..	..	..	43	..	43	..	
	6	..	..	..	..	..	322	..	322	..	322	..	..	..	..	43	..	43	..	
	7	..	..	..	..	..	290	..	290	..	290	..	..	..	..	43	..	43	..	
	8	1	..	..	..	..	236	..	236	..	236	..	..	..	..	43	..	43	..	First-half 450
	9	1	..	..	..	..	236	..	236	..	236	..	..	..	..	43	..	43	..	
	10	1	..	..	..	..	200	..	200	..	200	..	..	..	..	43	..	43	..	
	11	1	..	..	..	..	218	..	218	..	218	..	..	..	..	43	..	43	9,527	
	12	95	..	..	..	..	254	..	254	..	254	..	..	9,527	..	43	..	43	9,484	
	13	641	1,026	576	768	641	200	480	— 280	200	— 280	..	..	10,125	..	43	..	43	10,082	
	14	151	..	..	..	..	158	..	158	..	158	..	..	10,082	..	43	..	43	10,039	
	15	33	..	..	..	..	130	..	130	..	130	..	..	10,039	..	43	..	43	9,996	
		924	..	..	..	641	3,698	..	..	200	..	..	..	..	..	..	..	..	..	
	16	132	..	..	..	..	186	..	186	..	386	..	..	9,966	267	152	..	419	9,677	
	17	132	..	..	..	..	186	..	186	..	186	..	..	9,577	..	152	..	152	9,425	
	18	138	..	..	..	..	158	..	158	..	158	..	..	9,425	..	152	..	152	9,273	
	19	1,160	1,856	796	1,061	1,061	130	796	— 666	130	— 666	..	..	10,331	..	152	..	152	10,182	
	20	1,447	2,315	1,255	1,673	1,447	591	1,085	— 491	594	— 491	..	..	11,629	..	152	..	152	11,477	
	21	1,263	2,021	961	1,281	1,263	538	947	— 409	5[illegible]8	— 409	..	..	12,740	..	152	..	152	12,588	
	22	210	..	..	..	..	1,818	..	1,818	..	1,948	888	130	12,588	173	152	..	325	12,263	
	23	177	..	..	..	..	1,287	..	1,287	..	1,881	821	594	12,263	792	152	..	944	11,319	1,060
	24	144	..	..	..	..	851	..	851	..	1,389	329	269	11,319	717	152	..	869	10,450	
	25	135	..	..	..	..	662	..	622	..	662	..	..	10,450	..	152	..	152	10,298	
	26	328	..	..	..	..	594	..	594	..	594	..	..	10,298	..	152	..	152	10,146	
	27	328	..	..	..	..	704	..	754	..	754	..	..	10,146	..	152	..	152	9,994	
	28	405	..	..	..	..	1,579	..	1,579	..	1,579	..	..	9,994	..	152	..	152	9,842	
	29	569	..	..	..	..	3,697	..	3,697	..	3,697	..	..	9,842	..	152	..	152	9,690	
	30	723	1,157	97	129	129	3,638	97	3,541	..	3,541	..	..	9,819	..	152	..	152	9,667	
		7,291	..	..	..	3,900	16,672	..	..	1,262	..	2,036	993	..	1,949	..	..	..	..	
		8,215	..	..	..	4,541	20,370	..	..	1,462	..	2,036	993	..	1,949	..	..	..	..	

Month	Date	2 (a)	2 (b)	2 (c)	2 (d)	2 (e)	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		Approximations for quantity to be impounded.					Conditions at the Cauvery Dam.							Conditions at the Kannambadi Dam.						
Month and date.		Y = Flow at Kannambadi in m.c. ft.	NY = Probable flow at Cauvery dam. $N = \frac{8}{5}$ from June to September. N = 3 from October to January.	NY—z = Probable excess over the limit at Cauvery dam; Z = limit in col. 16.	$\frac{NY-z}{c}$ = Value of col. 2 (c) at Kannambadi dam, i.e., $\frac{3}{4}$ of col. 2 (c).	Quantity to be impounded at Kannambadi dam, col. 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery dam in m.c. ft. three days later.	Value of col. 2 (e) at Cauvery dam = $\frac{3}{4}$ of col. 2 (e).	Net flow at Cauvery dam, col. 3 — col. 4 + $\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, col. 3, if less than Z or Z — col. 5, Z = limit in col. 16.	Resulting flow at Cauvery dam, col. 5 + col. 6, three days previous.	Quantity running to waste at Cauvery dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, col. 2 (e) + previous day's balance in col. 15.	Compensation water converted to Kannambadi reservoir, i.e., $\frac{3}{4}$ of col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery dam.
July 1905.	1	1,141	1,826	201	268	268	3,802	201	3,601	..	3,601	1,976	..	9,935	..	156	..	156	9,779	
	2	1,172	1,875	250	333	333	3,680	250	3,430	..	3,430	1,805	..	10,112	..	156	..	156	9,956	
	3	1,044	1,670	45	60	60	2,834	45	2,789	..	2,789	1,164	..	10,016	129	156	..	285	9,731	
	4	855	..	..	..	..	2,020	..	2,020	..	2,020	395	..	9,731	..	156	..	156	9,575	
	5	676	..	..	..	..	1,495	..	1,495	..	1,495	..	..	9,575	..	155	..	156	9,419	
	6	612	..	..	..	..	1,000	..	1,000	..	1,000	..	..	9,419	..	156	..	156	9,263	
	7	584	..	..	..	..	730	..	730	..	730	..	..	9,263	..	156	..	156	9,107	
	8	2,714	4,342	2,717	3,623	2,714	730	2,036	— 1,306	730	— 1,306	..	..	11,821	..	156	..	156	11,665	1,625
	9	2,804	4,486	2,861	3,815	2,804	4,077	2,103	1,974	..	1,974	349	..	14,469	..	156	..	156	14,313	
	10	1,991	3,186	1,561	2,081	1,991	3,161	1,493	1,668	..	1,668	63	..	16,304	..	156	..	156	16,148	
	11	795	..	..	..	..	2,160	..	2,160	..	2,890	1,265	730	16,148	973	156	..	1,129	15,019	
	12	631	..	..	..	..	1,625	..	1,625	..	1,625	..	..	..	..	156	..	156	..	
	13	654	..	..	..	..	1,240	..	1,240	..	1,240	..	..	..	..	156	..	156	..	
	14	573	..	..	..	..	892	..	892	..	892	..	..	..	..	156	..	156	..	
	15	534	..	..	..	..	628	..	628	..	..	..	..	..	..	156	..	156	..	
		..	..	..	..	8,170	30,074	..	..	730	..	7,017	730	..	1,102	..	..	..	..	
	16	556	..	..	..	..	538	..	538	..	538	..	..	..	..	156	..	156	..	
	17	556	..	..	..	..	472	..	472	..	472	..	..	..	..	156	..	156	..	
	18	556	..	..	..	..	516	..	516	..	516	..	..	..	..	156	..	156	13,927	
	19	1,233	1,973	348	464	464	628	348	280	348	280	..	..	14,391	..	156	..	156	14,235	
	20	1,802	2,883	1,258	1,677	1,677	3,657	1,258	2,399	..	2,399	774	..	15,912	..	156	..	156	15,756	
	21	4,017	6,427	4,802	6,403	4,017	7,516	3,013	4,503	..	4,503	2,878	..	19,773	..	156	..	156	19,617	
	22	5,924	9,478	7,853	10,471	5,924	7,859	4,443	3,416	..	3,764	2,139	348	25,541	464	156	..	620	24,921	
	23	6,695	10,712	9,087	12,116	6,695	8,003	5,021	2,982	..	2,982	1,357	..	31,616	..	156	..	156	31,460	
	24	6,005	9,608	7,983	10,644	6,005	6,516	4,504	2,184	..	2,184	559	..	37,465	..	156	229	385	37,080	1,625
	25	3,606	5,770	4,146	5,527	3,606	4,654	[illegible]	4,548	..	4,548	2,923	..	40,686	..	156	3,450	3,606	37,080	
	26	2,770	4,432	2,807	3,743	2,770	4,585	2,078	4,468	..	4,468	2,843	..	39,850	..	156	2,614	2,770	37,080	
	27	2,486	3,978	2,353	3,137	2,486	4,133	1,864	4,016	..	4,016	1,391	..	39,566	..	156	2,330	2,486	37,080	
	28	2,173	5,477	1,852	2,469	2,173	4,133	1,630	4 016	..	4,016	1,391	..	39,253	..	156	2,017	2,173	37,080	
	29	2,029	3,246	1,621	2,161	2,029	3,046	1,522	2,929	..	2,929	1,304	..	39,109	..	156	1,473	2,029	37 080	
	30	1,958	3,133	1,508	2,011	1,958	2,698	1,468	2,581	..	2,581	956	..	39,038	..	156	1,802	1,958	37,080	
	31	1,821	2,914	1,289	1,719	1,719	2,650	1,289	2,533	..	2,533	908	..	38,799	..	156	1,561	1,719	37,080	
		..	..	..	..	41,523	61,614	..	..	348	..	19,423	348	..	464	..	15,476	..	..	
		..	..	..	..	49,693	91,688	..	..	1,078	..	26,440	1,078	..	1,566	..	15,476	..	..	

Limit of Rules. Table III—*cont.* 1905–06.

1. Month and date.	2 a. Y = Flow at Kannambadi in m. c. ft.	2 b. NY = Probable flow at Cauvery Dam. N = $\frac{5}{4}$ from June to September. N = 3 from October to January.	2 c. NY—z = Probable excess over the limit at Cauvery Dam. Z = limit in col. 16.	2 d. $\frac{NY-Z}{c}$ = Value of col. 2 (c) at Kannambadi Dam, *i.e.*, $\frac{3}{4}$ of col. 2 (c).	2 e. Quantity to be impounded at Kannambadi Dam, col. 2 (d) or 2 (a) which ever is less.	3. Flow at the Cauvery Dam in m. c. ft. 3 days later.	4. Value of col. 2 (e) at Cauvery Dam = $\frac{4}{3}$ of col. 2 (e).	5. Net flow at Cauvery Dam, col. 3—col. 4 + $\frac{4}{3}$ of surplus at Kannambadi, if any.	6. Compensation water, col. 3, if less than Z or Z—col. 5 Z = limit in col. 16.	7. Resulting flow at Cauvery Dam, col. 5 + col. 6 three days previous.	8. Quantity running to waste out Cauvery Dam, above limit.	9. Quantity running to waste out of compensation water.	10. Gross storage in the reservoir, col. 2 (e) + previous days balance in col. 15.	11. Compensation water converted to Kannambadi Reservoir, *i.e.*, $\frac{3}{4}$ of col. 6.	12. Draw off for irrigation, etc.	13. Surplus when the reservoir is full.	14. Total of cols. 11, 12 and 13.	15. Balance in the reservoir.	16. Limit of flow allowed at Cauvery Dam.
August 1905. 1	1,382	2,211	586	781	781	2,440	586	2,327	..	2,323	702	..	37,861	..	156	631	781	37,080	1,625
2	1,733	2,773	1,148	1,531	1,531	2,222	1,148	2,105	..	2,105	480	..	38,611	..	156	1,375	1,531	37,080	
3	1,676	2,682	1,067	1,409	1,409	2,074	1,067	1,957	..	1,917	332	..	38,436	..	156	1,253	1,409	37,080	
4	994	..	..	..	..	1,859	..	1,859	..	1,859	234	..	37,080	..	156	..	156	..	
5	549	..	..	..	..	1,573	..	1,573	..	1,573	..	..	..	..	156	..	156	..	
6	709	..	..	..	..	1,232	..	1,232	..	1,232	..	..	..	..	156	..	156	..	
7	666	..	..	..	..	981	..	981	..	981	..	..	..	..	156	..	156	..	
8	592	..	..	..	..	803	..	803	..	803	..	..	..	..	156	..	156	..	
9	595	..	..	..	..	662	..	662	..	662	..	..	..	..	156	..	156	..	
10	561	..	..	..	..	594	..	594	..	594	..	..	..	..	156	..	156	..	
11	561	..	..	..	..	560	..	560	..	560	..	..	..	..	156	..	156	..	
12	658	..	..	..	..	538	..	538	..	538	..	..	..	..	156	..	156	..	
13	646	..	..	..	..	516	..	516	..	516	..	..	..	..	156	..	156	..	
14	379	..	..	..	..	594	..	594	..	594	..	..	..	..	156	..	156	..	
15	565	..	..	..	..	784	..	784	..	784	..	..	..	..	156	..	156	..	
	..	..	..	..	3,721	..	..	..	..	..	1,748	..	..	..	..	3,206	..	..	
16	556	..	..	..	..	628	..	628	..	628	..	..	..	..	156	..	156	..	1,625
17	731	..	..	..	..	538	..	538	..	538	..	..	..	..	156	..	156	..	
18	731	..	..	..	..	516	..	516	..	516	..	..	..	..	156	..	156	..	
19	731	..	..	..	..	696	..	696	..	696	..	..	..	..	156	..	156	..	
20	689	..	..	..	..	851	..	851	..	851	..	..	..	..	156	..	156	..	
21	763	..	..	..	..	1,116	..	1,116	..	1,116	..	..	34,128	..	156	..	156	34,272	
22	1,134	1,814	189	252	252	1,116	189	927	189	927	..	..	34,524	..	156	..	156	34,368	
23	1,304	2,086	461	615	615	1,116	461	655	461	655	..	..	34,983	..	156	..	156	34,827	
24	922	..	..	..	..	1,062	..	1,062	..	1,062	..	..	34,827	..	156	..	156	34,671	
25	1,094	1,750	125	167	167	1,116	125	986	125	1,175	..	..	34,838	252	156	..	408	34,430	
26	1,534	2,454	829	1,105	1,105	1,170	829	341	829	802	..	..	35,535	615	156	..	771	34,764	
27	1,059	1,694	69	92	92	1,345	69	1,276	69	1,276	..	..	34,856	..	156	..	156	34,700	
28	985	..	..	..	..	1,345	..	1,345	..	1,470	834	829	34,700	167	156	..	323	34,377	
29	1,057	1,691	66	88	88	1,696	66	1,630	66	2,459	47	47	34,465	1,105	156	..	1,261	33,204	
30	1,074	1,718	93	124	124	1,696	93	1,603	93	1,672	130	..	33,328	92	156	..	248	33,080	
31	981	..	..	..	..	1,755	..	1,755	..	1,755	..	..	33,080	..	156	..	156	32,924	
	..	..	..	..	2,443	..	..	..	1,832	..	1,011	876	..	2,231	..	..	..	..	
	..	..	..	..	6,117	..	..	..	1,832	..	2,759	876	.	2,231	..	3,206	..	..	

Limit of Rules. Table III—*cont.* 1905–06.

1. Month and date.	2 a. Y=Flow at Kannambadi in m. c. ft.	2 b. NY=Probable flow at Cauvery Dam. N=$\frac{5}{4}$ from June to September N=3 from October to January.	2 c. NY—z=Probable excess over the limit at Cauvery Dam. Z=limit in col. 16.	2 d. $\frac{NY-Z}{c}$=Value of col. 2 (c) at Kannambadi Dam, *i.e.*, $\frac{3}{4}$ of Col. 2 (c).	2 e. Quantity to be impounded at Kannambadi Dam, col. 2 (d) or 2 (a) whichever is less.	3. Flow at the Cauvery Dam in m. c. ft. 3 days later.	4. Value of Col. 2 (e) at Cauvery Dam=$\frac{4}{3}$ of col. 2 (e).	5. Net flow at Cauvery Dam, Col. 3—col. 4 + $\frac{4}{3}$ of surplus at Kannambadi, if any.	6. Compensation water, Col. 3, if less than Z or Z—col. 5 Z=limit in Col. 16.	7. Resulting flow at Cauvery Dam, Col. 5 + col. 6, three days previous.	8. Quantity running to waste at Cauvery Dam, above limit.	9. Quantity running to waste out of compensation water.	10. Gross storage in the reservoir, Col. 2 (e) + previous day's balance in col. 15.	11. Compensation water converted to Kannambadi Reservoir, *i.e.* $\frac{3}{4}$ of col. 6.	12. Draw off for irrigation, etc.	13. Surplus when the reservoir is full	14. Total of cols. 11, 12 and 13.	15. Balance in the reservoir.	16. Limit of flow allowed at Cauvery Dam.
September 1905. 1	879	..	..	..	..	1,755	..	1,755	..	1,755	..	..	32,924	88	156	..	244	32,680	1,625
2	782	..	..	..	..	1,170	..	1,170	..	1,170	..	..	32,680	124	156	..	280	32,400	
3	750	..	..	..	..	851	..	851	..	851	..	..	32,400	..	156	..	156	..	
4	847	..	..	..	..	892	..	892	..	892	..	..	..	..	156	..	156	..	
5	584	..	..	..	..	838	..	838	..	838	..	..	..	..	156	..	156	..	
6	869	..	..	..	..	784	..	784	..	784	..	..	31,932	..	156	..	156	31,776	
7	1,163	1,861	236	315	315	838	236	602	236	602	..	..	32,091	..	156	..	156	31,935	
8	1,392	2,227	602	803	803	1,536	602	934	602	934	..	..	32,738	..	156	..	156	32,582	
9	1,503	2,405	780	1,040	1,040	2,320	780	1,540	85	1,540	..	..	33,642	..	156	..	156	33,466	
10	1,471	2,354	729	972	972	2,089	729	1,360	265	1,536	..	..	33,158	235	156	..	391	33,167*	
11	1,136	1,818	193	257	257	1,798	193	1,605	20	1,807	182	182	33,424	803	156	..	959	32,465	
12	1,035	1,656	31	41	41	1,495	31	1,464	..	1,464	..	..	32,506	..	156	..	156	32,350	
13	997	..	..	..	..	1,300	..	1,300	..	1,565	..	..	32,350	353	159	..	509	31,841	
14	646	..	..	..	..	1,060	..	1,060	..	1,080	..	..	31,841	27	156	..	183	31,658	
15	616	..	..	..	..	1,365	..	1,365	..	1,365	..	..	31,658	..	156	..	156	31,502	
	..	..	..	..	2,548	..	..	..	1,063	..	697	182	..	1,630	..	..	..	..	
16	457	..	..	..	..	730	..	730	..	730	..	..	31,502	..	156	..	156	..	1,120
17	431	..	..	..	..	662	..	662	..	662	..	..	..	..	156	..	156	..	
18	383	..	..	..	..	1,365	..	1,365	..	1,365	..	..	..	..	156	..	156	..	
19	374	..	..	..	..	730	..	730	..	730	..	..	..	..	156	..	156	..	
20	355	..	..	..	..	594	..	594	..	594	..	..	..	..	156	..	156	..	
21	300	..	..	..	..	494	..	494	..	494	..	..	..	..	156	..	156	..	
22	290	..	..	..	..	450	..	450	..	450	..	..	..	..	156	..	156	..	
23	278	..	..	..	..	434	..	434	..	434	..	..	..	..	156	..	156	..	
24	238	..	..	..	..	386	..	386	..	386	..	..	..	..	156	..	156	..	
25	238	..	..	..	..	354	..	354	..	354	..	..	..	..	156	..	156	..	
26	267	..	..	..	..	338	..	338	..	338	..	..	..	..	156	..	156	..	
27	268	..	..	..	..	338	..	338	..	338	..	..	..	..	156	..	156	..	
28	217	..	..	..	..	338	..	338	..	338	..	..	..	..	156	..	156	..	
29	206	..	..	..	..	338	..	338	..	338	..	..	..	..	156	..	156	..	
30	145	..	..	..	..	322	..	322	..	322	..	..	..	..	156	..	156	29,182	
	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	
	..	..	..	..	2,548	..	..	..	1,063	..	697	182	..	1,630	..	..	..	..	

* From the 10th September 1905 to the end of June 1906, add 880 to each of the figures in column 15.

Table III—*cont.*

Month and date.	1	Approximations for quantity to be impounded.				Conditions at the Cauvery Dam.				Conditions at the Kannambadi Dam.				
		2												
		Y = Flow at Kannambadi in m. c. ft.	NY = Probable flow at Cauvery Dam. N = 5/6 from June to September N = 3 from October to January.	NY−z = Probable excess over the limit at Cauvery Dam Z = limit in Col. 16.	$\frac{NY-z}{c}$ = Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, 4/5 of Col. 2. (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	a	*b*	*c*	*d*	*e*	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (*e*) at Cauvery Dam = 3/4 of Col. 2 (*e*).	Net flow at Cauvery Dam, Col. 3—Col. 4+3/4 of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z = limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*)+ previous day's balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, 3/5 of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
October 1905.																			
1	142					322	322	322		322									
2	142					322	322	322		322									
3	174					338	338	338		338									
4	237					1,062	1,062	1,062		1,062									
5	201					628	628	628		628									
6	214					472	472	472		472									
7	237					851	851	851		851									
8	196					3,336	3,336	3,336	2,996	2,996									
9	181					2,346	2,346	2,346	1,106	1,106									
10	169					3,140	3,140	3,140	1,900	1,900									
11	258					2,178	2,178	2,178	938	938									
12	595	1,765	515	727	595	1,746	1,746	1,746	606	2,987			28,061						
13	914	2,712	1,502	2,003	914	4,207	4,207	4,207	2,987	1,705	569		28,819						
14	1,246	3,786	2,296	3,060	1,246	2,945	2,945	2,945	1,705	569			29,908						
15	2,761	8,283	7,043	9,391	2,761	1,799	1,799	1,799	569				32,513						
16	1,415	4,246	3,005	4,007	1,415	1,190	1,061												
17	912	2,736	1,496	1,995	912	3,001	684												
18	726	2,178	938	1,251	726	2,305	544												
19	583	1,677	437	583	559	2,353	419												
20	760	2,280	1,040	1,387	760	1,048	570												
21	493	1,479	259	319	319	1,000	239												
22	414	1,242	2	3	3	838	2												
23	348					662													
24	278					560													
25	205					616													
26	207					460													
27	174					418													
28	139					402													
29	139					370													
30	146					364													
31	114					338													
	..	..	..	..	4,515	9,209	..	4,694	..	..	..	811	15,978	4,181	..	1,082	1,082	..	1,240

Table III—*cont.*

Month and date.	1	Approximations for quantity to be impounded.				Conditions at the Cauvery Dam.				Conditions at the Kannambadi Dam.				
		2												
		Y = Flow at Kannambadi in m. c. ft.	NY = Probable flow at Cauvery Dam. N = 5/6 from June to September N = 3 from October to January.	NY−z = Probable excess over the limit at Cauvery Dam Z = limit in Col. 16.	$\frac{NY-z}{c}$ = Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, 4/5 of Col. 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	a	*b*	*c*	*d*	*e*	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col 2 (*e*) at Cauvery Dam = 3/4 of Col. 2 (*e*).	Net flow at Cauvery Dam, Col. 3—Col. 4+3/4 of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z = limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous day's balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, 3/5 of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
November 1905.																			
1	112					322	322	322		322									
2	112					306	306	306		306									
3	93					218	218	218		218									
4	93					272	272	272		272									
5	93					236	236	236		236									
6	97					236	236	236		236									
7	97					236	236	236		236									
8	156					236	236	236		236									
9	117					254	254	254		254									
10	89					402	402	402		402									
11	89					322	322	322		322									
12	89					306	306	306		306									
13	76					306	306	306		306									
14	76					272	272	272		272									
15	64																		
16	65					254	254	254		254									
17	71					290	290	290		290									
18	71					370	370	370		370									
19	71					338	338	338		338									
20	71					322	322	322		322									
21	71					322	322	322		322									
22	69					322	322	322		322									
23	69					322	322	322		322									
24	69					338	338	338		338									
25	69					560	560	560		560									
26	84					434	434	434		434									
27	146					386	386	386		386									
28	190					364	364	364		364									
29	177					338	338	338		338									
30	93					322	322	322		322									
	..	..	..	..	..	..	..	..	..	..	..	..	33,470	..	..	..	698	31,130	28,790	1,000

Month and date. (1)	(2 a) Y = Flow at Kannambadi in m. c. ft.	(2 b) NY = Probable flow at Cauvery Dam. N=⅝ from June to September. N=3 from October to January.	(2 c) NY—z=Probable excess over the limit at Cauvery Dam. Z = limit in Col. 16.	(2 d) $\frac{NY-z}{e}$=Value of Col. 2 (c) at Kannambadi Dam, *i.e.*, ⅗ of Col. 2 (c).	(2 e) Quantity to be impounded at Kannambadi Dam, Col. 2 (d) or 2 (a) whichever is less.	(3) Flow at the Cauvery Dam in m. c. ft. 3 days later.	(4) Value of Col. 2 (e) at Cauvery Dam = ⅘ of Col. 2 (e).	(5) Net flow at Cauvery Dam, Col. 3—Col. 4 + ⅘ of surplus at Kannambadi, if any.	(6) Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	(7) Resulting flow at Cauvery Dam, Col. 5 + Col. 6, three days previous.	(8) Quantity running to waste at Cauvery Dam, above limit.	(9) Quantity running to waste out of compensation water.	(10) Gross storage in the reservoir, Col. 3 (e) + previous days balance in Col. 15.	(11) Compensation water converted to Kannambadi Reservoir, *i.e.* ⅘ of Col. 6.	(12) Draw off for irrigation, etc.	(13) Surplus when the reservoir is full.	(14) Total of Cols. 11, 12 and 13.	(15) Balance in the reservoir.	(16) Limit of flow allowed at Cauvery Dam.
December 1905. 1	128	..	..	..	..	338	..	338	..	338	..	..	28,790	..	156	..	156	..	
2	71	..	..	..	..	354	..	854	..	354	..	..	..	..	156	..	156	..	
3	71	..	..	..	..	338	..	338	..	338	..	..	..	..	156	..	156	..	
4	70	..	..	..	..	322	..	322	..	322	..	..	..	..	156	..	156	..	
5	76	..	..	..	..	322	..	322	..	322	..	..	..	..	156	..	156	..	
6	83	..	..	..	..	290	..	290	..	290	..	..	..	..	156	..	156	..	
7	67	..	..	..	..	272	..	272	..	272	..	..	..	..	156	..	156	..	
8	61	..	..	..	..	254	..	254	..	254	..	..	..	..	156	..	156	..	
9	61	..	..	..	..	236	..	236	..	236	..	..	..	..	156	..	156	..	
10	58	..	..	..	..	218	..	218	..	218	..	..	..	..	156	..	156	..	538
11	58	..	..	..	..	218	..	218	..	218	..	..	..	..	156	..	156	..	
12	58	..	..	..	..	200	..	200	..	200	..	..	..	..	156	..	156	..	
13	58	..	..	..	..	186	..	186	..	186	..	..	..	..	156	..	156	..	
14	58	..	..	..	..	186	..	186	..	186	..	..	..	..	156	..	156	..	
15	58	..	..	..	..	186	..	186	..	186	..	..	26,606	..	156	..	156	26,450	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16	56	..	..	..	..	186	..	186	..	186	..	..	26,450	..	156	..	156	..	
17	60	..	..	..	..	172	..	172	..	172	..	..	..	..	156	..	156	..	
18	12	..	..	..	..	158	..	158	..	158	..	..	..	..	156	..	156	..	
19	12	..	..	..	..	158	..	158	..	158	..	..	25,982	..	156	..	156	25,826	
20	265	795	425	567	265	144	199	−55	144	−55	..	..	26,091	..	156	..	156	25,935	
21	265	795	425	567	265	144	199	−55	144	−55	..	..	26,200	..	156	..	156	26,044	370
22	265	795	425	567	265	98	199	−101	98	−101	..	..	26,309	..	156	..	156	26,153	
23	..	..	..	..	..	82	..	82	..	226	..	..	26,153	265	156	..	421	25,732	
24	..	..	..	..	..	82	..	82	..	226	..	..	25,732	265	156	..	421	25,311	
25	..	..	..	..	..	50	..	50	..	148	..	..	25,311	265	156	..	421	24,890	
26	..	..	..	..	..	66	..	66	..	66	..	..	24,890	..	156	..	156	24,734	
27	16	..	..	..	..	44	..	44	..	44	..	..	..	..	156	..	156	..	
28	16	..	..	..	..	32	..	32	..	32	..	..	..	..	156	..	156	..	
29	16	..	..	..	..	32	..	32	..	32	..	..	..	..	156	..	156	..	
30	16	..	..	..	..	32	..	32	..	32	..	..	..	..	156	..	156	..	
31	23	..	..	..	..	26	..	26	..	26	..	..	24,110	..	156	..	156	23,954	
	..	..	..	..	795	..	..	..	386	..	..	..	..	795	..	..	..	..	
	..	..	..	..	795	..	..	..	386	..	..	..	..	795	..	..	..	..	

Month and date. (1)	(2 a) Y = Flow at Kannambadi in m. c. ft.	(2 b) NY = Probable flow at Cauvery Dam. N=⅝ from June to September. N=3 from October to January.	(2 c) NY—z=Probable excess over the limit at Cauvery Dam. Z=limit in Col. 16.	(2 d) $\frac{NY-z}{e}$=Value of Col. 2 (c) at Kannambadi Dam, *i.e.*, ⅗ of Col. 2 (c).	(2 e) Quantity to be impounded at Kannambadi Dam, Col. 2 (d) or 2 (a) whichever is less.	(3) Flow at the Cauvery Dam in m. c. ft. 3 days later.	(4) Value of Col. 2 (e) at Cauvery Dam = ⅘ of Col. 2 (e)	(5) Net flow at Cauvery Dam, Col. 3—Col. 4+⅘ of surplus at Kannambadi, if any.	(6) Compensation water, Col. 3, if less than Z or Z—Col. 5 Z = limit in Col 15.	(7) Resulting flow at Cauvery Dam, Col. 5 + Col 6, three days previous.	(8) Quantity running to waste at Cauvery Dam, above limit.	(9) Quantity running to waste out of compensation water.	(10) Gross storage in the reservoir, Col. 2 (e) + previous days' balance in Col. 15.	(11) Compensation water converted to Kannambadi Reservoir, *i.e.*, ⅘ of Col. 6.	(12) Draw off for irrigation, etc.	(13) Surplus when the reservoir is full.	(14) Total of Cols. 11, 12 and 13.	(15) Balance in the reservoir.	(16) Limit of flow allowed at Cauvery Dam.
January 1906. 1	14	..	..	..	..	20	..	20	..	20	..	..	23,957	..	156	..	156	23,957	
2	20	..	..	..	..	20	..	20	..	20	..	..	..	..	156	..	156	..	
3	20	..	..	..	..	20	..	20	..	20	..	..	..	..	156	..	156	..	
4	20	..	..	..	..	16	..	16	..	16	..	..	..	..	156	..	156	..	
5	20	..	..	..	..	16	..	16	..	16	..	..	23,333	..	156	..	156	23,177	
6	20	..	..	..	..	8	..	8	..	8	..	..	23,177	..	156+11	..	167	..	
7	25	..	..	..	..	8	..	8	..	8	..	..	..	..	156+11	..	167	..	
8	25	..	..	..	..	8	..	8	..	8	..	..	..	..	156+11	..	167	..	290
9	14	..	..	..	..	8	..	8	..	8	..	..	..	..	156+11	..	167	..	
10	14	..	..	..	..	8	..	8	..	8	..	..	..	..	156+11	..	167	..	
11	136	..	..	..	..	4	..	4	..	4	..	..	..	..	156+11	..	167	..	
12	27	..	..	..	..	4	..	4	..	4	..	..	..	..	156+11	..	167	..	
13	28	..	..	..	..	4	..	4	..	4	..	..	..	..	156+11	..	167	..	
14	44	..	..	..	..	8	..	8	..	8	..	..	21,841	..	156+11	..	167	21,674	
15	301	..	..	..	..	16	..	16	..	16	..	..	21,674	..	156	..	156	21,518	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16	301	..	..	..	..	12	..	12	..	12	..	..	21,518	..	43+6	..	49	..	
17	301	..	..	..	..	12	..	12	..	12	..	..	..	..	43+6	..	49	..	
18	301	..	..	..	..	16	..	16	..	16	..	..	..	..	43+6	..	49	..	
19	301	..	..	..	..	338	..	338	..	338	..	..	..	..	43+6	..	49	..	
20	301	..	..	..	..	200	..	200	..	200	..	..	..	..	43+6	..	49	..	
21	64	..	..	..	..	172	..	172	..	172	..	..	..	..	43+6	..	49	..	
22	64	..	..	..	..	144	..	144	..	144	..	..	..	..	43+6	..	49	..	
23	64	..	..	..	..	114	..	114	..	114	..	..	..	..	43+6	..	49	..	
24	55	..	..	..	..	98	..	98	..	98	..	..	..	..	43+6	..	49	..	290
25	49	..	..	..	..	66	..	66	..	66	..	..	..	..	43+6	..	49	..	
26	49	..	..	..	..	82	..	82	..	82	..	..	..	..	43+6	..	49	..	
27	35	..	..	..	..	50	..	50	..	50	..	..	..	..	43+6	..	49	..	
28	35	..	..	..	..	44	..	44	..	44	..	..	..	..	43+6	..	49	..	
29	27	..	..	..	..	44	..	44	..	44	..	..	..	..	43+6	..	49	..	
30	28	..	..	..	..	44	..	44	..	44	..	..	..	..	43+6	..	49	..	
31	27	..	..	..	..	38	..	38	..	38	..	..	20,783	..	43+6	..	49	20,734	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

Table III—*cont.*

February 1906.

Month and date.	1	Approximations for quantity to be impounded. 2 a	2 b	2 c	2 d	2 e	Conditions at the Cauvery Dam. 3	4	5	6	7	8	9	Conditions at the Kannambadi Dam. 10	11	12	13	14	15	16
		Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam. N=$\frac{8}{20}$ from June to September N=3 from October to January.	NY—z=Probable excess over the limit at Cauvery Dam Z=limit in Col. 16.	$\frac{NY-z}{c}$=Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, $\frac{4}{5}$ of Col 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (*c*) at Cauvery Dam=$\frac{3}{4}$ of Col 2 (*e*).	Net flow at Cauvery Dam. Col. 3—Col. 4+$\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous days balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, $\frac{4}{5}$ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
1							28	28												
2							23	23												
3							23	23												
4							23	23												
5							23	23												
6							23	23												
7							23	23												
8							60	60												
9							65	65												
10							26	26												
11							26	26												
12							26	26												
13							26	26												
14							3	3												
15							3	3												
16							3	3	38	38					20,784		43+6	49	80	18,620
17							3	3	32	32							43+6	49	80	18,535
18							3	3	32	32							43+6	49	80	18,455
19							3	3	32	32							43+6	49	80	18,363
20							3	3	32	32							43+6	49	80	18,271
20-							3	3	32	32							43+6	49	80	18,171
21							8	8	20	20					20,480		43+6	49	80	18,083
22							8	8	20	20					20,440		43+6	49	80	17,995
23							8	8	20	20					20,440		43+6	49	80	17,901
24							8	8	20	20					20,440		43+6	49	80	17,801
25							8	8	20	20					20,440		43+6	49	80	17,697
26							8	8	20	20					20,440		43+6	49	80	17,692
27							8	8	20	20					20,440		43+6	49	80	17,478
28							8	8	20	20					20,440		43+6	49	80	17,384
1							8	8	20	20					20,440		43+6	49	80	17,280
2							8	8	20	20					20,440		43+6	49	80	17,148
3							8	8	20	20					20,440		43+6	49	80	17,014
4							8	8	20	20					20,440		43+6	49	80	16,939
5							8	8	20	20					20,440		43+6	49	80	16,823
6							8	8	20	20					20,440		43+6	49	80	16,727
7							8	8	20	20					20,440		43+6	49	80	16,619
8							8	8	20	20					20,440		43+6	49	80	16,509
9							8	8	20	20					20,440		43+6	49	80	16,399
10							8	8	20	20					20,440		43+6	49	80	16,287
11							8	8	20	20					20,440		43+6	49	80	16,177
12							8	8	20	20					20,440		43+6	49	80	16,067
13							8	8	20	20					20,440		43+6	49	80	15,956
14							8	8	20	20					20,440		43+6	49	80	15,843
15							8	8	20	20					20,440		43+6	49	80	15,730
16							8	8	20	20					20,440		43+6	49	80	15,616
17							8	8	20	20					20,440		43+6	49	80	15,502
18							8	8	20	20					20,440		43+6	49	80	15,388
19							8	8	20	20					20,440		43+6	49	80	15,274
20							8	8	20	20					20,440		43+6	49	80	15,160
21							8	8	20	20					20,440		43+6	49	80	15,046
22							8	8	20	20					20,440		43+6	49	80	14,932
23							8	8	20	20					20,440		43+6	49	80	14,818
24							8	8	20	20					20,440		43+6	49	80	14,704
25							8	8	20	20					20,440		43+6	49	80	14,590
26							8	8	20	20					20,440		43+6	49	80	14,476
27							8	8	20	20					20,440		43+6	49	80	14,362
28							8	8	20	20					20,440		43+6	49	80	14,248

Limit of Rules.

Table III—*cont.*

March 1906.

Month and date.	1	Approximations for quantity to be impounded. 2 a	2 b	2 c	2 d	2 e	Conditions at the Cauvery Dam. 3	4	5	6	7	8	9	Conditions at the Kannambadi Dam. 10	11	12	13	14	15	16
		Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam. N=$\frac{8}{20}$ from June to September. N=3 from October to January.	NY—z=Probable excess over the limit at Cauvery Dam Z=limit in Col. 16.	$\frac{NY-z}{c}$=Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, $\frac{4}{5}$ of Col. 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (*c*) at Cauvery Dam=$\frac{3}{4}$ of Col. 2 (*e*).	Net flow at Cauvery Dam, Col. 3—Col. 4+$\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous days balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, $\frac{4}{5}$ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
1							8	8	20	20					20,440		43+6	49	80	14,134
2							8	8	20	20					20,440		43+6	49	80	14,020
3							8	8	20	20					20,440		43+6	49	80	13,906
4							8	8	20	20					20,440		43+6	49	80	13,792
5							8	8	20	20					20,440		43+6	49	80	13,678
6							8	8	20	20					20,440		43+6	49	80	13,564
7							8	8	20	20					20,440		43+6	49	80	13,450
8							8	8	20	20					20,440		43+6	49	80	13,336
9							8	8	20	20					20,440		43+6	49	80	13,222
10							8	8	20	20					20,440		43+6	49	80	13,108
11							8	8	20	20					20,440		43+6	49	80	12,994
12							8	8	20	20					20,440		43+6	49	80	12,880
13							8	8	20	20					20,440		43+6	49	80	12,766
14							8	8	20	20					20,440		43+6	49	80	12,652
15							8	8	20	20					20,440		43+6	49	80	12,538
16							8	8	20	20					20,440		43+6	49	80	12,424
17							8	8	20	20					20,440		43+6	49	80	12,310
18							8	8	20	20					20,440		43+6	49	80	12,196
19							8	8	20	20					20,440		43+6	49	80	12,082
20							8	8	20	20					20,440		43+6	49	80	11,968
21							8	8	20	20					20,440		43+6	49	80	11,854
22							8	8	20	20					20,440		43+6	49	80	11,740
23							8	8	20	20					20,440		43+6	49	80	11,626
24							8	8	20	20					20,440		43+6	49	80	11,512
25							8	8	20	20					20,440		43+6	49	80	11,398
26							8	8	20	20					20,440		43+6	49	80	11,284
27							8	8	20	20					20,440		43+6	49	80	11,170
28							8	8	20	20					20,440		43+6	49	80	11,056
29							8	8	20	20					20,440		43+6	49	80	10,942
30							8	8	20	20					20,440		43+6	49	80	10,828
31							8	8	20	20					20,440		43+6	49	80	10,714

Limit of Rules. Table III—*cont.* 1905-06.

1	Approximations for quantity to be impounded. 2					Conditions at the Cauvery Dam.							Conditions at the Kannambadi Dam.						16
	a	*b*	*c*	*d*	*e*	3	4	5	6	7	8	9	10	11	12	13	14	15	
Month and date.	Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam. N=⅝ from June to September. N=3 from October to January.	NY—z=Probable excess over the limit at Cauvery Dam Z=limit in Col. 16.	$\frac{NY-z}{c}$=Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, ⅘ of Col. 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (*e*) at Cauvery Dam=⅘ of Col. 2 (*e*).	Net flow at Cauvery Dam, Col. 3—Col. 4+⅘ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous days balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, ⅘ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
April 1906. 1	5	..	..	..	..	..	..	..	..	..	..	..	15,502	..	43+73	..	116	..	
2	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+74	..	117	..	
3	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+74	..	117	..	
4	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+74	..	117	..	
5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+74	..	117	..	
6	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+75	..	118	..	
7	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+75	..	118	..	
8	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
9	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
10	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+73	..	116	..	
11	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+75	..	118	..	
12	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+75	..	118	..	
13	36	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
14	35	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
15	21	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16	23	..	..	..	..	..	..	..	..	..	..	..	..	..	43+81	..	124	..	
17	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+81	..	124	..	
18	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
19	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
20	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
21	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
22	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
23	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
24	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+77	..	120	..	
25	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
26	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
27	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
28	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	11,910	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

Limit of Rules. Table III—*cont.* 1905-06.

1	Approximations for quantity to be impounded. 2					Conditions at the Cauvery Dam.							Conditions at the Kannambadi Dam.						16
	a	*b*	*c*	*d*	*e*	3	4	5	6	7	8	9	10	11	12	13	14	15	
Month and date.	Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam. N=⅝ from June to September. N=3 from October to January.	NY—z=Probable excess over the limit at Cauvery Dam Z=limit in Col. 16.	$\frac{NY-z}{c}$=Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, ⅘ of Col 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (*e*) at Cauvery Dam=⅘ of Col. 2 (*e*).	Net flow at Cauvery Dam, Col 3—Col. 4+⅘ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous days balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, ⅘ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
May 1906. 1	..	..	..	..	..	..	..	..	..	..	..	..	11,910	..	43+78	..	121	..	
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+79	..	122	..	
12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+78	..	121	..	
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+75	..	118	..	
14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+62	..	105	..	
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+46	..	89	..	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+6	..	49	..	
17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+6	..	49	..	
18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	43+6	..	49	..	
19	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+18	..	61	..	
20	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+18	..	61	..	
21	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+34	..	77	..	
22	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+6	..	49	..	
23	8	..	..	..	..	..	..	..	..	..	..	..	..	..	43+18	..	61	..	
24	7	..	..	..	..	..	..	..	..	..	..	..	..	..	43+34	..	77	..	
25	7	..	..	..	..	..	..	..	..	..	..	..	..	..	43+35	..	78	..	
26	7	..	..	..	..	..	..	..	..	..	..	..	..	..	43+35	..	78	..	
27	7	..	..	..	..	..	..	..	..	..	..	..	..	..	43+35	..	78	..	
28	5	..	..	..	..	..	..	..	..	..	..	..	..	..	43+42	..	85	..	
29	5	..	..	..	..	32	..	32	..	32	..	..	..	..	43+45	..	88	..	
30	5	..	..	..	..	32	..	32	..	32	..	..	..	..	43+45	..	88	..	
31	5	..	..	..	..	32	..	32	..	32	..	..	..	..	43+50	..	93	9,015	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

Month and date.	Approximations for quantity to be impounded.				Conditions at the Cauvery dam.						Conditions at the Kannambadi dam.				
1	2				3	4	5	6	7	8	9	10	11	12	13	14	15	16
	a	*b*	*c*	*d*	*e*													
	Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery dam. N=$\frac{5}{6}$ from June to September. N=3 from October to January.	NY—z=Probable excess over the limit at Cauvery Dam Z=limit in Col. 16.	$\frac{NY-Z}{c}$ = Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, $\frac{1}{4}$ of Col. 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery Dam, in m. c. ft. 3 days later.	Value of Col. 2 (*c*) at Cauvery Dam = $\frac{3}{4}$ of Col. 2 (*c*).	Net flow at Cauvery Dam Col. 3 −Col. 4+$\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5 Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+ Col. 6, three days previous.	Quantity running to waste at Cauvery Dam, above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (*e*) + previous days' balance in Col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, $\frac{1}{3}$ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
June 1906.																		
1	6				32			32	32				43+57		100			
2	6				44			44	44				43+57		100			
3	6				44			44	44				43+57		100			
4	6				44			44	44				43+47		90			
5	6				38			38	38				43+49		92			
6	6				130			130	130				43+44		87			
7	6				50			50	50				43+51		94			
8	6				50			50	44				43+62		105			
9	6				50			44	38				43+66		109			
10	6				50			44	38				43+68		111			
11	6				50			44	44				43+68		111			
12	6				50			50	50				43+68		111			
13	6				50			50	50				43+72		115			
14	6				98			98	98				43+72		118			
15	6				200			200	200				43+76		118			
16	6	1			158	32		158	32	5,745	6,739		43+57		100			
17	6	5			130	44		130	44				43+57		100			
18	6	4			98	44		98	44				43+57		100			
19	6	4			66	44		66	44				43+47		90			
20	6	4			66	44		66	44				43+49		92			
21	6	4			44	44		44	44				43+44		87			
22	6	4			354	354		354	354				43+44		87			
23	6	4			66	66		66	66				43+51		94			
24	6	4			386	386		386	386				43+58		101			
25	6	4			338	338		338	338				43+62		105			
26	6	4			1,314	1,314		1,314	1,314				43+66		109			
27	6	4			803	803		803	803				43+68		111			
28	6	4			628	628		628	628				43+68		111			
29	6	4			494	494		494	494				43+68		111			
30	6	4			402	402		402	402				43+72		115			
	6	4			364	364		364	364				43+76		118			
	11,674	11,402				172		994	994	5,745	6,739				1,520		2,780	4,715	4,300		
																					450
																					1,060

Limit of Rules.	Month and date.	Discharges at Kannambadi in mils. cubic feet	Excess over limit or quantity permissible for storage limit = $\frac{3}{4}$ × column 9 from June to September and $\frac{5}{6}$ × column 9 from October to January.	Equivalent of column 3 at Cauvery dam allowing for transmission losses.	Discharges at Cauvery dam.	Discharges at Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limit of flow allowed at Cauvery dam.
		2	3	4	5	6	7	8	9
July 1913.	1	494	..	..	1,243	1,243	..	..	1,625
	2	387	..	..	1,629	1,429	4	..	
	3	444	..	..	1,325	1,325	..	..	
	4	425	..	..	1,563	1,563	..	..	
	5	501	..	..	1,002	1,002	..	..	
	6	767	..	..	732	732	..	..	
	7	627	..	..	840	840	..	..	
	8	676	..	..	948	984	..	..	
	9	498	..	..	786	786	..	..	
	10	530	..	..	698	698	..	..	
	11	636	..	..	663	663	..	..	
	12	674	..	..	840	840	..	..	
	13	586	..	..	732	732	..	..	
	14	684	..	..	698	698	..	..	
	15	541	..	..	948	948	..	..	
	16	1,616	600	450	4,824	4,374	..	2,749	
	17	5,267	4,261	3,188	14,027	10,839	9,214	..	
	18	8,262	7,246	5,435	12,038	6,603	4,978	..	
	19	8,345	7,329	5,497	11,282	6,786	4,160	..	
	20	7,623	6,607	4,955	10,874	6,419	3,794	..	
	21	5,672	4,666	3,492	7,099	3,507	1,882	..	
	22	3,166	2,160	1,613	4,979	3,366	1,741	..	
	23	1,944	928	696	3,734	3,038	1,413	..	
	24	1,590	574	431	3,010	2,679	964	..	
	25	1,276	269	194	2,165	1,971	346	..	
	26	1,372	366	267	1,899	1,632	7	..	
	27	1,467	461	338	2,095	1,767	132	..	
	28	1,463	457	328	2,095	1,767	142	..	
	29	1,615	599	449	2,235	1,786	161	..	
	30	3,225	2,209	1,657	6,132	4,475	2,820	..	
	31	4,396	3,380	2,535	7,167	4,632	3,007	..	
		58,258	42,032	..	96,115	..	37,530	..	
		66,518	42,032	..	109,762	..	37,534	..	1,625
June 1913.	1	167	..	..	..	..	..	..	
	2	110	..	..	..	..	..	..	
	3	124	..	..	..	..	..	..	
	4	118	..	..	..	..	..	..	
	5	146	..	..	..	..	..	..	
	6	132	..	..	..	..	..	..	
	7	120	..	..	..	..	..	..	
	8	97	..	..	..	..	..	..	
	9	286	..	..	..	..	..	..	
	10	720	439	329	639	639	..	..	460
	11	702	421	316	618	618	..	..	
	12	688	407	306	617	617	..	..	
	13	702	421	316	617	617	..	..	
	14	720	439	329	639	639	..	..	
	15	286	5	4	639	639	..	..	
	16	97	..	..	786	786	..	..	
	17	120	..	..	661	661	..	..	
	18	146	..	..	786	786	..	..	
	19	132	..	..	786	786	..	..	
	20	118	..	..	786	786	..	..	
	21	124	..	..	786	786	..	..	
	22	110	..	..	786	786	..	..	
	23	124	..	..	786	786	..	..	
	24	100	..	..	786	786	..	..	
	25	128	..	..	786	786	..	..	
	26	303	..	..	786	786	..	..	
	27	248	..	..	786	786	..	..	
	28	472	..	..	786	786	..	..	
	29	996	333	260	786	786	..	260	
	30	669	..	..	786	786	..	..	
		6,820	382	287	10,436	..	2,607	260	
		12,921	4,512	3,384	25,222	..	7,903	899	1,060
		7,101	4,130	3,097	14,787	..	5,296	649	
	1	712	49	37	2,791	2,764	1,694	..	
	2	678	..	..	1,973	1,973	918	..	
	3	471	..	..	786	786	..	..	
	4	330	..	..	698	698	..	..	
	5	315	..	..	596	596	..	..	
	6	262	..	..	496	496	..	..	
	7	214	..	..	436	436	..	..	
	8	122	..	..	387	387	..	..	
	9	100	..	..	356	356	..	..	
	10	128	..	..	323	323	..	..	
	11	303	..	..	307	307	..	..	
	12	248	..	..	307	307	..	..	
	13	472	..	..	273	273	..	..	
	14	996	333	260	365	105	..	260	
	15	669	..	..	355	355	..	..	
		5,820	382	287	10,436	..	2,607	260	
		12,921	4,512	3,384	25,222	..	7,903	899	1,060

Month and date.		Discharges at Kannambadi in mills cubic feet.	Excess over limit or quantity permissible for storage limit = $\frac{8}{8}$ × column 9 from June to September and $\frac{3}{3}$ × column 9 from October to January.	Equivalent of column 3 at Cauvery dam, allowing for transmission losses.	Discharges at Cauvery dam.	Discharges at Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limit of flow allowed at Cauvery dam.
1		2	3	4	5	6	7	8	9
August 1913.	1	4,786	3,770	2,828	7,287	4,459	2,834	..	1,625
	2	4,931	3,965	2,974	7,167	4,187	2,562	..	
	3	5,125	4,109	3,082	5,663	2,581	956	..	
	4	4,472	3,456	2,592	5,883	3,291	1,666	..	
	5	4,235	3,219	2,414	4,877	2,463	838	..	
	6	3,106	2,090	1,568	3,884	2,316	691	..	
	7	2,817	1,801	1,351	4,012	2,661	1,036	..	
	8	2,057	1,041	781	3,526	2,745	1,120	..	
	9	1,997	981	736	2,656	1 820	195	..	
	10	1,691	675	506	2'375	1,869	244	..	
	11	1,331	315	236	2,095	1,869	234	..	
	12	1,212	196	147	1,824	1,677	52	..	
	13	1,036	20	15	1,629	1,614	..	11	
	14	814	..	..	1,429	1,429	..	..	
	15	744	..	..	1,243	1,243	..	..	
		..	25,638	72,230	..	..	11,428	11	
	16	704	..	..	1,183	1,183	..	..	1,625
	17	643	..	..	1,123	1,123	..	..	
	18	599	..	..	1,002	1,002	..	..	
	19	674	..	.	894	894	..	..	
	20	618	..	..	894	894	..	..	
	21	675	..	..	840	840	..	..	
	22	670	..	..	1,002	1,002	..	..	
	23	992	..	..	1,063	1,063	..	..	
	24	1,216	200	150	1,563	1,413	..	150	
	25	1,133	117	88	1,563	1,475	..	88	
	26	1,307	291	218	1,325	1,107	..	218	
	27	1,140	124	93	1,629	1,536	..	89	
	28	892	..	..	1,429	1.429	..	..	
	29	802	..	..	1,123	1,123	..	..	
	30	934	..	..	1,002	1,002	..	..	
	31	809	..	..	1,123	1,123	..	..	
		..	732	549	..	..	..	545	
		..	26,370	72,779	..	..	11,428	556	
September 1913.	1	758	..	..	1,002	1,002	..	..	1,625
	2	874	..	..	894	894	..	..	
	3	946	..	..	1,123	1,123	..	..	
	4	910	..	..	1,429	1,429	..	..	
	5	863	..	..	1,303	1,303	..	..	
	6	785	..	..	1,063	1,063	..	..	
	7	687	..	..	948	948	..	..	
	8	671	..	..	840	840	..	..	
	9	500	..	..	664	664	..	..	
	10	448	..	..	629	629	..	..	
	11	394	..	..	562	562	..	..	
	12	357	..	..	518	518	..	..	
	13	293	..	..	473	473	..	..	
	14	222	..	..	451	451	..	..	
	15	296	..	..	419	419	..	..	
		..	..	..	..	..	..	..	
	16	268	..	..	419	419	..	..	1,120
	17	253	..	..	419	419	..	..	
	18	255	..	..	451	451	..	..	
	19	255	..	..	451	451	..	..	
	20	287	..	..	1,498	1,498	378	..	
	21	320	..	..	1,183	1,183	63	..	
	22	316	..	..	732	732	..	..	
	23	318	..	..	1,063	1,063	..	..	
	24	284	..	..	1,243	1,243	123	..	
	25	446	..	..	1,325	1,325	205	..	
	26	415	..	..	4,796	4,796	3,676	..	
	27	571	..	..	2,759	2,759	1,639	..	
	28	361	..	..	1,824	..	704	..	
	29	600	..	..	1,954	..	834	..	
	30	675	..	..	2,408	..	1,288	..	
		..	..	..	..	..	8,910	..	
		..	..	..	..	..	8,910	..	

Month and date.		Discharges at Kannambadi in mills cubic feet.	Excess over limit or quantity permissible for storage limit = $\frac{8}{8}$ × column 9 from June to September and $\frac{3}{3}$ × column 9 from October to January.	Equivalent of column 3 at Cauvery dam allowing for transmission losses.	Discharges at Cauvery dam.	Discharges at Cauvery dam as affected.	Quantity in excess of the limit, running to waste.	Deficit in Madras supplies.	Limits of flow allowed at Cauvery dam.
1		2	3	4	5	6	7	8	9
October 1913	1	638	225	169	2,504	2,335	1,095	..	1,240
	2	673	260	195	2,923	2,728	1,488	..	
	3	634	221	166	3,901	3,735	2,495	..	
	4	714	301	226	2,432	2,206	966	..	
	5	704	291	218	3,368	3,150	1,910	..	
	6	632	219	164	2,483	2,319	1,079	..	
	7	845	432	324	2,305	1,981	741	..	
	8	979	566	425	2,746	2,321	1,081	..	
	9	804	391	293	2,165	1,862	622	..	
	10	692	279	209	1,967	1,758	518	..	
	11	503	90	68	1,303	1,235	..	5	
	12	529	116	87	1.629	1,532	292	..	
	13	1,107	694	521	4,193	3,672	2,432	..	
	14	3,220	2,807	2,105	6,396	4,291	3,051	..	
	15	3,373	2,960	2,220	5,615	3,395	2,155	..	
		...	9,852	..	..	..	18,925	..	
	16	2,301	1,888	1,416	4,555	3,139	1,899	..	1,240
	17	1,299	886	664	3,332	2,668	1,428	..	
	18	1,005	592	444	2,095	1,651	411	..	
	19	775	362	272	1,694	1,422	182	..	
	20	620	207	155	1,429	1,274	34	..	
	21	.	..	..	..	..	..	..	
	22	..	..	..	..	..	..	..	
	23	..	..	..	..	..	..	..	
	24	..	..	..	..	..	..	..	
	25	..	..	..	..	..	..	..	
	26	..	..	..	..	..	..	..	
	27	..	..	..	..	..	..	..	
	28	..	..	..	..	..	..	..	
	29	..	..	..	..	..	..	..	
	30	..	..	..	..	..	..	..	
	31	..	..	..	..	..	..	..	
		..	3,935	..	..	..	3,954	..	
		..	13,787	..	..	..	22,879	5	

Limit of Rules. Table II. 1913.

Month and date.		X = Discharges at Cauvery Dam.	X-Z = Surplussing to waste Z = Col. (10).	$\frac{X-Z}{C}$ = Equivalent of column (3) at Kannambadi Dam C = $\frac{3}{4}$.	Y = Discharges at Kannambadi Dam.	Storage at Kannambadi.	Equivalent of column (6) at Cauvery Dam *i.e.*, $\frac{4}{3}$ of column (6).	Cauvery Dam discharges as affected *i.e.*, column (3) — column (7).	Quantity running to waste, at Cauvery Dam after storage at Kannambadi.	Limit of flow allowed at Cauvery Dam.
1		2	3	4	5	6	7	8	9	10
June 1913.	1	539	89	119	157	119	89	450	..	
	2	618	168	224	110	110	83	535	85	
	3	286	..	..	124	..	..	286	..	
	4	172	..	..	118	..	172	172	..	
	5	517	67	89	132	89	67	450	..	
	6	786	336	448	146	146	110	676	226	
	7	561	111	148	120	120	90	471	21	
	8	539	89	119	97	97	73	466	16	450
	9	435	..	..	286	..	..	435	..	
	10	371	..	..	720	..	..	371	..	
	11	419	..	..	702	..	..	419	..	
	12	1,123	673	897	688	688	516	607	157	
	13	1,629	1,179	1,572	1,163	1,163	179	872	422	
	14	3,333	2,883	3,844	1,438	1,438	1,079	1,254	804	
	15	3,469	3 009	4,012	1,100	1,100	825	2,634	2,184	
		14,787	8,554	11,472	7,101	5,070	..		3,915	
	16	2,791	1,731	2,308	712	712	534	2,257	1,197	
	17	1,973	913	1,217	578	578	434	1,539	1,479	
	18	786	..	..	471	..	..	786	..	
	19	698	..	..	330	..	..	698	..	
	20	595	..	..	315	..	..	595	..	
	21	495	..	..	262		..	495	..	
	22	435	..	..	214	..	..	435	..	
	23	387	..	..	122	..	..	387	..	1,060
	24	355	..	..	180	..	..	355	..	
	25	323	..	..	128	..	..	323	..	
	26	307	..	..	303	..	..	307	..	
	27	307	..	..	248	..	..	307	..	
	28	273	..	..	472	..	..	273	..	
	29	355	..	..	996	..	..	355	..	
	30	355	..	..	569	..	..	355	..	
		10,435	2,644	3,525	5,820	1,290	..	..	2,676	
		25,222	11,198	14,997	12,921	6,360	..	..	6,591	
July 1913.	1	1,243	..	..	494	..	..	1,243	..	
	2	1,629	4	5	387	5	4	1,625	..	
	3	1,325	..	..	444	..	..	1,325	..	
	4	1,563	..	..	425	..	..	1,563	..	
	5	1,002	..	..	501	..	..	1,002	..	
	6	732	..	..	757	..	..	732	..	
	7	840	..	..	627	..	..	840	..	
	8	948	..	..	576	..	..	948	..	1,625
	9	786	..	..	498	..	..	786	..	
	10	698	..	..	530	..	..	698	..	
	11	663	..	..	636	..	..	663	..	
	12	840	..	..	674	..	..	840	..	
	13	732	..	..	586	..	..	732	..	
	14	698	..	..	584	..	..	698	..	
	15	948	..	..	541	..	..	948	..	
		14,647	4	..	8,260	5	..	..	..	
	16	4,824	3,199	4,265	1,616	1,616	1,212	3,612	1,987	
	17	14,027	12,402	16,536	5,267	5,267	4,950	9,077	7,452	
	18	12,038	10,413	13,884	8,262	8,262	6,197	5,841	4,216	
	19	11,282	9,657	12,876	8,345	8,345	6,259	5,023	3,398	
	20	10,374	9,318	12,424	7,623	7,623	5,717	4,657	3,032	
	21	7,009	5,384	7,179	5,672	5,672	4,254	2,775	1,150	
	22	4,979	3,354	4,472	3,166	3,166	2,375	2,604	979	
	23	3,734	2,109	2,812	1,944	1,944	1,458	2,276	651	
	24	3,010	1,385	1,847	1,590	1,590	1,193	1,817	192	1,625
	25	2,165	540	720	1,275	720	540	1,625	..	
	26	1,899	264	352	1,372	352	264	1,625	..	
	27	2,095	470	627	1,467	627	470	1,625	..	
	28	2,095	470	627	1,453	627	470	1,625	..	
	29	2,235	610	813	1,615	813	610	1,625	..	
	30	6,132	4,507	6,009	3,225	3,225	2,419	3,773	2,088	
	31	7,167	5,542	7,389	4,396	4,396	3,297	3,870	2,245	
		95,074	69,624	..	58,288	54,245	..	..	27.390	
		109,721	69,628	..	66,548	54,250	..	..	27,390	

Limit of Rules. Table II—*cont.* 1913.

Month and date.		X = Discharges at Cauvery Dam.	X-Z = Surplussing to waste Z = Col. (10).	$\frac{X-Z}{C}$ = Equivalent of column (3) at Kannambadi Dam C = $\frac{3}{4}$.	Y = Discharges at Kannambadi Dam.	Storage at Kannambadi.	Equivalent of column (6) at Cauvery Dam *i.e.*, $\frac{4}{3}$ of column (6).	Cauvery Dam discharges as affected *i.e.*, column (3)—column (7).	Quantity running to waste, at Cauvery Dam after storage at Kannambadi.	Limit of flow allowed at Cauvery Dam.
1		2	3	4	5	6	7	8	9	10
August 1913.	1	7,287	5,662	7,749	4,786	4,786	3,590	3,697	2,097	
	2	7,167	5,542	7,389	4,981	4,981	3,736	3,431	1,806	
	3	5,665	4,038	5,384	5,125	5,125	3,844	1,819	194	
	4	5,883	4,268.	5,477	4,472	4,472	3,354	2,529	904	
	5	4,877	3,252	4,336	4,235	4,235	3,176	1,701	76	1,625
	6	3,884	2,259	3,012	3,106	3,012	2,259	1,625	..	
	7	4,012	2,387	3,183	2,817	2,817	2,113	1,899	274	
	8	3,526	1,901	2,535	2,057	2,057	1,543	1,983	358	
	9	2,656	1,031	1,267	1,997	1,267	1,031	1,625	..	
	10	2,375	750	1,000	1,691	1,000	750	1,625	..	
	11	2,095	470	627	1,331	627	470	1,625	..	
	12	1,824	199	265	1,212	265	199	1,625	..	
	13	1,629	4	5	1,036	5	4	1,625	..	
	14	1,429	..	..	814	..	..	1,429	..	
	15	1,243	..	..	744	..	..	1,243	..	
		55,550	31,753	42,229	40,404	34,649	..	..	5,709	
	16	1,183	..	..	704	..	..	1,183	..	
	17	1,123	..	..	643	..	..	1,123	..	
	18	1,002	..	..	599	..	..	1,002	..	
	19	894	..	..	674	..	..	894	..	
	20	894	..	..	618	..	..	894	..	
	21	840	..	..	675	..	..	840	..	1,625
	22	1,002	..	..	670	..	..	1,002	..	
	23	1,063	..	..	992	..	..	1,063	..	
	24	1,563	..	..	1,216	..	..	1,563	..	
	25	1,563	..	..	1,133	..	..	1,563	..	
	26	1,325	..	..	1,307	..	..	1,325	..	
	27	1,629	4	5	1,140	5	4	1,625	..	
	28	1,429	..	..	892	..	..	1,429	..	
	29	1,123	..	..	802	..	..	1,123	..	
	30	1,002	..	..	934	..	..	1,002	..	
	31	1,123	..	..	809	..	..	1,123	..	
		18,758	4	..	13,808	5	..	..		
		74,308	31,758	..	54,212	34,654	..	..	5,709	
September 1913.	1	1,002	..	..	758	..	..	1,002	..	
	2	894	..	..	874	..	..	894	..	
	3	1,123	..	..	946	..	..	1,123	..	
	4	1,429	..	..	910	..	..	1,429	..	
	5	1,303	..	..	863	..	..	1,303	..	
	6	1,063	..	..	785	..	..	1,063	..	
	7	948	..	..	687	..	..	948	..	
	8	840	..	..	671	..	..	840	..	1,625
	9	664	..	..	500	..	..	664	..	
	10	629	..	..	448	..	..	629	..	
	11	562	..	..	394	..	..	562	..	
	12	518	..	..	357	..	..	518	..	
	13	473	..	..	293	..	..	473	..	
	14	451	..	..	222	..	..	451	..	
	15	419	..	..	296	..	..	419	..	
		12,318	..	..	9,004	..	..	12,318	..	
	16	419	..	..	268	..	..	419	..	
	17	419	..	..	253	..	..	419	..	
	18	451	..	..	255	..	..	451	..	
	19	451	..	..	255	..	..	451	..	
	20	1,498	378	504	287	287	215	1,283	..	1,120
	21	1,193	63	84	320	84	63	1,120	..	
	22	732	..	..	316	..	..	732	..	
	23	1,063	..	..	318	..	..	1,063	..	
	24	1,243	123	164	284	164	123	1,120	..	
	25	1,325	205	273	446	273	205	1,120	..	
	26	4,796	3,676	4,901	415	415	311	4,485	3,365	
	27	2,759	1,639	2,185	571	571	428	2,331	1,211	
	28	1,824	704	939	361	361	271	1,553	433	
	29	1,954	834	1,112	600	600	450	1,504	384	
	30	2,408	1,288	1,717	675	675	506	1,902	782	
		16,339	8,910	11,869	5,624	3,420	..	..	6,175	
		28,657	..	11,869	14,624	3,420	..	..	6,175	

Limit of Rules. Table II—*cont.* 1913.

1	2	3	4	5	6	7	8	9	10
Month and date.	X = Discharges at Cauvery Dam.	X-Z = Surplussing to waste Z = Col. (10).	$\frac{X-Z}{C}$ = Equivalent of column (3) at Kannambadi Dam C = ¾.	Y = Discharge at Kannambadi Dam.	Storage at Kannambadi.	Equivalent of column (6) at Cauvery Dam, *i.e.*, ⅘ of column (6).	Cauvery Dam discharges as affected, *i.e.*, column (3)—column (7).	Quantity running to waste, at Cauvery Dam after storage at Kannambadi.	Limit of flow allowed at Cauvery Dam.
October 1913.									
1	2,504	1,264	1,685	638	638	479	2,025	785	
2	2,923	1,683	2,244	673	673	505	2,418	1,178	
3	3,901	2,661	3,548	634	634	476	3,425	2,185	
4	2,432	1,192	1,589	714	714	536	1,896	656	
5	3,368	2,128	2,838	704	704	528	2,840	1,600	
6	2,483	1,243	1,657	635	635	474	2,009	769	1,240
7	2,306	1,065	1,420	845	845	634	1,671	431	
8	2,746	1,505	2,008	979	979	734	2,012	772	
9	2,165	925	1,233	804	804	603	1,562	322	
10	1,967	727	969	692	692	519	1,448	208	
11	1,303	63	84	503	84	63	1,240	..	
12	1,629	389	519	529	519	389	1,240	..	
13	4,193	2,953	3,937	1,107	1,107	830	3,363	2,123	
14	6,396	5,156	6,875	3,220	3,220	2,415	3,981	2,741	
15	5,615	4,375	5,833	3,373	3,373	2,530	3,085	1,845	
..	..	27,330	..	..	15,618	..	..	15,615	
16	4,555	3315	4,420	2,301	2,301	1,726	2,829	1,580	
17	3,332	2,092	2,789	1,299	1,299	974	2,358	1,118	
18	2,095	855	1,140	1,055	1,055	791	1,304	64	
19	1,694	454	606	775	605	454	1,240	..	
20	1,429	189	252	620	252	187	1,240	..	1,240
21	..	..	..	..	..	..	..	..	
22	..	..	..	..	..	..	..	..	
23	..	..	..	..	..	..	..	..	
24	..	..	..	..	..	..	..	..	
25	..	..	..	..	..	..	..	..	
26	..	..	..	..	..	..	..	..	
27	..	..	..	..	..	..	..	..	
28	..	..	..	..	..	..	..	..	
29	..	..	..	..	..	..	..	..	
30	..	..	..	..	..	..	..	..	
31	..	..	..	..	..	..	..	..	
..	..	6,905	..	..	5,512	..	..	2,771	
..	34,235	..	..	21,130	..	..	..	18,386	

1	Approximations for quantity to be impounded. 2 a	2 b	2 c	2 d	2 e	Conditions at the Cauvery Dam. 3	4	5	6	7	8	9	Conditions at the Kannambadi Dam. 10	11	12	13	14	15	16
Month and date.	Y = Flow at Kannambadi in mills. cubic feet.	NY = Probable flow at Cauvery Dam. N = ⅘ from June to September. N = 3 from October to January.	NY—Z = Probable excess over the limit at Cauvery Dam. Z = column 16.	$\frac{NY-Z}{C}$ = Value of column 2 (c) at Kannambadi Dam, i.e., ¾ of column 2 (c).	Quantity to be impounded at Kannambadi Dam, column 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery Dam in mills. cubic feet 3 days later.	Value of column 2 (c) at Cauvery Dam = ¾ of column 2 (c).	Net flow at Cauvery Dam, column 3 — column 4 + ⅘ of surplus at Kannambadi, if any.	Compensation water column 3, if less than Z or Z — column 5. Z = limit in column 16.	Resulting flow at Cauvery Dam, column 5 + column 6, three days previous.	Quantity running to waste at Cauvery Dam above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, column 2 (e) + previous day's balance in column 15.	Compensation water converted to Kannambadi reservoir, ⅘ of column 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of columns 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
June 1913.																			
1	157	..	..	..	..	539	..	539	..	539	89	..	..	..	43	..	43	..	
2	110	..	..	..	..	618	..	618	..	618	168	..	..	..	43	..	43	..	
3	124	..	..	..	..	286	..	286	..	286	..	..	..	..	43	..	43	..	
4	118	..	..	..	..	172	..	172	..	172	..	..	..	..	43	..	43	..	
5	132	..	..	..	..	517	..	517	..	517	67	..	..	..	43	..	43	..	
6	146	..	..	..	..	786	..	786	..	786	336	..	..	..	43	..	43	..	
7	120	..	..	..	..	561	..	561	..	561	111	..	..	..	43	..	43	..	
8	97	..	..	..	..	539	..	539	..	539	89	..	..	..	43	..	43	9,656	450
9	286	458	8	11	11	435	8	427	8	427	..	..	9,667	..	43	..	43	† 9,621	
10	720	1,152	702	936	720	371	540	* — 169	371	— 169	..	..	10,341	..	43	..	43	10,298	
11	702	1,123	673	897	702	419	526	* — 107	419	— 107	..	..	11,000	..	43	..	43	10,957	
12	688	1,101	651	868	688	1,123	516	607	..	615	165	8	11,645	11	43	..	51	11,594	
13	1,163	1,861	1,411	1,881	1,163	1,629	871	758	..	1,129	679	371	12,757	495	43	..	538	12,219	
14	1,438	2,301	1,861	2,201	1,438	3,333	1,078	2,255	..	2,674	2,224	419	13,657	559	43	..	602	13,055	
15	1,100	1,760	1,310	1,747	1,100	3,459	825	2,634	..	2,634	2,184	..	14,155	..	43	..	43	14,112	
..	..	..	..	..	5,822	..	..	..	796	..	6,112	796	..	1,062	..	..	1,707	..	
16	712	1,139	79	105	105	2,791	79	2,712	..	2,712	1,652	..	14,227	..	152	..	152	14,075	
17	578	..	..	..	..	1,973	..	1,973	..	1,973	913	..	..	..	152	..	152	13,923	
18	471	..	..	..	..	786	..	786	..	786	..	..	..	..	152	..	152	13,771	
19	330	..	..	..	..	698	..	698	..	698	..	..	..	..	152	..	152	13,619	
20	315	..	..	..	..	595	..	595	..	595	..	..	..	..	152	..	152	13,467	
21	262	..	..	..	..	495	..	495	..	495	..	..	..	..	152	..	152	13,315	
22	214	..	..	..	..	435	..	435	..	435	..	..	..	..	152	..	152	13,163	
23	122	..	..	..	..	387	..	387	..	387	..	..	..	..	152	..	152	13,011	1,060
24	100	..	..	..	..	355	..	355	..	355	..	..	..	..	152	..	152	12,859	
25	128	..	..	..	..	323	..	323	..	323	..	..	..	..	152	..	152	12,707	
26	303	..	..	..	..	307	..	307	..	307	..	..	..	..	152	..	152	12,555	
27	248	..	..	..	..	307	..	307	..	307	..	..	..	..	152	..	152	12,403	
28	472	..	..	..	..	273	..	273	..	273	..	..	..	..	152	..	152	12,251	
29	996	1,594	534	712	712	355	534	* — 179	355	— 179	..	..	12,963	..	152	..	152	12,811	
30	569	..	..	..	..	355	..	355	..	355	..	..	12,811	..	152	..	152	12,659	
..	..	..	..	..	817	..	..	..	355	..	2,565	..	..	..	..	..	2,280	..	
..	..	..	..	..	6,636	..	..	..	1,151	..	8,677	796	..	1,062	..	..	..	..	

* When net flow in column 5 is negative, compensation is given for the actual discharge in column 3.
† From the 9th June to 19th July inclusive, add 3 to each of the figures in column 15.

1	Approximations for quantity to be impounded. 2					Conditions at the Cauvery Dam.							Conditions at the Kannambadi Dam.						16
	a	*b*	*c*	*d*	*e*	3	4	5	6	7	8	9	10	11	12	13	14	15	
Month and date.	Y = Flow at Kannambadi in mills. cubic feet.	NY=Probable flow at Cauvery Dam. N=$\frac{2}{5}$ from June to September. N=$\frac{3}{5}$ from October to January.	NY-Z=Probable excess over the limit at Cauvery Dam. Z= column 16.	NY—Z / a = Value of column 2 (*c*) at Kannambadi Dam, column 2 (*d*) or 2 (*e*) whichever is less.	Quantity to be impounded at Kannambadi Dam, column 2 (*d*) or 2 (*e*) whichever is less.	Flow at the Cauvery Dam in mills. cubic feet 3 days later.	Value of column 2 (*e*) at Cauvery Dam = $\frac{3}{4}$ of column 2 (*c*).	Net flow at Cauvery Dam, column 3 — column 4 + $\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water column 5, if less than Z or Z — column 5. Z = limit in column 16.	Resulting flow at Cauvery Dam, column 5 + column 6, three days previous.	Quantity running to waste at Cauvery Dam above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, column 2 (*e*) + previous day's balance in column 15.	Compensation water converted to Kannambadi reservoir, $\frac{4}{3}$ of column 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of columns 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
July 1913. 1	494	..	..	..	..	1,243	..	1,243	..	1,243	..	..	..	..	156	..	156	12,503	
2	387	..	..	..	..	1,629	..	1,629	..	1,984	359	355	..	473	156	..	629	11,874	
3	444	..	..	..	..	1,325	..	1,325	..	1,325	..	..	..	..	156	..	156	11,718	
4	425	..	..	..	..	1,563	..	1,563	..	1,563	..	..	..	..	156	..	156	11,562	
5	501	..	..	..	..	1,002	..	1,002	..	1,002	..	..	..	..	156	..	156	11,406	
6	767	..	..	..	..	732	..	732	..	732	..	..	..	..	156	..	156	11 250	
7	627	..	..	..	..	840	..	840	..	840	..	..	..	..	156	..	156	11,094	
8	576	..	..	..	..	948	..	948	..	948	..	..	..	..	156	..	156	10,938	
9	498	..	..	..	..	786	..	786	..	786	..	..	..	..	156	..	156	10,782	1,625
10	530	..	..	..	..	698	..	698	..	698	..	..	..	..	156	..	156	10,626	
11	636	..	..	..	..	663	..	663	..	663	..	..	..	..	156	..	156	10,470	
12	674	..	..	..	..	840	..	840	..	840	..	..	..	..	156	..	156	10,314	
13	586	..	..	..	..	732	..	732	..	732	..	..	..	..	156	..	156	10,158	
14	584	..	..	..	..	698	..	698	..	698	..	..	..	..	156	..	156	10,002	
15	541	..	..	..	..	948	..	948	..	948	..	..	..	..	156	..	156	9,846	
	..	..	..	..	..	..	..	..	..	..	359	355	..	473	..	..	2,813	..	
16	1,616	2,586	961	1,281	1,281	4,824	961	3,863	..	3,863	2,238	..	11,127	..	156	..	156	10,971	
17	5,267	8,427	6,802	9,069	5,267	14,027	3,950	10,077	..	10,077	8,452	..	16,238	..	156	..	156	16,082	
18	8,262	13,219	11,594	15,459	8,262	12,038	6,196	5,842	..	5,842	4,217	..	24,344	..	156	..	156	24,188	
19	8,345	13,352	11,727	15,636	8,345	11,282	6,259	5,023	..	5,023	3,398	..	32,533	..	156	..	156	32,377	
20	7,623	12,197	10,572	14,096	7,623	10,374	5,717	6,730	..	6,730	5,105	..	40,003	..	156	2,767	7,623	37,080	
21	5,672	9,075	7,450	7,563	5,672	7,009	4,254	7,009	..	7,009	5,384	..	42,752	..	156	5,516	5,672	37,080	
22	3,166	5,066	3,441	4,588	3,166	4,979	2,374	4,979	..	4,979	3,354	..	40,246	..	156	3,010	3,166	37,080	
23	1,944	3,110	1,485	1,980	1,944	3,734	1,458	3,734	..	3,734	2,109	..	39,024	..	156	1,788	1,944	37,080	
24	1,590	2,544	919	1,225	1,225	3,010	919	2,893	..	2,893	1,268	..	38,305	..	156	1,069	1,225	37,080	
25	1,275	2,040	415	553	553	2,165	415	2,048	..	2,048	423	..	37,633	..	156	397	553	37,080	1,625
26	1,372	2,195	570	760	760	1,899	570	1,772	..	1,772	147	..	38,452	..	156	604	760	37,080	
27	1,467	2,347	722	963	963	2,095	722	1,978	..	1,978	363	..	38,547	..	156	807	963	37,080	
28	1,453	2,325	700	933	933	2,095	700	1,978	..	1,978	353	..	38,533	..	156	777	933	37,080	
29	1,615	2,584	959	1,279	1,279	2,235	959	2,118	..	2,118	493	..	38,695	..	156	1,123	1,279	37,080	
30	3,225	5,160	3,535	4,713	3,225	6,132	2,419	6,015	..	6,015	4,390	..	40,305	..	156	3,069	3,225	37,080	
31	4,396	7,034	5,409	7,212	4,396	7,167	3,297	7,050	..	7,050	5,425	..	41,476	..	156	4,240	4,396	37,080	
	..	..	..	..	54,894	..	..	..	..	..	47,109	..	..	..	..	25,164	32,363	..	
	..	..	..	..	54,894	..	..	..	..	..	47,468	355	..	473	..	25,164	..	..	

1	Approximations for quantity to be impounded. 2					Conditions at the Cauvery Dam.							Conditions at the Kannambadi Dam.						16
	a	*b*	*c*	*d*	*e*	3	4	5	6	7	8	9	10	11	12	13	14	15	
Month and date.	Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam. N=$\frac{2}{5}$ from June to September N=$\frac{3}{5}$ from October to January.	NY—Z=Probable excess over the limit at Cauvery Dam. Z=col 16.	NY—Z / a = Value of Col. 2 (*c*) at Kannambadi Dam, *i.e.*, $\frac{3}{4}$ of Col. 2 (*c*).	Quantity to be impounded at Kannambadi Dam, Col. 2 (*d*) or 2 (*e*) whichever is less.	Flow at the Cauvery Dam in M. C. ft. 3 days later.	Value of Col. 2 (*e*) at Cauvery Dam=$\frac{3}{4}$ of Col. 2 (*c*).	Net flow at Cauvery Dam, Col 3—Col. 4+$\frac{3}{4}$ of surplus at Kannambadi, if any.	Compensation water, Col. 3, if less than Z or Z—Col. 5. Z=limit in Col. 16.	Resulting flow at Cauvery Dam, Col. 5+Col. 6, three days previous.	Quantity running to waste at Cauvery Dam above limit.	Qnantity running to waste out of compensation water.	Gross storage in the reservoir, Col. (*e*) + previous day's balance in Col. 15.	Compensation water converted to Kannambadi reservoir, $\frac{4}{3}$ of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
August 1913. 1	4,786	7,658	6,033	8,044	4,786	7,287	3,589	7,170	..	7,170	5,545	..	41,866	..	156	4,630	4,786	37,080	
2	4,981	7,970	6,345	8,460	4,981	7,167	3,736	7,050	..	7,050	5,425	..	42,061	..	156	4,825	4,981	37,080	
3	5,125	8,200	7,575	10,100	5,125	6,663	3,844	5 536	..	6,536	4,911	..	42,205	..	156	4,969	5,125	37,080	
4	4,472	7,155	5,630	7,507	4 472	5,883	3,354	5,883	..	5,883	4,258	..	41,55	..	156	4,316	4,472	37,080	
5	4,235	6,776	5,151	6,868	4,235	4,877	3,176	4,760	..	4,760	3,135	..	41,315	..	156	4,079	4,235	37,080	
6	3,106	4,970	3,345	4,460	3,106	3,884	2,329	3,767	..	3,767	2,142	..	40,186	..	156	2,950	3,106	37,080	
7	2,817	4,507	3,882	5,176	2,817	4,012	2,113	3,895	..	3,895	2,270	..	39,897	..	156	2,661	2,817	37,080	
8	2,057	3,291	1,666	2,221	2,057	3,526	1,543	3,409	..	3,409	1,784	..	39,137	..	156	1,901	2,057	37,080	1,625
9	1,997	3,195	1,570	2,093	1,997	2,656	1,498	7,539	..	7,539	5,914	..	39,077	..	156	1,841	1,997	37,080	
10	1,691	2 706	1,081	1,441	1,441	2,375	1,081	2 253	..	2,253	628	..	38,521	..	156	1,285	1,441	37,080	
11	1,331	2,130	505	673	673	2,095	505	1,978	..	1,978	353	..	37,753	..	156	517	673	37,080	
12	1,212	1,939	314	419	419	1,824	314	1,707	..	1,707	82	..	37,499	..	156	263	419	37,080	
13	1,036	1,658	33	44	44	1,629	33	1,596	29	1,596	..	..	37,124	..	156	..	156	36,968	
14	814	..	..	..	..	1,429	..	1,429	..	1,429	..	..	..	..	156	..	156	36,812	
15	744	..	..	..	..	1,243	..	1,243	..	1,243	..	..	..	..	156	..	156	36,656	
	..	..	..	..	36,153	..	..	..	29	..	36,447	..	..	..	..	34,237	36,577	..	
16	704	..	..	..	..	1,183		1,183	..	1,212	..	..	..	39	156	..	195	36,461	
17	643	..	..	..	..	1,123	..	1,123	..	1,123	..	..	..	..	156	..	156	36,305	
18	599	..	..	..	..	1,002	..	1,002	..	1,002	..	..	..	..	156	..	156	36,149	
19	674	..	..	..	..	894	..	894	..	894	..	..	..	..	156	..	156	35,993	
20	618	..	..	..	..	894	..	894	..	894	..	..	..	..	156	..	156	35,837	
21	675	..	..	..	..	840	..	840	..	840	..	..	..	..	156	..	156	35,681	
22	670	..	..	..	..	1,002	..	1,002	..	1,002	..	..	..	..	156	..	156	35,525	
23	992	..	..	..	..	1,063	..	1,063	..	1,063	..	..	..	..	156	..	156	35,369	
24	1,216	1,945	321	428	428	1,563	321	1,242	321	1,242	..	..	35,797	..	156	..	156	35,641	
25	1,133	1,813	188	251	251	1,563	188	1,375	188	1,375	..	..	35,892	..	156	..	156	35,736	1,625
26	1,307	2,091	466	621	621	1,325	466	859	466	859	..	..	36,357	..	156	..	156	36,201	
27	1,140	1,824	199	265	265	1,629	199	1,430	199	1,751	126	126	36,466	428	156	..	584	35,882	
28	892	..	..	..	..	1,429	..	1,429	..	1,617	..	..	..	251	156	..	407	35,475	
29	802	..	..	..	..	1,123	..	1,123	..	1,589	..	..	..	621	156	..	777	34,698	
30	934	..	..	..	..	1,002	..	1,002	..	1,201	..	..	..	260	156	..	416	34,282	
31	809	..	..	..	..	1,123	..	1,123	..	1,123	..	..	..	..	156	..	156	34,126	
	..	..	..	..	1,565	..	..	..	1,170	..	126	126	..	1,599	..	..	4,095	..	
	..	..	..	..	37,718	..	..	..	1,199	..	36,573	126	..	1,599	..	34,237	40,672	..	

Month and date.	Approximations for quantity to be impounded.				Conditions at the Cauvery Dam.								Conditions at the Kannambadi Dam.				
	a	b	c	d	e	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Y = Flow at Kannambadi in m. c. ft.	NY = Probable flow at Cauvery Dam. N = 5/6 from June to September. N = 3 from October to January.	NY — Z = Probable excess over the limit at Cauvery Dam. Z = Col. 16.	NY/C — Z = Value of Col. 2 (c) at Kannambadi Dam, *i.e.*, 4/5 of Col. 2 (c).	Quantity to be impounded at Kannambadi Dam, Col. 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of Col. 2 (e) at Cauvery Dam = 3/4 of Col. 2 (e).	Net flow at Cauvery Dam Col. 3 — Col. 4 + 3/4 of surplus at Kannambadi, if any	Compensation water, Col. 3, if less than Z or Z — Col. 5. Z = limit in Col. 16.	Resulting flow at Cauvery Dam Col. 5 + Col. 6, three days previous.	Quantity running to waste at Cauvery Dam above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, Col. 2 (e) + previous day's balance in Col. 15.	Compensation water converted to Kannambadi reservoir, 4/5 of Col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of Cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam (Z).
September 1913.																			
1	758					1,002		1,002		1,002					156		156	33,970	
2	874					894		894		894					156		156	33,814	
3	946					1,123		1,123		1,123					156		156	33,658	
4	910					1,429		1,429		1,429					156		156	33,502	
5	863					1,303		1,303		1,303					156		156	33,346	
6	785					1,063		1,063		1,063					156		156	33,190	
7	687					948		948		948					156		156	33,034	
8	671					840		840		840					156		156	32,878	
9	500					664		664		664					156		156	32,722	
10	448					629		629		629					156		156	32,566	
11	394					562		562		562					156		156	32,410	
12	357					518		518		518					156		156	32,254	
13	293					473		473		473					156		156	32,098	
14	222					461		461		461					156		156	31,942	
15	296					419		419		419					156		156	31,786	
16	268					419		419		419					156		156	31,630	
17	253					419		419		419					156		156	31,474	
18	255					461		461		461					156		156	31,318	
19	255					461		461		461					156		156	31,162	
20	287					1,498		1,498		1,498					156		156	31,006	
21	320					1,183		1,183		1,183					156		156	30,850	
22	316					732		732		732					156		156	30,694	
23	318					1,063		1,063		1,063					156		156	30,538	
24	284					1,243		1,243		1,243					156		156	30,382	
25	416					1,325		1,325		1,325					156		156	40,226	1,120
26	415					4,796		4,796		4,796					156		156	40,070	
27	671					2,759		2,759		2,759					156		156	29,914	
28	361														156		156	29,758	
29	600														156		156	29,602	
30	675														156		156	446	
	.	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
											6,084						4,680		
																			1,625

Month and date.	Approximations for quantity to be impounded.				Condition at the Cauvery Dam.								Conditions at the Kannambadi Dam.				
	a	b	c	d	e	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Y=Flow at Kannambadi in m. c. ft.	NY=Probable flow at Cauvery Dam N=5/6 from June to September. N=3 from October to January.	NY—Z=Probable excess over the limit at Cauvery Dam. Z=col. 16.	NY/C — Z=Value of col. 2 (c) at Kannambadi Dam. *i.e.*, 4/5 of col. 2 (c).	Quantity to be impounded at Kannambadi Dam, col. 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery Dam in m. c. ft. 3 days later.	Value of col. 2 (e) at Cauvery Dam=3/4 of col. 2 (e).	Net flow at Cauvery Dam, col. 3—col. 4+3/4 of surplus at Kannambadi, if any.	Compensation water col. 3, if less than Z or Z—col. 5. Z=limit in col. 16.	Resulting flow at Cauvery Dam, Col. 5+col. 6, three days previous.	Quantity running to waste at Cauvery Dam above limit.	Quantity running to waste out of compensation water.	Gross storage in the reservoir, col. 2 (e) + previous day's balance in col. 15.	Compensation water converted to Kannambadi reservoir, 4/5 of col. 6.	Draw off for Irrigation, etc.	Surplus when the reservoir is full.	Total of cols. 11, 12 and 13.	Balance in the reservoir.	Limit of flow allowed at Cauvery Dam.
October 1913.																			
1	638	1,914	674	899	638	2,504	478	2,426		2,426	1,186		30,084		156		156	29,928	
2	673	2,019	779	1,030	673	2,523	505	2,418		2,418	1,178		30,601		156		156	30,446	
3	634	1,902	662	883	634	3,901	475	3,426		3,426	1,286		31,079		156		156	30,923	
4	714	2,142	902	1,203	714	2,432	535	1,897		1,897	657		31,637		156		156	31,481	
5	704	1,212	872	1,163	704	3,368	528	2,810		2,810	1,610		32,185		156		156	32,029	
6	632	1,896	666	875	632	2,483	474	2,009		2,009	769		32,661		156		156	32,505	
7	846	2,536	1,295	1,727	845	2,305	634	1,576		1,671	431		33,550		156		156	33,194	1,240
8	979	2,937	1,697	2,263	979	2,746	734	2,012		2,012	772		34,173		156		156	34,017	
9	804	2,412	1,172	1,563	804	2,165	603	1,562		1,562	662		34,821		156		156	34,866	
10	692	2,076	836	1,115	692	1,967	519	1,448		1,448	448		35,367		156		156	35,201	
11	503	1,509	269	359	359	1,303	269	1,034	206	1,034	205		35,660		156		156	35,404	
12	529	1,587	347	463	463	1,629	347	1,282		1,282	42		35,867		156		156	35,711	
13	1,107	3,321	2,081	2,775	1,107	4,193	830	3,363		3,363	1,123		36,818		156		156	36,662	
14	3,220	9,660	8,420	11,227	3,220	6,396	2,416	6,486		6,486	5,245		39,882		156		156	37,080	
15	3,373	10,119	8,879	11,839	3,373	5,615	2,530	5,495		5,498	4,258		40,453		156		156	37,080	
	.	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
					15,837				206					276			8,703		
16	2,301	6,903	5,061	7,548	2,301	4,555	1,726	4,438		4,438	3,198		39,381		156		2,145	2,301	37,080
17	1,299	3,897	2,567	3,409	1,299	3,332	974	3,215		3,215	1,975		38,379		156		1,143	1,299	37,080
18	1,005	3,015	1,775	2,367	1,005	2,096	964	1,958		1,978	768		38,085		156		849	1,005	37,080
19	775	2,325	1,055	1,447	775	1,694	586	1,577		1,677	337		37,866		156		619	775	37,080
20	620	1,860	620	827	620	1,429	465	1,312		1,312	72		37,700		156		464	620	37,080
21	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
22	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
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31	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
	.	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
					20,077				206					276			14,203		
																			1,240

Exhibit My.-9.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

MYSORE REPLY TO THE MADRAS REJOINDER PRESENTED ON THE 27TH NOVEMBER 1913 TO THE ARBITRATION COMMITTEE.

Reply to Part V of the Madras Case.

PART I.—THE TRUE INTERPRETATION OF THE AGREEMENT OF 1892.

1. The interpretation of "fair and reasonable" suggested by Mysore holds good as Madras do not seriously challenge it in their rejoinder. No good reasons have been shown to controvert the position taken up by Mysore in this respect.

Madras paragraph 4.

2. As sections 26 and 27 of the Limitation Act or the Indian Statute Law were the only ones in force both in Mysore and Madras at the time of the agreement, the proper presumption is that they alone were present before the minds of the parties thereto. This view is practically conceded by Madras.

Madras paragraph 5.

3. Abandonment of an easement is a question of *fact* to be determined by the Arbitrator in the light of all the *facts* and circumstances before him. Under the agreement of 1892, it is not enough if the right claimed was acquired, but it is also necessary that it should be "actually existing" when the dispute arose.

Madras paragraph 6.

In the concluding portion of paragraph 6 of the rejoinder, the Mysore case has been incorrectly understood and stated. Mysore do not contend that the claim to 7 ft. on the Cauvery dam was abandoned, but only that the right, if any, to the one foot flow over the Upper Anikat must be presumed to have legally ceased after the remodelling. There is no "remarkable inconsistency" in the Mysore case if it is rightly understood. Its essential parts are briefly as follow :—

(i) The user of 7 *ft. of water* at the Cauvery dam for irrigation can, at best, be deemed to have commenced only in 1896. The prescriptive period for 7 ft. is not thus fulfilled, but Mysore admit the prescriptive use of 6 ft. of water at this place for irrigation.

(ii) The plea of abandonment is not urged with reference to the Cauvery dam, but it applies only to the 1 ft. flow over the Upper Anikat.

(iii) At the Cauvery dam 7 ft. flow did often exist even before 1896; but it was for purposes other than *prescriptive use of water for irrigation*. Hence under the terms of the agreement no right to 7 ft. of water at the Cauvery dam, for irrigation can be founded upon such circumstance alone.

4. It is gratifying to note that Madras do not repeat the claim to all the water flowing towards the sea. "Particular acreage" is still contended by Mysore to be relevent in determining the *extent* of the prescriptive right of Madras as judged by the sole recognized legal test of *user*. The authorities quoted by Madras were not referred to in detail in the Mysore reply as they are obviously irrelevent under the terms of the agreement which prescribe the law of prescription as applicable to all disputes arising thereunder. Whatever force such authorities coming under the law of riparian rights and the international law would have had before 1892, they are now precluded from considaration by reason of the agreement. Hence, the Mysore reply observed the passages concerned to be of "little importance" or "merely of academic value." (*Vide* paragraph 4 of the Madras Rejoinder also). The American and Indian authorities referred to in the rejoinder also stand on the same footing.

Madras paragraph 7.

5. The admission of Madras that their complaint is not of the inevitable disturbance of the existing conditions of the *river flow*, is noted. But the cases cited in paragraph 22 of the Mysore reply appertain to disturbances of an *immaterial* character of *all easements* in general.

Madras paragraph 8.

6. The legal contention of Mysore that the alleged right to the one foot above the 6 ft. of flow has not matured into a prescriptive right is based on the fact that its enjoyment by Madras is not 20 years old as required under the agreement and the law applicable thereto. The Arbitrator has to determine the question of fact.

Madras paragraph 9.

7. Mysore accept the view of Madras that the private law of easements cannot ordinarily apply to Administrations such as Madras and Mysore. But it is open to them to agree as between themselves that the principles of the private law of prescription should, as far as possible, govern the disputes concerning their interests. This is precisely what has been provided for by the agreement of 1892. Yet, it does not follow that all the principles of such law *en bloc* should apply to the case. The reasonable deduction to be made is that only such principles as can be directly or analogically applied with appropriateness to the present dispute should be taken into account. If this essential distinction is borne in mind, it will be seen that the observations of Madras in paragraphs 10 and 12 are devoid of force.

Madras paragraph 10.

8. As already observed in paragraph 4 above, the extent of land irrigated is an important criterion in determining the extent of user or in other words the extent of the prescriptive right. So far at least, the contention of Mysore should hold good. The delta tract as a whole including the Coleroon irrigation cannot be taken into account *irrespective of the usur*; and no user for irrigation can be proved in regard to the 1 ft. flow over the Upper Anikat. Small variations in locality or extent may be permissible, but there can be no substantial addition to the quantity of water required beyond what has been used in accordance with prescriptive rights. It is not disputed that the user of water which has passed our boundaries does not affect us in any way; but we cannot be required to refrain from diminishing the flow to any extent not covered by the prescriptive right "already acquired and actually existing."

Madras paragraph 11.

9. The argument of Mysore based on the analogy of an easement of necessity does not apply to the 7 ft. user, if any, on the Cauvery dam as the opening sentence of paragraph 12 of the Madras Rejoinder incorrectly assumes. That argument, it is clear from a perusal of the Mysore reply, was employed only with reference to the 1 ft. claimed over the Upper Anikat.

Madras paragraph 12.

The right in question is, it is true, not such as to come under the terms of section 41 of the Easements Act; nor is it strictly speaking such an easement of necessity as is ordinarily understood in the law of easements appertaining to private parties. Admittedly, the latter law is applicable to the parties here not in its entirety but only by analogy. The nearest approach in the private law of easements to the claim for 1 ft. over the Upper Anikat is an easement of necessity and Mysore still contend that the general principles of the same should be borne in mind in deciding the claim.

Of course it could not be said that there was any severence of tenement in this case; and the arguments about extinction were and could only be meant to be applied analogically.

10. The correct view of the Mysore case regarding the Upper Anikat and the Cauvery dam is as follows :—The Upper Anikat existed and still exists for the purpose of securing the irrigation supply required for delta; but this supply is measured off at the Cauvery dam. In other words, the Upper Anikat is but a regulator and is not an indivisible legal unit as now represented by Madras, but it consists of two distinct parts from the standpoint taken by Mysore. The Upper Anikat has no direct connection with the extent of the prescriptive right which has to be determined only by the conditions that have prevailed at the Cauvery dam. In order to secure 7 ft. flow at the latter place, it used to be necessary before the remodelling but not afterwards, to waste 1 ft. of water over the Upper Anikat. According to the contention of Mysore, this 1 ft. of water was not prescriptively used for irrigation in the delta; and it is on this question of fact, that all the arguments of Mysore regarding the claim to 1 ft. are entirely based. As after the remodelling, 7 ft. at the Cauvery dam could be secured without this waste of 1 ft. at the Upper Anikat, the purpose of the latter ceased assuming that it amounted to an easement. The observations of Madras entirely overlook the cardinal features of the Mysore case with respect to this 1 ft. supply. They are, firstly, that the claim to it does *not* amount to a prescriptive right or easement within the meaning of the agreement of 1892: and secondly, that even assuming for the sake of argument that it did, the right is not "actually existing" for the several reasons urged analogically in the main in paragraph 15 of the Mysore reply.

Madras paragraph 13.

11. As Madras have stated that the legal cases quoted by them have not been noticed individually by Mysore, a brief note commenting on such cases is hereto annexed (Appendix Q.) This note shows that the cases have little or no bearing on the points in dispute as already pointed out by Mysore.

REPLY TO PART VI OF THE MADRAS CASE.

PART II—PRESCRIPTIVE RIGHTS.

12. The expression "extent of prescriptive rights" occurring in the law of prescription and also used in the terms of reference cannot apply to the flow in the river as contended by Madras *irrespective of the needs of the particular area irrigated* for the prescribed period, *viz.*, 20

Madras paragraph 1.

years, necessary to acquire prescriptive rights. That this right does not extend to the mere flow is perfectly clear from Rule III of the agreement of 1892 and this has been fully dealt with in paragraphs 12 and 13 of Part I of the Mysore case (My. 5); and the arguments put forward by Madras do not adequately meet the points raised by Mysore in this connection.

13. The important application of the terms of the agreement of 1892 to the Marikanave tank project immediately after the agreement was ratified by both the parties deserve special notice. This clearly shows that the mere flow irrespective of the requirements of prescriptive irrigation cannot be considered in settling the prescriptive rights. Madras have also impliedly admitted this view in their Rejoinder as they have not made any attempt to reply to this point of the Mysore case.

Thus, in the words used by Madras, the second issue "confines the matter to fixing the limit flow at the Upper Anikat" which is actually necessary for the protection of the existing area of irrigation which has been under cultivation for the prescriptive period.

14. If the argument of Madras, *viz.*, the limit flow of water alone, is to be considered independently of any reference to the flow actually required for the "extent" of irrigated area, then there was no necessity for clause 2 (*a*) in the terms of reference framed by the Arbitration and duly accepted by Madras; as clause 2 (*b*) alone would have conveyed the sense now imported into it by Madras. In respect of this very case, in the terms of reference proposed and communicated in a telegram to the Honourable the Resident in Mysore by the Madras Government, the first clause runs as under:—

> "(I) What is the quantity of water to which Madras is entitled for requirements of existing irrigation both above and below Upper Anikat and which should during the different months of the year be passed down by Mysore before impounding at Kannambadi reservoir?"

From this it is apparent that Madras themselves intended "the quantity of water" or flow is not to be independent of the requirements of irrigation. Such requirements should be fixed with reference to the existing area or extent of irrigation. Thus, it is clear that the word "extent" used in the terms of reference can only refer to the area of irrigation which can claim water as a prescriptive right. In this sense, the arguments put forward in the Mysore case (My. 7) in paragraphs 24, 26 and 27 are perfectly relevant.

Area of Madras Irrigation.

15. Mysore do not deny that Madras are entitled to the benefits of the remodelling works so far as they do not imply abandonment of the rights already acquired and so far as they are co-extensive with the prescriptive rights actually existing. At the same time, Mysore are entitled to claim the benefits of *abandonment* which such works may reasonably suggest and this is precisely what Mysore have urged. But, if the principle sought to be applied by Madras is to be accepted, then going backward to the time when no improvements of any sort had been made, the whole flow of the Cauvery would be considered as necessary for the irrigation of the cultivated area. But the very fact that Madras themselves have abandoned such a claim and confined their rights to a little over the quantity represented by the 7 feet flow at the Cauvery dam is a clear admission that the argument of prescriptive right to mere flow cannot be sustained. This makes it necessary that Madras should prove that the whole of the flow now claimed is really required and actually utilized for the irrigation of the area for which Madras have acquired a prescriptive right.

Madras paragraph 2.

On the other hand, positive proofs are adduced by Mysore from the very records put forward by Madras that less than the quantity now claimed was authoritatively considered as "full and ample" for their irrigation requirements. So, the claim now put forward by Madras will have to be considered exorbitant and therefore untenable.

16. There is no need to consider the converse of the Mysore argument and contend that, if Madras allowed their works to fall into disrepair, they could claim a larger quantity of water. No responsible Government would allow such a thing to happen as it would mean direct or indirect loss both to the Government and to the people.

17. It has been admitted in paragraph 10 that "176,334 acres were cultivated by Madras above the Upper Anikat prior to 1890 is no doubt true." It is therefore difficult to understand why the inference drawn by Mysore from this clear circumstance is contested. The natural inference is that unless it is shown by proper records that a larger area was cultivated in previous years, the area that can have water as a prescriptive right must be confined to 176,334 acres and the additional area, viz., 32,294 acres, cannot claim water as a prescriptive right.

Madras Paragraphs 3 to 10.

18. The total area under the Lower Anikat may be accepted as 112,000 acres. But it is important to limit the area under the Veeranam tank to 45,000 acres, as distinctly mentioned in the Madras Government Order No. 400–1, dated 24th September 1909, as this area is closely connected with the claim for 644 m. c. ft., over the Upper Anikat put forward by Madras.

19. It is requested that, before settling the extent of Madras prescriptive rights, the area of irrigation above the Upper Anikat prior to 1890, say, in the years 1880 and 1885, may be definitely ascertained. Madras have stated that they have already asked for information about the exact area under the Veeranam tank from the Revenue Department; similar information may be called for in the case of the area above the Upper Anikat also, as now indicated.

Quantity of water required.

20. The quantity of water necessary to protect the prescriptive right of Madras has to be measured by certain limits of flow. These limits will have to be considered under two heads, separately, *viz.*, on the Cauvery dam and on the Upper Anicut. In actual practice all these years, only the former has been used for the delta irrigation and the latter can be considered only in connection with the Lower Anikat irrigation. These quantities being separate and flowing in two distinct channels and also being separately measured, they cannot now be added together or redistributed in any different manner as now proposed by Madras. For, the prescriptive right has to be considered, as already stated, with reference to the flow required for meeting the actual irrigational requirements of particular areas and not merely to the flow in general.

Madras paragraphs 11 and 12.

Although a flow of 7 feet on the Cauvery dam might have meant also a flow of 644 m.c.ft. over the Upper Anikat under old conditions, this latter flow could not have been used for the delta irrigation. It is therefore not permissible to divert it for use now for the delta irrigation either partly or wholly, as such a diversion would make the burden on Mysore more onerous and would further be opposed to the law of prescription.

21. The matter has now therefore to be considered under two distinct heads, *viz.*

(*a*) the limit flow on the Cauvery dam for delta irrigation, and

(*b*) the flow of 644 m. c. ft., over the Upper Anikat as having reference to the requirements, if any, of the Lower Anikat irrigation.

The question has therefore been dealt with in the Mysore case under these two obviously distinct heads. Any intentional or unintentional supply of water of over 7 feet on the Cauvery dam in past years will have to be dealt with on its own merits under the requirements of the delta irrigation. The flow of 644 m. c. ft., over the Upper Anikat which could not have been formerly used for the delta irrigation should not be mixed up with the quantities required for the latter.

Requirements of the Cauvery Delta.

22. The limit flow required for the delta irrigation is mentioned here and also in paragraph 9 of Part III (Ma. 9). But the quantity that might have been used for scouring, through the under sluices of the Upper Anikat has been mixed up with that actually required over the Cauvery dam for the supply of the delta irrigation. It cannot be denied that the two items are quite distinct from each other and served two distinct purposes. With such a clear distinction, the present claim of Madras is tantamount to a limit flow of 6½ feet on the Cauvery dam connoting a discharge of 1,950 m.c.ft. in 24 hours, to meet the demands of the delta irrigation.

Madras paragraph 13.

But Madras have unjustifiably added the requirements for scouring through the under sluices as well as the previous unavoidable flow over the Upper Anikat to the requirements of the delta irrigation, although the original conditions do not now exist. Such an addition to the flow actually required for the delta irrigation would not represent the real prescriptive right but something more This latter claim cannot be admitted by Mysore.

23. It must be stated at the outset that the provisional acceptance of the 7 feet limit by Mysore was not based on any examination of the prescriptive rights of Madras.

Madras paragraph 14.

It is noted that Madras admit that their "prescriptive rights are the same under all sizes of work proposed by Mysore." This is an admission that the magnitude of the Mysore proposals could not be of much consequence to Madras as long as their prescriptive rights now to be determined are duly respected by Mysore.

24. Madras have now made a reference to a casual conversation with the late Chief Engineer who has made no note of the point. It would have obviated this reference, had a copy of the communication to Sir John Benton been furnished to the Mysore Government.

Madras paragraph 15.

25. The reference to the Bhavani project was made by Mysore to secure one more item of evidence in corroboration of other direct evidence available from the Madras records in respect of the delta requirements. The statement of Mr. Larminie, made in connection with the Bhavani project which is so analogous to the Mysore project, fixes definately the exact limit flow necessary for the delta irrigation. This could not be considered as his individual opinion, for he merely pointed out "that the recognised full supply for the delta in the south-west monsoon is 6 feet on the guage at Cauvery dam and that the Tanjore cultivators had a right to expect it whenever it comes

Madras paragraph 17.

naturally." The expression "recognised full supply" clearly indicates that it could not be his individual opinion. The expression "whenever it comes naturally" distinctly shows that this limit could not have been considered as indicating a constant or continuous flow. Even if this statement be construed as representing his opinion, it cannot be set aside as it comes from such an experienced officer and as it was advanced in the best interests of the delta cultivators *when opposing the Bhavani project.*

26. There is no force in the contention that, at the time (1900) the statement was made by Mr. Larminie, the rules of 1896 then in force prescribed 7 feet. Mr. Larminie was an old officer and, from his long experience, he must have referred when he used the words "recognised full supply" to the requirements as they had been recognised for very many years prior to 1896 and not to the limit that had been introduced into the rules of only four years' duration, as this short period could not have by any means secured such a recognition. The rules of 1882 for regulation at the Upper Anikat and those of 1888 for regulation at Cauvery-Vennar regulators, must have been in his mind when he spoke of the recognised full supply.

Madras paragraph 18.

27. Mysore stated that, on account of raising the top level of the gates, facilities for forcing 2 feet extra supply had been afforded, showing that the previous supply was 6 feet, as it is admitted that 8 feet could be forced by the new arrangement. There is nothing in the explanation now given which necessitates a modification of the Mysore statement.

Madras paragraph 19.

28. When the rules of 1882 were framed, the Cauvery and the Vennar regulators were not in existence and the floods passed through the open heads of these rivers "without restriction." Under such conditions no useful or definite information can be had about the quantity of water actually required for the crops by merely looking to the gauge readings. Such information can only be had from the rules which distinctly specify the limits indicating a "full and ample" supply.

Madras paragraph 21.

29. The fact that on 67 occasions the floods rose to 7 feet or over at the Upper Anikat, on 40 occasions to 8 feet and over, and on 89 occasions to 6½ feet and over, during the years 1882 to 1895, clearly indicate :—

(*a*) that, before the construction of the regulators, a very large quantity over and above the "full and ample supply," must have unavoidably passed into the open heads of the Cauvery and Vennar rivers, and

(*b*) that after the regulators were constructed, extra quantities had to be let in more for the safety of the regulators than for actual requirements of irrigation.

Thus the right to a larger quanity of water than 6 feet for delta irrigation cannot be established by the mere fact that the gauge records showed higher depths of flow.

30. It is stated that, in a rising river, the opening of the sluices at a level of 6½ feet above Cauvery dam which would generally tend to lower the level by about 6 inches would not have reduced the supply below this limit. But the river cannot be rising always. The fact remains that the reason for fixing a limit of not less than 6½ feet for opening the under-sluices is that such opening would tend to reduce the water level by 6 inches; without water standing at least at 6½ feet on the Cauvery dam, the 6 feet limit could not be ensured consistently with the opening of the under-sluices.

Madras paragraph 22.

31. No definite conclusion in regard to the interpretation of the old rules can be arrived at from the fact that 7 feet was fixed as the full supply level after the remodelling, for the conditions of the Upper Anikat must have become very unsatisfactory before the remodelling was started. In fact, in paragraph 33 of Part II of their case (Ma. 8), Madras state that the accumulations of sand gave much trouble prior to remodelling and, naturally, it must have been in consideration of such accumulation, that 7 feet was fixed in the later rules.

Madras paragraph 24.

32. Madras have attempted to refute the interpretation of Mysore that the 7 feet mentioned in the 1882 rules as well as in the rules of 1896 was due to the accumulation of sand and the consequent reduction in the water way.

Madras paragraphs 26 to 28.

In doing this, Madras base their arguments on the theory of the critical velocities deduced by Mr. Kennedy and published in 1895. A reference to page 38 of Bellasis' Hydraulics will show that this theory was quite unknown befere Mr. Kennedy discovered it and the argument that the framers of the rules of 1882 had this theory in view cannot carry much weight.

Thus, notwithstanding the explanation of Madras, the fact remains that about 6 inches of higher flow was generally allowed for scouring and another 6 inches to make up for the anticipated accumulation of sand and the consequent reduced waterway. Hence, the full supply limit cannot be taken as anything higher than 6 feet.

33. The quantities shown here for different gauge readings on the Cauvery dam, include the flow over the Upper Anicut as well as that passing through the under-sluices. But it has been shown that the quantity over the Upper Anikat or through the under-sluices could not have helped the irrigation of the delta proper and the quantities actually passing over the Cauvery dam only have to be considered. It may be noted that the Madras Government have shown a flow of 669 m.c.ft., through the under-sluices for the 6 feet gauge on the Cauvery dam. It is difficult to understand how this flow could be included according to the rules of 1882 which clearly enjoin that the scouring sluices are not to be opened until the water rose to 6·5 feet. Thus the quantity due to Madras with the 6 feet gauge in accordance with the rules of regulation is only 1,625 m.c.ft.

Madras paragraph 29.

34. Here there is an implied admission by Madras that the interpretation put upon the rules of 1882 by Mysore, *viz.*, that 6 feet represents the limit flow for the delta irrigation, cannot be lightly set aside.

Madras paragraph 30.

The rules of 1896 and of later dates, not being of 20 years' standing, have no prescriptive value.

35. Whatever might have been the requirements for scouring before the remodelling, no such special quantity of water is now required for the purpose. The water used for scouring might have been enjoyed as an easement of necessity prior to remodelling but that has now ceased. This quantity is now sought to be used for irrigation. Such a change of user is inadmissible even from a legal point of view, as shown in paragraph 15 of the Mysore case.

Madras paragraphs 31 and 32.

36. Between 1882 and 1895 there were 89 occasions when the Cauvery dam gauge read between 6½ and 7 feet and out of these only on 26 occasions were the scouring sluices opened. This indicates that the regulation could not have been strictly according to the rules. This is what was meant by Mysore by "non-operation of the rules."

Madras paragraph 33.

37. The description of the Calingula now given confirms the Mysore view that this was intended to help in surplusing excessive and unnecessary supplies flowing over the 5½ feet limit on the Cauvery dam. Major Oakes in the passage now quoted states that this depth is about 6 feet 3 inches. Surely, one of these figures is wrong. Evidently, the sill level of the Cauvery dam and the crest level of the Calingula have not been altered since they were constructed. It is therefore likely that Major Oakes must have made a mistake in taking 6¼ feet instead of 5½ feet. Such a mistake is all the more probable, because the discharge of 32,130 cusecs mentioned by Major Oakes cannot be relied upon. Thus, there is nothing to disprove the conclusions shown in paragraph 44 of the Mysore case (My. 7) that the Calingula gives one more proof to establish that 6 feet was the real limit of flow required for the delta irrigation.

Madras paragraph 34.

38. The expression "limit of flow" used by Mysore has not been correctly understood. What Mysore meant is quite unmistakably expressed in their paragraphs 45 and 46 (My. 7). This "limit of flow" is the "full and ample" supply of 17,314 cusecs mentioned in clause 1 of rules of 1888 and not any higher figure. The higher discharges referred to in the rules, 2, 3, 4 and 5 up to the point when a difference of 4½ feet between the front and rear gauges is reached, could not possibly be construed as necessary for irrigation. This has been made quite clear in paragraphs 47 to 49 of the Mysore case (My. 7).

Madras paragraphs 35 and 36.

39. From this point of view, the arguments here adduced by Madras need only a passing notice, as they cannot be taken to modify the interpretation of rules as shown in paragraphs 45 to 51 of the Mysore case (My. 7). The rules as such refer only to the regulation of floods. A reference to a certain passage in Vol. III of the Metur Project is made here. The same passage was referred to in paragraph 45, Part II (Ma 7). The explanation therein given has been clearly rebutted by Mysore in paragraph 49 of their case (My. 7).

Madras paragraphs 36 to 39.

40. In paragraph 39, Madras admit that in distributing the flow between the Cauvery and the Vennar "the proportion is abandoned" beyond 23,140 cusecs. With this admission of abandonment, it is difficult to realise on what grounds Madras try to make out that all flow up to the point giving a difference of 4½ feet between the front and rear gauges, was necessary for actual irrigation. Such abandonment must necessarily mean that these canals had to be and are even now being treated in the flood season as rivers to dispose of the excess waters as much as possible when it could be done without danger of submersion of the surrounding country. Such extra flow cannot have any reference to the full supply requirements of the delta irrigation. The limit flow prescribed in rule 2, *viz.*, 15,000 cusecs in the Cauvery and the 8,140 cusecs in the Vennar, should also be taken in this light as representing the flow which may not cause any injury to, and not as the flow necessary for, the crops beyond the "full and ample supply" limits mentioned in rule 1.

41. No doubt the full supply for the Cauvery is mentioned as 4½ feet on the rear gauge and as 8 feet for the Vennar under clause 2 of the 1902 rules relating to the regulation in non-flood season. A glance at clause 1 under the same head will make it quite clear that these higher limits were specified only for alternate distribution of supplies between the Cauvery and the Vennar on certain days. This means that one or the other of the two canals had practically very little supply during such periods; to make up for the deficiency, larger limits had to be allowed into each of the canals in turns. Thus these higher limits taken simultaneously as now attempted to be done, cannot represent the actual requirements of the crops.

42. That a flow of 6 feet on the Cauvery dam really represented the actual requirements of the delta area is further confirmed by the figures given in this paragraph. They specify the limits of flow to be maintained by the subordinate staff at the Cauvery and the Vennar according to the recent rules of 1905 and 1909. Here the flow considered necessary and up to which if possible the subordinate staff are enjoined to maintain is distinctly mentioned as 20,850 cusecs, connoting a gauge of only about 6 2 feet at the Cauvery dam. Considering that special facilities have been created by the remodelling of 1902 for admitting a larger quantity of water than before, it is quite clear that the comparatively small excess of 20,850 over 17,344, *viz.*, 3,506 cusecs, is only due to such improvements. This goes fully to further confirm the view that the limit flow of 6 feet really represented the full irrigation requirements before the remodelling of 1902.

Madras paragraph 41.

43. In fact, by comparing the rules of 1888 with the rules of 1905, it will be readily observed that the first clause of each of the two sets of rules is quite identical in their import. The injunction that the anicut superintendent shall maintain whenever possible the rear gauges of the Cauvery and the Vennar so as to secure a total discharge of 20,850 cusecs, clearly fixes the limit of useful supply beyond which the flood conditions would commence, in the same way as when "the full and ample" supply of 17,344 cusecs in clause 1 of the rules of 1888 is exceeded.

It is noteworthy that, even in the most recent rules of 1909, the injunction to the anikat superintendent fixing the limit supply at 20,850 cusecs, remains unchanged.

It should be remembered that such injunctions to the subordinate staff are generally given so as to err on the safe side regarding the sufficiency of supplies and, in this light, the limit defining correct requirements may be taken as somewhat less.

44. Thus, all discharges indicated by higher rear gauge readings must be, more or less, due to the convenience of flood regulation rather than to actual requirements of the delta irrigation. Any inferences drawn from the mere gauge readings of the Cauvery and the Vennar regarding the quantities necessary for the delta irrigation, cannot be conclusive. Accordingly, the distinction between *deliberate and obligatory* supplies brought in as an argument in paragraph 42, cannot stand in the face of the specific supplies mentioned in clause 1 of both the sets of rules.

Madras paragraphs 41 to 44.

45. With the object of claiming larger limits, Madras have gone to the extent of allowing their rules "to go by the board", although, in paragraph 42 of Part III (Ma. 9), they distinctly state that "the Madras prescriptive rights are established by the rules of regulation actually in force from time to time", with the water registers being taken as corroborative evidence. And now that it has been shown by Mysore that the rules do not support the excessive claims of Madras, they have gone to the other extreme of throwing the rules overboard.

46. It is not quite clear whether Madras want to make out that the flow of 17,600 cusecs, here mentioned, was passing down the Cauvery alone without taking into account the corresponding flow in the Vennar. This latter would be about 9,500 cusecs at the stage of the above flow in the Cauvery, giving a total of 17,600 + 9,500 = 27,100 cusecs. It is difficult to believe that Major Oakes should have computed such a large flow as due to a 6 feet gauge on the Cauvery dam. The quantity, 17,600 cusecs, obviously represented the flow in the river Cauvery above the heads of the two main branches, the Cauvery and the Vennar. With due allowance for transmission losses and discharge over the 150 yards Calingula, this tallies with the discharge due to 6 feet gauge as recently computed by Madras.

Madras paragraph 45.

With this explanation, paragraph 55 of the Mysore case (My. 7) does not require any alteration.

47. Thus, all the objections brought forward by Madras in their rejoinder against the 6 feet limit established by Mysore as necessary for delta irrigation have been duly answered and any claim of Madras for a higher limit of flow thus becomes untenable.

Madras paragraph 47.

48. It has been repeatedly stated that 25 to 30 per cent. extra allowance has been made over the Metur project supplies to make up for fluctuations in river flow from day to day. By the word "supplies" used in this connection, Mysore only meant daily supply limits and not the yearly total supplies realised with these constant limits. The argument of Madras in this

Madras paragraph 48.

paragraph does not therefore need any further explanation and the point noted in paragraph 56 of the Mysore case (My. 7) remains unaltered, particularly as Madras say that the Metur project is a record of "unbiassed and independent expert evidence" throwing valuable light on the matter at issue.

49. Notwithstanding all the arguments in these two paragraphs, the fact remains that the table (Appendix D, My. 7) shows distinct wastage of water at the Lower Anikat both in the first and second fortnights of June. It should be remembered that this wastage has occurred after the dry canals have all been duly wetted and after the interstices in the river bed have been duly filled in. In consideration of these large wastages and of the fact that there is practically no irrigation in June, the limits of flow for this month to be fixed as a prescriptive right should be considerably less than those necessary for July and August.

Madras paragraphs 50 and 51.

In order to establish their contention, Madras rely on no stronger evidence than the alleged inaccuracy of their own discharges. Notwithstanding any possible errors, it is needless to add that the general conclusions drawn from the table (Appendix D, My. 7) cannot by any means be overlooked.

50. Even according to the Madras computations for absorption in the river bed in early June, the quantity required for this purpose would be considerably small. There is always some flow in the river, particularly now after the installation of the Power Works at Sivasamudram. So the quantity required for absorption per mile may be taken as two-thirds of what is shown by Madras. *i.e.* ($3\frac{1}{2} \times \frac{2}{3}$) or $2\frac{1}{3}$ m.c.ft. In the whole length of the river course between Kannambadi and Cauvery dam, a distance of 250 miles, this quantity would amount to $250 \times 2\frac{1}{3} = 583$ m.c. ft. This is equivalent to a single day's flow of 6,705 cusecs. Such a small quantity can very well be met out of the limit allowances made in the Mysore rules even after meeting all other demands.

51. Also, much cannot be made of the 50 per cent. extra allowance said to have been made in the Metur project for absorption in the canal beds. A reference to page 29, paragraph 39, of Vol. III of Metur project, shows that such allowance is only made for absorption between the reservoir and the canal head (Grand Anikat) with no addition for absorption in the canal beds as alleged in paragraph 50, Part VI (Ma. 12) and paragraph 17, page 12 of Part III (Ma. 9). This shows that the limits of fortnightly supplies have been fixed in the Metur project so as to cover the latter item also.

52. The point raised here about the inadequacy of 25 to 30 per cent. over Metur project limits has been fully answered in the Mysore case; *vide* paragraph 8, My. 4, page 78 of the printed proceedings. It has already been shown that all the water passed through the canals cannot be considered to have been necessary for irrigation requirements and so any argument based upon a comparison of such total quantities with those resulting from the application of the Mysore limits cannot be accepted as conclusive.

Madras paragraph 52.

53. At the end of paragraph 54, Madras state that their "rights extend to the quantity and mode of user and are not restricted to the least quantity on which a cropped area might escape from loss or failure of crop." In making this assertion, Madras are taking up a position directly opposed to what law and equity permit in respect of the exercise of their prescriptive rights. First, there can be no prescriptive right to the mere customary flow of water irrespective of its use for irrigation as already shown, and secondly, the Law of Easements only allows the dominant owner to exercise his rights in a way that is least onerous to the servient owner. Any violation of this principle will be directly contrary to the express provision made in the agreement of 1892 that the settlement of the prescriptive rights should be based on "fair and reasonable" considerations.

Madras paragraphs 53 and 54.

54. If this important principle is kept in view, the point raised regarding the possible loss that might have been caused even in the years when no remissions have been granted, becomes untenable. The only year in which it has come to notice that any considerable amount has been allowed as remission is 1899–1900. A reference to paragraph 9, page 44 of the Madras Triennial Administration Report for 1901–02, shows that these remissions were mostly due to "damage done to crops over large tracts near the coast owing to excessive rainfall during the "north-east monsoon," rather than to deficiency of supplies, in the south-west monsoon, notwithstanding that this was the worst year on record so far on the south-west monsoon floods are concerned. The tables (Appendix G) show that, with the limits proposed by Mysore, the quantity available for Mrdras irrigation in 1899–00 will be as much as 132,000 m.c.ft. against 129,415 m.c.ft. actually thrown on the fields in accordance with the limits of flow prescribed in the rules of regulation of 1888.

55. It has been repeatedly stated that the Cauvery and the Vennar are really old rivers taking floods as they come and no idea can be had of the real requirements of irrigation by the mere quantity of flow through these rivers. Such a correct idea can only be gathered from the rules of regulation and, as long as Mysore rules allow quantities in conformity with such specified limits, there should be no reason to complain. Sir John Benton appears to have

Madras paragraph 55.

drawn his conclusions by the mere quantities of flow at the Cauvery dam without reference to the prescribed rules for regulation. So the apparent difference in the conclusions pointed out is not really of much consequence. In fact, the high peaks of flow are far beyond irrigation requirements involving much waste of water into the sea. The extraction of some of this water during the peak periods for storage in Mysore is not therefore likely to cause any material disturbance in the supplies needed for Madras irrigation.

56. A reference to the working tables (Apdendix P, My. 8) will show that the impounding in the Mysore reservoir is mostly confined to the months of July and August. As the flow in the river in these months is really very abundant, the extraction of a fraction of the flow will still leave more than sufficient water for all Madras requirements even in the worst years.

Madras paragraphs 56 to 58.

57. It must be remembered that the area of irrigation in Madras depends on the available flow during July and August and the good condition of the crops, on the rainfall in October and November. Both these conditions will be unaffected by the Mysore reservoir; the former, on account of the comparatively small storage in Mysore during the months when floods are abundant; and the latter, on account of the more or less sure and certain rainfall in the north-east monsoon in the delta area. This is one more reason why Mysore urge that the construction of their reservoir will not materially interfere with the irrigation requirements of Madras.

58. In Appendix G of the Mysore case (My. 7) it has been shown that the quantities that would be available for Madras irrigation even after the impounding is done, with the limits of flow as shown in the Mysore rules, are in most of the instances prior to remodelling greater than the quantities utilised as computed by Sir John Benton. It is found on examination that Sir John Benton has, in every case, taken the figures for discharge, as computed and given by Madras in their annual and triennial reports, as the basis of his computations and multiplied those figures by the number of days in the respective crop periods also given in the same reports.

59. So far the method of computation adopted by Sir John Benton is perfectly right. Errors, if any, can only arise in the discharge figures given in the Madras printed reports. They show that these discharges represent the total flow at the head of the Cauvery and the Vennar. But the column "supply utilised" in the duty table of these reports is left blank. This omission introduced an element of uncertainty as to the quantity of water actually utilised. But there is an explanation in regard to this in paragraph 8, page 8 of the Triennial Irrigation Report for 1901-02, which is quoted here for ready reference. "The latter information (*i.e.*, the total quantity of water supplied per acre of crop during the whole period the canals are open) has been given in the table above, but it must be noted that the quantity of water passed off through drainages has not in any case been measured, and this omission must give a wholly false idea of the quantity of water used."

60. This shows clearly the precise extent up to which the figures given in the printed reports may be considered as unreliable. As Sir John Benton's computations are only based on these discharges, the natural inference is that the totals arrived at by that officer give too high results as the quantity passed off through drainages has not been deducted.

As Mysore have shown that the total supplies according to their rules are greater than the already excessive figures given by Sir John Benton, the limits in their rules must be considered quite sufficient.

61. A different set of tables has also been prepared showing the quantities actually utilised on the fields according to the rules of 1888 within the limits considered "full and ample", viz., 11,240 cusecs on the Cauvery and 6,104 cusecs on the Vennar. The totals thus computed for the years 1890 to 1910 are given in Appendix G1, fortnight by fortnight, as compared with the totals accruing from the limits proposed by Mysore. Here too, the latter set of figures are in many cases greater than, and in others nearly equal to, the quantities actually used for irrigation in accordance with the rules and there can thus be no fear whatever that the limits proposed will interfere with the legitimate supply actually required for the delta irrigation.

62. The sufficiency of supplies allowed by the limits of the Mysore rules may be looked at in yet another way. The average annual rainfall may be taken as 40 inches as a mean over the whole delta area. Of this, about not less than 30 inches may be taken as useful fall in the irrigation season. It is well known that the maximum requirement of the rice crop is represented by a total depth of 72 inches of water above the fields, of which about one-fourth would be generally available as tail water. Thus the quantity of canal water required to supplement the useful rainfall of 30 inches noted above, would be represented by a depth of (72—30 =) 42 inches, on the field; here, no account is taken of the tail water referred to above which may be conveniently used on lower fields.

63. The total area of delta irrigation 890,000 acres. The quantity of water required for this on the above basis of a depth of 42 inches, or $3\frac{1}{2}$ feet, on the fields is $3\frac{1}{2}$ (feet) × 890,000 (acres) × 43,560 (square feet) = 135,689 m.c.ft. This quantity affords a proper measure of the annual requirements of the delta irrigation.

64. From Appendix G, it will be seen that the figures computed by Sir John Benton on the basis of discharges given in the Madras Reports, is, in almost all cases, greater than the above quantity of 135,689 m.c.ft. This confirms the view expressed in paragraph 60 that the Madras Reports give too high discharges.

Again considering the quantities resulting from the limits of Mysore rules, it will be found that, except in the year 1899-1900, in all other years, the resulting quantities are much greater than the above-noted measure of proper supply. This also shows that the limits proposed would amply provide for all requirements of the delta irrigation.

65. Mysore do not suggest that a standard of a bad year should be applied alike to all years. They only urge that, in judging the effects of impounding in a bad year, the conditions actually realised in the delta also in such bad years, should be taken into consideration. A re-perusal of the Mysore paragraph 63 (My. 7) will make this clear.

Madras paragraph 59.

66. While admitting the right of Madras to 6 feet in the height of the south-west monsoon season, when also the irrigation demand is greatest, Mysore have all along been urging that the same limits should not be enforced throughout the irrigation season for reasons repeatedly given on various occasions. So a mere computation of figures shown in Appendix G (My. 7), (*a*) for a uniform limit of 6 feet, and (*b*) for varying limits of the Mysore rules, cannot be taken to indicate any admission on the part of Mysore that they accept the former limit.

Madras paragraph 60.

67. It may be remarked that, for the period of the greatest demand, viz, July, August and first half of September, there is no difference between the two sets of figures. There is some difference observable in June. As there is very little demand for irrigation in this month, Madras interests are not really affected. There is also some difference in the months of October to January. But, in these months, there is abundant rainfall in the delta area and this would more than make up for the slightly smaller figures.

All this shows clearly that the limits proposed by Mysore would not really affect Madras interests.

68. Mysore fail to see the distinction made between the two clauses referred to in the latter portion of this paragraph, viz.—

Madras paragraph 70.

(1) *what supply will adequately safeguard Madras interests, and*
(2) *what limits of flow measured at the Upper Anikat are necessary to conserve the prescriptive rights of Madras unimpaired.*

If it is meant that the latter gives any title to Madras to the mere flow at the Cauvery dam as such irrespective of the actual requirements of irrigation, Mysore emphatically deny such a claim.

69. It is admitted by Madras that "reductions of supply passed to irrigation are not infrequently made after heavy falls of rain in the months of October and November," that the rainfall is much the heaviest along the coast where most of the irrigated area in the delta is situated and that it would be possible "as an act of grace" to allow Mysore to impound quantities in addition to what is allowed by the rules on account of continuous and well distributed rainfall.

Madras paragraph 71.

Mysore note these admissions and only urge that the rules put forward in this connection (App. H., My. 7) may be tried and modified or improved as may be necessary, so that a fair and proper allowance may be made in reducing the limits of flow on account of the rainfall in the delta.

Requirements of the Coleroon system.

70. It has been often shown that the claim of 644 m.c.ft. cannot have any bearing on the requirements of the delta irrigation. Madras have themselves admitted in paragraph 14 of Part III of their case (Ma. 9) that this flow is mainly required for the Coleroon irrigation, though mention has been made therein of some occasional extra demands for the delta said to be based on existing practice. Also, to show that 644 m.c.ft. were mainly required for the Coleroon irrigation, Madras have worked out detailed tables in paragraph 41 of Part II of their case (Ma. 8). In the first table under this paragraph, they show that a free flow of 6,430 cusecs is necessary above the Lower Anikat to secure a discharge of 1,100 cusecs in the Vadavar and that 15,519 cusecs are required to secure 1,260 cusecs with a view to secure an extra 190 cusecs alleged to be required for replenishing the Veeranam tank.

Madras paragraphs 72-75.

71. From all this it is clear that Madras attemtted to prove that the quantity of 644 m.c.ft. was required for supplying the Veeranam tank. This has been shown, in paragraphs 66 to 77 of the Mysore case (My. 7), as quite unnecessary either for the Veeranam tank or for the direct area under the Lower Anikat, as the leakage water from the delta irrigation has been found to meet all such requirements. Madras have now changed their position in a marked manner and want to treat the requirements of the Coleroon irrigation as a secondary matter by stating that

"the limit of their prescriptive rights at the Upper Anikat with reference to the irrigation of Cauvery delta includes a flow of 644 m.c.ft. per day when available over and above the discharge due to 7 feet on Cauvery dam."

72. The claim for 644 m.c.ft. is now altered on the plea that this water is necessary to meet such occasional demand. It should be remembered that the practice referred to is not specifically recognised in the rules of regulation at the Grand Anikat prior to remodelling. Only in the rules of 1905 and 1909, the Anikat Superintendent is enjoined to alter the gauge-readings in the Cauvery and the Vennar to suit the requisitions of the Canal Engineers. It will be found that such alteration more often refers to the securing of a reduction of the flow rather than an increase. Even if the latter holds good on some occasions, the practice can only be said to have come into existence after 1905, and therefore cannot have any value as a part of the prescriptive right of Madras. Thus, the demand for 644 m.c.ft. cannot be connected with this existing practice.

73. Such a change of position cannot help Madras in securing a large prescriptive right. If 644 m.c.ft. flowing over the Upper Anikat into the Coleroon is not required for the Coleroon irrigation, it cannot certainly be claimed for the delta irrigation. The whole question about the inadmissibility of 644 m.c.ft. on either of these considerations has been dealt with in paragraphs 15 and 16 of the Mysore case (My. 6) to which a reference is requested.

74. It is admitted by Madras that, when there is an adequate supply for the delta, no special supply is required for the Coleroon system. But such adequate supply to the delta has now been stated to be not less than a flow of 7 feet per day at the Upper Anikat. If this standard of 7 feet and over is to be seriously considered, there will be very few days even in good years when such a high standard is at all obtained. In the Metur project, the 7 feet standard flow has not been provided even for the month of the highest demand, and at this rate there can be no adequate supply at all to the delta, if the Metur project should come into operation, and consequently none for Coleroon irrigation.

Madras paragraphs 77 and 78.

75. If, on the other hand, it is to be taken that, as explained by Madras, due provision has been made for the Lower Coleroon irrigation in the several fortnightly limits fixed in the Metur project, Mysore have only to state that the project does not distinctly allow any special flow *across the Upper Anikat into the Coleroon* to directly serve the needs of the Coleroon irrigation. This is all that was meant by the statement in paragraph 70 (My. 7) that no special provision has been made for the Coleroon irrigation.

If it is contended that the fortnightly allowances over the Cauvery dam made in the Metur project will produce sufficient leakage into the Coleroon to meet all the requirements of the Lower Anikat system, it can be stated that, with about 30 per cent. extra limits now made by Mysore, such leakage would not be materially diminished. If anything, the conditions that would arise after the Mysore reservoir is built would be much more favourable than what could be obtained with the Metur reservoir for reasons stated in paragraph 70 of the Mysore case (My. 7).

76. Madras, however, now state that Col. Ellis who prepared the Metur project made a mistake in connection with the provision for the Coleroon irrigation. This is in contrast with their statement that the projected Metur reservoir will give sufficient water for the existing irrigated area (*vide* paragraph 2 Part VI).

Madras paragraph 79.

Here "the existing irrigated area" includes the area under the Coleroon. A reference to the clear details in paragraph 4 on page 30, Vol. III of the Metur project, will show that Col. Ellis has not made any mistake, but has made suitable and adequate provision for all the requirements of the lower irrigation on the same liberal scale as for the delta area. Accordingly, the limits of flow in the Mysore rules based on the Metur project limits, would produce sufficient leakage and seepage in the Coleroon without any such specific allowance as the quantity of 644 m.c.ft., now demanded.

77. This is corroborated by the daily discharge tables now attached (Appendix K_1)* from which the fortnightly discharge in Appendix K have been compiled. It will be seen that the flow in the Lower Anikat canals has been maintained from day to day practically throughout the whole period, except rarely in floods, without any specific flow into the Coleroon either at the Upper Anikat, the 150 yards calingula or at the Grand Anikat.

* Not printed.

Madras paragraph 81.

78. Madras now contend that the Lower Anikat discharge figures are unreliable. All that Mysore urge is that although some of the discharges for individual days may be incorrect here and there, the general utility of the figures on the whole, cannot be set aside and the broad inferences drawn therefrom cannot be refuted.

Madras paragraphs 81 and 82.

It will be seen that the total quantities of leakage in the Coleroon were 20,594 m.c.ft., 63,634 m.c.ft., 54,439 m.c.ft., 103,112 m.c.ft., in the years 1899–1900, 1904–05, 1905–06 and 1906–07, respectively. The quantities used for irrigation in the same years were 16,090 m.c.ft.,

20,655 m.c.ft., 25,436 m.c.ft. and 27,454 m.c.ft., respectively. It will also be seen that the quantity used as per column 10 is, in every fortnight with some exceptions, less than the quanitty of leakage as per column 8.

* Not printed.

A glance at Appendix K_1* will also make it clear that in several months of each year, while column 6 shows no discharge, column 7 shows considerable quantities. Also the same Appendix further proves that figures in column 7 in most of the instances are greater than those in column 6, indicating that the extra flow in column 7 could only have been derived through leakage which is admitted by Madras to be "visually" clear to any one who has seen the works.

79. It is a matter for special notice that the total daily discharges in all the channels taking off at the Lower Anikat is less than the seepage quantity as already noted. There is no reason to infer that the same condition will not obtain with the supplies allowed in the Mysore rules even after the Kannambadi reservoir comes into operation.

Madras paragraph 83.

80. It should be stated that the conditions of supply at the Lower Anikat can be studied better by daily discharge tables now appended (Appendix K_1)*than by mere "fully explained" descriptions of the Lower Anikat.

Madras paragraph 84.

* Not printed.

81. A reference is invited to the sub-paragraph under paragraph 38, Part II (Ma. 8), beginning with the words "it will be seen", where it is distinctly stated that "Veeranam tank does not begin to impound" until there is a flow of 25,674 cusecs at the Lower Anikat. The quantity of 644 m.c.ft. claimed would mean only about 7,500 cusecs and such a flow in the Coleroon would not accordingly be useful for the Veeranam tank.

Madras paragraph 86.

82. It is clear that, unless there was great necessity, the Madras Government would not have gone to the expense of remodelling the Upper Anikat. In this connection a reference is requested to sub-paragraph under paragraph 27, page 7, Part II of the Madras case (Ma. 8), beginning with the words "trouble was however experienced from the accumulations of sand" and to sub-paragraph under paragraph 33, page 9, Part II (Ma. 8), extracted below for ready reference. "The lowering of the crest of the Upper Anikat has obviated the necessity for constant attention to the matter of scouring sand, while the system of passing floods at the lower level of the crest has prevented the accumulation which gave so much trouble prior to remodelling."

Madras paragraph 87.

83. A close reading of the second clause of this paragraph will show that Mysore have stated exactly what Madras have admitted regarding the under-estimating of high floods. Whatever may be the object of adopting the lower figures for floods and even allowing for caution on the side of safety referred to by Madras, the fact remains that the results of high flood discharges have been represented at a lower limit than the actual discharges.

Madras paragraph 88.

84. This matter may not be material to Madras, but as the Mysore reservoir depends mostly on the interception of high floods, it is of vital importance to Mysore that these high floods should be correctly measured and estimated. This has also an important bearing on the sufficiency of supplies for the Coleroon irrigation.

Madras paragraph 89.

85. Mysore have only to point out in regard to filling the Veeranam tank that the conditions here advanced by Madras are based on questionable assumptions The best way of judging about the actual conditions is by a study of the available statistics showing the daily discharges in the Vadavar including the replenishment into the Veeranam tank and how such discharges have been obtained. Enough has already been stated to show that all such requirements have been met from the large amount of seepage into the Coleroon.

Madras paragraphs 92 to 96.

86. The description given by Mysore of the effects of remodelling of the Lower Anikat is practically the same as what is here admitted by Madras. The real conditions of replenishment of the Veeranam tank in particular and of the supply of the Lower Anikat in general have been repeatedly explained by Mysore.

Madras paragraph 98.

87. After all, the Mysore reservoir intercepts only a portion of the floods coming from a fraction of the catchment area above the Upper Anikat and a proper consideration of the whole case will show that the interference with the quantity or incidence of floods at the Cauvery dam will not be materially affected either in connection with the delta or the Coleroon requirements.

88. Mysore note that Madras have agreed as to what should be done if the power supply is altogether closed or altered in any way convenient to Mysore. It is understood that the claim of Madras is limited to the average estimated natural flow of the river in the months of February to May subject to the customary irrigation rights of Mysore.

Madras paragraph 99.

REPLY TO PART VII OF MADRAS CASE.

PART III—PLACE AND MODE OF MEASUREMENT.

89. The system of proportionate measurement, though not mentioned in paragraph 80 of the Mysore case, has been discussed fully in paragraphs 98 to 103 (My. 8); and working tables have also been prepared for this system. (*Vide* Table 1 of Appendix P.) The disadvantages of this system to Mysore have been shown in paragraphs 101 to 103 (My. 8).

Madras paragraph 1.

90. Why the method proposed by Madras of measuring the discharges at the four higher anikats cannot be accepted by Mysore has been fully explained in paragraphs 82 to 84 of the Mysore case (My. 8) and nothing new has now been added by Madras to render an alteration of the previous view necessary.

Madras paragraph 3.

91. A carefull study of Appendix X (Ma. 10) prominently shows one or two important features which require a further investigation. There is practically no irrigation between the Bhavāni bridge and the Dhanakere anikat; the river runs more or less through rocky country in a comparatively narrow channel; yet in this reach a total loss of as much as (227,889—193,221 =) 34,668 cusecs has been shown during the short period to which the observations refer. On the other hand, in the reach between the Bhavāni bridge and the Cauvery dam, a gain of (195,046—193,221 =) 1,825 cusecs has been shown during the same period It should be remembered that the river in this reach is much wider and also sandy and that there is a large area of irrigation amounting to as much as 99,500 acres. When all this is duly considered, this gain appears inexplicable. These observations were confined to a short period of about 20 days in September. In this month the Bhavāni was not flowing at all over the lowest weir and there was no contribution from the Amaravati and the Noyel. The conclusion is therefore irresistible that something is wrong with the observed discharges either at Dhanakere, the Bhavāni bridge or the Cauvery dam or at all the three places.

92. It is on this account that a special set of observations is necessary to arrive at the exact relation to flow in the different reaches of the river by gaugings specially conducted for the purpose at the several places mentioned in the Mysore rules. (*Vide* Rule 8).

93. Mysore note the admission made by Madras regarding the necessity for occasional independent check of discharges at the Cauvery dam. The velocity observations conducted in 1909, upon which the available discharges at the Cauvery dam are based, are already four years old; and it would be desirable to have check observations conducted at suitable intervals in the future.

Madras paragraph 7.

94. The special computations, referred to in paragraphs 57 to 62, Part IV (Ma. 10), are based upon three considerations—

Madras paragraph 9.

(*a*) the difference between Sivasamudram and Bhavāni bridge discharges,

(*b*) the centage allowance made in the Metur project, and

(*c*) certain remarks of Mr. McHutchin, a former Chief Engineer of Mysore.

Of these, the value of (*a*) is practically *nil* as it is based upon over-estimated discharges at Sivasamudram,

(*b*) refers only to a particular portion of the river and is based upon more or less empirical considerations and not on special observations, and

(*c*) is an opinion referring to a small quantity of water to be passed for power in the hot season with a dry river bed and cannot be made generally applicable.

95. It is on this account that Mysore again urge that special observations are necessary in the different reaches of the river mentioned in the Mysore rules to find out transmission losses as well as the quantity required for intermediate irrigation.

96. It is noted that Madras have "no objection" to the time of transmission being made the subject of further examination. For this purpose also, the observations suggested in the Mysore rules would prove suitable.

Madras paragraphs 11 and 12.

97. Mysore agree that the items (*a*), (*b*) and (*c*) mentioned here may be fixed tentatively. For the method of measurement recommended by Mysore, items (*d*) and (*e*) included in their paragraph 91 (My. 8) would no doubt become unimportant as long as there is no appreciable increase in the intermediate irrigation between Sivasamudram and Cauvery dam.

Madras paragraph 13.

98. The method proposed by Madras may safeguard their own interests, but this is most unfavourable to Mysore. Here no account whatever is taken of the abundant intermediate replenishment, while so much is made of the occasional transmission losses. If, however, a clear account of all the replenishment is kept and also of all the water used for intermediate irrigation, a fair result can be arrived at, which might be acceptable to both parties. The method of measurement advocated by Mysore in a way obviates such computations and is fair to both the parties.

Madras paragraph 16.

99. As regards the extension of irrigation above the Mysore reservoir referred to, all that is necessary has already been stated in paragraphs 96 and 97 of the Mysore case (My. 8).

Madras paragraphs 18 and 20.

100. As regards the contention made here by Madras, a reference is requested to the concluding paragraph 32 (v) of Sir John Benton's note of 12th May 1911 (Ma. 9), wherein that officer lays down that "the Mysore Darbar are to have all the surplus supplies to which they have any claim under the existing agreement placed unconditionally at their disposal." This is all that Mysore have to urge. Whatever may now be settled as the prescriptive rights of Madras, the quantity of water flowing over and above what is necessary to conserve such prescriptive right should be "unconditionally placed" at the disposal of Mysore for being impounded in the Kannambadi reservoir. This is strictly in accordance with agreement of 1892. In settling the present question it need hardly be stated that all considerations of future projects should be excluded and the reference here made by Madras to such future extensions is contrary to the provisions of the Agreement and to the spirit of the enquiry.

Madras paragraphs 21 to 23.

101. If any such project becomes necessary, either in Mysore or Madras, the matter should be settled on its own merits with a view to make such modifications as may be necessary in the method of measurement.

Madras paragraphs 21 to 23.

Accordingly, judged on its own merits, the Mysore system of measurement as per Table III of Appendix P, will be found to be quite simple in its application and quite efficient in safeguarding the prescriptive rights of Madras.

102. If, however, as implied by Madras in paragraph 23, an absolute finality is desired in settling the relative rights of Madras and Mysore to the waters of the Cauvery so as to leave "both States as far as practicable free to develop their own resources," the question evidently must form the subject of a separate enquiry on a much broader basis. This evidently does not fall within the scope of the present Arbitration.

MODE OF MEASUREMENT PROPOSED BY MYSORE.

103. While it is admitted that no system can be devised which would absolutely prevent all wastage into the sea, Mysore contend that any method which reduces such wastage to a minimum without materially interfering with Madras interests, should receive due consideration at the hands of the Arbitration Committee; and it is plain that the Mysore method satisfies this condition better than any other method so far proposed.

Madras paragraphs 24 to 26.

104. Why the purely proportional method, as shown in Table I under Appendix P of Mysore case (My. 8), is disadvantageous to Mysore has already been explained. Even after satisfying the prescriptive rights of Madras a very large quantity of water runs to waste by this method, as also by the Madras method. But the avowed object of the Mysore project is, as already stated, to utilise, as far as practicable, all such waters running to waste after duly meeting the prescriptive rights of Madras. With this object in view, Mysore have suggested a mode of measurement as shown in Table III (Appendix P).

105. Madras have carefully examined the method and admit that this is an improvement on the old method proposed by Mysore. They object to the table mainly on the score (*a*) that the impounding produces a *minus* discharge at the Cauvery dam on certain days and (*b*) that a part of the compensation water is shown as running to waste.

Madras paragraphs 28 to 31.

106. As regards the *minus* quantities, a careful examination of the tables will show that this result is due to the assumption that the time of transmission of flood between Kannambadi and the Cauvery dam will be 3 days. If this time is properly ascertained after careful observations, for different stages of flow, the quantity of *minus* discharges can be considerably reduced. Although in high floods the time of transmission may be less than 3 days especially when the floods are continuous, ordinary floods may require 4 days. This is apparent from a comparison of the discharges at the Cauvery dam and the Kannambadi reservoir, as given in the tables already prepared.

107. Accordingly, a fresh set of tables have been worked out with 4 days and the result shows an improvement. An abstract of the more important figures from the detailed tables is attached (Appendix R).

108. The figures relating to the *minus* quantities (columns 21 to 23) are given below with details month by month:—

Months.	1899.				1902.				1905.				1913.			
	3 days interval.		4 days interval.		3 days interval.		4 days interval.		3 days interval.		4 days interval.		3 days interval.		4 days interval.	
	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.	Number of days.	Quantity.
June	4	2,383	2	507	4	1,485	3	1,142	4	1,846	3	1,071	3	456	2	300
July	..	..	..	..	3	1,296	..	..	1	1,306	..	..	..	..	..	..
August	2	2,046	1	1,194	..	..	..	..	..	..	..	..	..	..	..	..
September	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
October	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
December	..	..	..	..	..	..	..	..	3	211	3	273	..	..	..	..
Total ..	6	4,429	3	1,701	7	2,781	3	1,142	8	3,363	6	1,344	3	456	2	300

It will be observed that by taking 4 days, the quantity of *minus* flow is considerably reduced in each year, the reduction being most noticeable in the worst year on record. A more careful computation of the time of transmission will still further reduce these *minus* quantities.

109. Regarding the deficiency in the supplies referred to by Madras, the following marked improvement is observed by adopting 4 days instead of three:—

Years.	Deficit with 3 days.	Deficit with 4 days.	Useful surplus up to 7 feet.
	M.C.FT.	M.C.FT.	M.C.FT.
1899	7,439	2,298	17,133
1902	8,593	4,993	10,539
1905	6,456	4,664	29,203
1913	1,638	1,476	34,027

In all the four years, the quantity of water in deficit is reduced considerably. The reduction in the worst year (1899) from 7,439 m.c.ft. to 2,298 m.c.ft. deserves special notice. Even this cannot be called a real deficit, because although on certain days the deficit was observable, there is still on other days a large quantity of surplus water which Madras can use, if they choose, up to the limit of 7 feet which they are demanding, as shown in the last column above; such surpluses, it would be noticed from the tables, closely follow periods of deficit. If this useful surplus quantity is taken into consideration, the deficit is more than made up. In fact, this surplus is as much as 2 to 21 times the quantity in deficit. This means that although, on a few days, the flow is somewhat reduced, there will be very many occasions on which Madras may take in a large quantity of water even up to their own limit of 7 feet. The total quantity of water available for cultivation according to the rules, will therefore remain unaffected and no serious disturbance in its distribution is proved by the tables.

110. It is rather misleading to convert the deficit quantities noted above into their corresponding acreage value, as Madras have done. There would have been some justification for such conversion, if there were no source of supply to make up for these deficits. If the useful surplus be converted into acreage on the same principle, the results will be somewhat as below:—

Year.	Deficit.	Equivalent acres.	Useful surplus.	Equivalent in acres.	Extra acres in favour of Madras.
1899	7,439	37,000	17,133	85,000	48,000
1902	8,593	43,000	10,539	50,000	7,000
1905	6,456	32,000	29,203	145,000	113,000
1913	1,638	8,000	34,027	170,000	162,000

Instead of a deficit in the area of cultivation, varying from 6,000 to 37,000 acres as made out by Madras, they can obtain if they choose an extra cultivation ranging from 7,000 to 162,000 acres in the same years, notwithstanding the impounding done by Mysore.

111. The only other point to which Madras have raised an objection against the Mysore method is that the incidence of flow would be disturbed by impounding in the Mysore reservoir. Here it may be asked what is the nature of this incidence? There is no fixed standard of incidence from day to day that would be repeated year after year and therefore it is not understood what is meant by a disturbance in the incidence of flow.

If there is a particular curve of flow at the Cauvery dam in any year, it is quite admitted that the maintenance of the same curve would not be possible, consistently with impounding in the Mysore reservoir. But this should not affect Madras at all, if the flow up to the limits prescribed remain more or less the same even after impounding in the Mysore reservoir.

112. From Appendix R, it will be seen that the impounding is confined to from 50 to 60 days in the whole season. Out of these, the compensatien water is due for about 10 to 30 days only. The compensation water acts as a balancing factor on 7 to 20 days. Thus the real disturbance due to impounding is confined to from 3 to 10 days in a year. This period is so small that it can be safely said that no injury worth the name will be caused to the lower irrigation.

113. Also, the quantity of compensation water which disturbs the flow varies from about 3,000 m.c.ft. to 11,000 m.c.ft. or from 1 to 5 per cent. of the total resulting flow at the Cauvery dam. Of this, nearly half acts as balancing factor, helping Madras when the natural flow is low. The real deficit would be confined to about 0·5 per cent. to 2·5 per cent. of the total flow at the Cauvery dam. Even this shows that the disturbance to the delta irrigation is brought down to a minimum. The effect of this insignificant disturbance can be more than made up by the large quantity of useful surplus noted above. (*Vide* table in paragraph 109 *supra*.)

114. It is true that the same quantities of flow, without the reservoir, will not be available on the same days, as with the reservoir. But within a few days of any such disturbance, a fairly abundant supply is invariably available and can be readily utilised to make up for the disturbance. The cultivation in the delta has been practised from time immemorial by taking advantage of freshets whenever they came. If this is remembered there is no reason to fear that the insignificant disturbance due to impounding in the Mysore reservoir will cause any real injury to the delta irrigation.

115. It may be noted that, in three out of the four of the years under consideration, the daily discharges at Kannambadi have been obtained by computations; while in one year, viz., 1913, they are actual discharges based on daily observations. The results of the Mysore method can be judged better by the real discharges of 1913 than by computed and therefore somewhat hypothetical discharges. A study of the several tables noted above clearly shows that the disturbance due to impounding in the Kannambadi reservoir as judged by the quantity of compensation water, has been the least in 1913, although the number of days in which impounding was done was the largest. This means that tables based on computed daily discharges as contrasted with actual observations cannot be excepted to give any conclusive results. At the most, such computations will serve to give a fair idea of the total annual flow. This would be useful for fixing tentatively proportionate factors that the discharges at Kannambadi bear to those at the Cauvery dam in the two monsoon seasons.

Madras paragraph 32.

116. The mere fact that compensation water comes in as a factor in the Mysore working tables, cannot be taken as any recognition on their part of the insufficiency of the proportionate factors (assumed in the table) to safeguard the Madras interests. Merely with the idea of securing absolute non-interference with the incidence of flow, the position taken by Madras in claiming that very high factors should be fixed cannot be justified. This would mean that the conditions of the very worst year should be imposed on Mysore against impounding. Madras have themselves stated that have no intention of taking up this extreme position.

Madras paragraphs 29 and 34.

117. It has thus been shown that the disturbance in the incidence and quantity of flow at the Cauvery dam caused by the Mysore method of measurement is quite of an insignificant character.

118. In considering the merits of any mode of measurement, whether advanced by Mysore or Madras, two important facts have to be borne in mind—

(*a*) the requirements of the delta irrigation should be duly provided for; and

(*b*) full facilities should be given to Mysore for impounding the excess waters in the proposed Mysore reservoir.

On the one hand, if any system merely advocates that the delta irrigation requirements alone should form the basis, irrespective of the quantity of water made available for storage, such a system cannot prove acceptable to Mysore. If on the other hand, the securing of the storage facilities becomes the only object, apart from the prescriptive requirements of the delta irrigation, such a method will not be acceptable to Madras.

119. The point for consideration in the present enquiry is thus evidently to uphold a method which may be proved to avoid these two extremes. The method put forward by Mysore has been shown to fulfil all the legitimate requirements of Madras with very insignificant disturbances confined to a very few days. Is has been shown that even these little disturbances are immediately remedied, either by the useful surplus derived from the natural flow or from the compensation water provided for in the rules. It is on this account claimed that this system fully satisfies all the requirements of Madras irrigation, while the second condition, namely, the affording of full facilities for storage by Mysore has also been secured.

120. Any reservoir, large or small, must disturb the flow at the Cauvery dam. The agreement of 1892 contemplates such reservoirs and binds down Madras not to refuse consent to the same if, on fair and reasonable considerations, it is not found to interfere with their prescriptive rights. This fact deserves to be prominently kept in view in arriving at an amicable conclusion in this matter.

APPENDIX Q.

Brief Notes on Cases quoted by Madras.

1. Quoted to show that "riparian rights" theory is not unknown to international law and to refute the claim of an unlimited natural right:—The passages quoted in this paragraph are not of any significance in connection with this dispute, as the controversy is, as already stated, to be decided solely under the terms of the Agreement of 1892, and Mysore do not wish to base their claim on unlimited natural right.

Madras paragraph 14.
Farnham on water and water rights, section 6, 8 Harvard Law Review, page 144. 1 Whartons International Law Digest, section 20.

2. Quoted with reference to the argument of permissive user. Not relevant since the argument is not urged by Mysore now.

Madras paragraph 15.
Perumal *v.* Ramaswami, I.L.R., 11 Mad., 16.

3. These contain a statement of the law regarding riparian rights as between private individuals. But such rules cannot obviously be extended, without agreement, to dealings between States and the Agreement of 1892 does not make any reference to them.

Madras paragraph 16.
Debi Pershad *v.* Joynath Singh, I.L.R., 24 Cal., 865, P C. and Embrey *v.* Owen, 6 Exch, 353.

4. The case does not refer to the Easements Act as it was decided before that Act was enacted, but to the provisions about prescription in the Limitation Act of 1871. The *dictum* laid down that the Act does not exclude other modes of acquisition is quite just, but we are concerned in this case only with the question of protecting "prescriptive" rights.

Madras paragraph 20.
Rajrup Koer *v.* Abdul Hossein, I.L.R., 6 Cal., 394.

5. It is not denied that prior to the enacting of the Statute Law, the principles of English law of prescription used to be referred to whenever necessary.

Madras paragraph 20.
Ponnuswami Tevar *v.* Collector of Trichinopoly, 5 M.H. C.R., 6.

6. Quoted to show that even if the Statutory Law of prescription is applicable, prior enjoyment will be regarded as continuing even in the absence of *user*, unless there was an interruption. This case will not support so broad a proposition. All that it decides is that if the suit is brought within two years of interruption, it is sustainable, though actual *user* within two years prior to suit is not proved provided there has been *enjoyment of the right* within such period. The case before them involved a right which could be used only for 2 or 3 months in a year and even that, when the defendant's lands were flooded. That no broad rule was laid down in this case is shown in 26 *Cal., page* 597, wherein Their Lordships in reference to this case state: "No rule was or could be laid down as to what would or would not constitute a continuance of the enjoyment as of right when there was no exercise of it for a given period and obviously that must depend upon the circumstances of each case and the nature of the right claimed."

Madras Paragraph 20.
Kylas Chunder *v.* Sonatun Chung, 7 Cal., 132..

7. This is also cited as an authority for the proposition referred to above but Their Lordships on page 598 state: "At whatever time the suit is brought, the enjoyment must be found to have continued till within two years of the suit and if that cannot be found, the claim fails." The claim to easement was rejected by Their Lordships as the claimant had not exercised it for three years prior to suit.

Madras paragraph 20.
Janhavi Chowdhurani *v.* Bindu Bashini, I.L.R., 26 Cal., 593.

8. It is pertinent to note here that under the English Prescription Act, the claimant of an easement in order to satisfy the length of enjoyment required by the statute is bound to show some act of *user* within one year of action.

Cf. Parker *v.* Mitchell, 11 A. & E., 788.
Lowe *v.* Carpenter, 1851. 6 Ex., 825.

(Pages 455–456, Peacock on Easements, 2nd Edition.)

9. This is a peculiar case depending upon the combination of Roman Dutch law and English law and is not applicable to cases of statutory prescription under which the enjoyment of the right must be within a definite period from date of suit. In this dispute, we contend that subsequent acts of Madras do amount to an abandonment or surrender of the additional one foot flow at the Upper Anikat.

Madras paragraph 25.
Commissioner of French Hock *v.* Hugo, L.R. 10 App. cases, 336.

10. Quoted to show that abandonment cannot be presumed from the mere fact of non-user *of the same quantity since*. This is an old case of 1852. It cannot certainly be law where the Easements Act has to be applied; nor would it be sound law where the prescriptive provisions of a specific statute (such as Limitation Act) have to be applied anologically as we contend in this case Moreover, the English case relates to a right of way which was not used as there was a more convenient way. But the expression "of the same quantity" introduced into paragraph 27 of the Madras case raises the question of the *extent* of the right.

Madras paragraph 27.
Ward *v.* Ward, 7 Exch. 86 Revised Reports.

11. These cases are quoted to show that discontinuance does not extinguish an easement unless release could be inferred. The first two relate to rights of way and the last to right to water. These cases would be relevant if the *right* alone were in dispute and not the *extent* of the right. The Madras case does not seem to make this distinction always. Madras practically seek to prove that the extent of its right should be the *maximum* quantity enjoyed at a particular time and not the varying quantities enjoyed at different intervals during the prescriptive period. These cases do not support such an extreme proposition.

Madras paragraphs 27 & 28.
James *v.* Stevenson, 1893, appellate cases, 162 Kristodhone Mitter *v.* Nandarini, I.L.R., 35, Cal., 889. Hale *v* Oldroyd (1845), 14 M. & W. 789.

12. *Re* argument based on joint possession. This argument is not raised now by Mysore and therefore the cases need not be considered.

14 M.L.J., 350.
L.R. 10 Ch Ap., 283.

13. Madras admit that it is laid down in the authorities that the measure of a prescriptive right is the extent of user and that the further question arises "how is the extent of user to be measured." It is also stated that the true principle of measurement is indicated in section 28 of the Easements Act according to which the intention of the parties and the purpose for which it was acquired should be taken into account (paragraph 32). For what purpose then did Madras acquire prescriptive right and what was their intention? Surely, it is for the purpose of irrigation and not to preserve a particular level of flow as a piece of natural scenery. This is admitted by Madras (*vide* paragraph 13, Madras Legal Rejoinder). A convenient way of measuring prescriptive right to water for irrigation is to ascertain the area for which the water was used. The passages quoted by Madras from Doss, Angell and Farnham doubtless show that once a right has been acquired, a change in the mode and objects of exercising it is justifiable to a certain extent. But these authorities are not useful for the purpose in view, inasmuch as they throw no light at all on the question enunciated by Madras itself "how is the *extent* of user to be measured." The Mysore answer to this query is that the area irrigated ought to be the chief criterion in determining the extent of the right. No authority is cited by Madras to show why this view is untenable.

Madras paragraphs 32 to 35.
Doss on Riparian Rights, 324. Angell on Water Courses, paragraph 230. Farnham on Waters, section 542.

14. These cases are quoted to show that no interruption due to seasons or natural causes brings about a breach of continuity so as to take away the right itself. This is not the argument used by Mysore. The contention of Mysore is that in determining the extent of the user, the varying quantities of water used by Madras for the necessarily varying needs of irrigation ought to be taken into account. The cases quoted by Madras have little or no bearing on this aspect of the case.

Madras paragraph 41.
Simpson *v.* Corporation of Godmanchester, L.R., 1897 Ap. Cases, 696.
Hall *v.* Swift, 4 Bing. N.C., 381.
Angell on Water Courses, section, 211.
11 Madras 18:20 Cal. 1077. 8. Cal. W. Notes 158. 13 Cal. L.J., 670.

15. Mysore concede that a change in the mode of using a right is no doubt permissible under certain conditions; but the contention of Mysore has been that the effect of the remodelling of the anikat was to abandon the right to one foot flow over the Upper Anikat if it amounted to a right of easement and that such a right was only a dependent one. From the Mysore point of view these two cases are inapplicable as the question is not one of change of user merely, but is a question of *abandonment* of the right itself.

Madras paragraphs 44 and 45. R. V. Tippet 13 Cal. 136. 3, B. and Ald. 193.

APPENDIX G1.

STATEMENT of fortnightly discharges of the rivers Cauvery and Vennār limited to a discharge of 11,350 cusecs in the Cauvery and 6,100 cusecs in the Vennār.

Fortnights.	1890-91.	1891-92	1892-93.	1893-94.	1894-95.	1895-96.	1896-97.	1897-98.	1898-99.	1899-00.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.	1909-10.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
June .. 1st half ..	2,864	5,309	6,077	12,687	4,055	946	1,309	2,733	3,122	1,185	1,885	4,060	595	3,629	7,109	2,573	688	1,262	1,551	11,836
2nd half ..	8,087	5,127	9,631	20,765	15,560	13,504	14,891	17,611	19,321	15,719	15,331	16,999	7,178	8,254	16,685	7,656	3,059	9,981	4,294	11,871
July .. 1st half ..	11,854	14,671	15,060	17,973	5,710	21,427	22,248	16,827	14,267	20,526	22,615	17,066	8,406	4,384	20,777	19,692	4,174	15,028	16,742	22,395
2nd half ..	19,354	20,814	23,863	17,001	21,638	23,795	24,123	24,123	17,276	14,364	24,122	24,053	23,492	24,123	24,019	18,859	18,331	14,863	23,583	24,123
August .. 1st half ..	22,079	22,494	22,546	20,813	20,414	22,614	22,615	22,614	22,580	6,237	22,614	22,122	18,218	21,750	20,261	17,732	21,923	22,614	22,615	21,483
2nd half ..	18,890	20,150	22,855	13,884	24,019	23,950	24,123	24,123	16,615	10,448	24,123	21,970	11,071	23,440	19,184	15,619	19,301	30,369	21,181	20,648
September .. 1st half ..	10,931	16,758	21,602	19,300	16,546	13,530	21,630	22,614	17,216	16,199	22,248	11,947	19,256	16,974	7,674	16,692	21,308	21,377	13,092	19,921
2nd half ..	5,521	8,959	16,355	13,169	11,536	12,462	18,582	22,062	20,765	17,926	19,819	18,140	18,789	13,716	15,556	11,718	16,815	15,166	5,891	11,803
Total for S.W. Monsoon.	99,580	114,282	137,989	135,492	119,478	132,228	149,486	152,737	131,162	102,604	152,757	124,915	107,005	116,270	131,265	110,541	105,599	130,660	108,949	144,080
October .. 1st half ..	12,919	16,437	16,478	19,201	4,635	21,803	20,381	22,580	22,615	7,170	16,740	18,737	15,076	18,186	10,058	8,412	16,919	13,720	7,025	18,478
2nd half ..	9,355	21,231	19,267	23,812	19,833	22,187	12,742	21,669	22,697	11,681	18,502	18,266	14,645	23,328	13,521	8,958	10,554	11,107	8,802	20,388
November .. 1st half ..	22,287	15,965	8,570	15,072	16,317	19,837	6,205	15,589	18,149	4,677	9,478	13,835	14,177	20,506	5,377	2,833	8,957	3,156	4,865	13,424
2nd half ..	8,925	7,213	3,184	20,409	5,903	6,274	19,293	9,227	19,001	970	5,812	18,082	10,301	18,204	1,430	3,776	2,094	10,708	1,352	4,211
December .. 1st half ..	4,868	2,837	1,763	10,811	3,716	3,420	14,663	8,114	14,727	803	2,728	10,079	11,487	15,650	652	2,163	3,531	3,788	349	4,510
2nd half ..	3,338	4,900	1,688	4,309	1,142	2,611	14,049	5,311	10,236	572	2,714	5,418	10,044	9,371	501	867	5,979	5,032	376	3,415
January .. 1st half ..	804	2,353	994	2,042	932	7,597	5,691	3,048	7,952	459	1,557	6,508	4,692	9,546	389	537	3,572	1,671	9,812	1,805
2nd half ..	527	985	573	1,317	625	1,421	1,541	2,509	3,033	580	1,399	2,226	2,836	5,438	373	1,088	1,177	1,895	2,072	925
Total for N.E. Monsoon.	63,023	71,921	52,517	96,973	53,103	85,150	94,655	88,047	119,010	26,812	58,940	93,551	83,258	120,229	32,304	27,997	67,183	51,077	34,643	67,106
Grand Total ..	162,603	186,203	190,506	232,465	172,581	217,378	244,141	240,784	250,172	129,416	211,697	218,501	190,263	236,499	163,569	138,573	172,782	181,737	143 592	211,886
Appendix G, Total for limits of rules.	163,431	175,896	204,940	225,374	184,354	210,742	225,999	220,527	210,191	132,123	210,753	219,432	191,966	224,944	162,033	158,659	183,140	197,405	163,995	221,747
Supply to Delta area. According to Sir John Benton's Note.	129,078	129,398	143,184	179,123	125,501	164,005	227,560	205,990	173,508	117,312	229,671	204,624	173,109	223,146	128,933	165,265	185,701	236,777	177,068	252,337
Supply to including Coleroon.	143,420	142,659	159,093	199,025	139,445	182,238	252,845	228,878	192,775	129,043	255,190	227,360	192,343	247,940	144,248	183,628	206,334	263,086	195,632	280,373

APPENDIX R.

COMPARATIVE table showing the effect on the quantity and incidence of flow at the Cauvery dam due to the impounding at the Kannambadi reservoir by taking 3 and 4 days as the time of transit between the reservoir site and the Cauvery dam.

Year.	From date.	To date.	Interval of transmission of flow from Kannambadi to Cauvery dam.	Total flow at Kannambadi.	Total flow at Cauvery dam.	Total quantity available for impounding after serving Madras rights.	Total quantity actually impounded excluding surplus and compensation water.	Resulting flow at Cauvery dam.	Number of days of impounding	Compensation water.			Compensation water acting as a balancing factor.			Compensation water running to waste			Minus flow at the Cauvery dam.			Total quantity of water surplusing at the Cauvery dam.	Quantity of useful surplus up to 7 feet limit.
										Number of days on which due.	Quantity.	Percentage to resulting flow.	Number of days.	Quantity.	Percentage to resulting flow.	Number of days.	Quantity.	Percentage to resulting flow.	Number of days.	Quantity.	Percentage to resulting flow.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1899 ..	1st June.	31st Aug.	3 days ..	77,165	128,946	50,547	32,370	104,697	28	9	8,308	7·93	3	869	0·83	8	7,439	7·15	6	4,428	4·23	38,417	17,939
	Do.	Do.	4 ,, ..	77,165	129,336	50,547	32,369	105,454	28	5	4,083	3·90	3	1,785	1·70	4	2,298	2·17	3	1,701	1·61	36,139	17,133
1902 ..	Do.	31st July.	3 ,, ..	105,508	135,067	93,727	34,640	109,386	35	18	13,174	12·04	11	4,430	4·05	10	8,593	7·85	7	2,781	2·56	65,406	11,695
	Do.	Do.	4 ,, ..	105,508	137,294	93,727	34,711	111,268	35	14	8,594	7·72	8	3,601	3·23	8	4,993	4·48	3	1,142	1·02	64,018	10,539
1905 ..	Do.	31st Dec.	3 ,, ..	135,364	238,702	74,830	46,389	263,889	54	24	10,039	4·82	19	3,583	1·76	8	6,456	3·16	8	3,363	1·65	53,795	29,554
	Do.	Do.	4 ,, ..	135,364	238,412	74,830	46,695	204,264	54	30	11,233	5·49	20	6,479	3·17	11	4,664	2·28	6	1,344	0·65	54,603	29,203
1913 ..	Do.	20th Oct.	3 ,, ..	170,202	303,085	121,088	47,378	268,190	62	10	3,014	1·13	6	1,376	0·51	6	1,638	0·61	3	456	0·17	117,584	38,598
	Do.	19th ,,	4 ,, ..	170,202	302,556	120,468	47,902	267,786	61	10	2,854	1·06	7	1,378	0·50	4	1,476	0·55	2	300	0·11	122,942	34,027

Exhibit My.-10.

Extract from the report of the Indian Irrigation Commission, 1901-03, Part II.—Provincial.

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624. *Rainfall and famines.*—The province is so situated that it receives the rainfall of both monsoons. That from the south-west brings rain from the middle of May to about the middle of September and that from the north-east from September to about the middle of November. The amount received varies enormously according to the locality. At one point on the Western Ghats the annual average is said to exceed 350 inches, while at two of the recording stations in the Chitaldrug district it is barely 17½ inches. For the recording stations situated in the Ghats close to the western border, the average is over 140 inches ; but the rainfall rapidly decreases as the clouds drift eastwards, and at a distance of 30 miles from the border the average is only 34½ inches, while at 50 miles off it is only 25 inches Eastward of this the average is about 21 inches in the south-eastern portion of the province, and about 22 inches in the north-eastern portion which, as a rule, receives only a scanty share of either monsoon.

625. Previous to 1876-77, there is no record in the history of the province of any considerable famine caused by drought alone. Famines had followed on the devastations of hostile armies, and partial failures of the rains had led to severe scarcities in 1824, 1833 and 1866; but these latter were of short duration, and until the failure of the rains of 1875, and the still more deficient rainfall of 1876, the province was looked upon as practically immune from very prolonged drought. In these two successive years it received only about half its average rainfall. The result was a famine which fell with appalling severity on the districts of Chitaldrug, Tumkur, Bangalore and Kolar, and in fact on the whole two-thirds of the State lying east of a line drawn through the town of Mysore parallel to the Western Ghats. The province lost about one-fifth of its population ; the treasury a year's revenue or over a million sterling ; while the loss to the people in produce, cattle and other property, was estimated at nearly 9¾ millions sterling. Since then there has been no serious failure of the rains, but the rainfall has often been deficient or unfavourably distributed throughout the season.

626. *Value of irrigation.*—Experience, then, has shown that everywhere throughout the province save in a narrow strip of assured rainfall along the western border, irrigation is necessary as a protection against occasional famine and the vicissitudes of ordinary seasons; while, throughout the whole province, it is useful in affording employment to the agricultural classes in the interval between the reaping of the dry crops in December and the setting in of the rains in May. None of the more valuable crops, such as sugarcane, garden produce and the best qualities of rice, can be grown profitably without irrigation ; and on an average the value of the produce of a single crop is said to be nearly quadrupled in ordinary years by an assured supply of river water, and increased thirty-fold in a year of drought. But perhaps the best index to the value of irrigation in Mysore will be found in the fact that though the irrigated lands comprise only about 15 per cent. of the whole occupied area, they pay about 40 per cent. of the total land revenue of the state.

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637. *Progress made since the famine of* 1877.—Before passing to the question of the scope which exists for the further extension of irrigation works, it is desirable to consider briefly in what respects Mysore is now better fitted than it was in 1875 to withstand a serious famine. The most important advantage gained lies no doubt in the improvement of the means of communication. During the famine there was but one short line of rail in the whole province —the branch line from Jalarpet terminating at Bangalore, its total length within the province being little more than 40 miles; and "upon the traffic carried along this single iron thread, throughout 1877, hung the lives of a million of souls." * Every district in the province is now either traversed by or has its main town connected with a railway, and the total length of line within the province has been increased to over 450 miles. In addition to the extension of railways, more than 1,000 miles of new roads have been opened out and a number of large rivers bridged at a total cost of over 60 lakhs. The opening out of the Kolar Gold Field has also created a new and important source of industry, which is said to afford employment to about 40,000 people in a district unusually liable to drought.

638. These improvements are a substantial addition to the general wealth and well-being of the province, while the increased means of communication will enormously facilitate relief operations in the contingency of another famine. But with regard to the amount of protection afforded by irrigation, a matter with which we are more immediately concerned, it cannot be said that any very distinct advance has been made. Writing in 1877, the Famine Commissioner estimated that before the famine there was more than one acre of cultivation to each head of the population, and that about 15 per cent. of the cultivated area was under irrigation. So

* Report on the History of the Mysore Famine of 1876-78 by Mr. Charles Elliot, C.S.I., Famine Commissioner.

far as we can gather from the data which have been supplied to us, the conditions now are much the same as they were then. The proportion which the irrigated area bears to the whole area of cultivation certainly does not appear to have increased by more than 1 per cent.

639. Under river channels, which are described as the most valuable form of irrigation in Mysore, a distinct advance has no doubt been made, and the area irrigated by these works has been nearly doubled within the past 25 years. But this means an increase of only 5 per cent. to the whole irrigated area of the province, and the increase is confined for the most part to the districts which are least liable to famine. Large sums have also been liberally spent in improving the tanks, but most of this expenditure seems to have been necessary to prevent retrogression, and it is not said to have led to any considerable increase in the tank irrigated area. On the whole, however, the extension of irrigation has fully kept pace with the increases in population and cultivation ; and all things considered, the State is now, no doubt, much better equipped to meet famine than it was in 1875. The position, as regards the district most liable to be affected by drought, will be still more improved when the great Marikanave tank is completed.

SCOPE FOR FURTHER EXTENSIONS OF STATE IRRIGATION WORKS.

640. *General remarks.*—Outsite of the area covered by the Western Ghats, nearly every suitable site has been already occupied by a storage work. The only means of providing any considerable extension of irrigation in Mysore must therefore, as in the case of the Deccan districts of Bombay, be sought for in a system of canals depending for their supplies on large storage works in the western region of assured rainfall. Unforunately, the main rivers of Mysore, having their sources in the Western Ghats, do not traverse the districts most liable to famine. Their courses lie close to the Ghats in deep valleys which separate the secure tracts on the west from the precarious plateau districts on the east. The Tungabhadra flows almost due north through the districts of Kadur and Shimoga, while the Cauvery and its main tributaries flow to the south-east through the districts of Hassan and Mysore. Storage works in the basins of both these rivers would be useful—on the Tungabhadra they would be invaluable to the district of Madras which they subsequently traverse, but they would be of little use to Mysore. The only portions of the State that could be commanded by them lie in the tract that least requires protection. All the difficulties that we have referred to in connection with the utilization of the rainfall of the Ghats in the Deccan districts of Bombay are here intensified. The courses taken by the rivers, the general level of the country, and the broken nature of its surface, would all be serious obstacles against any attempt to carry the abundant rainfall of the Ghats on to the main plateau of the province. These difficulties might no doubt be overcome, but in all probability the cost would be quite prohibitive. Nevertheless, the question is, we think, one of such vital importance to the State that no opinion on this point should be accepted as final, until a thorough and systematic reconnaissance has been made by a specially qualified Engineer. Should no possible means be discovered for utilizing rainfall stored in the Ghats, Mysore will have to rely, for any extension of its irrigation by means of State works in the tracts liable to famine, upon the improvement of its existing tanks and channels and upon the construction of new works for the storage of local rainfall in the comparatively few catchments which are not already fully occupied.

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643. *River channels and ghat-fed storage works.*—The existing dams are sufficient to draw off all the supply generally available in the rivers during the dry weather; and even if this were not the case, the Madras Government would object to any interference with the surplus, or the construction of any work likely to reduce the present dry weather supply of the canals in that Presidency. Hence, for the supply of any new canals in Mysore, or to increase the dry weather supply of existing canals, it will be necessary to construct large storage reservoirs on the main rivers or their tributaries, and within the region of assured rainfall. We understand that sites for such works are now being systematically investigated, and that the discovery of suitable sites on the Cauvery or its branches will lead to a very large increase on the area under river channels ; though, as we have already stated, it will probably be impossible to extend this form of irrigation to the tracts which are most in need of protection. The works, however, are, as we have shown, very remunerative, and the extension of these channels, even within the limits of the western districts, will be of very great benefit both to the cultivators and to the State. The investigations previously made, apparently in no very systematic way, have resulted in the discovery of only one possible site in the valley of the Cauvery ; and even this has not proved practicable, for the construction of a reservoir would submerge the town of Fraserpet. A more thorough investigation, which should include those portions of Coorg and of the Madras Presidency lying within the upper valley of the river, may, however, lead to the discovery of other and more practicable sites. In the valley of the Tungabhadra some excellent sites have been found at Lakvalli and Mudaba ; but, as we have said, reservoirs at these sites, though of great value to Madras would apparently be of little use to Mysore. The site at Lakvalli has a catchment of 776 square miles with an average rainfall of 150 inches. It is situated in an unhealthy tract and in the midst of valuable forests of teak, but in all other respects it is said to be one of the finest sites for a reservoir in the whole of India.

644. But, even if the investigations should result in the discovery of but few suitable sites for new storage works, our evidence leads us to think that the area irrigated by river channels could be largely extended by improving the existing works. The Chief Engineer estimates that to provide proper masonry dams and to improve and extend the channels would cost about 25 lakhs. We think that the results would justify the expenditure but this could easily be tested by remodelling a few selected works.

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647. *Cost of proposed new works and possible increase in the area irrigated.*—Excluding the two works under construction, the list of proposed new works contains 48 works estimated to cost 107·5 lakhs, and to irrigate 107,000 acres in a year of ordinary rainfall and 56,000 acres in a year of drought. Of the latter area, only one-fifth lies in the precarious eastern districts. These figures are not based on detailed surveys or estimates. They are admittedly only a rough approximation, and they do not include all the extensions that may be rendered possible by the construction of ghat-fed storage works, and by minor improvements which collectively should have an important effect. But we fear that they indicate generally, and, at least as regards the tracts most liable to famine, with sufficient accuracy, the limited field that exists for the extension of irrigation in Mysore by means of new State works. Such possibilities as there are will, we have no doubt, be fully utilized in the near future by a Darbar which has proved itself so liberal in the past in providing funds for the general improvement of the province.

Exhibit My.-11.

Copies of correspondence relating to the Marikanave Reservoir Project.

Letter—from Colonel C. Bowen, R.E., Secretary to the Government of Mysore, Public Works Department.
To—the First Assistant to the Resident in Mysore.
Dated—the 17th February 1892.
No.—834-142.

I have the honour, by desire of the Diwan, to request you will be good enough to move the Resident to ascertain whether the Madras Government have any objection to the great Marikanave reservoir, across the Vedavati river, a project which has been under discussion for very many years, being now taken in hand.

2. The Darbar propose in the first instance simply to attempt to get in perfectly secure foundations for the great dam. The nature of the rock and adjoining strata indicate that this attempt may fail, in which case the project would have to be altogether abandoned. But should the endeavour prove quite successful, the dam will be built to impound the maximum discharge and irrigate as much as possible of the irrigable area up to the Bellary frontier.

3. I annex, for information, copy of a memorandum by Colonel LeMessurier, R.E., which gives a brief history of the project and what is now proposed. Until the difficulties connected with the foundations have been overcome, it would, of course, be useless to discuss the details of the work itself, but when the time comes for taking these in hand they will, if thought necessary, be submitted for the acceptance of the Madras Engineers.

No. 58-I.

Note by the Chief Engineer for Irrigation.

The Vedavati or Hagiri river is No. 4 of schedule A of the rules lately agreed to by the Madras Government and the Mysore State. See Proceedings of Madras Government No. 162 I., dated 18th February 1892. It is an affluent of the Tungabhadra and has drainage area above the site for the proposed reservoir of 2,075 square miles or about one-tenth of the Tungabhadra above the Sunkasala anicut.

See paragraph 8 of Colonel A. LeMessurier's Memorandum, dated 9th October 1885.

2. Below the infall of the Vedavati there are taken off from the Tungabhadra the following channels and systems of canals, viz. :—

(*a*) The Rampur channel irrigating 888 acres.

(*b*) The Kurnool-Cuddapah canal, the works of which were constructed for the irrigation of some 200,000 acres and now supplies about 30,000 acres of wet cultivation, whilst in years of deficient rainfall a large area of dry crop is watered; in 1876-77 the area of "wet" crop and "dry" watered amounted to 90,285 acres.

(*c*) The Kistna canals from the Bezwada anikat, the works connected with which are still in progress which already irrigate in (1890-91) upwards of 463,000 acres and will before long irrigate not much under 500,000 acres.

3. There are times, chiefly during the south-west monsoon, when more water passes down the Tungabhadra and Kistna than can be utilised by the works named, and some of it flows uselessly to the sea; at such times, of course, it would be desirable to impound and utilise the surplus, but it is also certain that the construction of such a reservoir as that under consideration and the impounding in it of water on anything like the scale proposed by Mysore would at times seriously affect the irrigation in British territory dependent on the Kistna and on the Tungabhadra below the infall of the Vedavati.

4. It seems, therefore, inevitable that Madras should object to the construction of the reservoir unless provision be made for passing on through it of all discharge down the Vedavati when the water in the Tungabhadra is below the crest of the Sunkasala anicut, or that in the Kistna is less than 3 feet above crest of the Bezwada anicut which is the level required to give a full supply to the delta.

5. A table showing the number of days in each month during the last ten years on which the water at the Bezwada anicut was less than 3 feet over the crest is appended.

Chepauk,
17*th March* 1892.

G. T. Walch,
Chief Engineer for Irrigation.

To the Joint Secretary to Government, Public Works Department (Irrigation).

Enclosure.

Statement showing number of days water was less than 3 feet over crest of Kistna anicut.

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1882	31	28	31	30	31	10	4	1	2	16	16	23	Crest of anicut raised 1 foot.
1883 ..	31	28	31	30	31	21	3	..			19	29	
1884	31	29	31	30	31	30	13	..	..	12	25	29	
1885	32	28	31	30	31	30	5	..	1		19	15	
1886	31	28	31	30	31	17	2	..	5	4	17	14	
1887	15	19	31	30	31	21	2	..	..	..	6		
1888	3	23	31	30	31	23	5	..	3	15	4	15	
1889	31	28	31	30	31	24	2	..	..	..	20		
1890	31	28	31	30	31	27	..	..	5	19	11	15	
1891	31	28	31	30	31	29	15	..	6	11	30	31	

Letter—from C. H. Ravenshaw, Esq., First Assistant to the Resident in Mysore.
To—the Secretary to the Government of Mysore, Public Works Department.
Dated—Bangalore, the 21st May 1892.
No.—1715—624-5.

I am directed to reply to your letter No. 834-142, dated the 19th February 1892, regarding the Marikanave reservoir project.

2. Under rule III of the rules regarding the restoration and construction of irrigation works in Mysore, a copy of which was furnished to this office with your letter No. 3-1 of the 4th January 1892, the Government of Madras object to the construction of the proposed Marikanave reservoir, unless arrangements be made by which the whole discharge in the river Vedavati will be passed on through or round the proposed reservoir whenever the water in the Tungabhadra is not up to the crest of the Sunkasala anikat, or whenever there is less than 3 feet depth on the Bezwada (Kistna) anicut.

3. A copy of the note on this subject by the Chief Engineer for Irrigation (No. 58 I., dated 17th March 1892), Madras, is enclosed for the information of the Darbar.

Letter—from Colonel C. Bowen, R.E., Secretary to the Government of Mysore, Public Works Department.
To—the Diwan of Mysore.
Dated—the 23rd May 1892.

In the accompanying letter from the Assistant to the Resident is conveyed the refusal of the Madras Government to consent to the construction of the great Marikanave reservoir unless on certain prescribed conditions.

These limitations would, in my opinion, so far affect the irrigation of the wide area it is proposed to water, as to virtually destroy the usefulness of the project. To build a great dam and to establish below it an extensive system of garden and wet cultivation, hampered by such conditions as those proposed would necessarily result in disappointment and failure. Under the circumstances it is evident the scheme must be abandoned once for all.

Diwan's orders on Public Works Secretary's Memorandum, dated the 23rd May 1892.

I think there are good grounds for doubting the reasonableness of the proposal made by Madras requiring Mysore to pass the Vedavati water beyond the proposed reservoir, either when the Tungabhadra is below the Sunkasala anicut or the Kistna less than 3 feet above crest of Bezwada anikat. When Tungabhadra and Kistna are below these levels, Vedavati carries next to no discharge. Is this not so? Do not our and Madras records prove this? This is an important point which should be cleared up by reference to our statistics and to statistics, if any, in Madras. Stress should be laid upon it.

2. The Marikanave will practically intercept only what admittedly flows uselessly into the sea during the south-west monsoon, and when the Tungabhadra and Kistna are low, the Vedavati is dry and can't help them.

3. Another point of importance is to ascertain when the Sunkasala and Bezwada anicuts were built up to their present levels, and what were their levels 20 years ago. Prescriptive right on the part of Madras, if any, can only exist with reference to levels of these anicuts as uninterruptedly in force during the past 20 years. This is an important point to dwell upon and get full information about. Under such circumstances I would like to have the draft of a careful reply to go to the Resident at an early date.

I would like the Marikanave to be settled finally once for all.

5th July 1892.

K. Seshadri,
Diwan of Mysore.

Letter—from Lieutenant-Colonel D. McNeil Campbell, R.E., Secretary to the Government of Mysore, Public Works Department.
To—the First Assistant to the Resident in Mysore.
Dated—Bangalore, the 14th December 1892.
No.—5436–993.

With reference to your letter No. 1715—624–5, dated 21st May 1892, I am directed to request that the Government of Madras may be asked to reconsider their objection with regard to the construction of the Marikanave Reservoir.

2. It appears from the note by the Chief Engineer for Irrigation, Madras, that there are three systems of channels that he considers would be affected by the proposed work—

(1) The Rampur channel irrigating 888 acres.

(2) The Kurnool-Cuddapah canal taking off from the Sunkasala anicut on the Tungabhadra.

(3) The Kistna canals taken off from the anicut at Bezwada on the Kistna.

3. The first of these is a small work and need not be considered. The third can be entirely left out of the question for it is absurd to suppose that a river like the Vedavati with a catchment of 2,075 miles could have any appreciable effect on the Kistna river at the Bezwada anicut, a distance of over 300 miles. It is only necessary, therefore, to consider the second work. The Sunkasala anicut was built in 1861—64 and it was supposed that the irrigation under it would amount to 200,000 acres, but it has never reached anything like this figure, the present wet cultivation being only about 30,000 acres. It is presumed that when the anicut was built, it was ascertained by observation and calculation that there would be sufficient water available for the irrigation of 200,000 acres, but as only 30,000 acres are actually watered, the balance of water available for the other 170,000 acres must be wasted and this is a far greater quantity than will be intercepted by the Marikanave dam, it is therefore evident that the storing of water is in this case an absolute advantage.

4. The drainage area of the Vedavati is 2,075 square miles or only about one-tenth of the total drainage area of the Tungabhadra above the Sunkasala anicut, but about two-thirds of the run-off from this catchment has already been impounded in nearly 1,000 tanks so that the free catchment area available to supplement the supply in the Tungabhadra is only one-thirtieth of the total catchment area of that river at the Sunkasala anicut.

5. Most of the flood discharge in the Marikanave gorge is obtained from the dry and arid tracts of Kadur, Arsikere and Huliyar and it is well known that in years of normal rainfall, the Vedavati is seldom or ever in flood till the tanks on its catchment are discharging and this occurs almost invariably only in September or October, but sometimes in November; in bad years many

of the tanks do not fill at all (as in 1890–91). The records of the flood observations at the gorge for five years gives an average discharge of 15,115 mills. c.ft. which represents a run-off of only 3" per annum from the whole area of 2,075 square miles.

6. It is also proved from the records of 1862 that two-thirds of the whole discharge through the gorge in the year occurs in October alone and six-sevenths of the total yearly discharge in September and October, this is a most important point, as the Chief Engineer for Irrigation, Madras, considers (paragraph 3 of his memorandum) that the reservoir would at times seriously affect the irrigation in British territory; from this it is evident that he thinks that when the water in the Tungabhadra is low, the supply would be supplemented by the supply from the Vedavati, but he is wrong in this respect as the following will show.

7. From the register of water returns of the Tungabhadra river at the Sunkasala anicut it is found that from 1872 to 1889, or a period of 18 years, the water was only below the crest of anicut in September in two years, once for 8 days in 1882 and once for 10 days in 1889; in October for 21 days in 1882 and one day in 1885. From this it will be seen that for 15 years out of 18, the supply in the Tungabhadra was ample and it will probably be found that in the other three years the Vedavati was dry or nearly so.

8. During the months of the year from December to June when the supply at the Sunkasala anicut is deficient the Vedavati could afford no help, for as mentioned above, six-sevenths of the yearly discharge is in September and October.

9. From the foregoing facts it will be seen that the effect of construction of the Marikanave reservoir will be practically to intercept only what water the Chief Engineer, Madras, admits, flows uselessly into the sea during the south-west monsoon and in October, while when the Kistna and Tungabhadra are low, the reservoir will do no harm, as the Vedavati is dry and could not increase the supply.

10. Enough has been said to show that there can be no possible reason for objecting to the construction of the reservoir on the grounds that it would interfere with the water-supply to the wet cultivation in British territory, and there are other and very strong reasons why the project should not be stopped.

1*st.*—The project was under investigation long before the Sunkasala anicut was built in 1861.

2*nd.*—No objections have been raised when the Government of India were going to carry out the work and ordered the necessary data to be worked up.

3*rd.*—Large sums of money have been spent under orders of Government of India on establishment and survey for the work.

4*th.*—A provision against famine in the dry tract commanded is absolutely necessary.

11. It must further be remembered that the reservoir will not absorb all the water available, as the tail water from 50,000 acres of cultivation will pass on lower down.

12. The effect of the Vedavati on Kistna at Bezwada anicut cannot, as before stated, be anything appreciable, but it may be as well to state here that the months when there is best supply in the latter river are July to October inclusive.

13. Another fact that may be mentioned is that the Kistna anicut was in existence before the Sunkasala anicut was projected and yet no objections were made to water for 200,000 acres being taken off at the latter, but objection is now made to the construction of a reservoir to store water for 50,000 acres, even though it is known that the cultivation under the Sunkasala anicut has only reached and will in all probability never exceed 30,000 acres.

14. In conclusion, I am to add that this Government feel confident that the Madras Government will no longer object to the execution of this project, which will be of immense advantage to this Province especially as a protection against famine on account of doubts now shown to be unfounded, as to whether it may affect prejudicially the irrigation of land in British territory.

Letter—from Lieutenant-Colonel D. McNeil Campbell, R. E., Secretary to the Government of Mysore, Public Works Department.
To—the First Assistant to the Resident in Mysore.
Dated—Bangalore, the 24th January 1894.
No.—345—43.

By desire of the Durbar, I have the honour to request that you will be so good as to again call the attention of the Madras Government to the subject of the construction of the Marikanave dam.

2. In letter No. 5436–903, dated 14th December 1892, the circumstances of the case were fully represented, and it was clearly shown why it was considered that the construction of the dam could not possibly affect prejudicially the irrigation of lands in British territory and the belief was expressed that the Madras Government would no longer object to the carrying out of a work which will be of immense benefit to a large tract of country that now periodically suffers from drought.

To this letter no answer has been received, and as the matter is one of the very greatest importance as affecting the interest of the province, several works of utility being held in abeyance pending the settlement of the question, I have to request that the matter may receive the consideration of the Madras Government as soon as possible.

Letter—from C. W. RAVENSHAW, Esq., First Assistant to the Resident in Mysore.
To—the Secretary to the Government of Mysore, Public Works Department.
Dated—Bangalore, the 24th February 1894.
No.—7724—62–85.

With reference to correspondence ending with your letter No. 345–43, dated the 24th January 1894, I am directed to state that on reconsideration the Government of Madras withdraws its objection to the construction of the proposed Marikanave reservoir in the Mysore State.

Exhibit My.-12.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

REPLY TO PART VIII OF THE MADRAS CASE.

PART I—THE TRUE INTERPRETATION OF THE AGREEMENT OF 1892.

Legal Aspects.

The controversy has become so complex as to necessitate a clear summary of the real and principal contentions of the parties now requiring consideration at the hands of the Arbitration Committee. The complexity arises not only from the bulkiness of the documents filed by the parties but also from changes of position primarily on the part of Madras, from time to time. References to these changes are necessary as they throw unmistakeable light on the nature of some of the contentions still urged by Madras for decision.

2. After much discussion it was conceded by Madras that it would be sufficient to determine the rights of Madras as legally acquired and actually existing in 1910 (Ma. I, paragraph 4), and that they could under the Agreement of 1892, acquire a right by prescription only to what they have been utilising for *irrigation* in their territory (Ma. I, paragraph 32 and Ma. 14, paragraph 12).

3. The objection urged by Madras that "on the face of it, it is difficult to see what exactly the first issue was intended to cover" (Ma. 7, paragraph 3), no longer subsists as the impression of "indefiniteness" complained of could not survive a better knowledge of the pleadings in the case.

4. Madras took considerable pains to refute the arguments of "permissive user" (Ma. 7, paragraph 15) and of "joint possession" (Ma. 7, paragraph 30). The discussions relating to these have been rightly dropped, as it was pointed out that the arguments were what were advanced prior to the conclusion of the Agreement of 1892, and that they had not now been relied on by Mysore.

5. Madras at first contended that the main question for decision was whether or not Madras were justified under the Agreement of 1892, in refusing their consent to a particular work proposed by Mysore and objected to the form of the issue "what is the extent of the prescriptive rights of Madras" (Ma. 7, paragraph 6). When it was shown that whether as a subordinate or principal question the extent of rights of Madras has to be determined, "as on it depends the answer to the question whether Madras are right in objecting to the construction of the new reservoir" (My. 6, paragraph 8), this needless controversy ceased and the objection aimed by Madras against the issue, 2 (*a*), fell to the ground.

6. Madras disputed the competency of the Arbitrator to devise a method by which the water of the river might be usefully employed by both Madras and Mysore and questioned the suggestion of Mysore that the extent of Madras prescriptive right should be determined also on the basis of "fair and reasonable" occurring in clause 3 of the Agreement of 1892. Madras could see nothing but glaring inconsistency in the contentions of Mysore in regard to these points (Ma. 7, paragraph 7). When Mysore, however, pointed out that the extent of a prescriptive right is a mixed question of fact and law, that the test of "fair and reasonable" should be applied in determining the fact; and that this could be done without any such conflict with law as had been apprehended by Madras (Ma. 7, paragraph 7), the challenge was practically

dropped by Madras except to the extent that it was not for the Arbitration Committee to devise a method for enabling both Madras and Mysore to utilize the river in the best manner (My. 9, paragraph 1 and Ma. 7, paragraph 4). Even this last contention is not repeated in Ma. 14, in which, however, exception is taken only to the *notions* of what is fair and reasonable (paragraph 23).

7. The lengthy discussion of legal points in Ma. 7, paragraphs 14, and 16 to 46 were mostly drawn from the doctrines relating to the international law and the law of riparian rights, while the correct basis stipulated in the Agreement of 1892, viz., the law of prescription, was almost entirely disregarded. Attention to this error had to be pointedly drawn by Mysore (My. 6, paragraph 10). Nevertheless, Madras still adhered to their original line of thought and pressed for a detailed notice of the cases quoted by them (*vide* paragraphs 7 and 13 of Ma. 11). Mysore were obliged to again explain the correct position (My. 9, paragraph 4) and to furnish a criticism of the case law relied on by Madras (Appendix Q, My. 9). It is now gratifying to note that Madras concede at least a part of the contention of Mysore, viz., that the principles both of the law of prescription and of the law of easements govern the present dispute. (Ma. 14, paragraph 3).

8. The points still at variance will now be dwelt upon. For the sake of convenience, they will be discussed as far as possible in the order in which they occur in Ma. 14.

9. Mysore have all along been contending that Section 26 of the Limitation Act, before all others should, as far as possible, govern the present dispute and that the general principles of the laws of prescription and easement should be applied to the case subject to Sections 26 and 27 of the Limitation Act. In paragraph 10, My. 6, it was pointed out that "Sections 26 and 27 of the Limitation Act dealing with the subject of acquisition of easements by prescription have long been in force in Mysore also and there can be little doubt that this fact was in the minds of the framers of the Agreement in question." To this Madras replied that it was immaterial whether the rule of common law prescription or that contained in Sections 26 and 27 applied to the case, though they observed they were unable to agree that Sections 26 and 27 were present to the minds of the parties to the Agreement (Ma. 11, paragraph 5). In regard to this, Mysore explained their position more clearly as follows:—"As Sections 26 and 27 of the Limitation Act or the Indian Statute Law were the only ones in force both in Mysore and Madras at the time of the Agreement, the proper presumption is that they alone were present before the minds of the parties thereto. This view is practically conceded by Madras" (My. 9, paragraph 2). To this, Madras can only return a summary and ineffectual answer, viz., "The question of the particular kind of prescription that the authors had in view deserves no further discussion as it is of little practical significance in the present circumstances" (Ma. 14, paragraph 3). What these circumstances are, is stated neither clearly nor definitely; and this observation of Madras can be no answer to the oft-repeated contention of Mysore. Mysore contend that this point has much practical significance as it explains why 1890 is taken in this case as the starting point of the prescriptive period and why Mysore urge that the enjoyment of any right claimed by Madras should be found, if the right is to prevail, to have continued to within two years of the suit and that, if that cannot be found, the claim must fail (My. 6, paragraph 7: and My. 9, Appendix Q, paragraph 7).

10. The division of the Madras claim into—

(i) the flow required during the period March to May and
(ii) that required during the period June to February

is convenient and intelligible. These claims will be referred to in their order.

11. In regard to the first claim, which may, for the sake of brevity, be styled by the already familiar designation of the hot weather supply, there are two serious errors in the Madras position. It is assumed that an "understanding" has been recorded with reference to this supply in paragraph 78, My. 7 and paragraph 99, Madras, Part VI. Next, it is asserted by Madras that the question of prescription arises chiefly in connection with the second claim noted above, implying thereby that it has no material bearing on the first. In view of the turn which the controversy has taken and also of the stage at which it has arrived, a brief and succinct statement of the facts of such controversy from its very inception appears necessary.

12. The question has passed through five distinct phases so far as Madras are concerned:—

Five variations in the Madras case.

First of all, Madras definitely stated on the 15th November 1910 (*vide* paragraph 74 below) that no demand for irrigation existed in Madras in regard to the Cauvery water during the hot weather and thus admitted that the whole flow of the river was available for being impounded by Mysore during such period.

Secondly, in Ma. 3, paragraphs 3 and 4, Madras put forward a claim quite inconsistent with their first position, for not less than 900 cusecs. No details in respect of the claim were specified by Madras

Thirdly, Madras urged in Ma. 4, paragraphs 3 and 4, their alternative claim to the whole natural flow of the river up to 7 ft. in the absence of 900 cusecs. For the first time Madras alleged that their first position was due to an understanding on their part that Mysore would let down 900 cusecs from their power works at Sivasamudram for the hot weather supply of Madras.

Fourthly, in Ma. 9, paragraph 21, a modified claim was asserted by Madras in this respect. Madras stated that their prescriptive right was equivalent to the whole natural flow *minus* the supply customarily drawn off the channels by Mysore for hot weather irrigation within their own territory. And at the same time, in Ma 10, paragraph 77, Madras urged that their rights extended not to the whole natural flow of the river, but only to a *limit* flow of L million c. foot per day, L being defined as the amount of flow to be fixed under the second term of reference.

Fifthly, Madras urged the existence of irrigation during the hot weather and contended that their prescriptive right extended to the whole natural flow under conditions prior to the installation of power works at Sivasamudram. Madras relied, for this position, on the supposed admission of Mysore that the first part of their fourth contention noted above was sound. (Ma. 12, paragraph 99.)

13. Mysore noted the first position of Madras; denied the second and the third; contested and argued the fourth; and partly admitted the fifth contention. Mysore claim that Madras should be asked to adduce satisfactory proof of the circumstances urged by them as supporting their claim to hot weather flow.

Mysore case.

14. The points for determination by the Arbitration Committee in regard to the hot weather supply will accordingly be somewhat as follow :—

Points for determination.

(*a*) Whether hot weather irrigation actually exists in Madras above the Upper Anikat under the Cauvery ?

(*b*) If so, has the right to draw off water from the Cauvery matured into a prescriptive right in favour of Madras ?

(*c*) What is the extent of such right and what limits of flow should be provided for ?

These points, just as the main claim to 7 ft. limit flow over the Cauvery Dam, have to be decided on the basis of the Agreement of 1892 and it is needless to repeat the facts which Madras have to prove to support their present claim.

15. Madras rely on the statement of Mysore "even if the waiver is now withdrawn, they (Madras) are only entitled to the natural flow of the river after the customary Mysore requirements are satisfied." This is understood by Madras to be an admission on the part of Mysore of the Madras fourth claim. Mysore must demur to this in the following circumstances :—

Alleged admission by Mysore of the right of Madras.

(i) Mysore had been given to understand that there was no hot weather irrigation in Madras.

(ii) The corner-stone of the Mysore case has throughout been that the prescriptive right of Madras is not to natural flow of water but to *quantities of water or limits of flow actually used for irrigation*.

(iii) The passage in question must be read along with the others in the same paragraph which summarizes the chief contentions of Mysore in regard to the hot weather supply in a way entirely opposed to the passage relied on by Madras. The paragraph must be read as a whole and a passage therefrom should not be isolated for fixing a construction thereon which obviously militates against both the preceding and succeeding passages.

16. The expression "average estimated natural flow" remains to be commented upon. This expression indicates the reluctance of Mysore, often repeated, to admit any right on the part of Madras to natural flow irrespective of a limit flow required for irrigation. Mysore are quite prepared to recognise in favour of Madras any prescriptive right which they can establish to the hot weather supply. But, as a proof of the several facts necessary to establish such a right would involve delay and protract the proceedings of the Arbitration, Mysore suggested that Madras might be given the benefit of "average estimated natural flow." As this suggestion is unacceptable to Madras, Mysore have no objection whatever to its being disregarded without any prejudice to the merits of the case.

"Average estimated natural flow" explained.

The points at variance between Madras and Mysore will then be the three detailed in paragraph 14 above. Madras will have to adduce satisfactory proofs of the same.

17. The second claim, viz., water required by Madras during the period June to February, will now be considered. The contention of Mysore in regard to the Madras claim to 7 feet flow in the Aganda Cauvery has been quite simple from the very beginning, viz., that Madras never earned a prescriptive right for purposes of irrigation to such 7 feet flow over the Aganda Cauvery or even at the Cauvery Dam. For, prior to remodelling limit flow required and used for irrigation in Madras was 6 feet or less (My. 6, paragraph 17 and My. 9, paragraph 3).

The next step in the reasoning of the case of Mysore is that, even *assuming for the sake of argument* that Madras had earned a prescriptive right to 7 feet flow over the Aganda Cauvery prior to the remodelling, it is inadmissible under Section 26 of the Limitation Act, as the enjoyment of the right in that manner has ceased from the date of the remodelling of the anikat.

The right asserted underwent both physically and legally radical change in consequence of the remodelling and also of nature of the user that followed it. A limit flow of 7 feet was thereafter secured in actual practice at the Cauvery Dam *without necessitating at the same time any overflow at the Upper Anikat.*

18. As Madras do not appear to have fully understood the facts underlying the legal contentions of Mysore, it will be necessary to state these facts in a different form as follows :—

Before the remodelling of 1899, the circumstances were :—7 feet flow in the Aganda Cauvery was not used for irrigation by Madras. Even if it be assumed that 7 feet flow over the Cauvery Dam was so used, the 1 foot flow over the Upper Anikat was not specially used for irrigation even under the Lower Coleroon System. It was only the consequence of a 7 feet flow in the Aganda Cauvery so far as the Upper Anikat was concerned.

After the remodelling, the circumstances have been as follow :—7 feet flow at the Cauvery Dam may have been utilised by Madras for some years; but this user has not matured into a prescriptive right owing to the period of user falling short of the legally prescribed one. And there has been no flow of 1 foot at all over the Upper Anikat since the remodelling, whenever 7 feet flow has been secured at the Cauvery Dam. Hence the contention of Mysore that the claim to 1 foot flow over the Upper Anikat is untenable and that it is in fact not in existence, assuming that a right to it was ever acquired either as a prescriptive right or as an easement of necessity.

19. The divisibility or otherwise of the right even before the remodelling depends upon the character of the flow as determined by the works. Even the arrangement then in existence was such as to divide the 7 feet flow, if any, into two parts, viz., 7 feet over the Cauvery Dam and 1 foot over the Upper Anikat. This divisibility was still more emphasized by the remodelling of the works in 1899, as the 1 foot flow over the Upper Anikat was altogether detached from the 7 feet flow over the Cauvery Dam and completely stopped in actual use. Thus Mysore do not admit the Madras claim to an *indivisible* right to limit flow prior to the remodelling and much less afterwards.

20. Thus the statements made by Madras in paragraph 11 are based on certain erroneous assumptions, viz :—

(1) that the 7 feet flow used to be prescriptively enjoyed for irrigation by Madras prior to the remodelling;
(2) that the 1 foot flow over the Upper Anikat was used for irrigation under the Lower Coleroon System;
(3) that there is no difference between using a flow required *directly* for irrigation and a flow *indirectly* connected with irrigation; and
(4) that their right to flow was indivisible.

Mysore do not grant any of these assumptions as correct. If they are eliminated as they should be, the contentions advanced in paragraphs 11 and 12 of Ma. 14 fall to the ground. This step, viz., 1 foot flow over the Upper Anikat is not, in the words of Madras themselves, "necessary to make that last step in the process of irrigation possible."

21. It is difficult to follow the line of reasoning of Madras in this paragraph. Mysore have been uniformly contending that the user itself in this case has been varying in extent. In My. 5, paragraph 18, it was observed "In this case water is used in periodically fluctuating quantities dependent upon the varying flow in the river and the varying needs of irrigation." But this contention has not been satisfactorily met by Madras. It is not denied that Madras are at liberty to extend the area of irrigation within their territory; but they are precluded from claiming in consequence thereof any increase over the prescriptive limit flow, unless a right to such increase has become a prescriptive right under the terms of the agreement of 1892.

Ma. paragraph 14.

22. The discussion in paragraphs 14 and 15 of Madras is somewhat inconsistent with the admission made by Madras at the very inception that it is common ground that the rights of Madras are to be determined as in the year 1910 on the basis of the agreement of 1892. In view of this admission, it is really difficult to understand why exception has been taken to the Mysore proposition that the right of Madras is confined to what can be shown to have been uninterruptedly enjoyed for twenty years since 1890. There is substantially no difference between the statement laid down as common ground and that which is sought to be rebutted. Acquisition of prescriptive rights implies the enjoyment of such rights for a period of time as a condition precedent and Mysore have taken this period to be twenty years under the particular law of prescription applicable to the case, viz, section 26 of the Limitation Act. As a matter of fact, this notion of twenty years was put forward by Madras themselves in the discussions, etc., preceding the agreement of 1892 (*vide* Appendix A. Ma. 11, marginal note No. 2, on page 6). This specific period was also emphasized by the late Sir Seshadri Ayyar in his orders, dated the 5th July 1892, on the P. W. Secretary's memorandum, dated the 23rd May 1892, in regard to the Marikanave controversy (*vide* copies of correspondence already produced).

Ma. paragraph 15.

23. In this case the word "suit" referred to in paragraph 16, Ma. 14, must be taken to mean dispute. This contention is supported by the meanings of "suit" as found in the standard dictionaries; and the argument of Madras therefore, does not hinder the application of either the provisions of section 26 to this case or the distinction pointed out by Mysore in regard to the decision in *Commissioner of French Hock v. Hugo*, L. R.—10 App. case 336. (*Vide* Ap. Q. My. 9, paragraph 9.)

24. Then, again, Madras ask "And further why should we rely only on 20 years' user *after* 1890" Because, the time when the dispute arose and the provisions of the Agreement read with section 26 of the Limitation Act, as already explained, constitute 1890 as the starting point for consideration for the purposes of this case. It does not necessarily wipe out all previous rights actually earned by Madras; but in order that they should be recognized as actually existing when the dispute arose, the necessary proofs should be adduced by Madras. If the present dispute had arisen in 1891 or 1895 as hypothetically put forward by Madras, and had the agreement been in existence in 1891, the starting point would have been 20 years prior to each of those dates, but not 1890. In paragraph 17 of Ma. 14, Madras fail to note that, under the agreement, the *onus* of proving that the rights claimed by them were both "already acquired" and "actually existing" when the dispute arose, viz., 1910, is on Madras themselves.

25. Coming to the question of the area irrigated being a chief criterion in determining the extent of prescriptive right to use of water for irrigation, Mysore observe that their position has again not been correctly understood. Madras themselves have made several statements in their documents filed before the Arbitration Committee, which serve to impliedly prove the correctness of the view urged by Mysore. Reference to a few of such statements will be made here:—

(i) "on the one hand there is an existing prescriptive right of the *lands* in Madras, over a million acres in area, to receive and enjoy without restriction whatever water they (*i.e., lands*) have heretofore been receiving."....."The whole of this area has an undoubted right to receive the natural flow of the Cauvery" (Ma. 9, paragraph 4). The italics are ours.

(ii) "it has been shown that the then existing state of the works made the passing of the water a necessary condition to the *required irrigation supplies being delivered on Madras lands* (Ma. 9, paragraph 18). The italics are ours.

As a matter of fact, in Ma. 14 itself there occurs the passage, "It is no concern of Mysore how Madras utilise or distribute this quantity within its own limits, so long as it is used for purposes connected with irrigation." One step further will render the contention of Mysore clear. Irrigation of what? It is impossible to think of any irrigation *independently of lands*. And Madras cannot certainly deny that the *amount* of *irrigation* does constitute a chief criterion in determining the extent of prescriptive right to use of water for irrigation. If so, it logically follows that the acreage irrigated is an important element, for the purpose, as contended by Mysore.

26. It is unnecessary to repeat the arguments of Mysore to the effect that the right, if any, earned to the 1 foot flow over the Upper Anikat must be deemed to have been abandoned or to have ceased with the necessity therefor. It is admitted by Madras that the principles of the law of easements are analogically applicable to the present dispute and therefore it follows that they also apply to the pleas of abandonment and cessation of easement of necessity. Madras have said nothing to invalidate these pleas. It is not admitted by Mysore that Madras ever earned a *prescriptive* right for irrigation to this 1 foot flow and therefore the contention of Mysore that the right to 1 foot flow over the Upper Anikat, if any, ceased with the necessity therefor is not inappropriate, as argued by Madras in Ma. 14, paragraph 21.

27. Exception is also taken by Madras to the expression "non-user" employed in connection with this 1 foot flow. But the objection is groundless; for ever since the remodelling, the 1 foot flow over the Upper Anikat has been non-existent in its possible former sense. It ceased thereafter to be either a cause or a consequence of the 7 feet flow at Cauvery Dam and it was in fact not available for use as such.

Madras paragraph 22.

28. It is strange to find Madras contending that the opinions of Madras officers and even of the Arbitration Committee, regarding the extent of the prescriptive rights are of no value in this controversy. Mysore are fully justified in their endeavour to support their case that only 6 feet over the Cauvery Dam was the limit of the enjoyment by Madras, by references to the statements made by Madras officers themselves and, what is more important still, to the calculations embodied in the records relating to Metur project These statements would be perfectly relevant evidence even in any court of law, tending, as they do, to throw light on the question of the extent of actual user. Nor can it reasonably be contended that the calculations and opinions of responsible Public Works Department officers, conversant with the actually existing facts, would be far divorced from realities. Mysore have therefore sought to support their case from the best evidence possible in the circumstances. It would indeed be highly anamolous if such materials are sufficient to form correct bases for maturing large irrigation projected of Maras, but insufficient to have any probative value in this controversy.

Madras paragraph 23.

REPLY TO PART IX OF THE MADRAS CASE.

Part II.—Prescriptive rights.

29. A reference to the papers connected with Marikanave Reservoir will show that a mere flow, as such, was not demanded irrespective of the requirements of the area irrigated. In the Madras Chief Engineer's Note No. 58-I, dated the 17th March 1892, the exact areas dependent upon the river Krishna have been given (*vide* copies of correspondence produced already).

Madras paragraph 29.

30. Madras have explained that clause (*b*) of the second issue has nothing to do with prescription but that it raises a different question, *viz.*, what must now be done to conserve the rights of Madras. This is straining the plain and unmistakable meaning of clause (*b*) which is only intended to define the quantity of water (measured at the Upper Anikat) necessary for the extent of prescriptive irrigation determined under clause (*a*). The question "what must *now* be done to conserve the rights" forms clause (*a*) of the third issue.

Madras paragraphs 30 to 32.

31. Notwithstanding the explanation now given by Madras, the consideration of areas under the two heads originally proposed by Mysore is not affected and the correct way of considering the claims put forward by Madras, *viz.*, (1) 644 m. c. ft., per day over the Upper Anikat under the old conditions, and (2) 7 feet over the Cauvery dam, is to analyse and see where the quantity of 644 m.c.ft., could be used as contrasted with the other demand. The mere remodelling of the Upper Anikat cannot change this natural division of the areas served by the respective quantities demanded.

32. A statement (Appendix S) is attached showing the area of irrigation in the quinquennial periods from 1880 to 1910 prepared from Appendices XV and XXI of the Madras case. Where the figures are not available for any particular channel for any period, the averages of the available figures are taken. Even with this assumption, the total irrigation is seen to have increased gradually by 17,462 acres from 1880 to 1910. In fact, Madras have admitted that some scattered minor extensions of areas have taken place. The question is whether they are merely due to the greater efficiency in control and distribution of water or whether they are extensions requiring an extra quantity of water.

Madras paragraph 33.

The description of the channels concerned, as given by Madras in their paragraphs 102 and 103, Ma. 14, indicates that any material portion of the extension could not be due to the former cause; and the original statement of Mysore that the area of irrigation must have increased subsequent to 1890 requiring a greater quantity of water holds good. Such extension cannot therefore be included in the extent or area of prescriptive irrigation.

33. In the Madras G.O. No. 400 I, dated the 24th September 1909, quoted in paragraph 25, My. 7, the area under the Vadavar is given as 11,000 acres and that under Veeranam tank as 45,000 acres, making a total of 56,000 acres. When this was increased to 63,000 in paragraph 37, Part II, of the Madras case, while the area under the Vadavar was given practically the same as before, Mysore had to state that the increase in the Veeranam tank required an examination. Now, however, Madras show an increase in the Vadavar area from 11,000 to 17,000. This matter requires therefore verification from the information already called for from the Collectors.

Madras paragraph 34.

34. Madras state that "it is reasonable and proper to consider and study separately the conditions and requirements of irrigation supply for various tracts irrigated under different limiting conditions," the final conclusion being based on a consideration of all these requirements. This is precisely what Mysore have attempted to put before the Arbitration Committee.

Madras paragraph 36.

The consideration of the three groups of areas separately (namely, above the Upper anikat, in the delta and under the Coleroon, respectively) becomes therefore necessary and proper.

35. The conclusion that no specific supply is required for the area under the Coleroon, can only be arrived at, by a separate consideration of its requirements, as shown in the Mysore case.

Madras paragraph 37.

Requirements of the Cauvery Delta.

Madras paragraph 38.

36. The division of the flow under three heads as below made by Madras in this paragraph is no doubt natural:—

(*a*) water for irrigation of the delta,
(*b*) water for scouring through the under-sluices of the Upper anikat, and
(*c*) water surplussed over the Upper anikat.

37. The rules in force after the remodelling distinctly specify that no scouring is to be allowed unless water rises above 7 feet. Those prior to remodelling specificially enjoin that scouring should only commence at a depth of flow not less than 6½ feet. So at a stage of river represented by the 6 feet limit there would be no scouring. The admission here attributed to Mysore is therefore denied.

Madras paragraph 40.

38. The statement of Mr. Larminie has been shown to be quite in agreement with the natural interpretation of the rules of 1882 and its value cannot be disregarded.

Madras paragraph 43.

39. The useful limits cannot change from year to year, nor has the necessity of disposal of floods, by distribution into the Cauvery and the Vennar rivers on the one hand, and the Coleroon on the other, materially changed even after remodelling, although there may be a better control at the Upper anikat. The function of the Grand anikat to distribute the large floods between the Cauvery, the Vennar and the Coleroon has not been materially altered.

Madras paragraph 44.

40. Any hydraulic engineer will readily admit that, when a maximum difference of 4½ feet between the front and rear gauges is specified, as the limit consistent with the safety of the regulators, the shutters have to be gradually adjusted to this extreme limit. Instantaneous regulation is not practicable. The very necessary intermediate stages of regulation must mean that greater quantities than the specified limits of the full and ample supply, had to be admitted into the canals. Mysore have already explained (in their paragraph 47 of My. 7) that the intermediate stages of the regulation are all represented by clauses 2, 3, 4 and 5 of the rules of 1888.

Madras paragraph 45.

41. The argument of Madras about the wording of the rules and the gradual opening of the scour gates of the Upper anikat would hold good only if the regulating staff employed on the spot were as competent as the framers of the rules. But such rules of regulation are framed to avoid all deficits due to possible mistakes of regulation which must always arise on account of the more or less imperfect appliances and agency employed for the purpose. A very delicate adjustment of the gates would be necessary to keep the level constant with a changing river and this cannot always be expected of the regulating staff. It is therefore natural that an allowance of about 6 inches should have been made in the rules for scouring and another 6 inches for sand in the low stages as already explained.

Madras paragraphs 48 and 49.

42. That the sluice gates would be kept open discharging as much as 669 m.c.ft., in a falling river and yet water maintained at 6 feet level over the Cauvery dam, is inconsistent with the natural conditions, and is also against the spirit and letter of the rules of 1882, clause 2 in particular.

The natural mode of regulation according to the rules would be that the gates would be begun to be closed as soon as water falls below 6½ feet and would be absolutely shut when 6 feet level is reached. No claim to the water for scouring would thus arise at a stage of flow of the river equal to 1,625 mills. c.ft.

Madras paragraph 50.

If occasional scouring be necessary, Madras have still the full option of utilising whenever they please for scouring or for any other purpose all excess flow and occasions of such excess will not be materially diminished by the Mysore Reservoir, the impounding in which will be practically confined to high stages of the river in July and August.

43. It may here be stated that facilities for scouring would be much less with the proposed Metur Reservoir, as its capacity is much larger, while the quantity of water diverted for other than scouring purposes is nearly 5 times the quantity proposed to be utilised through the Mysore Reservoir. Floods below the Mysore Reservoir and unintercepted by it, are more abundant and occur more often than below the Metur Reservoir and yet no specific allowance is made for scouring in this Project.

Madras paragraph 52.

44. Whatever may be the value of the figure for discharge given by Major Oakes, the level of the Calingula crest should be taken as fixed. It discharges when there is a flow of 5½ feet above the Cauvery dam, as given by Madras; and this does not necessitate any change in the Mysore statement (My. 7, paragraph 44).

Madras paragraph 53.

45. The argument here is practically a repetition of the contentions in paragraphs 43 and 44 which have been answered above.

The existence of facilities for forcing extra water after remodelling is admitted by Madras. This practice being of recent origin cannot create any prescriptive right. There will be plenty of surplus water left at the option of Madras even after the Mysore Reservoir comes into operation; and with the means of control now obtainable at the Upper Anikat, Madras will be at liberty to take this water into their canals if they choose. This matter will be more fully dealt with in the later paragraphs.

Madras paragraph 54.

46. The argument here has been answered in the reply to paragraph 44 *supra*. The figures given in the Madras Appendix XVIII are not based on any specific requisitions for extra supplies of water required and cannot therefore be accepted in the light of the explanation given by Mysore.

Madras paragraph 55.

47. Clause 1 of the rules of 1902 relating to non-flood season is reproduced below for ready reference:—

"On Monday and Tuesday full supply will be sent down the Cauvery and what surplus there is will be sent down the Vennar. On Wednesday and Thursday full supply will be sent down the Vennar and what surplus there is will be sent down the Cauvery. On Friday, Saturday and Sunday, the water will be sent down the Vennar and the Cauvery proportionately."

Here distribution by turns and proportionate distribution are mentioned on specific days of the week and the position taken by Madras that distribution by turns is not enjoined in the rules, is obviously wrong.

Madras paragraph 56.

48. Even taking the somewhat higher figures derived from the Assessor's curves and accepting allowances made for losses in transmission, the argument of Mysore still holds good, *viz.*, that 6 feet must have been the full supply limit prior to remodelling, considering that facilities have been afforded for forcing extra supplies after remodelling.

Madras paragraphs 57 and 58.

49. With the explanation given above in paragraphs 39 and 40, there is nothing to add in reply to the Madras contention here, except to refer to the statement of one of the responsible Madras officers quoted under:—

"No scheme for the complete exclusion from the delta proper below the Grand anikat of all the Cauvery floods, except what is required for irrigation is either practicable or advisable." (*Vide* item, paragraph 36 of Ma. 16).

Madras paragraphs 59 and 60.

50. An attempt has been made here by Madras to show that by means of dam stones the gauge reading of the Cauvery branch could be raised from 4·67 to 6·67 feet. The quantity represented by this higher gauge would be about 30,000 cusecs; and, as this is much more than what Madras are now claiming for the whole of the irrigation under both the Cauvery and the Vennar, *viz.*, 26,680 cusecs, the conclusion is obvious that, if such a quantity had been admitted into the river Cauvery alone, it could not have been all for purposes of irrigation, in the face of the specific full and ample supply of 11,240 cusecs for the Cauvery branch, noted in the rules.

Madras paragraph 63.

51. Notwithstanding the contentions here, the conclusions to be drawn from Mysore Appendix D and mentioned in paragraph 49, My. 9, require no alteration.

Madras paragraph 64.

52. The computation made by Mysore was only a modification of the Madras computation after making some allowance for the continuous flow in the hot weather due to power works. But, if *twenty times* the figure computed by Mysore (20 × 583 m.c.ft. = 11,660 m.c.ft.), would still be found by Madras quite inadequate to fill up the sandy beds of the delta rivers and channels as now asserted by them, then the Metur Project supply for the month of June (354 m.c.ft. × 30 = 10,620 m.c.ft.), would be much more inadequate for that purpose. There would only be *a minus* discharge left for the fields. It is significant that the pertinent reference made by Mysore to a passage in the Metur Project in this connection, has also been entirely ignored by Madras. All that Mysore urge is that the limit for June cannot be the same as for July and August, and whatever limits may be fixed for these latter months, the limit for June may be reasonably reduced in the proportion of the quantities connoted by the gauge readings 2·9 and 6·1 (354 : 1,690) these being the Metur Project limits for June and July. Thus, with the limit flow of 1,625 m.c.ft., proposed by Mysore for July and August, the flow due in June would be about one-fifth of 1,625 or 325 m.c.ft. But Mysore have already made a more liberal allowance by fixing limits of 450 m.c.ft., and 1,045 m.c.ft., for the first and second half of the month, respectively.

53. Sir John Benton's tables in Appendix II give the total quantities due to discharges up to a limit of 7 feet at the Cauvery dam from day to day. They have no reference to the total discharges that would result from the "full and ample supply" limits mentioned in the rules of the Grand anikat. This is what was meant by Mysore when they stated that Sir John Benton's inferences were drawn without reference to the prescribed rules of regulation.

Madras paragraph 68.

54. The matter that is said to be irrelevent has been put in by Mysore to show that the conditions of even the worst year would not be disturbed by the proposed impounding. The impounding is confined mostly to July and August, when generally the floods are abundant and so the area of transplantation will not be affected by it. The north-east monsoon conditions are practically undisturbed by the reservoir.

Madras paragraphs 69 and 70.

55. The corrected figures in column 7 of Appendix XXIV, Ma. 14, are not exclusive of the large quantities of tail water wasting into the sea. This is so stated in the Madras Printed Reports. The discharges are necessarily high due to the admission of excessive quantities for disposal of floods and so they do not give an idea of the correct requirements of irrigation. Such an idea can only be obtained from the figures in column 10. A comparison of these with the figures in column 5, which are the quantities resulting from the Mysore limits, shows that the legitimate requirements of irrigation will be met, as already explained in paragraph 61, My. 9.

Madras paragraphs 71 and 72.

56. Here it may be noted that the losses in transmission and draw off between the Upper and the Grand anikats were not considered by Mysore, as these will be generally made up by the replenishment from the Kodumuruti river with a catchment area of 768 square miles which joins the Cauvery above the Grand anikat.

57. It is admitted that rice crop irrigation necessarily means some waste due to the change of stagnant water. But, in the delta, the drainage channels of the upper areas act as supply channels for the lower areas and so the wastage on this account is not much. The full and ample supply limits according to the rules provide for all such necessary change of water. But the total discharges shown in column 7 of Madras Appendix XXIV, include extra quantities let in merely for the disposal of floods. The Madras Triennial Report for 1901–02, therefore, states that the omission to deduct such extra flood water gives "a wholly false idea of the quantity of water used." If the explanation of Madras now given, that all quantities passed into the Cauvery and the Vennar are to be considered useful were correct, the words "wholly false idea of the quantity of water used" would not have been used in an important Government Report.

Madras paragraphs 73 and 74.

58. The words "it is well known that the maximum requirements of rice crop is represented by a total depth of 72 inches of water above the fields," used by Mysore in their paragraph 62, My. 9, require some explanation. The practice in Mysore in computing *tank storage* required for rice cultivation is to take a depth of 72 inches over the fields to be irrigated, including provision for evaporation and absorption in the tank; and this quantity required per acre is generally known as a *unit* in Mysore. Thus, the quantity represented by 72 inches depth "above the fields" is that required at the head of the canal system.

Madras paragraphs 76 and 77.

59. The total quantity of water required for 890,000 acres of single crop area and 90,000 acres of double crop area with 66·05 and 49·45 inches, respectively, comes to 181,000 m. c. ft., and not to 190,000 m. c. ft., as stated by Madras. Assuming that this would be the requirement in a normal year for the delta area, the quantities due to the Mysore limits, as shown in column 5 (of Madras Appendix XXIV) are in most cases greater than this figure. In bad years, there is a deficiency in the river flow itself, and it is natural that the resulting flow would be somewhat less. But a glance at column 5 will show that even this variation is not much.

60. It may be here stated that although the figures in column 5 are those due to the strict application of the rules, Madras will have the option, during the period of impounding, of taking larger supplies as they please. The difference between the normal supply of 181,000 m.c.ft., noted above and the figures appearing in a few cases in column 5, could then be more than made up. Hence even on the considerations put forward by Madras, there will be ample supply to meet all the legitimate requirements of the delta after impounding in Mysore.

61. A reperusal of paragraph 65, My. 9, and paragraph 63, My. 7, will show that Madras should not demand very high limits of flow with a view to avoid granting remissions in bad years which they have been granting in the past.

Madras paragraph 78.

62. While Mysore admit a 6 feet limit flow in the height of the south-west monsoon season, they have been from the very commencement urging that the same limit would not be applicable throughout the irrigation season.

Madras paragraphs 79 and 80.

63. Madras have admitted that substantial reduction of canal supply is possible on account of rainfall and that concession might be given to Mysore in this respect. To secure this concession it is now to be decided whether the rules suggested by Mysore may not be adopted bodily, or with such modifications as may be necessary.

Madras paragraph 82.

Coleroon Requirements.

64. The sources of supply to the Coleroon system are correctly stated by Madras. As the extensive and deep sand bed of this river acts as a reservoir to hold the run-off from the large catchment of 1,077 square miles, this water would be available for irrigation at the Lower Anikat. Taking the average rainfall as 35 inches, a run-off of 12 m.c.ft. per square mile can be safely expected and this will mean an yield of 12,924 m.c.ft. capable of irrigating about 45,000 acres.

Madras paragraphs 87 and 88.

Also, the floods in the worst year (1899) after impounding in Mysore, amount to about 49,000 m.c.ft., at the Cauvery dam as can be seen from the working tables appended (Appendix T). It may be expected that by direct flow into the Veeranam tank and the canals, and by absorption into, and subsequent seepage from, the bed of the river, about one-fourth of this surplus may be expected to be utilized for irrigation. This also means about 45,000 acres. The Veeranam tank catchment has been shown to irrigate about 30,000 acres (My. 7, paragraph 72).

Thus, the total area that can be irrigated from the local rainfall and the floods alone will amount to 45,000 + 45,000 + 30,000 = 120,000 acres, which is more than the total area of irrigation dependent on the Coleroon system.

But the above calculation does not include the very large amount of leakage from the delta rice lands flowing directly into the Coleroon. This alone would suffice for about 30,000 acres of irrigation. Thus, all the four sources would yield sufficient water for an area of about 150,000 acres.

65. At all events, there can be no difficulty whatever in securing enough water even in bad years, for the 112,000 acres under the Lower Anikat, without imposing any additional burden on Mysore specifically for this area. These details fully explain the passage already quoted (and now repeated for ready reference) from the Metur Reservoir project.

"It is found as a fact, that although no definite supply through works is being passed into the Coleroon, there is always an adequate supply in that river for the Lower Anikat system when the supplies in the Cauvery system are adequate."

* Not printed.

66. The object with which the tables in Appendices K (and K-1*) have been prepared will be explained more fully now.

The quantities actually diverted for irrigation into the different canals (column 10) are in most cases less than the quantities shown as due to leakage, seepage, etc. (column 8). Sixteen fortnights are considered in each year. Of these, there are only 4, 0, 4, 2 fortnights in the years 1899–00, 1904–05, 1905–06, 1906–07 respectively, when the actual quantity used for irrigation (column 10) is greater than the quantity due to "leakage, etc." (column 8). Thus, the periods when the flow from the surplus works above was helpful in adding to the discharge in the canals, cannot but be considered *rare*. Madras, instead of comparing figures in columns 8 and 10 as shown above, have by mistake compared columns 6 and 10 and it is natural that their conclusion should be wrong.

67. What Mysore meant when they said that the flow in the Lower Anikat canals has been "maintained", will be clear from the above. All that they meant was that the flow in the canals, *such as it was*, was practically all obtained from "leakage, etc.," and that the surplus water from works above contributed to such flow only on rare occasions.

The words "leakage, etc.," have been used in the heading of column 8 to denote that the additions are not merely from leakage, but also from all other sources, such as seepage arising from absorption from floods of both the monsoons. No object could have been gained by showing the *minus* figures in this column. What is clearly intended is that there is an arithmetical increase in column 7 over column 6 on many days. And the quantity of such increase, being unaccounted for by direct flow, can only be considered as due to leakage, seepage, etc. That there is absorption also of large quantities between the surplus works and the Lower Anikat is not denied. That such absorption partly accounts for the additions shown in column 8 has been admitted by Madras also.

In fact, it is this absorption whether from the floods or from the leakage water flowing into the Coleroon from the rice fields or from direct run-off from the catchment, that must fully account for the flow at the Lower Anikat when there is more than the direct supply from the surplus works above. If this is understood, there can be no vitiation of figures in column 8 in the omission of the *minus* quantities, which merely mean absorption of one sort or other noted above. It is true that for the moment the appearance of the *minus* figure really means the absorption of so much water into the bed of the Coleroon. This absorption does not at the same time mean that the water so disappearing is permanently lost. Madras have themselves stated that the bed of the river acts as a reservoir to store up such absorbed water and this is alway

returned in the low stages of the river to maintain the flow at the Lower Anikat, *such as it is.* This absorption appears again as a positive gain and accounts for the total quantities of leakage, etc., shown in column 8; and so the figures given in paragraph 78, My. 9, do not require any modification and cannot be considered as either erroneous or misleading.

* Not printed.

For example, referring to Appendix K-1,* in the month of July 1899 the total quantity surplussed as per column 6 is 25,058 m. c.ft. The observed discharge at the Lower Anikat is 21,759 m. c.ft. The inference is natural that (25,058—21,759) 3,299 m. c.ft.. had all disappeared by absorption. But the figures shown in column 8 indicate that a total of 1,725 m. c.ft. has actually reappeared as an additional discharge due to seepage from the absorption of 3,299 m. c.ft. noted above. Similar remarks apply to other months also.

† Not printed.

68. Now, coming to the supply of the Veeranam tank, column 11, Appendix K-1,† shows the total discharge passed through the Vadavar; and this in every case is less than the quantities of leakage, etc., shown in column 8 and indicates that whatever supply was passed through the Vadavar for direct irrigation as well as for replenishment of Veeranam tank was practically all derived from other than direct flow.

69. Provision for direct irrigation on the Vadavar has been taken at a duty of 50 acres. The quantity corresponding to this duty or whatever less quantity was available, has been assumed as having been used for direct irrigation on the Vadavar.

The balance quantity, as shown in column 13, is what is left for the Veeranam tank, either for 'impounding" or for direct irrigation thereon. The quantities in column 13 by themselves would be insufficient to meet the requirements of the irrigation under the Veeranam tank, which, however, has been successfully carried on from year to year. The conclusion is therefore inevitable that the help which the Veeranam tank cultivation gets from the Vadavar is quite insignificant, the major portion of the supply being doubtless derived from its own catchment. With this explanation, the Mysore argument in paragraph 75, My. 7, *viz.*, that the irrigation under the tank does not materially depend upon the south-west monsoon supply from the Coleroon, stands good. Madras in Ma. 1 have specifically made a very limited demand of only 66 m.c.ft., for this purpose, corroborating the above view. Even this demand of 66 m. c.ft will appear excessive from the actual average daily discharges shown in column 14 (Appendix K).

70. If, as implied in sub-paragraph 6, under paragraph 89, Ma. 14, the impounding in the Veeranam tank can only commence when the total discharge in the Vadavar exceeds 110 m.c.ft., then, for the four years for which the tables are prepared (App. K and K.-1‡), there would have been no scope whatever for such impounding in any of the years except for four days in 1906 (24th to 26th July and 29th August) and the quantity available on these four days was 1 to 5 m.c.ft., only. This is in spite of the fact that there was abundant flow at the Lower Anikat on many days as may be seen from column 7. Thus, no such specific flow as is now demanded was taken in past years, nor is it really required.

‡ Not printed.

71. Madras themselves have admitted in paragraph 98 that the effect of the Mysore Reservoir in a good year will not injure the Lower Anikat irrigation. But even in the worst year, 1899, the available surplus after impounding in the Mysore reservoir will be 49,000 m.c.ft., at the Cauvery Dam (Appendix T.)

Madras paragraphs 95 to 98.

It has been admitted by Madras that the discharges in high floods at the Cauvery Dam are under-estimated. If a correct estimate be made, the quantity now given as 49,000 m. c.ft., would really mean much more. Thus, there is no reason to apprehend that, even in the worst year, the Mysore reservoir will reduce the floods in any way prejudicial to the Lower Anikat irrigation. It is in this sense that Mysore stated in paragraph 84, My. 9, that the correct measurement of high floods had an important bearing on the Mysore reservoir, on the one hand and on the requirements of Coleroon irrigation, on the other.

An abstract (Appendix W) of discharges at the Lower Anikat showing the figures for the two monsoon seasons separately, has been extracted from the annual diagrams furnished by Madras. It will be seen that in the worst year (1899) as much as 55,000 m.c.ft. was uselessly surplussed into the sea at the Lower Anikat; and the Mysore reservoir would only intercept a portion of this large wastage. The argument holds with greater force in other years as the surplusses were much larger.

Hot Weather Flow.

72. As there has been some misapprehension in this matter, the claim to hot weather flow has been dealt with under its legal aspects in paragraphs 11 to 16 *supra.* The facts, however, have been briefly summarised here.

Madras have stated (paragraphs 3 and 4, Ma. 4) that they would waive their claim to the hot weather flow provided the power water of 900 cusecs was guaranteed; if this was denied, they claimed *the whole natural flow of the river up to the limit of 7 feet,* as in the irrigation season. Mysore could not be sure that their power works would continue as they are or that the quantity would not be reduced on account of any improvements or any additional power installations

Madras paragraph 99.

lower down the river. They therefore wished to reserve to themselves the option to modify the quantity of water used according to the demand for electric power, or according to their convenience. They therefore urged that while the natural flow had been known to go so low as 90 cusecs, Madras could not reasonably claim a constant flow of 900 cusecs.

73. The expression "the natural flow" was used by Mysore in this connection in paragraph 78, My. 7. But this was taken by Madras as the "whole natural flow" in paragraph 99, Ma. 12. It is clear that, in so converting the expression, Madras could not go beyond the claim already twice made by themselves in unmistakable terms, first, in paragraphs 3 and 4, Part II, Ma. 4, where *the whole flow up to 7 feet limit* was claimed and again, in paragraph 77 of Part IV (Ma. 10), where the flow up to L million cubic feet is claimed, L being defined as "the limit amount of flow due to Madras as fixed under the second term of reference." Thus, the expression, the "whole natural flow," must be subjected to some limit to be fixed now.

74. In paragraph 2 of a note, dated 15th November 1910, by the Superintending Engineer, on special duty, which accompanied D.O. letter R.O.C. 386-1-10, dated the 6th December 1910, from the Joint Secretary to the Government of Madras, Public Works Department (Irrigation), to the Honourable the Resident in Mysore, Madras had stated that, in the months of March to May, "there is no demand for irrigation water." Therefore, such a limit flow would have been practically *nil.* The original statement was, however, subsequently modified by Madras to the effect that there was some hot weather irrigation on the upper channels. Mysore, in consideration of all this, stated in their paragraph 88, My. 9, that the claim of Madras would be respected up to the average estimated flow after meeting the customary requirements of Mysore.

75. Madras have now furnished figures showing the area of hot weather irrigation. The area of such irrigation in the year 1890 was 27,324 acres under second crop and 3,232 under perennial crops, making a total of 30,556 acres. This total increased to 35,450 in the year 1900 before the introduction of power works. But, in the year 1910, the total had further risen to 46,224 acres, the latter increase being presumably due to the constant flow from power works in recent years. It is not clear whether the second crop requires water during the whole of the hot weather from February to end of May for the natural hot weather flow, known to go down to 90 cusecs, would certainly be not sufficient for this large area. It is therefore necessary to determine when the second crop supply ceases, and after this period what limit flow is necessary for the perennial crop in the lowest stages of the river. In fact, two limits will be necessary in the hot weather (from February to May) one for the second crop period including the perennial crop and the other for the latter crop only. In consideration of all this, reasonable limits have now to be fixed under clause 2 of the terms of reference. If, on account of any cause, the power water falls below 900 cusecs, Madras rights up to these lim ts will be respected.

Cauvery Channels above the Upper Anicut.

76. It was always understood that the requirements of these upper channels would be adequately and automatically met by the stages of the river flow corresponding to the limits fixed for the delta irrigation.

On several previous occasions, the construction of reservoirs on the Bhavani and the Cauvery above the upper channels, have been carefully and seriously considered by competent and eminent engineers who had a thorough knowledge of the requirements of both the delta and the upper channels.

77. Mr. Hughes in proposing the Bhavani project fixed a standard of 4½ feet for the supply of the delta and seriously recommended that all supplies above this could be impounded, without any harm to the delta irrigation. It is true that, so far as can be judged from the records supplied to Mysore, he has not made any specific reference to the requirements of the upper channels. But it is impossible to believe that such an experienced officer could have ignored the requirements of these channels. The inference therefore is that Mr. Hughes considered that the upper channels would not in any way suffer with the standard depth of 4½ feet proposed by him for the Cauvery delta.

78. Madras now represent that the stages of the river between 3½ and 5½ feet at the Cauvery Dam would mean a time of scarcity for these channels. This may be so when compared with the higher stages of the river. But, except in July and August, the stage of the river is generally between these limits. The irrigation under these channels is dependent on the direct flow in the river without anicuts or headworks. As such, a more or less continuous flow only can ensure irrigation under them. The limit of irrigation would therefore be determined by the stages of the river between 3½ and 5½ feet; a condition which can be depended on practically throughout the irrigation season. Mr. Hughes, when he fixed the 4½ feet standard for the Cauvery Dam, must have been influenced by this view.

79. Mr. Larminie, who differed from Mr. Hughes, proposed a limit flow of 6 feet at the Cauvery Dam, above which impounding in the proposed Cauvery Reservoir might be allowed in the south-west monsoon.

Colonel Smart was practically of the same opinion as regards the 6 feet limit. If, as now stated by Madras, 7 to 7½ feet stage of the river is necessary for the upper channels, surely, the two former Chief Engineers named above would not have proposed the cutting off of all flow above the 6 feet limit.

80. The Metur Project also contemplates the cutting off of the river flow to nearly the same limit of 6 feet, as noted above, in the height of the south-west monsoon (July 6·1, August 5·9). But, if the provision made in the Metur Project from September to November is considered, the conclusion is inevitable that the supplies to the upper channels would be strictly limited to what could be obtained by the stages of flow as under :—

	1st half.	2nd half.
September	5·6	4·7
October	5·0	4·2
November	3·8	3·8

If the representation now made by Madras is to be accepted, that the stages of flow between 3½ feet and 5½ feet at the Cauvery Dam would mean times of scarcity for these channels and that no replenishment is possible without freshes into them, then surely the interests of these channels must suffer with the Metur Reservoir in operation, as practically all freshes would be arrested by it.

Hence, it is clear that the cultivation on the upper channels is limited by these lower stages of the river flow.

Madras have stated in paragraph 107, Ma. 14, that these channels receive adequate supply at a stage of flow of 6 feet. Mysore have already proposed a limit of 6 feet in July, August, and first half of September, when at all such a limit can be expected, the limits from September to November being between 4·5 and 5·4 feet. The working tables have clearly shown that, in these latter months, there is scarcely any impounding and the interference with the natural flow will be practically *nil*.

81. Madras admit that it is not possible to give exact figures to connect the stage of flow at the Upper Anicut with the stages at the different points of offtake up the river. In the face of this, the mere statement that it is believed that stages of flow under 7 feet involve material reduction of useful supply, cannot have much value. For, in another place, they have distinctly admitted that these channels begin to receive adequate supply at a stage of flow represented by 6 feet. The latter statement is definite and tallies with the opinion of experienced engineers named above. It is therefore clear that a consideration of the requirements of these upper channels will not necessitate the fixing of any higher limits than those proposed by Mysore.

REPLY TO PART X OF MADRAS CASE.

Part III—Place and Mode of Measurement.

82. Notwithstanding what has been stated in these paragraphs, the necessity for conducting further observations extending over a longer period to arrive at more reliable results, cannot be denied. Madras have in a way admitted that they have no objection to this course. Arrangements may therefore be made to institute these observations for ascertaining the factors (a), (b), (c), (d) and (e) mentioned in paragraph 91, My. 8.

Madras paragraphs 107 to 110.

83. The conditions (i) and (ii) specified by Sir John Benton and referred to by Madras are the very conditions to settle which the Arbitration Committee are now sitting. After such settlement, the claim of Mysore would be precisely what Sir John Benton has conceded, *viz.*, "that the Mysore Durbar are to have all the surplus supplies to which they have any claim under the existing agreement placed unconditionally at their disposal."

Madras paragraphs 111 and 112.

84. In these and some subsequent paragraphs, Madras have repeatedly raised an important point about extending their irrigation and have attempted to mix up such future contingencies with the present enquiry. This is quite inadmissible as the scope of the Arbitration is confined to the question of the Mysore Reservoir and its effect on the existing prescriptive Madras irrigation. It is understood that the Arbitration Committee will not be moved by any such considerations of future expansion in giving their decision. In this connection, a reference is invited to paragraphs 101 and 102, My. 9.

85. Madras object to the system of measurement proposed by Mysore, now for the first time on the ground, that it would concede to Mysore rights to the flow of the Bhavani, the Amaravati and all the basin of the Cauvery beyond Mysore. It should be remembered that the prescriptive rights of Madras can only be settled with reference to the quantity of flow at the Cauvery Dam which, from the nature of things, include the flow from both the Mysore and

Madras areas. The settlement of such a right imposes a burden on Mysore only to the extent by which the flow of the Madras area falls short of the prescriptive requirements. This is clearly the basis of the agreement of 1892. Accordingly, Mysore have all the while been claiming that whatever surplus there may be at the Cauvery Dam over and above the prescriptive limits, should be placed at their disposal up to the extent available in their territory. This is all their table III aims at. It is therefore difficult to see how Madras can maintain their contention that Mysore would get a claim to the waters of the Bhavani or any other tributary of the Cauvery in Madras by the system of measurement proposed by Mysore.

86. The necessary provision for the existing prescriptive irrigation without reference to future extensions, will no doubt be decided on all "fair and reasonable" considerations, as provided in the Agreement of 1892. It is urged that, if the method proposed by Mysore is shown not to materially affect the existing prescriptive irrigation in Madras, it should be accepted. What constitutes material interference with the quantity and the incidence of flow is a matter for decision on a consideration of all the circumstances of the case.

Madras paragraphs 113 and 114.

87. In settling prescriptive rights, the most important point to consider is up to what extent it is obligatory on the part of Mysore to contribute to the flow necessary for the existing Madras irrigation. All excess flow above such obligatory limits will be at the disposal of Mysore and any quantity which they do not or cannot impound will be available at the Cauvery Dam for use, within certain limits. It would be impossible under any reasonable system of rules to impound in a reservoir without some interference with the quantity or incidence of flow. When Madras raise an objection against such a system on account of inevitable small differences, the question will be whether the available excess flow at the Cauvery Dam cannot reasonably be expected to make up for such deficits, when the excess flow follows immediately after the periods of these deficits. If, on all fair considerations, this excess flow can be found to so compensate for the deficits there can be no proper grounds for objecting to the mode of measurement proposed by Mysore. It is to bring out this view prominently that Mysore have shown what may be conveniently termed "useful surplus" as available at the option of Madras.

Madras paragraphs 115 and 116.

88. But Madras represent that these deficits, very insignificant as they are, will mean that—

(*a*) in a good year the average outturn of crop per acre would be reduced, and
(*b*) in a bad year the reduction would entail probable failure more or less complete to an area several times larger than that stated as the area equivalent to the deficiency.

If the "useful surplus" noted above be utilised, Mysore are confident that the above unfavourable contingencies would never happen and the result would if anything be quite in favour of Mysore method of measurements.

89. All that Mysore have to say in reply to the matter in these paragraphs has already been stated in their paragraphs 106 to 119 of Mysore 9. The spirit of the remarks therein made has evidently not been fully appreciated by Madras, who are obviously aiming at absolute non-disturbance both in the incidence and the quantity of natural flow up to the fixed limit. No reservoir would be possible without some disturbance. If this position is not recognized, it is tantamount to a repudiation of the Agreement of 1892.

Madras paragraphs 117 to 122.

90. Mysore do not deny that there will be trifling disturbances due to their methods of impounding. But they have amply shown that these disturbances are of a very minor nature and that they are more than made up by the immediately succeeding abundant flow which, if properly utilised, as by all reasonable considerations Madras will be expected to, and as a matter of fact they will no doubt, do, the slight disturbances which are complained of, will not cause any injury to the standing crops.

91. As so much is made of a few days of *minus* flow and compensation water, it is desirable to examine the question a little more in detail. Revised working tables on the basis of dates corresponding to the flow at the Cauvery Dam with 4 days as the time of transit, have now been prepared for the year 1899 and extracts from these for the days of impounding are appended (App. T.).

92. It will be seen that there are only two days, on which a *minus* flow has occurred in the year 1899 out of the 34 days when at all any impounding could be done in the whole period of 214 days. On both the occasions, viz., 14th June and 10th August, the river at the Cauvery Dam was at its ebb, the discharges being 803 m.c.ft. and 200 m.c.ft. respectively. On both occasions there was sudden rise on the succeeding days, up to 5,103 m. c.ft. and 1,877 m. c.ft. The *minus* flow on both occasions is shown by the tables as a result of an incorrect estimate of the time of transit. It may be true that such mistakes are inevitable, but the effect of such *minus* discharges have been immediately afterwards more than remedied by the abundant rise in the river up to the high limits named above.

93. It is also urged that these *minus* figures mean the deprivation of so much water from the legitimate supply of the upper channels. Let us suppose that a stage of river of 1 foot on

the Cauvery Dam represents the level of zero supply to the upper channels. The falling of the river *below this* 1 *foot* cannot affect the upper channels any more than the falling down to 1 *ft. level*, as in both these stages the flow into the channels would be represented by zero. So, in judging the effect of a *minus* figure, the difference of flow into the channels, between the natural flow stage before impounding on the day the *minus* figure appears, and the zero stage, is all that can be considered as a loss to the channels.

94. On the two occasions, on which *minus* figures occur in the year 1899, the stages of the river at the Cauvery Dam are denoted by gauge readings 4·6 and 2·0, respectively. The corresponding discharges on these two days are 803 m c.ft. and 200 m. c ft., respectively. The value of the *minus* figures on these dates are 377 and 1,194. The Madras contention appears to be that the loss to the upper canals cannot be less than 377 and 1,194. By this they imply that the loss to the upper canals will be equal to or more than the above figures. This is evidently a fallacy. If the supply to these canals before impounding was, say, 100 m c.ft and 30 m.c ft., respectively, on these days it is impossible to conceive how the loss to them will be represented by the full value of the *minus* figures, in the instance 377 and 1,194 m.c.ft. respectively. The fact is that the canals cannot lose more than the actual flow therein on these days, namely, 100 and 30 m.c.ft., respectively.

95. In fact, taking the maximum area of irrigation under these channels as 100,000 acres, the quantity of water required for these at a duty of 40, will be 2,500 cusecs or about 220 m.c.ft. From the preceding paragraph, it will be clear that whatever be the value of the *minus* figure, the maximum loss on any particular day that can be caused to the upper canals cannot exceed this quantity of 220 m.c.ft. If this is remembered, the contention of Madras about the loss to the upper canals cannot but appear to be exaggerated. These *minus* quantities have occurred in the month of June, when irrigation will not have been started and when the purpose of wetting the canal beds and the fields served by the first floods can be equally well done a day or two later. The second instance occurring in August is at a very low stage of the river represented by 2 feet and this too is more than made up by the succeeding high discharges.

96. Although, arguing on general principles, the *minus* quantities are shown to be of much consequence by Madras, the examination of the particular cases in the worst year, considered above, has clearly shown, first, that the disturbance to the upper canals, if any, is much less than would be apparently represented by the *minus* figures. secondly, that the defects, such as they are, are made up on the immediately succeeding days in each case, and thirdly, as irrigation will not have been started in the period in which such *minus* figures generally appear, there can be no room for complaint of any sort.

97. Having shown that the appearance of *minus* discharges in the tables are not of much consequence in actual practice, the conditions under which the compensation water becomes due and the effects thereof may now be discussed, with reference to the working tables for the year 1899, the worst on record.

98. It will be observed from column 6, that there are only 6 days on which compensation becomes due in the total period of four months, June to September.

Out of this, the first is on the 14th of June which is due to a *minus* flow. This is immediately followed by an abundant flow of 3,130 m.c.ft. and above, which is kept on successively for four or five days. On the 28th of June, a small quantity of compensation water of 103 m c.ft., becomes due. This is also succeeded by abundant floods which amply make up for it.

In August, there are three days on which compensation water becomes due. But a glance under column 7 from the 14th to the 16th, will show that, on all the three days, this water has materially increased the flow in the river when it was low. The balancing effect in a falling river is materially helpful to Madras at a time whed it is most required.

On the 13th September, compensation water of only 67 m.c.ft. becomes due and this is with a rising river and so its effect would be insignificant.

Thus, out of six days noted above, the effect of compensation water is insignificant on two days. It is substantially useful on three of the other days both to the delta and to the upper channels as it increases the natural flow in a falling river.

99. It is true that part of the compensation water results in producing a surplus over the Mysore limits as shown in column 9. But, from column 8, it will be seen that very large quantities of water above the limits are at the disposal of Madras on almost every day of impounding. In fact, impounding is done only on 32 days in the whole period of 122 days considered. Out of these 32 days, on as many as 26 days, abundant quantities of surplus are available as shown in column 8 and they are at the full disposal of Madras and may be used by them for scour, or for Coleroon irrigation or for any other purposes they may choose.

100. So the necessity of passing compensation water, as such, could not be taken as any grave defect in the system of measurement or as in any way materially interfering with the incidence and quantity of flow necessary for Madras irrigation.

It must be remembered that the year 1899 was the worst on record. The results with the adoption of the Mysore method, have thus been proved by the working tables to be satisfactory even in such a year, in ensuring the interests of Madras unimpaired, it is hardly necessary to examine similar details for other years, as Madras themselves have admitted that, in good years, the effect of the reservoir will not be prejudicial to their interests.

101. Apart from the objection on the ground of future development of irrigation, which, as stated above, is outside the scope of this enquiry, the only other point that Madras have urged against the Mysore method is that it " cannot give a basis on which the natural flow can be computed " at the Upper Anicut.

Ma. paragraphs 123 and 124.

The exact method by which the flow at the Cauvery dam can be computed, has been clearly described under clause 5 of Ap. E, My. 7, a reference to which is again requested. Madras have accepted the method so far as the computations go, but have now referred to two factors which, in their opinion, would tend to vitiate the above computation.

102. As regards one of these factors, *viz.*, R, the possible deficit to the upper channels, Mysore have already shown that the real interests thereof do not suffer either by the *minus* flow or by the necessity of providing compensation water and that the slight deficits, if any, are more than made up by more or less abundant flow in the immediately succeeding days, as shown by a study of the working tables (Appendix T).

103. As regards the other factor S, namely, the inflow due to seepage from the bed and sides of a falling river, which in the opinion of Madras tends to increase the flow at the Cauvery dam and consequently lessens the burden on Mysore, several counter-considerations suggest themselves.

104. It cannot be denied that this seepage inflow is a natural addition to the river, more or less similar to the additions from any of the tributaries below the Kannambadi dam. If Madras object to credit being given to this source of contribution in measuring the flow at the Cauvery dam, is it also to be inferred that similar objections apply to the flow from the other rivers, both in Mysore and Madras territories below the reservoir? The proposition put in this light clearly shows that the Madras position is untenable.

On the other hand, Mysore with equal force can urge that, in a rising river, when generally impounding is done, the natural flow would be correspondingly under-estimated by the extra quantity of flow which would be absorbed into the bed and sides of the river. This is generally more than the seepage quantity received back in the low stages of the river. To this extent Mysore would suffer owing to the reduction of the quantity permissible for storage and increase in the quantity of compensation water. If the inflow factor S is to be counted in favour of Madras in low stages, is not a corresponding factor S + X to be counted in favour of Mysore in the immediately succeeding high stages? The factor S brought in by Madras therefore does not need any further notice.

105. This also leads to another important consideration regarding the condition of flow in the river that will obtain after the Mysore reservoir is built and after the irrigation under it comes into full operation. It is well known that, under any system of irrigation, a good portion of the water thrown on the fields flows back directly or indirectly into the river. This is generally estimated at about one-fourth to one-sixth of the quantity thrown on the fields. Mysore proposes to utilise about 40,000 m.c.ft., on their fields below the reservoir. Of this, about 8,000 m.c.ft. of water would be flowing back into the river.

106. It is hardly necessary to quote any instances to prove this fact. The recently constructed Marikanave reservoir is across the river Vedavati or Huggari, flowing near Bellary. This river used to be practically dry for nearly 9 months in the year prior to the construction of the reservoir ; and now the same has been converted into a perennial stream, as any inhabitant of the Madras districts bordering on the river can testify. This is partly due to the direct inflow from the fields and partly to the increase in springs owing to the high level of the water stored in the reservoir.

107. There is every reason to expect that such contribution to the river flow by the existence of the Kannambadi Reservoir would be very material. The only way by which Mysore can get credit for at least a part of this additional contribution into the river, is by the method of measurement proposed by them. In fact, for the majority of the days in the irrigation season, Mysore will not get credit for this flow (even by their method) as the total even with its addition would be less than the prescribed limits. So, this indirect flow will be a positive gain to Madras, not to speak of the power water flowing constantly in the hot weather.

108. If Madras object to this method on the score of the two factors R and S which have been shown above to be insignificant or ineffective, Mysore will be more than fully justified in claiming a proper account at least of all the indirect contribution to the river flow due to their reservoir. It is here that fair and reasonable considerations have to come in for a proper decision of the case. Mysore trust that the method of measurement proposed by them will be accepted, because it is the only method that will not prove unfair to Mysore, while at the same time adequately safeguarding the interests of existing irrigation in Madras.

APPENDIX S.

STATEMENT showing the area irrigated by the channels and tanks fed by the Cauvery and its tributaries above the Upper Anicut.

River.	Tributary or channel.	1880.	1885.	1890.	1895.	1900.	1905.	1910.	Remarks.
Tirumanimuthar.	....	(a) 6,036	(a) 6,036	(a) 6,036	6,069	6,324	5,244	6,506	(a) Average of 4 years.
Omalur river	....	(a) 5,049	(a) 5,049	(a) 5,049	5,467	5,113	3,453	6,164	
Thoppiyar.	....	(b) 2	(b) 2	1	1	1	3	3	(b) Average of 5 years.
Sanathkumaranadi.	....	342	249	233	240	229	232	243	
	Total ..	(c) 11,321	(c) 11,336	(c) 11,319	11,777	11,667	8,932	12,916	(c) Increase from 1880 to 1910 is 1,595 acres.
Bhavani ..	Thadapalli and Kalingarayan channels.	(d) 30,043	(d) 30,043	29,264	29,446	30,007	30,414	31,085	(d) Average of 5 years.
	Other channels ..	(d) 2,276	(d) 2,276	1,922	2,115	2,362	2,376	2,605	
	Total ..	(e) 32,319	(e) 32,319	31,186	31,561	32,369	32,790	33,690	(e) Increase from 1880 to 1910 is 1,371 acres.
Noyel ..	....	(f) 15,414	(f) 15,414	15,515	14,554	15,733	15,437	15,833	(f) Average of 5 years
	Total ..	15,414	15,414	15,515	14,554	15,733	15,437	15,833	Increase from 1880 to 1910 is 419 acres.
Amaravathi.	Twenty-two channels.	(g) 26,116	(g) 26,116	(g) 26,116	20,068	26,066	25,889	26,441	(g) Average of 4 years.
	Four channels ..	(h) 2,584	(h) 2,584	2,777	2,528	2,526	2,528	2,568	(h) Average of 5 years.
	Nanganjiyar ..	(h) 782	(h) 782	604	669	922	682	1,035	
	Shunmuganadi ..	(i) 5,957	(i) 5,957	5,054	5,064	6,099	5,925	6,177	(i) This is the area for the year 1884.
	Poranthalar ..	851	927	971	940	967	981	970	
	Pachiyar	(j) 1,540	(j) 1,540	1,689	1,674	1,385	1,446	1,609	(j) This is the area for 1884.
	Nallathangayar ..	(k) 262	(k) 262	254	269	263	256	270	(k) Average for 5 years.
	Varathar	(k) 1,918	(k) 1,918	2,161	2,064	1,686	1,524	2,157	
	Other channels 10 in number.	(k) 4,616	(k) 4,616	3,784	4,455	4,776	4,722	5,342	
	Total ..	44,626	44,702	43,410	43,524	44,690	43,954	46,569	Increase from 1880 to 1910 is 1943.
Cauvery ..	Pogalore	(l) 4,980	(l) 4,980	(l) 4,980	5,020	4,923	5,014	4,965	(l) Average of 4 years.
	Vangal								
	Nerur								
	Four channels in Kulitalai taluk.	7,881	8,849	10,144	9,983	10,175	10,408	10,440	
	Three channels in Namakkal taluk.	5,215	5,329	5,252	5,251	5,250	5,260	5,446	
	Eight channels in Musiri taluk.	12,318	13,826	10,062	12,459	12,773	14,742	15,189	
	Five channels in Trichi taluk.	57,006	56,534	61,073	62,234	62,545	63,028	63,493	
	Total ..	87,399	89,518	91,511	94,947	95,966	98,452	99,533	Increase from 1880 to 1910 is 12,134.

ABSTRACT.

No.	Name of channels and rivers.	Total increase.
		ACS.
1.	Minor channels	1,595
2.	Bhavani	1,371
3.	Noyel	419
4.	Amaravathi	1,943
5.	Cauvery	12,134
	Total ...	17,462

APPENDIX T.

Extract from Table III.

Month and date.	Approximations for quantity to be impounded. 2 a: Y=Flow at Kannambadi in m.c.ft.	2 b: NY=Probable flow at Cauvery dam. N=3 from June to September. N=3 from October to January.	2 c: NY-Z=Probable excess over the limit at Cauvery dam. Z=Limit in col. 16.	2 d: $\frac{NY-Z}{6}$=Value of col. 2 (c) at Kannambadi dam, i.e., ⅙ of col. 2 (c).	2 e: Quantity to be impounded at Kannambadi dam. Col. 2 (d) or 2 (a) whichever is less.	Conditions at the Kannambadi dam. 3: Flow at the Cauvery dam in m.c.ft. 4 days later.	4: Value of col. 2 (c) at Cauvery dam = ⅘ of col. 2 (c).	5: Net flow at Cauvery dam, col. 3—col. 4+⅘ of surplus at Kannambadi, if any.	6: Compensation water, col. 3, if less than Z or Z—col. 5. Z=limit in col. 16.	Resulting flow at Cauvery dam. Col. 5+col. 6. 4 days previous.	Surplus quantity above the limit at Cauvery Dam.	9: Quantity in excess of limit out of compensation water.	Gross storage in the reservoir, col. 2 (e)+previous day's balance in col. 15.	11: Compensation water converted to Kannambadi Reservoir, i.e., ⅓ of col. 6.	12: Draw off for irrigation, etc.	13: Surplus when the reservoir is full.	14: Total of columns 11, 12 and 13.	15: Balance in the reservoir.	16: Limit of flow allowed at Cauvery dam.	17: Remarks.
June 1899.																				1,060	Net quantity impounded=col. (e)—col. 11—col. 13=35,063.
13	336	538	*		*	696	1,180	696	696	696		9,484				43	9,441		
14	1,573	2,517				803	1,973	803	377	377		11,014				43	10,971		
15	2,631	4,210				5,103	2,387	5,103	3,130	3,130		15,602				43	13,559		
16	3,182	5,091				6,042	2,640	6,042	2,655	2,655		16,741				152	16,589		
17	3,520	5,632				6,534	3,032	6,198	3,594	3,594	1,180	20,109				152	19,957		
18	4,042	6,447				6,198	3,439	3,439	3,834	3,834		23,999	1,673			152	22,274		
19	2,495	3,992				3,439	1,871	2,295	2,286	2,286		24,769				152	24,617		
20	1,350	2,160				2,295	1,013	1,639	503	503		25,967				152	25,815		
21	936	1,498				1,639	438	1,180	222	222		26,389				152	26,237		
22	513					1,180		946	141	141						152			
23	378		*		*	946			120	120						152			
27	542	1,728				516	516	516	516	516		25,356		156		203	25,336		
28	1,080	2,378				538	103	538	435	435		23,320		156		156	23,320		
29	1,486	3,507				2,673	753	2,673	1,820	1,820		26,172		156		156	26,172		
30	2,192	4,477				5,388	1,644	5,388	3,744	3,744		28,212				152	28,212		
1	2,798	4,810				6,321	2,099	6,321	4,222	4,222		30,864				152	30,864		
2	3,006	4,323				6,855	2,253	6,855	3,002	3,002		33,567				152	33,567		
3	2,702	3,971				6,621	2,027	6,621	3,594	3,594		36,113				152	36,113		
4	2,482	3,630				4,921	1,862	4,921	4,078	4,078		37,080				152	37,080		
5	2,269	3,240				3,946	1,699	3,946	3,829	3,829						152			
6	2,026	2,296				3,182	1,619	3,182	3,065	3,065						152			
7	1,435	1,758				2,673	671	2,673	2,466	2,466						152			
8	1,099	1,768				2,295	133	2,295	2,178	2,178						152			
9	1,311	2,098				2,853	473	2,853	2,736	2,736						152			
July 1899.																				1,625	
13	1,673	2,517	*		*	696	1,180	696	696	696		9,484				43	9,441		
14	2,631	4,210				803	1,973	803	377	377		11,014				43	10,971		
15	3,182	5,091				5,103	2,387	5,103	3,130	3,130		15,602				43	13,559		
16	3,520	5,632				6,042	2,640	6,042	2,655	2,655		16,741				152	16,589		
17	4,042	6,447				6,534	3,032	6,198	3,594	3,594	1,180	20,109				152	19,957		
18	2,495	3,992				6,198	3,439	3,439	3,834	3,834		23,999	1,673			152	22,274		
19	1,350	2,160				3,439	1,871	2,295	2,286	2,286		24,769				152	24,617		
20	936	1,498				2,295	1,013	1,639	503	503		25,967				152	25,815		
21	513					1,639	438	1,180	222	222		26,389				152	26,237		
22	378		*		*	1,180		946	141	141						152			
23	542	1,728				516	516	516	516	516		25,356		156		203	25,336		
27	1,080	2,378				538	103	538	435	435		23,320		156		156	23,320		
28	1,486	3,507				2,673	753	2,673	1,820	1,820		26,172		156		156	26,172		
29	2,192	4,477				5,388	1,644	5,388	3,744	3,744		28,212				152	28,212		
30	2,798	4,810				6,321	2,099	6,321	4,222	4,222		30,864				152	30,864		
1	3,006	4,323				6,855	2,253	6,855	3,002	3,002		33,567				152	33,567		
2	2,702	3,971				6,621	2,027	6,621	3,594	3,594		36,113				152	36,113		
3	2,482	3,630				4,921	1,862	4,921	4,078	4,078		37,080				152	37,080		
4	2,269	3,240				3,946	1,699	3,946	3,829	3,829						152			
5	2,026	2,296				3,182	1,619	3,182	3,065	3,065						152			
6	1,435	1,758				2,673	671	2,673	2,466	2,466						152			
7	1,099	1,768				2,295	133	2,295	2,178	2,178						152			
8	1,311	2,098				2,853	473	2,853	2,736	2,736						152			
9																				1,625	

Extract from Table III—*cont.*

Month and date.	Approximations for quantity to be impounded.		Conditions at the Kannambadi dam.									Limit of flow allowed at Cauvery dam.	Remarks.
	1	2											
		Y=Flow at Kannambadi in m.c.ft.	NY=Probable flow at Cauvery dam. N=¾ from June to September. N=½ from October to January.	NY-Z=Probable excess over the limit at Cauvery dam. Z=Limit in col. 16.	$\frac{NY-Z}{c}$=Value of col. 2 (*e*) at Kannambadi dam, *i.e.*, ¾ of col. 2 (*c*).	Quantity to be impounded at Kannambadi dam. Col. 2 (*d*) or 2 (*a*) whichever is less.	Flow at the Cauvery dam, in m.c.ft. 4 days later.	Value of col. 2 (*e*) at Cauvery dam=¾ of col. 2 (*e*).	Net flow at Cauvery dam, col. 3—col. 4+¾ of surplus at Kannambadi, if any.	Compensation water, col 3, if less than Z or Z − col. 5. Z=limit in col. 16.	Resulting flow at Cauvery dam. Col. 5 + col. 5. 4 days previous.	Surplus quantity above the limit at Cauvery dam.	Quantity in excess of limit out of compensation water.	Gross storage in the reservoir, col. (2) (*e*)+ previous day's balance in col. 15.	Compensation water converted to Kannambadi Reservoir, *i.e.*, ¾ of col. 6.	Draw off for irrigation, etc.	Surplus when the reservoir is full.	Total of columns 11, 12 and 13.	Balance in the reservoir.	Net quantity impounded = col. 2 (*e*)—col. 11 = col. 13 = 35,063.	
		a	*b*	*c*	*d*	*e*	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17
July 1899—*cont.*	10	2,094	3,850	1,725	2,300	2,094	3,504	1,571	3,447		3,447	1,622					1,938				1,625	
	11	2,166	3,460	1,825	2,483	2,166	2,853	1,617	2,736		2,736	1,111					2,000					
	12	1,617	2,475	850	1,183	1,138	2,490	860	2,379		2,373	748					977					
	13	1,172	1,876	259	333	333	1,997	250	1,880		1,680	255					177					
	14	995	•	•	•	•	1,587	•	1,687		1,687	•					•		37,080			
August 1899.	9	650	3,090	1,394	1,869	1,869	200	1,394	200	1,394	200			34,727					32,868		1,625	
	10	1,887	2,677	1,053	1,403	1,403	1,877	1,052	—1,194	800	—1,194			35,974					34,671			
	11	1,673	2,019	394	526	526	1,107	394	825	394	825			36,343					35,818			
	12	1,263	•	•	•	•	1,116	•	1,013		1,013			36,187					36,167			
	13	776	•	•	•	•	1,008	•	1,116		1,116			•					36,031			
	14	619	•	•	•	•	861	•	1,008		2,402	777		777	1,859	166			34,018			
	15	447	•	•	•	•	706	•	861		1,661	26		26	1,067	166			32,793			
	16	457	•	•	•	•	696	•	706		1,100				626	166			32,112			
	17	457	•	•	•	•	•	•	698		693								•			
September 1899.	12	528	•	•	•	•	1,008	•	1,008		1,008			•	•	•			27,900		1,120	
	13	743	1,187	67	89	89	964	67	887	67	887			27,989		166			27,833			
	14	366	•	•	•	•	1,008	•	•	•	•			•					•			
	16	722	1,155	35	47	47	4,340	35	4,305	•	4,305	3,186	67	27,668	89	155			27,412			
	17	1,168	1,869	749	999	999	2,713	749	1,964		1,964	911		28,411		166			28,166			
	18	1,201	1,922	802	1,069	1,069	3,182	802	2,380		2,380	1,260		29,235		166			29,079			
	19	971	1,554	434	579	67	3,755	434	3,321		3,321	2,201		29,668		166			29,502			
	20	562	•	•	•	•	2,179	•	2,179		2,179	1,469		•		•			29,346			
Totals to end of December.		99,377	•	•	•	61,977	201,552	•	175,254	3,938	175,254	49,311	2,153	•	5,260	•	11,661	•	•			

Appendix W.

ABSTRACT of discharges at the Lower Anikat.

Years.	South-west monsoon, June to September.		North-east monsoon, October to January.		Totals of south-west and north-east monsoons.		Grand total of south-west and north-east monsoons.	Remarks.
	Irrigation supply.	Surplus into sea.	Irrigation supply.	Surplus into sea.	Irrigation supply.	Surplus into sea.		
1	2	3	4	5	6	7	8	9
1890-91	10,524	58,006	10,744	48,909	21,268	106,915	128,183	Figures not available.
1891-92	..	..	..	..	..	..	..	
1892-93	15,745	165,512	7,952	4,474	23,697	169,986	193,683	
1893-94	12,100	35,175	11,943	105,420	24,043	140,595	164,638	
1894-95	11,527	58,873	9,643	10,818	21,170	69,691	90,861	
1895-96	15,326	121,257	13,101	64,888	28,427	186,145	214,572	
1896-97	21,859	376,061	12,471	32,943	34,330	409,004	443,334	
1897-98	20,514	994,270	12,313	77,856	32,827	1,072,126	1,104,953	
1898-99	10,051	53,026	10,667	162,459	20,718	215,485	236,203	
1899-00	7,058	50,410	4,043	5,364	11,101	55,774	66,875	
1900-01	17,878	319,595	8,134	15,863	26,012	335,458	361,470	
1901-02	14,104	99,593	11,053	91,439	25,157	191,032	216,189	
1902-03	9,997	86,656	6,998	147,404	16,995	234,060	251,055	
1903-04	13,610	230,936	15,923	310,790	29,533	541,726	571,259	
1904-05	13,412	166,138	6,713	5,884	20,125	172,022	192,147	
1905-06	..	..	..	..	..	..	..	Figures not available.
1906-07	..	..	..	..	..	..	..	
1907-08	..	..	..	..	..	..	..	
1908-09	12,499	130,466	7,971	34,389	20,470	164,855	185,325	
1909-10	14,345	380,625	10,854	63,405	25,199	444,030	469,229	

Exhibit My.-13.

CAUVERY RESERVOIR ARBITRATION.

Note on the "Average estimated natural flow" during the hot weather at Sivasamudram.

Madras have asked for the precise meaning conveyed by the expression "Average estimated natural flow" used by Mysore in paragraph 88 of My.-9 and subsequently in paragraphs 16 and 74 of My.-12.

2. A statement is attached showing the average flow in cusecs measured at Sivasamudram for each fortnight in the hot weather, February to May, for the years 1903 to 1907 inclusive. From the averages of the several years, a general average for the five years 1903 to 1907 has been derived and shown in column 12 of the statement.

3. The area of hot-weather irrigation in 1910 as given by Madras is 46,224 acres; part of this appears to have come into existence in recent years after the installation of the power works and cannot claim water as a prescriptive right. Even taking this larger area, the limit quantity of water necessary for it would be about (40,000/100) 400 cusecs, taking 100 as the average duty for the season. Allowing for fluctuations in river supply and transmission losses a maximum limit supply of about 600 cusecs would be sufficient for the above area. With this consideration the limit of the "average estimated natural flow" up to which Madras would be entitled in case the power supply is stopped, are shown in column 13 of the statement. These are generally the same as the actual averages shown in column 12 except that the nearest round figures have been taken subject to a limit of 900 cusecs against 600 actually required for the crops. All excess flow above these limits will be available for impounding in Mysore.

4. The power works were started in August 1902 and the discharge figures have been taken for five summers from 1903 to 1907 only, as the channel conservancy operations were started after this date.

It may be stated that these averages are somewhat higher than those due to the correct discharges because (*a*) the Sivasamudram discharge on which the present figures are based err on the side of excess, and (*b*) the draw off for the hot-weather irrigation in Mysore has been restricted since the power works were started.

K. SHRINIVASA RAO,
Mysore Representative.

28*th January* 1914.

Exhibit My.-13 (*a*).

AVERAGE estimated natural flow of the Cauvery at Sivasamudram.

Months and fortnights.		1903. Total	1903. Average.	1904. Total.	1904. Average.	1905. Total.	1905. Average.
1		2	3	4	5	6	7
February.	First-half	23,316	1,665	24,834	1,656	13,386	956
	Second-half	12,072	862	20,374	1,455	14,035	1,003
March ..	First-half	9,366	624	15,595	1,040	8,591	573
	Second-half	7,326	458	13,280	830	4,794	299
April ..	First-half	4,461	297	13,855	924	4,643	310
	Second-half	4,855	324	14,510	967	7,252	483
May ..	First-half	16,269	1,085	31,909	2,127	7,138	476
	Second-half	84,980	5,311	121,457	7,591	72,432	4,518

Months and fortnights.		1906. Total.	1906. Average.	1907. Total.	1907. Average.	Average of five years.	Proposed limits.	Remarks.
		8	9	10	11	12	13	14
February.	First-half	10,638	760	14,783	1,056	1,219	900	The figures have been taken from the discharge statements already supplied to Madras.
	Second-half	6,416	453	6,961	497	855	850	
March .	First-half	5,353	357	7,182	479	615	600	
	Second-half	3,598	225	5,630	352	433	450	
April ..	First-half	2,340	156	7,714	514	440	450	
	Second-half	1,853	124	19,449	1,297	639	650	
May ..	First-half	1,889	126	16,972	1,131	989	900	
	Second-half	11,226	702	23,859	1,491	3,925	900	

28*th January* 1914.

K. SHRINIVASA RAO,
Mysore Representative.

Exhibit My.-14.

CAUVERY RESERVOIR ARBITRATION.

A note on the remissions and loss of crops in the Cauvery delta.

The Jamabandi reports of the Collectors produced by Madras mostly deal with local conditions of rainfall and season prospects and the valuation of crops depending upon so many causes known and unknown, is based on more or less indefinite data. Even if they were definite, the conclusions about the loss of crops have scarcely any bearing on the question of impounding.

2. The causes of remissions as well as of loss of crops have been grouped by Madras under three heads which really reduce themselves to two heads, viz.—

(i) Deficient supply of water.
(ii) Submergence of lands.

The effect of the reservoir will, if anything, tend to reduce the submersion of lands by floods; and therefore the second condition will be a reason for rather than against, the construction of a reservoir and need not therefore be further considered.

3. The first condition, viz., loss due to deficient supply, is not really affected by the reservoir as the impounding will be practically confined to quite a limited number of days in the height of the monsoon season. On many of these days, the impounding in the Mysore reservoir cannot possibly prevent the flow at the Cauvery dam from exceeding the limit of 6 feet as the reservoir dominates only a limited portion of the catchment. A reference to paragraph 99 of My.-12 will show that in the worst year on record, 1899–1900, out of 32 days of impounding, there would have been such excess flow on as many as 26 days.

4. In fact the method of impounding and regulation proposed by Mysore automatically ensures that the periods of deficient supply in the river are left undisturbed and the natural flow will not be interfered with at all during such periods. Any small differences in the incidence or quantity of flow that may be caused by such impounding, have been shown to be quite of an insignificant nature and their effects, if any, are at once remedied by large quantities of water generally available on the immediately succeeding days.

5. Thus the question of remissions or loss of crops does not affect the present controversy as already explained in paragraphs 63, My.-7 and 65, My.-9.

28*th January* 1914.

K. SHRINIVASA RAO,
Mysore Representative.

Exhibit My.-15.

CAUVERY RESERVOIR ARBITRATION.

Note on the Cauvery channels above the Upper Anicut.

With the object of finding a relation between the stages of flow in the river at the Cauvery dam with those at the heads of the upper channels, Madras have selected three typical channels (Pugalore, Maradur and Wyyacondan) and compared the gauge readings at their heads with corresponding readings at the Cauvery dam for three years 1911, 1912 and 1913 by means of tabular statements and diagrams.

2. From the diagram for the Pugalore channel it will be seen that its full supply reading of 5·15 has been obtained even with a gauge of less than 5 feet at the Cauvery dam; and with 6 feet this full supply has been amply secured.

3. In the case of the Wyyacondan channel, the full supply level of 5·75 and even as much as 6·1 has been obtained with a gauge reading of 6 feet at the Cauvery dam. Also the full supply level of 5 feet (4·9) for the Maradur channel has been obtained with about 6 feet (5·9) on the Cauvery dam. It may be noted that in the latter two diagrams, the readings are so irregular that no definite conclusions can be drawn from them.

4. From what has been said above there is good reason to expect that a reading of 6 feet on the Cauvery dam will be sufficient to give "full supply level" of these channels. But it has been stated in paragraph 78 of My.-12 that the comparatively low stages of the river between $3\frac{1}{2}$ and $5\frac{1}{2}$ feet on the Cauvery dam (which alone can be depended on for the greater part of the season) determines the limit of irrigation under them as the channels take off direct from the river without anicuts.

5. Mysore have already provided in their rules for a limit flow of 6 feet in the height of the monsoon from 1st July to 15th September. The lower limits in other months are in conformity with the natural stages of the river in those months, when also there is practically no impounding as shown by the tables. The supply to these channels will therefore not be affected by the limits proposed by Mysore as already clearly explained in paragraphs 76 to 81 of My.-12.

28*th January* 1914.

K. SHRINIVASA RAO,
Mysore Representative.

Exhibit My.-16.

Summary of the Mysore case on the First and Second terms of reference framed by the Arbitration Committee.

CONTENTS.

I. What is the true interpretation of the Agreement of 1892 ?
  (i) Preliminary.
  (ii) Legal aspects of the case.
II. (*a*) What is the extent of the prescriptive rights of Madras against Mysore under that interpretation ?
  (*b*) What volume of water measured at the Upper Anikat is necessary to conserve these rights unimpaired ?
    (i) Extent of irrigation.
    (ii) Quantity of water required.
      Requirements of the Delta Irrigation.
      Coleroon Irrigation.
      Hot Weather Flow.
      Cauvery Channels above the Upper Anikat.

Exhibit My.-16.

Part I.

What is the true Interpretation of the Agreement of 1892 ?

Preliminary.

The discussions which led to the Agreement of 1892 were begun by the Madras Government about the year 1889, when they took objection to certain irrigation works proposed in the Mysore State in the Palar and Pennar basins. As matters could not be settled by correspondence, a conference of the representatives of the two Governments was arranged in the year 1890 with a view to come to an understanding by personal discussion on the subject of irrigation developments in Mysore. The proceedings of this conference show that the Madras Government took up a somewhat uncompromising attitude on that occasion.

My. 6, paragraphs 1 to 5.
Ma. Appendix A.

2. It was at this stage that the then Dewan, the late Sir K. Seshadri Ayyar, submitted the whole case for the consideration of the Government of India. The Madras Government also addressed a letter to the Supreme Government in which they suggested that some pressure might be brought to bear on the Mysore Darbar in the matter. Thereupon, the Government of India desired that the question should, if possible, be settled by mutual understanding between the two Governments. This led to the conference of 1891 which resulted in the Agreement of 1892.

My. 6, Appendix A.

3. The correspondence connected with the two conferences throws full light on the circumstances which led to that Agreement and shows that special precautions were taken by both the Governments to make the terms of the Agreement clear, so that future complications might be avoided in regard to the interpretation of the Agreement and to the application of the law bearing on the subject to individual cases as they arose.

Legal Aspects of the case.

In discussing the question of the law applicable to this dispute, certain preliminary points regarding the wording of the issues were raised by Madras. At the beginning, Madras found it "difficult to see what the first issue was intended to cover"; and they also objected to the form of the second issue, "What is the extent of the prescriptive rights of Madras?" After it was explained that both these issues had to be determined in order to answer the question whether Madras were right in objecting to the construction of the new reservoir, the contentions were not further pursued.

My. 6, paragraph 8.
My. 12, paragraphs 3 and 5.

5. In this controversy Mysore do not rely on the arguments of "permissive user" and "joint possession," referred to in Ma. 7, paragraphs 15 and 30.

My. 12, paragraph 4.

6. *What law is applicable* ?—The law of prescription alone is applicable to the case since the Agreement of 1892 specifically provides for it and since the correspondence which preceded its conclusion shows that such provision was deliberately made.

My. 6, paragraphs 6 to 11.
My. 9, paragraphs 2 and 7.
My. 12, paragraphs 9, 22 to 24.

Therefore the lengthy discussion of legal points in Ma. 7, paragraphs 14 and 16 to 46, which were mostly drawn from the doctrines relating to international law and law of riparian rights is considered irrelevant by Mysore. It is now conceded by Madras that the principles both of the law of prescription and of the law of easements govern the present dispute (Ma. 14, paragraph 3).

7. Under the law of prescription, Section 26 of the Limitation Act should apply to the case. This statute law which was introduced into Mysore in the year 1871, was in force both in Mysore and Madras when the Agreement between the two Governments was concluded, and sufficient internal evidence has been quoted to prove that this provision alone should be presumed to have been present to the minds of the parties to the Agreement of 1892. Madras however thought that it was immaterial whether the rule of common law prescription or that contained in sections 26 and 27 of the Limitation Act applied to the case (Ma. 11, paragraph 5), and later on stated that the question of the particular kind of prescription that the authors had in view was of little practical significance in the present circumstances. This view is not correct as the point is of practical importance since it explains the contention of Mysore that

the year 1890 should be taken as the starting point of the prescriptive period and that the enjoyment of any right claimed by Madras should have continued to within two years from the date of suit. As regards matters outside the scope of the provisions of the Limitation Act, the general principles of the Law of Easements have to be referred to.

8. *Prescriptive right to what* ?—The prescriptive right of Madras does not apply to mere flow. User is the soul of a prescriptive right. It applies to the quantity of water actually used from time to time by Madras for the purpose of irrigation. Rule III of the Agreement makes this clear, apart from the ordinary requirement of the prescriptive law.

My. 1, paragraph 3.
My. 4, paragraphs 2 and 4.
My. 6, paragraphs 12 and 13.
My. 9, paragraphs 4 and 8.

9. *Extent of prescriptive rights and mode of enjoyment.*—This should be determined with reference to :—

My. 6, paragraphs 17 to 22.
My. 9, paragraph 5.

(1) the law of prescription, and
(2) what is fair and reasonable.

Rule III of the Agreement prescribes both these bases which are not in conflict with each other, as the question of the extent of a prescriptive right is a mixed question of *law* and *fact*.

10. Under the prescriptive law, both the *extent* and *mode* of enjoyment of the right must be fixed with reference to :—

(1) the probable intention of the parties as embodied in the Agreement,
(2) the purpose of the prescriptive right determined with reference to all the surrounding circumstances at the time of such Agreement and
(3) the *user* of such right consistently with the terms thereof including the *nature* of such user, which in this case means periodically fluctuating quantities of water depending on the varying needs of irrigation.

11. *Application of these principles to the present dispute.*—The claim of Madras is with reference to :—

My. 12, paragraph 10.

(1) the flow required during February to May ; and
(2) that required during June to January.

12. The first claim relates to the hot weather supply with reference to which it has been pointed out that no understanding has been arrived at as incorrectly assumed in paragraph 99, Madras, Part VI and that this question has also to be decided on the basis of prescription. The Madras case with regard to the hot weather supply has undergone various changes, as noted in paragraph 12 of My. 12. Mysore contend that Madras should adduce satisfactory proof of the circumstances urged by them as supporting their claim to the hot weather flow, the points for decision being as follow :—

My. 12, paragraphs 11 to 16.

(1) whether hot weather irrigation actually exists in Madras above the Upper Anicut under the Cauvery ;
(2) assuming the existence of irrigation, whether the right to draw off the water has matured into a prescriptive right in their favour ; and
(3) what the extent of such right as well as the limits of flow required are.

13. With regard to the flow from June to January, the Mysore contentions are :—

My. 6, paragraphs 14 to 16.
My. 9, paragraphs 3, 6, 9 and 10.
My. 12, paragraphs 17 to 20 and 26 and 27.

(*a*) Right of Madras to 6 feet flow on the Cauvery Dam for irrigation in the height of the flood season is admitted by Mysore. But it is contended that the alleged claim to 7 feet, *i. e.*, one foot extra at the Cauvery Dam, has not been legally acquired as a prescriptive right for want of twenty years' enjoyment (section 26 of the Limitation Act and Rule III of the Agreement).

(*b*) The alleged claim to 1 foot on the Upper Anicut, even if it had amounted to an easement or prescriptive right, is not actually existing within the meaning of Rule III of the Agreement, as, like an easement of necessity, it ceased when the necessity therefor came to an end by the remodelling of the Upper Anicut in 1889-1902. This flow was not connected with the delta irrigation and cannot therefore be claimed as a prescriptive right for such irrigation as it would impose a new burden on Mysore. The fair inference to be drawn from the alterations to the Upper Anicut made in 1899-1902 and the local circumstances connected with them, is that this right, if any, was abandoned by Madras.

(*c*) The Madras claim to 7 feet on the Cauvery Dam and 1 foot over the Upper Anicut is not a single indivisible claim, as before the remodelling of the anicut, the arrangements in existence were such as would necessarily divide the flow into two parts.

After the remodelling, the 1 foot flow over the Upper Anicut was altogether detached from the 7 feet flow over the Cauvery Dam and completely stopped in actual use.

(*d*) Madras have not earned a prescriptive right, to any *one particular limit of flow throughout the period*, but only to fluctuating quantities dependent upon varying flow in the river and the varying needs of irrigation.

My. 12, paragraphs 21 and 25.
My. 6, paragraph 18.

Mysore also contend that, in determining the extent of the Madras rights, the area under irrigation should be taken to be the chief criterion. The authorities quoted by Madras do not disprove this proposition.

14. So far, the law which governs the case in dispute is clear and is set forth in the rules of the Agreement of 1892. The respective rights of the parties are also clear in the light of this Agreement, viz., Madras have a right to demand that the supply of water required for their prescriptive irrigation should not be materially interfered with; while Mysore are entitled to the use of all the waters over and above what is required to safeguard Madras prescriptive irrigation. This position is accepted by both the parties. Mysore urge that, in interpreting the terms of the Agreement and in determining the extent of the prescriptive rights of Madras and the mode of exercising them, certain large considerations of natural equity may be prominently borne in mind. These considerations are :—

My. 1, paragraphs 24 and 34.
My. 6, paragraph 19.

(1) More than two-thirds of the waters of the Cauvery flow is from Mysore Territory; but the extent of irrigation in Mysore dependent on the Cauvery river, is only $\frac{1}{12}$th of the whole area under it.

(2) The natural features of the country in Madras allow direct flow irrigation to be practised over extensive areas at a very moderate outlay, while the ruggedness of the Mysore country renders costly storage works necessary to secure irrigation of even a fraction of the area in Madras.

(3) There is a large surplus which goes to waste into the sea year after year, ranging from 400,000 m. c. ft. in good years, to 45,000 m. c. ft. in the worst year, according to the computations made by Madras. But the Mysore Reservoir is intended to store only a fraction of the average surplus which now does no good to either party.

(4) While Madras expect by their Metur Project to make use of this surplus for irrigating about $2\frac{1}{2}$ times the extent proposed by Mysore with a reservoir of double the capacity, there ought to be no impediment of any kind in the way of the moderate scheme projected by Mysore.

15. These circumstances have a material bearing on the question at issue. It is essential that the agreement of 1892 and the law applicable to the case thereunder should therefore receive a liberal interpretation at the hands of the Arbitration Committee, so that the people of Mysore may be enabled to utilise their due share of the waters of the Cauvery.

Part II.

(a) *What is the extent of the prescriptive rights of Madras against Mysore under that interpretation?*

(b) *What volume of water measured at the Upper Anicut is necessary to conserve these rights unimpaired?*

My. 1, paragraph 4.
My. 7, paragraph 23.
My. 9, paragraphs 12 to 14.
My. 12, paragraphs 29 to 31 ; 34 and 35.

16. For a proper consideration of this issue, it is necessary that the matter should be viewed under two heads corresponding to the clauses (*a*) and (*b*) of the same, viz., extent or area of irrigation, and the limits of flow required for the irrigation of such area.

(i) Extent of Irrigation.

My. 7, paragraphs 23 to 27.
My. 9, paragraphs 15 to 19.
My. 12, paragraphs 32 and 33.

17. The extent affected is—

(*a*) the delta area;
(*b*) the area above the Upper Anicut; and
(*c*) the area under the Coleroon.

The delta area.—The area already given by Madras for the delta proper has been admitted by Mysore.

The area above the Upper Anicut.—This area requires to be definitely ascertained. As the total extent cultivated in recent years is found to be greater than in 1890 or previous to that year after examination of the figures given by Madras, the quantity of water taken up for this extra area has to be deducted from the limits that may be fixed as due to Madras on the Cauvery dam.

The Coleroon area.—The exact extent under the Veeranam tank has to be decided after the information already called for by Madras from the Revenue authorities is duly received and examined.

(ii) Quantity of water required.

My. 7, paragraphs 28 to 30.
My. 9, paragraphs 20 and 21.

18. The question of the flow of water has to be dealt with under three heads :—

(*a*) the limit of flow necessary for delta irrigation;
(*b*) the flow required if any, for Coleroon irrigation; and
(*c*) the hot weather flow.

Requirements of the Delta Irrigation.

19. The flow required for the delta irrigation has to be considered separately with reference to :—

(1) the requirements in the height of the irrigation season, and
(2) the varying requirements in other months.

20. *Maximum limit.*—Madras have been demanding that a limit of 7 feet on the Cauvery Dam should be allowed, with a right to call for additional water when necessary. In lieu of this right, Madras now claim a daily flow up to 644 m.c.ft. on the Upper Anicut. Mysore do not recognise this right, as no mention is made of it in any of the rules prior to the date of remodelling. This demand for 644 m.c.ft. has been dealt with separately under the requirements of Coleroon irrigation. Mysore have all the while been contending that a demand for a limit flow of 7 feet at the Cauvery dam is untenable.

My. 1, paragraphs 6 and 7.
My 7, paragraphs 31 and 32.

21. *A depth of six feet only is admissible.*—Substantial proofs, as summarised below, have been adduced to prove conclusively that a limit of 6 feet on the Cauvery Dam really represents the "full and ample supply" required for the delta irrigation.

My. 7, paragraph 33.

22. *Proof from the Bhavani project.*—In the Metur Reservoir report certain references have been made to the proposed Bhavani Project. From these it is evident that a flow of 6 feet was recognised by the responsible Engineer Officers of the Madras Government as the limit requirement of the delta irrigation in the south-west monsoon. The Mysore Project being quite analogous to the Bhavani Project in regard to its effect on the delta irrigation, the same limit of 6 feet would naturally be applicable in connection with the storage restrictions on the Mysore Reservoir.

My. 7, paragraphs 34 to 37.
My. 9, paragraphs 25 and 26.
My. 12, paragraph 38.

These statements made by responsible officers of the Public Works Department would form perfectly relevant evidence as they tend to throw light on the question of the extent of actual user. If such materials are sufficient to form correct bases for maturing large irrigation projects in Madras, their probative value in this controversy cannot be disregarded.

My. 1, paragraph 7.
My. 4, paragraph 7.
My. 7, paragraphs 37 to 43.
My 9, paragraphs 22, 27, 30 to 36.
My. 12, paragraphs 36 and 37, 41 to 43, 45.

23. *Upper Anicut conditions.*—The rules of 1882 for the regulation of water at the Upper Anicut (Appendix B) enjoin that the scouring sluices should be opened when the water rises to a level of $6\frac{1}{2}$ feet at ordinary times and at 7 feet at times of "scarcity." A head of 6 inches has been admitted to be usually required for scouring; and another six inches may be taken as necessary to make up for reduced section due to accumulation of sand when the flow is low. Thus the limits of $6\frac{1}{2}$ and 7 feet mentioned in the rules of 1882 really mean net supply to the delta of 6 feet. In fact, the crest of the Upper Anicut is just 6 feet over the Cauvery Dam and the rules are in full conformity with this depth. Also, at this depth no water has been used for scouring at the Upper Anicut and none is allowed for in the rules.

24. The remodelling of the Upper Anicut is admited to have given faciliities for forcing supplies up to 8 feet of water into the delta, *i.e.*, 2 feet more than before. This also indicates that 6 feet was the original limit of supply.

25. *The* 150 *yards calingula.*—The 150 yards calingula was specially constructed so as to surplus when there is a flow of $5\frac{1}{2}$ feet at the Cauvery Dam. This is one more proof that 6 feet on the Cauvery Dam was really considered the full and ample supply for the delta irrigation.

My. 7, paragraph 44.
My. 9, paragraph 37.
My. 12, paragraph 44.

26. *The rules for regulation at the Grand Anicut.*—The rules of 1888 for regulation at the Grand Anicut (Appendix C) are quite specific in fixing the "full and ample" supply of water required for the delta irrigation at 17,344 cusecs, which corresponds to a flow of 6 feet on the Cauvery Dam. The permissible higher discharges indicated in some clauses of the rules have all been shown as being due to the exigencies of flood regulation. The water registers by themselves therefore do not give any exact idea about the real requirements of irrigation.

My. 7, paragraphs 45 to 54.
My. 9, paragraphs 28 and 29, 38 to 46.
My. 12, paragraphs 39 and 40; 46 to 50.

27. The rules in force since 1905 framed after the remodelling of the Upper Anicut, specify certain limit supplies in the Cauvery and the Vennar which give a total discharge connoted by a gauge reading of about 6·2 feet at the Cauvery Dam. Considering that facilities for forcing extra supplies were afforded by remodelling, this later limit establishes that 6 feet must have been the original limit of full and ample supply.

28. The larger limits of flow mentioned in the rules of 1902 and later dates for the alternate running of channels in the non-flood season cannot be taken simultaneously and added together to represent the total supply required for the delta area. Besides, these rules are not of 20 years' standing.

29. *Varying limits.*—Thus 6 feet has been established as the limit due to Madras for the delta irrigation. But this limit would be applicable only during the height of the monsoon season, viz., July, August, first half of September, when also the irrigation requirements are at their highest.

My. 1, paragraph 8.
My. 4, paragraphs 8 and 9.
My. 7, paragraphs 55 and 56.
My. 6, paragraph 18.
My. 9, paragraphs 47 and 48.
My. 12, paragraphs 21 and 62.

30. *Limits required in June and second half of September.*—The flow in June mostly runs to waste as shown in Appendix D. In the first half of the month there is practically no irrigation. In the second half, the irrigation is very limited being confined to less than 10 per cent. of the total area. Even making allowance for absorption the limits to be fixed for this month must therefore be considerably less than the maximum limit.

My. 1, paragraph 9.
My. 4, paragraph 9.
My. 7, paragraphs 57 and 58.
My. 9, paragraphs 49 to 51.
My. 12, paragraphs 51 and 52.

Similarly, the limit for the second half of September should be reduced as the first crop would be harvested then and also the period of maximum demand will have been over.

31. *Limits required from October to January.*—From October to January, there is usually plenty of rainfall in the delta area and the requirements are also naturally decreased as the crops mature. Besides, in these months only on very few occasions is the south-west monsoon limit of flow reached. Hence considerable reductions from the maximum limit are necessary during this season.

My. 4, paragraph 6.
My. 7, paragraph 59.

32. *Limits as per Mysore Rules.*—The limits proposed in the Mysore rules (Appendix E) have been fixed with due regard to the above considerations as well as to the provision made in the Metur Project.

My. 1, paragraph 13.
My. 4, paragraph 13.
My. 7, paragraphs 60 and 61.
My. 9, paragraphs 48, 52, 53.

The average flow during each fortnight varies very considerably from year to year and no definite idea can be formed of the real requirements from these averages. Also, the fortnightly averages in several years are less than the limits allowed in the Metur Project. Accordingly the limits provided in that project are taken as the basis for getting an idea of the requirements. In consideration of the fluctuating nature of the flow, an allowance of 25 to 30 per cent. is made. These increased limits or those corresponding to the average flow during the past 20 years (based on a 7 feet limit flow at the Cauvery Dam) whichever may be the greater, have been proposed. It must be remembered that, in the calculations, the varying limits are fixed on a consideration of 7 feet flow which has been the limit supply in the past. Even after impounding under these limits, the daily flow at the Cauvery Dam would on many days be above the 7 feet limit demanded by Madras and so extra quantities can often be admitted into the canals if really needed.

33. *Resulting yearly discharges.*—Further, to show that these limits give all the water actually required for the delta irrigation, the resulting annual quantities of discharge due to these limits have been computed. These do not compare unfavourably with the corresponding quantities shown in the annual Irrigation Revenue reports if regard be had to the fact that the later figures are admittedly very much more than the quantities actually used as due deductions for tail water have not been made.

My. 1, paragraph 10.
My. 7, paragraphs 62 to 64.
My. 9, paragraphs 54 to 67.
My. 12, paragraphs 53, 55 to 61.

A similar comparison with the annual quantities of water based on the "full and ample supply" of the rules of regulation of 1888 also shows that the limits of Mysore rules give ample yearly discharges for the delta irrigation.

It has also been shown that the yearly total supplies realised with the limits proposed by Mysore compare very favourably (*a*) with the theoretical requirements of the rice crop after making due allowance for the rainfall in the delta area and (*b*) with the resulting quantity based on the depth of water in the fields provided in the Metur project.

34. Appendix F (paragraph 62, My. 7) shows that the area of cultivation from year to year has remained more or less uniform notwithstanding very large variations in the total quantity of water thrown on the fields. The fact is that much more water than is actually necessary is being passed into, and wasted through, the delta area on account of the exigencies of flood regulation.

The real irrigation interests of Madras will not therefore be affected by the proposed impounding in Mysore.

35. *Allowance for rainfall.*—It has been admitted by Madras that, on account of excessive rainfall, direct flow to the fields has often been cut off, and Mysore urge that the benefit of such short supplies should be given to them so as to enable them to impound more water than with the usual limits.

My. 1, paragraph 9.
My. 4, paragraph 9.
My. 7, paragraph 65.
My. 9, paragraph 69.
My. 12, paragraph 63.

The rules suggested by Mysore in this behalf (Appendix H) may be accepted.

Coleroon Irrigation.

36. No good reasons exist for mixing up the flow of 644 m.c.ft. over the Upper Anicut with the actual requirements of the delta irrigation. Such a flow before the remodelling of 1902 would have only surplussed into the Coleroon river and therefore could not have been available for the higher delta area. So this quantity can have no connection with the requirements of the delta proper.

My. 1, paragraph 12.
My. 4, paragraph 12.
My. 7, paragraphs 66 and 67.
My. 9, paragraphs 70 to 73.
My. 12, paragraph 61.

If the claim for 644 m.c.ft. is to be considered, it could be only for Coleroon irrigation directly under the Lower Anicut or under the Veeranam tank. To connect this flow with the requirements of the Veeranam tank, elaborate calculations have been made by Madras in paragraph 41 of Part II (Ma. 7).

In this connection it should be noted that Madras have claimed (*vide* Ma. 1) only a flow of 66 m.c.ft. daily for the supply of the Veeranam tank in the south-west monsoon (June to September).

The present calculations therefore show results obviously far in excess of any requirements.

37. *Discharges maintained without specific supplies.*—But the daily records of gauge-readings at the Lower Anicut distinctly show that, without any direct replenishment, there is ample flow due to leakage and seepage to meet all the Coleroon irrigation requirements. In fact, the tail water from the rice fields of the delta area, the rainfall over the 1,077 square miles of the Coleroon catchment and the absorption from the floods given out as seepage have been shown to account for this abundant flow at the Lower Anicut. No special provision is therefore necessary. This fact has been clearly admitted in the Metur Project in the following words:—"It is found, as a fact that although no definite supply through works is being passed to the Coleroon there is always an adequate supply in that river for the Lower Anicut system when the supplies in the Cauvery system are adequate." The tables of discharges at the Lower Anicut (Appendix K and K-1) show that the whole of the Coleroon irrigation including that under the Veeranam tank has been maintained by leakage, seepage, etc., without any specific supply from the surplus works above.

My. 1, paragraph 11.
My. 4, paragraph 11.
My. 7, paragraphs 68 and 69.
My. 9, paragraphs 74 to 80.
My. 12, paragraphs 64 to 67.

38. *Interference with floods.*—The interference with flood conditions by the Mysore reservoir is much less than it would be by the Metur reservoir when constructed. The catchment area over the Mysore Reservoir is limited and it intercepts only a portion of the total flow at the dam site. If anything, the conditions with the Mysore Reservoir, so far as Coleroon supplies are concerned, would be better than with the Metur Reservoir. Appendix W shows that even in the worst year on record (1899-00) 55,774 m.c.ft. was wasted into the sea at the Lower Anicut; and the tables (Appendix T) show that the quantity that could have been possibly impounded in the reservoir is much less than the quantity so wasted.

My. 7, paragraph 70.
My. 9, paragraphs 84 to 87.
My. 12, paragraph 71.

39. *Veeranam tank.*—This tank has its own catchment which supplies a considerable portion of the water required for irrigating the land commanded by it. The replenishment required from the Vadavar is reduced by this extent. The quantities actually used in the past years for the Veeranam tank irrigation, as shown in column 13, Appendix K, are very small. The figures of actual discharges prove that the daily flow in the Vadavar including the requirements of the Veeranam tank is really less than the quantity of leakage available at the Lower Anicut, even after meeting the requirements of the direct irrigation under the anikat.

My. 1, paragraph 12.
My. 4, paragraph 12.
My. 7, paragraph 77.
My. 9, paragraphs 84 and 86.
My. 12, paragraphs 68 to 70.

It has been shown in Appendix L (paragraph 75, My. 7) that the extent of irrigation under this tank has been more or less constant, though the supplies from the south-west monsoon through the Vadavar has greatly varied from year to year.

Hot Weather Flow.

40. The claim to the hot weather flow (February to May) has to be decided on the basis of prescription. Accordingly certain limits of flow have to be fixed, beyond which impounding may be done in Mysore as admitted by Madras. Mysore, in a separate note, dated the 28th January 1913, have shown what limits of flow may be considered as due to Madras on a basis of the average estimated natural flow at Sivasamudram.

My. 1, paragraph 32.
My. 4, paragraphs 3 and 4.
My. 7, paragraph 78.
My. 9, paragraph 88.
My. 12, paragraphs 11 to 16, 72 to 75.

Mysore obviously cannot guarantee that the demands of power supply will be constant, and they therefore should have the option to modify the quantity of water used for power purposes. Whenever the power supply is stopped for any reason, Madras rights would be respected up to the limits noted above to meet the requirements of their prescriptive hot weather irrigation. The exact figures representing such areas have to be determined.

Cauvery channels above the Upper Anicut.

41. To justify their claim for a higher limit of 7 feet or more at the Cauvery Dam, Madras have tried to connect these stages of the river with the full supply levels of the upper channels. It is however significant that Madras themselves have distinctly stated (paragraph 107, Ma. 14) that a stage of 6 feet on the Cauvery Dam would give adequate supplies to these channels.

My. 12, paragraphs 76 to 81.

42. It has been stated by Mysore that the lower stages of $3\frac{1}{2}$ to $5\frac{1}{2}$ feet on the Cauvery Dam can alone be depended upon for the greater portion of the irrigation season and this must have influenced all the previous experienced engineers who proposed large projects on the Cauvery and the Bhavani, when they did not make any special allowance for these upper channels. In fact, the stages of flow from $4\frac{1}{8}$ to 6 feet proposed for such reservoirs would have been ample to meet the requirements of these upper channels.

43. Accordingly, the limit of 6 feet already proposed by Mysore in the height of the season and the varying limits in consonance with the natural stages of the river for other months, would ensure proper supply to the upper channels. Certain gauge readings and diagrams produced by Madras have been examined by Mysore in a note, dated the 28th January, which, it will be seen, confirms the above conclusions.

Exhibit My—17.

I

STATEMENT showing the area of wet cultivation of the river Cauvery and its channels above the Reservoir site.

Year.	Paddy or monsoon crop.											Sugarcane and garden or perennial crop.										
	Sriramadevar North and South channels.	Mandagiri.	Hemagiri.	Kalhalli Kannambadi channel.	Krishnarajakatte.	Chamaraj and Mirle series.	Hamasamudram.	Marohalli.	Tippur Nalla.	Total.	Sriramadevar North and South channels.	Mandagiri.	Hemagiri.	Kalhalli Kannambadi channel.	Krishnarajakatte.	Chamaraj and Mirle series.	Hamasamudram.	Marohalli.	Tippur Nalla.	Total.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.	Acs.		Acs.	Acs.
1896	5,728	3,112	1,067	1,385	4,700	5,200	5,861	410	815	28,278	927	572	424	176	927	1,120	374		194	4,718
1897	5,932	3,086	1,075	2,303	4,700	5,200	5,872	410	815	29,393	959	598	416	180	959	1,120	374		194	4,600
1898	7,196	3,073	1,090	2,596	4,947	5,200	5,872	410	815	31,198	809	735	409	130	809	1,120	380		194	4,686
1899	7,044	3,082	1,004	2,596	4,953	5,200	5,872	410	815	31,036	944	726	435	130	944	1,120	380		194	4,878
1900	7,148	3,084	1,035	2,601	4,954	5,200	5,872	410	814	31,118	896	724	464	125	896	1,120	381		196	4,799
1901	6,927	3,106	...	2,601	4,957	5,952	5,872	410	814	34,639	1,114	702	27	125	1,114	1,152	381		196	4,810
1902	6,657	2,366	...	2,148	4,957	5,952	5,872	410	814	33,166	1,316	889	27	125	1,316	1,152	381		196	5,461
1903	6,361	2,373	...	2,113	4,967	5,952	5,872	410	814	32,852	1,667	872	27	160	1,667	1,152	380		196	6,121
1904	6,854	2,403	...	2,135	4,945	5,954	5,872	410	814	33,337	1,120	842	27	136	1,120	1,152	380		196	4,974
1905	6,818	2,387	898	2,114	4,953	5,954	5,872	410	814	34,220	1,127	864	484	169	1,127	1,152	380		195	5,488
1906	7,264	2,470	908	2,125	4,963	5,954	5,872	410	814	34,760	725	776	474	148	725	1,152	380		196	4,674
1907	7,211	2,476	893	2,132	4,962	5,978	5,872	410	814	34,747	740	771	489	141	740	1,183	382		196	4,641
1908	7,725	2,942	916	2,488	4,962	9,981	5,872	401	814	36,100	909	739	467	128	909	1,179	382		196	4,908
1909	7,646	2,841	900	2,488	4,963	9,999	5,872	406	814	36,528	848	840	482	128	848	1,188	382		196	4,911
1910	7,591	2,787	913	2,488	4,964	9,999	5,872	405	814	36,833	886	894	469	128	886	1,191	382		196	5,031

N.B.—Information is not readily available for some channels and they are therefore not included in this statement.

II

STATEMENT showing the area of wet cultivation of the river Cauvery and its channels below the Reservoir site.

Year.	Paddy or Monsoon crop.										Sugar-cane and garden or perennial crop.										Remarks.
	Chick Devaroy Sagar.	Ramaswamy.	Mahadeva Mantri.	Mahadeva Mantri.	Devaroy.	Virjanadi.	Bangara Doddi.	Rajaparameswari.	Hampur and Hulhalli.	Total.	Chick Devaroy Sagar.	Ramaswamy.	Mahadeva Mantri.	Devaroy.	Virjanadi.	Bangara Doddi.	Rajaparameswari.	Hampur and Hulhalli.	Total.		
	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19		20
	Acs.	Acs.	Acs.	Acs.	Acs.	Ac .	Acs.	Acs.	Acs.		Acs.	Acs.	Acs.	Acs.	Acs	Acs.	Acs.	Acs.	Acs.		
1896	14,627	7,398	2,832	1,202	6,384	763	3,286	6,432	41,373		2,406	246	66				76	84	2,877		Figures incomplete.
1897	14,628	7,338	2,621	1,202	6,380	763	3,286	6,222	42,389		1,838	255	94				76	256	2,499		Do.
1898	14,627	7,366	2,620	1,202	6,382	763	3,286	6,478	42,673		1,146	246	94				76	226	1,798		Do.
1899	13,486	8,085	2,722	1,109	6,069	582	3,583	7,146	42,781		1,836	247	94	92	263	180	76	236	3,024		
1900	13,488	8,088	2,750	1,109	6,069	582	3,583	7,422	43,091		1 836	248	94	92	263	180	76	324	3,103		
1901	13,516	8,074	2,744	1,100	6,069	582	3,583	7,422	43,099		1,825	246	94	92	263	180	76	324	3,100		
1902	13,516	8,179	2,745	1,109	6,073	582	3,583	7,615	43,402		2,566	246	94	92	263	180	76	324	3,779		
1903	13,618	8,144	2,998	1,126	6,088	582	3,584	7,807	43,827		2,601	244	82	92	263	180	76	324	3,762		
1904	13,589	8,165	2,981	1,126	6,084	582	3,584	8,769	44,870		1,222	248	82	92	263	180	76	324	2,487		
1905	13,589	8,159	2,973	1,126	6,085	582	3,584	9,620	45,618		1,222	246	82	92	263	180	76	324	2,487		
1906	13,577	8,165	2,980	1,126	6,086	581	3,584	9,752	45,860		1,221	243	82	91	263	180	76	324	2,483		
1907	13,577	8,118	2,978	1,126	6,086	581	3,584	10,569	46,608		1,221	247	82	91	263	180	76	324	2,487		
1908	13,581	8,182	3,017	1,127	6,090	581	3,690	10,620	46,788		1,221	245	82	91	263	180	76	324	2,485		
1909	13,686	8,183	3,015	1,127	6,092	581	3,696	10,662	46,841		1,221	248	82	91	263	180	76	324	2,488		
1910	13,691	8,102	2,998	1,127	6,092	581	3,695	10,763	46,849		1,221	246	82	91	263	180	76	324	2,486		

N.B.—Information is not readily available for some channels and they are therefore not included in this statement.

Exhibit My.-18.

Number of appendix.	Heading.	Reference to paragraphs of Exhibits.	Brief description of the object of the appendix.
A.	Sir K. Seshadri Ayyar's letter and memorandum of June 1890.	My.-6, paragraph 2 ..	The circumstances that led to the Agreement of 1892 are briefly related here It also shows that the object of the Agreement was to avert the consequences of loss to the British Government without checking the legitimate and reasonable progress of the irrigation works of Mysore.
B.	Rules for the regulation of water at Upper Anicut, dated July 1882.	My.-7, paragraphs 40 and 41. My.-9, paragraphs 28 to 36.	Six feet on the Cauvery dam has been the full supply limit prior to remodelling and not 7 feet as claimed by Madras. The rules distinctly state that the scouring sluices should not be opened ordinarily until water rises to 6½ feet and at times of scarcity to 7 feet on the Cauvery dam. Hence no claim to scouring water can arise at 6 feet.
C.	Rules for regulation at Cauvery-Vennar regulators, dated April 1888, and revised rules, dated August 1894.	My.-7, paragraphs 44, 45, 46, 47, 48, 49 and 53. My.-9, paragraphs 38, 39, 40, 42, 43 and 44.	These rules confirm that less than the equivalent of 6 feet (5·8 feet) on the Cauvery dam was considered the full and ample supply to the Delta.
D.	Table of discharges in millions cubic feet in the month of June for the years 1890 to 1909.	My.-7, paragraph 57 .. My.-9, paragraph 49 ..	Proves that the floods in the month of June are mostly wasted and that much of the water admitted into the Delta finds its way into the Coleroon below the Grand Anicut.
E.	Provisional rules for working the Mysore Reservoir.	..	The method of impounding in the Mysore Reservoir so as not to infringe on the rights of Madras is fully given here.
F.	Statement showing areas irrigated as compared with supplies under different conditions.	My.-7, paragraph 62 ..	This appendix proves that, though there is a large variation in the quantity of water supplied to the Delta, there has been no great variation in the area cultivated from year to year, thus establishing that much more water than is actually necessary has been thrown on the cultivated area.
G.	Table showing quantities of flood that would have been available for Madras irrigation with the limits proposed by Mysore.	My.-7, paragraph 64 .. My.-9, paragraphs 64 to 76.	A comparison between the quantities actually used according to Sir J. Benton's appendix V and those that would have been obtained with the limits proposed by Mysore has been made.
G_1.	Statement of fortnightly discharges of the rivers Cauvery and Vennar limited to a discharge of 11,350 cusecs in the Cauvery and 6,100 in the Vennar.	My.-9, paragraph 61 ..	This table shows that the total quantities realised with the Mysore limits compare favourably with those obtained within the full and ample supply limits of the rules of 1888 (Appendix C).
H.	Tentative rules for making allowance for rainfall.	My.-7, paragraph 65 .. My.-9, paragraph 69 ..	This appendix gives the rules for relaxing the limits at times when canal supply is not required for the Delta lands.
K & K_1.	Statement of discharge in the Coleroon showing the quantities used for irrigation of the Lower Anicut system.	My.-7, paragraphs 63 (2), 75. My.-9, paragraphs 77 to 80 and 85. My.-12, paragraphs 66 to 70.	The tables in this appendix prove that the flow in the Lower Anicut canals, such is it was, has been maintained by means of leakage, seepage, etc., that the flow utilised through the Vadavar to the direct irrigation under it and the Veeranam tank has been very little; and that the quantity impounded in the Veeranam tank has been practically nothing even though large quantities were surplussed into the sea at the same time.
L.	Abstract of appendix IV of Madras case showing the conditions of Veeranam tank and the area irrigated under the Coleroon for the twenty years ending 1909–10.	My.-7, paragraph 75 ..	Shows that whether the Veeranam tank fills or not in the south-west monsoon, the irrigation under it has been maintained more or less uniformly.
M.	Discharges of the rivers the Bhavani, the Amaravathi and the Noyel.	My.-7, paragraph 84 ..	Proves that the replenishment below the Mysore territory from the tributaries, Bhavani, Amaravati and the Noyel amounts to about twice the capacity of the Kannambadi Reservoir even in a very bad year like 1905.
N.	Madras table N improved ..	My.-8, paragraph 92 ..	These are tables exemplifying the results of impounding according to the method originally put forward by Mysore, but subsequently rejected.
P.	Working tables I, II and III ..	My.-8, paragraphs 104 to 107. My.-9, paragraphs 104, 105 and 106.	The tables here indicate the results of working according to the revised rules proposed by Mysore (Appendix E).
Q.	Brief notes on cases quoted by Madras.	My.-9, paragraph 11 ..	This appendix shows that the cases quoted by Madras in their Legal arguments have little or no bearing on the points in dispute.

Exhibit My.-18.—*cont.*

Number of appendix.	Heading.	Reference to paragraphs of Exhibits.	Brief description of the object of the appendix.
R.	Comparative table showing the effect on the quantity and incidence of the flow at the Cauvery dam.	My.-9, paragraphs 107 to 117.	This appendix clearly shows that the effect of impounding in the Mysore Reservoir on the quantity and incidence of flow at Cauvery dam is of an insignificant character and that any of the slightest disturbances observed are at once remedied by abundant flow available on the immediately succeeding days and that the days of impounding in any year are mostly confined to July and August and that the passing on of compensation water will be necessitated for a very few days and that the quantity of compensation water is also negligible.
S.	Statement showing the area irrigated by the Cauvery and its tributaries, channels above the Upper anicut.	My.-12, paragraph 32 ..	This appendix shows that there have been considerable extensions in the area irrigated since 1890 thus indicating that this extra area cannot claim water as a prescriptive right.
T.	Table III for the year 1899 ..	My.-12, paragraphs 71, 91 to 100.	The table shows that the appearance of minus quantities and the necessity of passing on compensation water are no grave defects in the method of impounding proposed by Mysore as these factors will have no appreciable effect on the Delta irrigation as well as the irrigation under the upper channels.
W.	Abstract of discharges at the Lower anicut.	My.-12, paragraph 71 .	This appendix shows that in the worst year 1899 as much as 55,000 millions cubic feet was uselessly surplussed into the sea at the Lower Anicut.

Exhibit My.-19.

Note on the quantity of water to be issued for power generation from the storage of the Kannambadi Reservoir for preparing the working tables.

The provision made in the project for meeting the ultimate power requirements is 1,000 cusecs at the reservoir, including the credit due to the river flow at Sivasamudram; and the net quantity to be drawn-off from the reservoir is (14,256 — 7,904 =) 6·352 million cubic feet as clearly shown in the foot-note No. 2 on page 31 of the printed project and in columns B and A of the table on the same page. Also, in paragraph 18 (page 4) of the Chief Engineer's report, the "stored water" required for power is taken as 6,352 million cubic feet agreeably to the table noted above. There can thus be no mistake that the 1,000 cusecs referred to in the Project represents the quantity at the reservoir if the whole had to be issued from the storage water.

2. In fact, this quantity is 200 cusecs in excess of that required for the power demands including the additional supply for the Kolar Gold Fields, as shown in the statement of calculations attached.

3. The provision made under the first stage of the project represents more nearly the quantity of water necessary for generating the electric power now required including the demand of the Kolar Gold Fields; this is shown on page 32 of the project where a provision of 750 cusecs only at the reservoir instead of 1,000 has been made.

4. Thus these quantities, viz., 750 cusecs for the first stage and 1,000 cusecs for the second stage shown in the project give the measure of power water required at Kannambadi including river flow and not at Sivasamudram as represented by Madras by mistake.

5. In fact, if 1,000 cusecs referred to in the project were to be taken as at Sivasamudram, it would mean as much as 26,000 h.p., for which there is no possible demand either at present or in the future, the whole of the present and the contracted plant being capable of generating only about 17,500 h.p.

6. It is therefore obvious that the extreme demand on the reservoir to be provided in the working tables is 1,000 cusecs at Kannambadi less the natural flow in the river. Making an allowance of 25 per cent. extra for the transmission factor between Sivasamudram and Kannambadi, the demand on the reservoir would thus be (1,000—5/4 S.), where S is the measured discharge at Sivasamudram. The expression 5/4 (1,000—S) used in the note presented on the 24th instant, is an error and is now corrected.

7. Fresh working tables with an explanatory note are therefore attached showing the distribution of water for the different stages of storage in supersession of the previous tables.

In this note, the points raised by the Madras Representative in his note of the 23rd instant have been answered and the tables are suitably modified.

CAMP MADRAS,
26th *February* 1914.

K. SHRINIVASA RAO,
Mysore Representative.

Memorandum on the quantity of water required to generate power at Sivasamudram.

(Reference page 36 of Mysore Project Report.)

	H.P.	Reference. PART.
(1) Present maximum demand	12,000	1 (1)
(2) Additional power to be supplied to Messrs. John Taylor & Sons' Committee for which machinery is ordered	5,000	1 (3)
(3) Add for transmission losses on (2) at 8 per cent.	400	1 (1) & 4
Total ...	17,400	

Water required at Sivasamudram = 485 cusecs for 13,000 h.p. Hence for 17,400 h.p.

13,000 h.p. : 485 cusecs : : 17,400 h.p. or

$\frac{17,400 \times 485}{13,000}$ = 649 cusecs at Sivasamudram.

Add 25 per cent. for losses on the way ... ... 162 cusecs.

Total 811 cusecs or in round figures 800 cusecs if the whole flow had to be given from Kannambadi against 1,000 cusecs provided in the Project to meet remote contingencies.

Tentative rules for working the Kannambadi Reservoir for different conditions of storage.

A storage of about 4,000 million cubic feet above the irrigation sluice is proposed to be generally kept in the reservoir at the beginning at the second half of June as a starting balance for the season.

With this assumption the normal storage required at the beginning of every month or the end of the preceding month, has been calculated, working backwards from 15th June to the preceding September, as shown in column A of the statements attached. Thus a storage of 30,597 million cubic feet would be required at the end of October for normal supply to irrigation and for power water.

Here the power water has been calculated on the basis of the worst year for which there is record at Sivasamudram, namely, 1906, as the total flow during the month, March to May of this year at Kannambadi was nearly the same as in the corresponding period of 1899 as calculated by Madras. Thus the discharge at Sivasamudram in the year 1899 would have very nearly coincided with that of the year 1906. So, the power water to be issued from the reservoir would represent the maximum demand, being based on the minimum natural flow.

2. When the storage falls short of the normal supply of 30,597 million cubic feet noted above, the manner in which distribution is proposed may be shown for the several stages of storage differing by about 2,000 million cubic feet as in columns B to G of the statements attached, those in column A representing the normal figures.

Case.	Storage.	At the end of October.
A	30,000	,,
B	28,000	,,
C	26,000	,,
D	24,000	,,
E	22,000	,,
F	20,000	,,
G	18,000	,,

Case A.

Storage at the end of October 30,000 *million cubic feet.*—The supplies for irrigation and power will be as shown in columns 2 to 4 of the statements.

Case B.

Storage at the end of October 28,000 *million cubic feet.*—The monsoon crop supply will be reduced by one-half in the months of December and first half of January; the perennial crop supply remaining normal throughout. The actual storage required for this would be 28,191 million cubic feet.

Case C.

Storage at the end of October 26,000 *million cubic feet.*—(*a*) The monsoon crop supply will be reduced by one-half in the months of November, December and first half of January.

(*b*) The perennial crop supply will be left undisturbed except in the two fortnights of January when only half supply will be given. The storage required with this arrangement would be 25,646 million cubic feet.

Case D.

Storage at the end of October 24,000 *million cubic feet.*—(*a*) The monsoon crop supply will be reduced as in case C above.

(*b*) The perennial crop supply will be reduced by half in the months, November to January, and by one-sixth from February onwards by reduction in the area of new perennial irrigation.

The quantity required would thus be 23,271 million cubic feet.

Case E.

Storage at the end of October 22,000 *million cubic feet.*—(*a*) The monsoon crop supply will be reduced as in case C above.

(*b*) The perennial crop supply will be reduced by one-half in the months, November to January, and by one-half from February onwards by reduction in the area of new perennial irrigation.

The quantity required in this case will be 21,416 million cubic feet.

Case F.

Storage at the end of October 20,000 *million cubic feet.*—(*a*) Monsoon crop supply will be reduced by half in the months of November and December and fully cut off in the half month of January.

(*b*) The perennial crop supply will be reduced by one-half in the months November to January; and from February onwards only one-third supply will be given for new perennial irrigation, thus stopping two-thirds of the area of new perennial irrigation.

The storage required to meet this programme would be 19,563 million cubic feet.

Case G.

Storage at the end of October 18,000 *million cubic feet.*

(*a*) The monsoon crop supply will be reduced as in case F above.

(*b*) The perennial crop supply will be reduced by half from November to January; and from February only one-fourth the supply will be given for new perennial irrigation by stopping three-fourths of that area.

The closing balance in this case would be less than 4,000 million cubic feet on 16th June, and the issue to the succeeding monsoon crop will be delayed until the Reservoir receives replenishments from first freshes.

The storage required with this arrangement would be 17,302 million cubic feet.

3. The assumptions on which the above systems of regulation are based may require modification in actual working. Although the figures in the statement give an idea of what is proposed to be done, they are not to be taken as finally binding. The draw-off figures for irrigation represent the average, while actuals may be more or less according to the requirements and do not include extraordinary draw-off when the river is in very high floods and the Reservoir is surplussing.

4. The details of regulation as noted above have been shown in the form of tabular statements attached. In these, column 2 gives the monsoon crop draw-off at 103 million cubic feet per day up to January first-half; column 3 gives the perennial crop draw-off at 44 million cubic feet per day throughout the year; column 4 gives the quantity required for power. This is calculated by substracting from 1,000 cusecs 5/4 of the flow recorded at Sivasamudram in 1906. The sum of the figures in columns 2–4 is given in column 5. On this the allowance for the evaporation is calculated for each month or half-month on the basis of the balance of the beginning thereof as under:—

	INCHES.
June	5
July to February	4
March	5
April	7
May...	8

In the application of the above rules to working tables, the following procedure may be observed:—

(*a*) The class of scale to be applied should be that indicated by the nearest equal figure at the end of October.

(*b*) If monsoon irrigation is started later than 15th June, extra issue will be made only for the number of days so delayed after 1st July.

(*c*) When reductions are made in the issue for new perennial crop area from February to June, supply will be given for such areas to enable monsoon crop being grown in them up to the limit of the average draw-off of 147 million cubic feet is adhered to.

(*d*) The draw-off in the months of 16th June to 30th September will be generally 147 million cubic feet. But extra quantities will be drawn within permissible limits up to the maximum capacity of the canals, viz., 3,000 cusecs. The quantity so drawn may average up to about 4,000 million cubic feet in any year.

Case A.—Balance at end of October—30,000.

—	Monsoon crop.	Perennial crop.	Hot weather power.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
				33,307	..	35,493
September	3,193	1,364	..	28,750	339	30,597
October	3,090	1,320	..	24,240	301	25,886
November	3,193	1,366	..	19,783	274	21,055
December	1,545	660	60	17,518	121	18,669
January, first-half	..	704	31	16,783	110	17,824
Do. second-half	..	1,232	719	14,832	214	15,659
February	..	1,364	1,694	11,774	244	12,357
March	..	1,320	2,132	8 322	278	8,627
April	..	1,364	1.499	5,459	251	5,513
May	..	660	799	4,000	54	4,000
June, first-half						

Normal table.

Case B.—Balance at end of October—28,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
				30,937	..	33,077
September	3,193	1,364	..	26,380	329	28,191
October	3,090	1,320	..	21,970	290	23.491
November	*1,596*	1,364		19,010	255	20,276
December	*773*	660	60	17.518	115	18,669
January, first-half	..	704	31	16,783	110	17,824
Do. second-half	..	1,232	719	14,832	214	15,659
February	..	1,364	1,694	11,774	244	12,357
March	..	1,320	2,132	8,322	278	8,627
April	..	1,364	1,499	5,459	251	5,513
May	..	660	799	4,000	54	4,000
June, first-half						

Monsoon crop—Half supply in December and January.
Perennial—Normal throughout.

Case C.—Balance at end of October—26,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
				28,710	..	30,504
September	3,193	1,364	..	24,153	301	25,646
October	*1,545*	1,320	..	21,288	274	22,507
November	*1,596*	1,364	..	18,328	255	19,292
December	*772*	*330*	60	17,166	113	18,017
January, first-half		*352*	31	16,783	110	17,524
Do. second-half	..	1,232	719	14,832	214	15,359
February	..	1,364	1,694	11,774	244	12,057
March	..	1,020	2,132	8.322	278	8,627
April	..	1,364	1,499	5,459	251	5,513
May	..	660	799	4,000	54	4,000
June, first-half						

Monsoon crop—Half supply November, December and January first-half.
Perennial—Half supply, January only.

Case D.—Balance at end of October—24,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
September	..	..	..	26,129	..	28,112
October	3,193	1,364	..	21,572	284	23,271
November	*1,545*	*660*	..	19,367	255	20,811
December	*1,596*	*682*	..	17,089	239	18,294
January, first-half	*772*	*330*	60	15,927	110	17,022
Do. second-half	..	*352*	31	15,544	104	16,535
February	..	*1,037*	719	13,798	202	14,587
March	..	*1,137*	1,694	10,967	227	11,529
April	..	*550*	2,132	7,985	260	8,287
May	..	*1,137*	1,499	5,349	243	5,108
June, first-half	..	*550*	799	4,000	54	4,000

Monsoon crop—half supply—November, December and January first-half.
Perennial—half supply—November, December and January.
New crop area reduced—1/6th or 5/6th supply from February.

Case E.—Balance at end of October—22,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
September	..	..	..	24,398	..	26,247
October	3,193	1,364	..	19,841	274	21,416
November	*1 545*	*660*	..	17,636	239	18,972
December	*1,596*	*682*	..	15,358	220	16,474
January, first-half	*772*	*320*	60	14,196	101	15,211
Do. second-half	..	*352*	31	13,813	94	14,734
February	..	*616*	719	12,478	181	13,218
March	..	*682*	1,694	10,102	213	10,629
April	..	*660*	2,132	7,310	246	7,591
May	..	*682*	1,499	5,129	229	5,181
June, first half	..	*330*	799	4,000	52	4,000

Monsoon crop—half supply—November, December and January first half.
Perennial crop—half supply—November, December and January. Half supply to new perennial crop from February

Case F.—Balance at end of October—20,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
September	..	..	..	22,636	..	24,375
October	3,193	1,364	..	18,079	255	19,563
November	*1,545*	*660*	..	15,874	225	17,133
December	*1,596*	*682*	..	13,596	202	14,653
January, first-half	..	*330*	60	13,206	91	14,172
Do. second-half	..	*352*	31	12,823	88	13,701
February	..	*410*	719	11,694	170	12,402
March	..	*455*	1,694	9.545	199	10,054
April	..	*440*	2,132	6,973	239	7,243
May	..	*455*	1,499	5,019	220	5,069
June, first-half	..	*220*	799	4,000	50	4,000

Monsoon crop half supply—November, December and *nil* in January first half.
Perennial half supply—November, December and January.
New perennial one-third supply—from February.

Case G.—Balance at end of October—18,000.

—	Monsoon crop.	Perennial crop.	Hot weather crop.	Total.	Allowance for evaporation.	Total storage required at end of month.
1	2	3	4	5	6	7
September	..	..	..	20 591	..	22,108
October	3,193	1,361	..	16,034	249	17,302
November	*1,545*	*660*	..	13,829	209	14,888
December	*1,596*	*682*	..	11,551	181	12,429
January, first half	..	*330*	60	11,161	79	11,960
Do. second half	..	*352*	31	10,778	76	11,501
February	..	*308*	719	9,751	149	10,325
March	..	*341*	1,694	7,716	176	8,114
April	..	*330*	2,132	5,254	206	5,446
May	..	*341*	1,499	3,414	186	3,410
June, first half	..	*115*	799	2,500	26	2,500

Monsoon crop—half supply November, December and *nil* in January.
Perennial—half supply November, December and January.
Do. quarter supply from February.

Exhibit My.-19a.

I

Tentative Rules for working the Kannambadi Reservoir for different conditions of storage.

A storage of about 4,000 million cubic feet, above irrigation sluice, is proposed to be generally kept in the reservoir at the beginning of the second half of June as a starting balance for the season.

With this assumption, the normal storage required at the beginning of every month or the end of the preceding month has been calculated working backwards from 15th June to the preceding 30th September as shown in column A (2 to 7) of the statement attached. Thus a storage of 32,637 million cubic feet would be required at the end of October for normal supply to irrigation and for power water.

Here, the power water has been calculated on the basis of the worst year for which there is record at Sivasamudram, *i.e.*, for 1906. Also, the total flow during the months, March, April and May of this year at Kannambadi is nearly the same as in 1899 as calculated by Madras. So the power water to be issued from the reservoir would represent the maximum demand, being based on the minimum natural flow in the river.

2. When the storage falls short of the normal supply, the manner in which distribution is proposed may be shown for the several stages of storage differing by about 2.000 million cubic feet as in columns B to H of the statement; those in column A representing the normal figures.

Case.	Storage.	At the end of
A normal	32,000 m. c. ft.	October.
B ,	30,000 ,,	,,
C ,,	28,000 ,,	,,
D ,,	26,000 ,,	,,
E ,,	24,000 ,,	,,
F ,,	22,000 ,,	,,
G less than	25,000 ,,	September.
H ,,	23,000 ,,	,,

CASE A.

Storage at the end of October about 32,000 *million cubic feet.*—The supplies for irrigation and power will be as shown in columns 2 to 4. The actual storage required at the end of October will be 32,637 million cubic feet.

CASE B.

Storage at the end of October about 30,000 *million cubic feet.*—(*a*) The monsoon crop supply will be reduced by one-third in the months of November and December and by one-half in January by alternate distribution in the channels.

(*b*) The perennial crop supply will be unaffected. The actual storage required for this would be 30,479 million cubic feet.

Case C.

Storage at the end of October about 28,000 *million cubic feet.*—(*a*) Monsoon crop supply will be reduced by one-half in the months, November to first half of January.

(*b*) The perennial crop supply will be left undisturbed, except in the two fortnights of January when half the normal supply will be given alternate distribution.

The total storage required for this arrangement is 28,875 million cubic feet.

Case D.

Storage at the end of October about 26,000 *million cubic feet.*—(*a*) Monsoon crop supply will be reduced by one-half in the months, November to January first-half.

(*b*) The perennial crop supply will be reduced by one-third in the months of November and December; by one half in January; and, in addition, one-sixth reduction in supply to new perennial irrigation will be made from February onwards. This would mean that the area of new perennial irrigation would be reduced by one-sixth. The storage required in this case is 26,917 million cubic feet at the end of October.

Case E.

Storage at the end of October about 24,000 *million cubic feet.*—(*a*) Monsoon crop supply same as in case C above.

(*b*) Perennial crop supply same as in case D till the end of January; in addition, one-half reduction in the supply to new perennial crop from February onwards. This would mean that the area of new perennial irrigation would be reduced by one-half. The storage required for the above arrangement is 24,854 million cubic feet.

Case F.

Storage at the end of October 22,000 *million cubic feet.*—(*a*) Monsoon crop supply, same as in case C above.

(*b*) Perennial crop supply, one-half reduction in the months of November to January and two-thirds reduction from February onwards, thus stopping two-thirds of the new perennial irrigation. The total storage thus required at the end of October is 22,810 million cubic feet.

Case G.

Storage less than 25,000 *at the end of September.*—(*a*) Half supply to monsoon crop from October to January first-half.

(*b*) The perennial crop supply will be reduced as in case F above, up to end of January; from February onwards, three-fourths reduction will be made, so that only one-fourth of the normal area would be cultivated.

Case H.

Storage less than 23,000 *million cubic feet at the end of September.*—(*a*) Monsoon crop supply will be reduced to half from October to December and will be fully cut off in the first-half of January.

(*b*) Perennial crop supply same as in case G above.

The closing balances on the 15th June in cases F, G and H are less than 4,000 million cubic feet. The supply to irrigation in the respective succeeding years will be given a few days later after the reservoir receives proper supply from the first freshes.

3. The assumptions on which the above system of regulation is based may require modification in actual working. Although the figures in the statement give an idea of what is proposed to be done, they are not to be taken as finally binding. The draw-off figures for irrrigation represent the averages, while actuals may be more or less according to the requirements and do not include extraordinary draw-off when the river is in very high floods and the reservoir is surplusing.

4. The details of regulation as noted above have been shown in the form of tabular statements attached. In these, column 2 gives the monsoon crop draw-off at 103 million cubic feet per day up to January first-half. Column 3 gives the perennial crop draw-off at 44 million cubic feet per day throughout the year, column 4 gives the quantity required for power. This is calculated by subtracting from 1,000 cusecs the flow recorded at Sivasamudram in 1906 and multiplying the difference by 5/4ths. The sum of the figures in columns 2 to 4 is given in column 5. On this the allowance for the evaporation is calculated for each month or half month on the basis of the balance of the beginning thereof as under :—

	INCHES.		INCHES.
June	5	April	7
July to February	4	May	8
March	5		

In the application of the above rules to working tables, the following procedure may be observed :—

(*a*) The class of scale to be applied should be that indicated by the nearest equal figure at the end of October.

(*b*) If monsoon irrigation is started later than 15th June, extra issue will be made only for the number of days so delayed after 1st July.

(*c*) When reductions are made in the issue for new perennial crop area from February to June, supply will be given for such areas to enable monsoon crop being grown in them up to the limit of the average draw-off of 147 million cubic feet.

(*d*) The draw off in the months of 16th June to 30th September will be generally 147 million cubic feet. But extra quantities will be drawn within permissible limits up to the maximum capacity of the canals, viz., 3,000 cusecs. The quantity so drawn may average up to about 4,000 million cubic feet in any year.

Case A.—32,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw off for perennial crop.	Draw-off for power.	Total	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	..	..	..	34,779	..	..
October	3,193	1,364	..	30,222	332	32,637
November	3,090	1,320	..	25,812	351	27,876
December	2,129	1,364	..	22,319	319	24,064
January (first half	772	660	506	20,381	141	21,985
January (second ,, ...	..	704	80	19,597	144	21,057
February	..	1,232	1,263	17,102	280	18,282
March	..	1,364	2,383	13,355	325	14,210
April	..	1,320	2,786	9,249	390	9,714
May ,, ...	..	1,364	2,103	5,782	372	5,875
June, first half	..	660	1,122	4,000	93	4,060

Case B.—30,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Total.	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	..	..	..	32,652	..	35,401
October	3,193	1,364	..	28,095	355	30,479
November	2,060	1,320	..	24,715	339	26,760
December	1,418	1,364	..	21,933	310	23,668
January (first half	386	660	506	20,381	141	21,975
January (second ,, ...	..	704	80	19,597	144	21,047
February	..	1,232	1,263	17,102	278	18,274
March	..	1,364	2,383	13,355	313	14,214
April	..	1,320	2,786	9,249	405	9,703
May	..	1,364	2,103	5,782	362	5,874
June, first half	..	660	1,122	4,000	92	4,000

Case C.—28,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Total.	Evaporation.	Total at the end of each fortnight.
1	2	3	4	5	6	7
September	..	..	..	31,102	..	33,789
October	3,193	1,364	..	26,545	357	28,875
November	1,545	1,320	..	23,680	324	25,686
December	1,065	1,364	..	21,251	301	22,956
January (first half	386	330	506	20,029	138	21,596
January (second ,, ...	..	352	80	19,597	133	21,031
February	..	1,232	1,263	17,102	283	18,253
March	..	1,364	2,383	13,355	316	14,190
April	..	1,320	2,786	9,249	400	9,684
May	..	1,364	2,103	5,782	344	5,873
June, first half	..	660	1,122	4,000	91	4,000

Case D.—28,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw off for power.	Total.	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	..	..	..	29,201	..	31,815
October	3,193	1,364	..	24,644	341	26,917
November	1,545	880	..	22,219	312	24,180
December	1,065	909	..	20,245	282	21,924
January { first half	386	330	506	19,023	133	20,569
January { second ,, ..	..	352	80	18,591	139	19,998
February	..	1,027	1,263	16,301	266	17,442
March	..	1,137	2,383	12,781	307	13,615
April	..	1,083	2,786	8,912	387	9,359
May	..	1,137	2,103	5,672	356	5,763
June, first half	..	550	1,122	4,000	91	4,000

Case E.—24,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw off for power.	Total.	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	..	..	..	27,237	..	29,737
October	3,193	1,364	..	22,680	326	24,854
November	1,545	880	..	20,255	297	22,132
December	1,065	909	..	18,281	276	19,882
January { first half	386	330	506	17,059	130	18,530
January { second ,, ..	..	352	80	16,627	129	17,969
February	..	616	1,263	14,748	252	15,838
March	..	682	2,383	11,683	291	12,482
April	..	660	2,786	8,237	369	8,667
May	..	682	2,103	5,452	341	5,541
June, first half	..	330	1,122	4,000	89	4,000

Case F.—22,000 million cubic feet at the end of October.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Total.	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	..	..	..	25,298	..	27,671
October	3,193	1,364	..	20,741	304	22,810
November	1,545	660	..	18,536	285	20,320
December	1,065	682	..	16,789	264	18,309
January { first half	386	330	506	15,567	123	16,964
January { second ,, ..	..	352	80	15,135	123	16,409
February	..	410	1,263	13,462	238	14,498
March	..	454	2,383	10,625	276	11,385
April	..	440	2,786	7,399	354	7,805
May	..	454	2,103	4,842	325	4,923
June, first half	..	220	1,122	3,580	81	3,500

Case G.—Less than 25,000 million cubic feet at the end of September.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Drow-off for power.	Total.	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	3,090	1,320	..	23,207	333	25,483
October	1,596	1,364	..	20,247	298	22,225
November	1,545	660	..	18,042	261	19,759
December	1,064	682	..	16,296	248	17,765
January { first half	386	330	506	15,074	119	16,424
January { second ,, ..	..	352	80	14,642	122	15,870
February	..	308	1,263	13,071	235	14,064
March	..	341	2,383	10,347	246	11,094
April	..	330	2,786	7,231	345	7,633
May	..	341	2,103	4,787	313	4,870
June, first half	..	165	1,122	3,500	83	3,500

Case H.—Less than 23,000 million cubic feet at the end of September.

—	Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Total	Evaporation.	Total at the end of each month or fortnight.
1	2	3	4	5	6	7
September	3,090	1,320	..	20,111	309	22,262
October	1,545	1,364	..	17,202	276	19,077
November	1,064	660	..	15,478	255	17,098
December	386	682	..	14,410	239	15,791
January { first half	..	330	506	13,574	111	14,844
January { second ,, ..	..	352	80	13,142	114	14,298
February	..	308	1,263	11,571	224	12,503
March	..	341	2,383	8,847	254	9,525
April	..	330	2,786	5,731	321	6,088
May	..	341	2,103	3,287	286	3,358
June, first half	..	165	1,122	2,000	81	2,000

II

Statement of daily draw-off for monsoon and perennial irrigation to be applied for the working tables.

Case.	A		B		C		D		E		F		G		H	
Months.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial	Monsoon.	Perennial.	Monsoon.	Perennial	Monsoon.	Perennial.	Monsoon.	Perennial.
October	103	44	103	44	103	44	103	44	103	44	103	44	52	44	52	44
November	103	44	69	44	52	44	52	29	52	29	52	22	52	22	52	22
December	69	44	46	44	34	44	34	29	34	29	34	22	34	22	34	22
January { first half..	52	44	26	44	26	22	26	22	26	22	26	22	26	22	..	22
January { second ,, ..	..	44	..	44	..	22	..	22	..	22	..	22	..	22	..	22
February and beyond..	..	44	..	44	..	44	..	37	..	22	..	15	..	11	..	11

Case.	Storage.		At the end of
A	32,000	m.c.ft.	October.
B	30,000	,,	,,
C	28,000	,,	,,
D	26,000	,,	,,
E	24,000	,,	,,
F	22,000	,,	,,
G	Less than 25,000	,,	September.
H	do. 23,000	,,	,,

Exhibit My.-20.

ENQUIRY INTO THE QUESTION OF STORAGE OF THE CAUVERY WATERS WITHIN MYSORE TERRITORY.

Hot Weather Supply.

The Arbitrator's award under the terms of reference, 2 (*b*), refers only to the irrigation season, June to January. The finding recorded regarding the hot weather supply is based on the assumption that the demand for power is both constant and certain and that its extent is such as to require a flow of 1,000 cusecs. No finding has been recorded regarding the extent of the prescriptive right of Madras to the flow required for their hot weather irrigation, under the Agreement of 1892, as asked for by both the parties. This note is accordingly presented for the consideration of the Arbitration Committee.

2. The Representative of the Mysore Government brought to the notice of the Assessor certain facts on the 26th February 1914 in My.-19, with the object of showing what quantity of water should be provided for power supply in the working tables, the correct quantity according to the provision made in the Mysore project being less than 900 cusecs at Sivasamudram allowed in the finding. The Assessor has recorded that the matter requires a decision from the Arbitrator.

3. It may be stated at the outset that there would be no objection to a reconsideration of the question even under the strict terms of the law of arbitration. There are, doubtless, decisions to the effect that once an Arbitrator delivers an award he has no power to review it, as his jurisdiction over the matter in dispute must be deemed to have come to an end, with the pronouncement of such award. But, in this case, no *award* has yet been pronounced or delivered by the Arbitrator in regard to the hot weather supply, though a *finding* has been recorded.

4. It may be noted that this finding has been recorded not under issue 2 (*a*)* but under issue 2 (*b*) †. The former, read apart from the latter, is wide enough to include the item of hot weather supply as well on the basis of prescription. But when issue 2 (*a*) is read with issue 2 (*b*), as it should be read in consequence of the words "these rights" occurring in issue 2 (*b*), the hot whether supply will appear to lie *outside* the terms of the reference as now framed. For, these terms are restricted to only the prescriptive rights, that could be conserved by a "volume of water measured at the Upper Anikat"; whereas the prescriptive right for the hot weather supply *cannot* be measured at that place at all. Accordingly, Mysore suggest that an appropriate issue for the hot whether supply may now be raised, as such supply is quite distinct and separable from the monsoon supply (from June to January) for which alone the award has now been given. (Russel on Arbitration and Award, 9th Ed., pages 227 and 370.)

* 2 (*a*) "What is the extent of the prescriptive rights of Madras as against Mysore under that interpretation."

† 2 (*b*) "What volume of water measured at the Upper Anicut is necessary to conserve these rights unimpaired."

5. Two material considerations affecting the finding on the hot weather supply as to quantity and place were pointed out in My.-19. This was objected to by the Madras Representative on the ground that My.-19 introduced new matter. Whatever may be the value of such an objection strictly according to the rules of technical procedure applicable to a Court of Law, it has been understood that, in the present inquiry, a somewhat greater freedom is permissible regarding the presentation of all facts necessary for a full and proper understanding of the subject.

6. In this instance, however, the re-consideration asked for is not based on any new matter, but only on certain important facts and figures bearing on this subject and contained in the exhibits already presented. These are now briefly enumerated—

(*a*) The present maximum demand on the power plant at Sivasamudram is 12,000 H.P. requiring about 485 cusecs of water at Sivasamudram (My.-5 page 36). The gold mines have demanded only 5,000 H.P. extra and the first stage of the Reservoir project has been undertaken to fully meet this extra demand. The mines have, however, the option to take this amount or anything less.

(*b*) Accordingly, the Mysore Government sanctioned extensions and improvements to the Cauvery Power Scheme at a cost of Rs. 8 lakhs to generate this additional power of 5,000 H.P., "required by the Mining Companies in the near future" (*vide* Government Proceedings on page 61, My.-5).

(*c*) The quantity of water required for the total amount of power in the first stage, was estimated at 750 cusecs at the Kannambadi Reservoir and shown in the table on page 32, My.-5, against 650 cusecs actually required at Sivasamudram as indicated in My.-19.

(*d*) In the *complete* scheme (second stage) the storage provided for power supply has been based on a discharge of 1,000 cusecs (My.-5, page 31, note 2).

(*e*) But it should be observed that *no provision has been made in the estimate for the complete scheme* for any more electrical plant than that provided for in the estimate for the first stage (*vide* pages 61 and 62; also pages 15 and 31, My.-5).

(*f*) From all this it is clear that there is no present nor even a near prospective demand for more than the amount of power that can be generated by 750 cusecs. A provision of 1,000 cusecs was made in the complete scheme only to meet *remote* contingencies.

(*g*) In fact, the primary object of the second stage is not the generation of power supply (as in the first stage) but extension of irrigation in tracts where it is needed.

(*h*) As already stated, the extra demand from the Mining Companies is only for 5,000 H.P. in the immediate future, and machinery has been ordered only for this extra power. When any further demand arises, Mysore could more economically generate such additional power, as might be required, by a subsidiary installation at a suitable place lower down the Cauvery river *by utilizing a second time the same flow of 650 cusecs noted above*. There would be therefore no occasion to scrap any machinery already erected or now under erection.

7. Madras doubtless claimed 900 cusecs as measured at Sivasamudram relying on the figure of 1,000 cusecs entered against the *complete* stage of the Reservoir, obviously without going into all these details clearly given in the Project report itself (My.-5).

Mysore did not *expressly* question this assumption of measurement at Sivasamudram, as their case was and is that no *award* should be given on the basis of power supply, which is obviously of a *transitory and shifting character* and which is not the correct criterion for an *award* under the Agreement of 1892 governing the present dispute. Having objected to the principle itself, Mysore did not at that stage consider it necessary to *specifically* refer to the exact quantity of flow necessary for the immediate requirement of power supply. In fact, it has been urged by both the parties from the very early stages of the enquiry, that the finding as regards the hot weather supply should be based on prescriptive right. Such a decision is now asked for.

8. In Ma.-12, paragraph 99, Madras stated "should Mysore after reasonable notice discontinue the supply of 900 cusecs," their (Madras) existing rights to the whole natural flow (up to the limit claimed by them) must be recognized as unimpaired. It is manifest from this that Madras were fully prepared for a reduction, or even a discontinuance of the power supply.

The supply of the flow from Power Works has been made such an inflexible rule as to lead to the expression of the opinion that by 20 years' user "the prescriptive right of Madras to the 900 cusecs continuous supply must be held to have matured under any fair and reasonable application of the terms of 1892 Agreement" (*vide* paragraph 109 of the Assessor's Examination of Evidence).

If the demand for power is wholly or partly withdrawn, it is not made clear whether Mysore has the option to correspondingly discontinue or reduce the supply of power water. The finding only states that "Mysore shall be bound subject of course, to exemption to liability for interruption beyond their control, to send down during the hot weather season a continuous supply of 900 cusecs to Madras." The finding on this point thus goes very much farther than the position taken by Madras themselves, so far as the character of the supply is concerned.

It may be remembered that even the present supply of about 500 cusecs required for power is maintained by curtailing supplies to hot weather crops in Mysore, as expressed by the Assessor himself in paragraph 115 of his examination of evidence.

If the finding be interpreted as binding Mysore to pass down 900 cusecs at Sivasamudram whether actually required for power or not, it would impose an unduly heavy burden on Mysore; *vide* paragraph 116 of the Assessor's Examination of Evidence.

9. Under these circumstances, it is urged that the question of the hot weather supply may be further examined and dealt with somewhat on the following lines:—

(*a*) The prescriptive limits of flow, to which Madras may be entitled for hot weather irrigation in their territory from February to May, may now be fixed.

(*b*) If the actual demand for power generation does not necessitate the passing down of 900 cusecs, the natural flow up to these prescriptive limits, will then be left undisturbed except to the extent of customary draw-off in Mysore.

(*c*) But, if such power flow be not less than 900 cusecs, Mysore should be entitled to impound the entire flow in the river without restriction, as already admitted by Madras.

10. For the purpose of working tables, however, the figure of 1,000 cusecs at Sivasamudram has been adopted as the basis agreeably to the ruling given by the Assessor. The discussion on the third term of reference can thus proceed without delay as the further consideration of the question of the hot weather supply is practically independent.

Exhibit My.-21.

A NOTE ON THE WORKING TABLES BASED ON THE MYSORE SYSTEM OF MEASUREMENT.

Madras have generally accepted the system of measurement proposed by Mysore. The principles upon which this method is based have also been admitted by them to be sound in paragraphs 55 and 65 (Ma.-22) which may be quoted here for ready reference—

"As regards the system now proposed by Mysore, that part of it which provides for "applying a factor to the flow at Kannambadi with a view to forecasting the probable flow at

"the Upper Anicut is recognised by Madras as a reasonable proposal, and one which, while "giving to Mysore great advantages as regards impounding, may, subject to fixing suitable "factors, adequately protect Madras interests while leaving Madras and Mysore mutually free "to develop irrigation resources by more economical distribution by storage, etc.

* * * * *

"The measurement at the Upper Anicut and passing compensation water, much of which "must be surplused to waste, is an integral part of the Mysore system, but it is by no means an "essential part. A reasonable increase in the proportion of water to be passed to Madras would "obviate the necessity for compensation water and render all measurement at the Upper Anicut "or below Sivasamudram unnecessary."

2. It is the Mysore method alone that can give due facilities for impounding according to the terms of the agreement of 1892 without infringing on the Madras rights. While generally agreeing on this point, Madras object to the system on the following grounds :—

(*a*) That the tables based upon it show *minus* discharges at the Cauvery dam on some days thus indicating a shortage in the natural supply.

(*b*) That it necessitates the passing of compensation water which means that the Madras supplies are interfered with on some days.

(*c*) That some of the compensation water passes away as surplus, even when made good.

(*d*) That the system involves the measurement of flow at the Cauvery dam which would interfere with the future developments of Madras irrigation.

3. These objections have already been answered in general terms, in the several sections of the Mysore case, by means of hypothetical tables for a few years. Now, we have the Kannambadi discharges for 13 years 1896 to 1908 duly approved by the assessor and the corresponding Cauvery dam discharges also. From these, continuous tables can be prepared and general effect on Madras supplies discussed.

4. For preparing these working tables according to the Mysore method, the proportion of flow at Kannambadi to that at Cauvery dam has first to be fixed. From the rough calculation made by the assessor in paragraph 37 of his examination of evidence the flow at Kannambadi may be taken as 0·48 and 0·14 of that at Cauvery dam in the south-west and north-east monsoons respectively.

5. From the discharges at Kannambadi as calculated by Madras according to the method approved by the assessor and from the recorded discharges at the Cauvery dam, the proportions for the two monsoons have been shown for each year from 1896 to 1908 in the accompanying statement (A). The proportion for south-west monsoon varies from ·39 to ·64 and that for the north-east from 0·13 to 0·40.

6. To arrive at a fair proportion for the south-west monsoon, the average of the three lowest season discharges at the Cauvery dam may be taken. This gives the proportion of 1/2·06. But to make up for possible fluctuations and to err on the side favourable to Madras the higher proportion of 1/1·80 has been taken. During the north-east monsoon the proportion in 10 out of 12 cases is not more than 0·25 and hence this proportion ($\frac{1}{4}$) has been taken for that season.

7. Tables have been worked out accordingly with the above proportions for 13 years from 1896–97 to 1908 (December) and two abstract statements B and C have been prepared showing the more important results of the tables in a compact form. From the results shown in these statements the objections of Madras may be answered seriatim.

8. As regards *minus* flow figures, it can be seen from a glance at abstract B that such figures have practically disappeared (columns 24 and 25). There are in all, during the 13 years, only five days when at all the *minus* figures occur.

9. Of these, the quantity on three days is not worth mentioning. The remaining two days occur in June 1906 under exceptional circumstances and cannot be said to disturb the irrigation conditions. The objection therefore regarding such *minus* flows can, on all fair and reasonable considerations, be dropped.

10. The next point to consider is regarding the necessity of passing down compensation water. It will be observed that in abstract B (with the proportion of 1/1·8) the quantity of compensation water (column 15) in each year is more or less insignificant as compared with the total resulting flow at the Cauvery dam (column 13). In fact the percentage of this (column 16) over the total flow varies from 2·8 per cent. in the year 1908 to 0·20 per cent. in the year 1903–04 and the average percentage for all the 13 years is only 0·93. It may be noted that, in the worst year 1899, the compensation water becomes due only on three days in the whole of the impounding season and the total quantity is only 1,754 m.c.ft. This quantity is too small to affect the Madras irrigation in any way. It is true that, in other years, the quantity is somewhat greater, but the abundant resulting flow at the Cauvery dam in those years is more than sufficient to make up for all such fluctuations. The question of compensation water is therefore not a serious objection against the Mysore method.

11. The Assessor has noted in paragraph 137 of his examination of evidence, when comparing annual supplies and irrigated areas, that deficiencies in the supplies have coincided with increase of area, generally indicating that, within certain limits varying from 2 per cent. to 20 per cent., the deficiency in supplies have not actually affected Madras irrigation.

In the present instance, it will be found that deficiency caused by compensation water amounts to almost an insignificant *percentage* (0·95 per cent.) of the resulting flow at the Cauvery dam and consequently it may be left out of consideration. Even then it is very probable that the whole of the compensation water thus left out of account may not be impounded by Mysore, for much of it might surplus over the waste weir and would be available for use by Mysore. It should also be remembered that compensation water becomes due only for a few days when generally the river is in floods. Such small deficiencies can therefore be immediately made up.

12. The next objection of Madras is about the portion of compensation water which, when made good, will surplus at the Cauvery dam over and above the 6½ feet limit. Here too, it may be pointed out that the quantity is very small, being naturally smaller than the whole quantity of compensation water noted above The total of such surplus varies from 0·10 per cent in the year 1903–04 to 1·4 per cent. in the year 1902–03 and the average for thirteen years is only 0·31 per cent. This is quite insignificant; and considering that such surplus may at the option of Madras be utilised for irrigation, there would be no loss to Madras on this account.

13. As regards the difficulties involved in the correct computation of the compensation water, it may be stated that any possible errors that may arise in such computation on particular days, would not produce any material difference, as it has been shown that the total annual quantities of compensation water are in themselves too small to prejudicially affect Madras irrigation.

It should be remembered that the flood discharges at the Cauvery dam have been admittedly underestimated and the assessor has also confirmed this by careful examination. If the discharges had been correctly estimated, it is very probable that the tables would have shown much less compensation water. The quantity would then be doubly negligible.

14. If, however, Madras want to obviate the measurement at the Cauvery dam for any other reasons, this can be done by omitting out of account the compensation water, as the quantity is really very small. If such omission be not acceptable, an alternative may be considered. Madras have, in the extract quoted under paragraph I above, suggested that a reasonable increase in the proportion would obviate the necessity for compensation water. Accordingly, another set of tables have been prepared with a higher proportion 1/1·6 (for the south-west monsoon). It should be remembered that this proportion is slightly exceeded in only two out of the 13 years under consideration and to apply such a high proportion for all years, good or bad, alike would manifestly be to the disadvantage of Mysore.

·625

15. If the proportion of 1/1·6 be adopted instead of 1/1·8, the quantity of compensation water would be reduced. A comparative statement C showing the distribution, by months, of the compensation water in the two cases has been attached. The total number of days in the 13 years has been reduced from 142 in the latter to 96 in the former case.

In the former case, the maximum percentage is 1·9 and the minimum 0·12, while, in the latter case, it ranges from 2·8 to·20 of the total resulting flow at the Cauvery dam, the average being ·73 and 0·95 respectively. This shows clearly that the Cauvery dam conditions have all been improved by taking the higher proportion.

16. On the other hand, by the adoption of this proportion (1/1·6) facilities for impounding in the Mysore reservoir would be reduced, while the resulting flow at the Cauvery dam would be correspondingly increased. In fact from column 12 of statements C and E it will be seen that the shortage in supplies for irrigation under the Mysore reservoir with the proportion 1/1·8 is 27,542 m.c.ft. and this has been increased to as much as 30,895 m.c.ft. or 12 per cent. extra with the higher proportion of 1/1·6 causing considerable loss to Mysore which cannot be recouped, whereas the small deficit in compensation water to be left out of account by Madras is more than made up by the abundant surplus flow at the Cauvery dam. This is an advantage to Madras for which a return would be justly due to Mysore. Such a return can be secured by omitting out of account the small quantity of compensation water occurring in the case of the increased proportion of 1/1·6.

17. Also it is to be observed that the proposed neglecting of such compensation water and the consequent retention of it in the reservoir would tend to fill it, somewhat sooner than otherwise; and then all water beyond the quantity drawn off for irrigation must surplus into the river; thus more or less natural conditions would be restored at an earlier date than by taking account of compensation water and passing it down from day to day.

18. On all "fair and reasonable" considerations therefore, there can be no objection to the mode of measurement proposed by Mysore with the modifications suggested, viz., (1) the adoption of the proportion of 1/1·6 and (2) the omission of all account of compensation water.

By this means the measurement at the Cauvery dam can be avoided. Mysore are willing to accept such high proportions on the condition that free impounding as in column 2 (*e*) would be allowed. By such a give and take process, the problem of measurement can be easily solved.

19. A few remarks may be made on the mode of impounding by the method of proportionate limit at the Kannambadi reservoir. According to this method the quantity allowable for impounding is represented by the expression K-NL, where K is the discharge at Kannambadi, L the limit of ($6\frac{1}{2}$ ft. flow) at Cauvery dam, N the proportion which the season flow at Kannambadi bears to that at Cauvery dam. To get a comparison of the quantities of storage obtained by this method, with those by the Mysore method, a set of tables has been worked out with the proportions of 1/1·6 and 1/3·33. The results have been abstracted into a statement F for ready comparison with the results obtained by the Mysore method with the same proportions.

20. The following salient points under the two systems of impounding may be observed from statement F :—

(*a*) The total quantity available for impounding in the 13 years considered is 532,441 m.c.ft. by the proportionate limit method against 563,044 m.c.ft. by the Mysore method (column 3).

(*b*) There will be 9 out of 13 years with less than normal supply by the proportionate method against only five years by the Mysore method.

(*c*) Again, in two out of these nine years there will be a minus balance in the reservoir of—4,994 and—396 m.c.ft. on the 1st June 1900 and 1906 respectively indicating that there will not be sufficient water for power supply in these years.

(*d*) Further the proportionate method produces shortage on the normal supply of as much as 59,060 m.c.ft. making it impracticable to maintain the irrigation conditions even under the last case H in two out of these nine years, whereas under the Mysore method the shortage will be only about half the above amount, viz., 30,895 m.c.ft. and confined to five years. Even the effects of this shortage can be tided over by judicious regulation under different cases as shown in column 11.

21. All this shows clearly that with the same proportions the purely proportionate method imposes restrictions quite double in their intensity and makes the working of the reservoir extremely difficult.

22. In fact the problem as to what ratio under the proportionate method would give the same facilities for impounding as the proportion of 1/1·6 gives according to the Mysore method, has been worked out algebraically (*vide* appendix V) and the results are worth noting—

(*a*) To get 1,000 m.c.ft. storage with one and the same discharge at Kannambadi a much lower proportion of ·36 will have to be adopted in the case of the proportionate method and to get 2,000 m.c.ft. storage the proportion will have to be further reduced to as low as 0·113.

(*b*) On the other hand if the same proportion be taken for both the methods, for a given discharge at Kannambadi of say 3,000 m.c.ft. per day, the Mysore method will give 3,000 m.c.ft. storage against only 1,781 m.c.ft. by the proportionate method and for a discharge of 2,000 m.c.ft. at Kannambadi the two methods give 1,708 m.c.ft. and 781 m.c ft. respectively.

23. The above results clearly show that the proportionate limit method as exemplified by the working tables imposes double hardship on Mysore. While such undue restrictions would be imposed on Mysore the quantity of surplus at the Cauvery dam becomes unnecessarily large, resulting in so much more wastage into the sea as already explained in paragraph 101, My.-8, although the precise object of the Mysore reservoir is to utilise as much of this surplus as possible. Unless a very low proportionate limit is fixed (even lower than 0·48 and 0·14 referred to in paragraph 4 above) the proportionate limit method cannot be expected to give fair and reasonable facilities for impounding in Mysore according to the terms of the Agreement of 1892.

Under the circumstances herein presented it is clear that the adoption of the Mysore method alone can be expected to give satisfaction to both the parties as that is the only method by which Mysore would be enabled to get their due share of the Cauvery waters without infringing on the rights of Madras.

24. In conclusion, it is urged that one of the two alternatives as under may be finally adopted—

(i) Proportions of 1/1·8 and 1/4·6 for the two seasons may be fixed with due computation and adjustment of compensation water; or

$$\begin{matrix}\cdot555\\ \cdot25\end{matrix}$$

(ii) the higher proportions of 1/1·6 and 1/3·33 for the two seasons may be taken, free impounding being allowed in Mysore as per column 2 (*e*) of the working tables, the computation of compensation water being neglected on account of the more restricted storage conditions.

$$\begin{matrix}\cdot625\\ \cdot3\end{matrix}$$

18*th March* 1914.

K. Srinivasa Rao,
Mysore Representative.

APPENDIX V.

The prescriptive right of Madras has now been settled as extending to a limit of flow of water connoted by $6\frac{1}{2}$ feet on the Cauvery dam. Any flow above this limit is evidently available for impounding in Mysore. The problem now is to devise a method by which as much of this surplus as can be obtained at the Kannambadi reservoir should be made available for being impounded therein.

2. The principle of the Mysore method may be put in the form of an algebraic equation thus :—

(i) Let K = discharge at Kannambadi.
C = corresponding discharge at Cauvery dam.
$\frac{C}{K}$ = 1·6 or C = 1·6 K.
t = percentage factor of transmission loss, *i.e.*, if 100 be the flow at Kannambadi $100 - t$ will reach Cauvery dam.

Let $T = \frac{100}{100 - t}$

L = Limit flow = 1,950 m.c.ft. per day.

Then the surplus at the Cauvery dam on any day may be represented by the expression (C — L) = (1·6 K — L).

The value of this at Kannambadi will thus be T (1·6 K — L).

Let T (1·6 K — L) = Q ... ... (A)

(ii) The principle of the proportionate limit method may also be put in the form of an algebraic equation thus :—

Let N = ratio of K to C or $\frac{K}{C}$

Then the quantity that may be impounded is (K — NL) = Q^1 ... ... (B)

3. Then in order that the quantities Q and Q^1 may be equal the value of N should be such as to satisfy the equations.

T (1·6 K — L) = (K —NL).

Eliminate K between the equations thus :—

From the second equation K = NL Q ; substituting this in the first we have,

$$T\left\{1{\cdot}6\ (NL + Q) - L\right\} = Q$$

Dividing both sides by T,

$$1{\cdot}6\ (NL + Q) - L = \frac{Q}{T}$$

Transposing,

$$1{\cdot}6\ NL = \frac{Q}{T} + L - 1{\cdot}6\ Q$$

$$\therefore N = \frac{Q}{1{\cdot}6\ TL} + \frac{1}{1{\cdot}6} - \frac{Q}{L}$$

$$\text{or } N = \frac{1}{1{\cdot}6} - \frac{Q}{L}\left\{1 - \frac{1}{1{\cdot}6T}\right\}$$

Substituting the value of L, viz., 1,950,

$$N = \frac{1}{1{\cdot}6} - \frac{Q}{1{,}950}\left\{1 - \frac{1}{1{\cdot}6T}\right\} \quad \ldots \ldots \ldots \ldots \ldots \text{(C)}$$

If $t = 22\frac{1}{2}$,

$$T = \frac{100}{100\text{-}t} = \frac{100}{77\frac{1}{2}} = \frac{40}{31}$$

Substituting this value of T in equation (C)—

$$\text{Then } N = \cdot625 - \frac{Q}{1{,}950}\left\{1 - \frac{1 \times 31}{1{\cdot}6 \times 40}\right\}$$

Let Q = 1,000.

$$\text{Then } N = \cdot625 - \frac{1{,}000}{1{,}950}\left(1 - \tfrac{31}{64}\right)$$

$$= \cdot625 - \cdot26 = \cdot365$$

If Q = 2,000

$$\text{Then } N = \cdot625 - \frac{2{,}000}{1{,}950}\left(1 - \tfrac{31}{64}\right)$$

$$= \cdot625 - \cdot52 = \cdot115.$$

The greater Q is, the less will be the value of N in order that Q and Q^1 may be equal.

4. Putting the whole thing in ordinary language, if the Mysore method of measurement with a proportion of 0·625 between Kannambadi and Cauvery dam flow give a surplus of 1,000 as available for impounding at Kannambadi, then the proportional limits to be placed on the river flow at Kannambadi, according to the proportionate limit method in order to give the same surplus for impounding is 0·365 and if the Mysore method give 2,000 with the same proportion the proportion of 0·115 will give the same storage in the case of the proportionate limit method.

5. If the proportion be the same in both the cases, the quantities available for impounding will be different.

Thus the expressions giving the quantities permissible for impounding according to the Mysore method, and the proportionate method are respectively—

$$T(1\cdot6K - L) = (K - NL) = Q^1 =$$

Let $N = \frac{5}{8}$ or $\frac{1}{1\cdot6}$

and $K = 3{,}000$

$L = 1{,}950$

$T = \frac{41}{50}$

$Q\frac{41}{50} = (1\cdot6 \times 3{,}000 - 1{,}950)$

$= \frac{41}{50}(4{,}800 - 1{,}950) = \frac{41}{50} \times 2{,}850 = 3{,}895$ or $3{,}000$ or the entire flow at Kannambadi ... ... D

$Q^1 = 3{,}000 - NL$

$= 3{,}000 - \frac{5}{8} \times 1{,}950 = 3{,}000 - 1{,}219 = 1{,}781$... ... ... E

Let $K = 2{,}000$.

$Q = \frac{41}{50}(1\cdot6 \times 2{,}000 - 1{,}950)$

$= \frac{41}{50}(3{,}200 - 1{,}950)$

$= \frac{41}{50}(1{,}250)$

$1{,}708$ ... ... F

$Q = 2{,}000 - 1{,}219 = 781$ ... ... G

Exhibit My.-21a.

STATEMENT A.

STATEMENT of proportion between Cauvery dam flow and Kannambadi flow for the years 1896-97 to 1908-09.

		1896-97.	1897-98.	1898-99.	1899-00.	1900-01.	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.	1906-07.	1907-08.	1908-09.
1		2	3	4	5	6	7	8	9	10	11	12	13	14
South-west monsoon, June to September.	Cauvery dam ..	571,766	495,407	(3) 217,384	(2) 176,001	578,549	283,121	230,559	379,259	309,931	(1) 175,339	258,856	357,013	262,487
	Kannambadi ..	286,352	212,447	105,837	76,541	228,883	148,541	148,643	180,694	164,627	93,874	136,768	227,133	161,302
	Proportion c/k ..	2·00	2·33	2·05	2·30	2·53	1·91	1·56	2 10	1·83	1·87	1·89	1·58	1·63
	Proportion k/c .	0·50	0 42	0·48	0·43	0·39	0·52	0·64	0·47	0·54	0·53	0·52	0·63	0·61
North-east monsoon, October to January.	Cauvery dam ..	111,107	134,635	243,978	(1) 27,743	(3) 71,214	167,683	181,970	322,305	(2) 28,338	66,605	117,235	82,245	57,888
	Kannambadi ..	18,003	17.715	43,147	4,877	25,723	43,261	42,059	63,351	12,582	16,161	21,108	20,660	.. *
	Proportion c/k ..	6·17	7·60	5·65	5·69	2·73	3·88	4·33	5·09	2 03	4·09	5·56	3·99	..
	Proportion k/c ..	0·16	0·13	0·17	0 17	0·36	0 25	0·23	0 19	0 40	0·23	0·18	0·25	..

Remarks.—* Kannambadi discharges not fully calculated.

N.B.—(1) Average of the seasons marked (1), (2) and (3) in the south-west monsoon is 2·06 (c/k) or 0·49 (k/c).
(2) For the north-east monsoon in 10 out of 12 cases the proportion k/c is not more than 0·25.

Exhibit My.-21b.

STATEMENT B.—*Abstract of Working Tables.*

Losses in transit 40 per cent. in June.
Do. 22½ per cent. July to January.

Proportion of flow at the Cauvery dam to flow at Kannambadi.
1·8 : 1 June to September; 4 : 1 October to January.

Year.	Total flow at Kannambadi in m. c.ft.	Opening balance on 16th June.	Balance at the end of October.	Case.	Number of days of impounding.	Quantity impoundable (June to January).	Quantity actually stored.	Percentage on Kannambadi flow.	Surplus at Kannambadi. Number of days.	Surplus at Kannambadi. Total surplus.	Total flow at the Cauvery dam (June to January).	Resulting flow at the Cauvery dam.	Compensation water. Number of days.	Compensation water. Quantity.	Compensation water. Percentage.	Compensation surplussed. Number of days.	Compensation surplussed. Quantity.	Compensation surplussed. Percentage.	Surplus flow at Cauvery dam if impounding is not made. Quantity.	Surplus flow at Cauvery dam if impounding is not made. Number of days.	Surplus flow at Cauvery dam if impounding is done. Quantity.	Surplus flow at Cauvery dam if impounding is done. Number of days.	Minus flow at the Cauvery dam. Number of days.	Minus flow at the Cauvery dam. Quantity.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1896-97 ..	304,028	4,000	32,617	A	73	265,815	50,660	16·6	65	211,049	681,696	651,572	8	3,183	·49	3	496	·07	392,815	86	389,584	86	..	..
1897-98 ..	230,162	8,305	34,682	A	61	165,103	48,319	21·0	40	114,474	632,853	598,937	5	2,082	·34	2	1,445	·24	357,393	94	317,854	93	..	..
1898-99 ..	148,984	9,540	35,001	A	59	80,507	52,557	35·3	22	23,488	459,541	423,629	8	3,425	·88	4	2,037	·48	159,322	78	121,086	75	..	..
1899-00 ..	81,418	19,658	22,387	G & F	21	37,355	27,496	33·7	7	7,303	202,485	184,133	3	1,754	·95	1	777	·42	52,664	30	35,158	30	1	443
1900-01 ..	266,367	5,344	29,508	B	69	190,702	46,256	19·7	38	137,893	651,284	617,099	14	4,607	·74	2	1,175	·19	401,547	76	368,107	74	..	..
1901-02 ..	191,672	4,739	36,603	A	83	129,708	57,888	30·2	49	67 704	449,684	405,794	20	2,964	·73	6	566	·14	165,738	82	122,500	75	..	..
1902-03 ..	190,202	13,055	34,846	A	60	130,126	52,188	27·4	25	56,462	411,205	370.760	15	5,579	1·5	7	3,868	1·4	138,796	68	104,378	60	..	..
1903-04 ..	250,143	2,182	36,442	A	89	177,393	42,682	17·06	65	133,024	7·2,416	669,337	11	1,423	·20	5	709	·10	413,420	110	338,492	108	..	..
1904-05 ..	180,977	26,739	25,066	D	54	108,589	20,490	11·3	32	80,485	326,709	29·,671	9	5,900	1·9	2	590	·20	129,674	58	97,430	58	1	166
1905-06 ..	183,894	9,504	28,078	C	32	48,958	41,187	22·4	..	..	240,424	208,504	17	5,989	2 8	4	1,429	·68	63,260	38	32,351	27	..	..
1906-07 ..	161,451	3,109	35,067	A	47	102,391	50,748	31·4	22	44,729	376,843	337,513	5	4,176	1·28	1	689	·20	157,274	62	118,810	61	2	2,672
1907-08 ..	254,900	11,092	33,481	A	59	198,684	43,433	17 04	39	149,769	438,902	405,292	9	4,139	1·02	2	877	·21	208,629	64	176,595	57	1	80
1908	169,022	9,791	26,141	..	48	121,992	35,929	21·2	23	76,611	308,536	280,691	18	7,523	2·8	5	2,427	·86	126,387	47	102,845	38	..	..
Total ..	2,618,220	..	..	..	..	..	569,833	21·8	..	..	..	5,452,932	142	52,744	·96	44	17,085	31	2,716,683	..	2,325,190	..	5	..

Exhibit My.-21c.

TABLE III. STATEMENT C.—*Abstract of Working Tables.* Proportion 1·8.

Year.	Balance on 1st June.	Quantity actually stored in the irrigation season up to January.	Quantity stored from February to May.)	Total of columns 2, 3 and 4.	Expenditure. Irrigation.	Evaporation.	Power.	Total of columns 6, 7 and 8.	Balance.	Cases.	Shortage in irrigation supply.	Surplus.		Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1896-97	4,000	50,580	896	55,476	35,623	4,120	6,593	46,336	9,140	A	..	211,049		
1897-98	9,215	48,809	550	58,574	36,283	4,314	7,886	48,483	10,091	A	..	114,474		
1898-99	10,091	52,557	2,770	65,578	36,283	4,486	8,425	49,194	16,384	A	..	23,488		
1899-00	16,387	27,496	1,273	45,156	26,193	3,627	8,728	38,548	6,608	G &	10,090	7,303		
1900-01	6,610	46,256	514	53,380	33,261	3,845	11,238	48,344	5,036	B	3,022	137,893		
1901-02	5,005	57,878	702	63,585	36,283	4,411	8,610	49,304	14,281	A	..	67,704		
1902-03	14,284	52,188	2,976	69,448	36,283	4 819	5,817	46,919	22,529	A	..	56,462		
1903-04	22,528	42,682	4,683	69,893	36,3 7	5,065	1,106	42,498	27,395	A	..	133,024		
1904-05	27,396	20,490	2,282	50,168	30,820	4,130	5,685	40,635	9,533	D	5,463	80,485		
1905-06	9,504	41,187	27	50,718	32,421	3.772	9,371	45,634	5,084	C	3,792	..		
1906-07	4,991	50,748	980	56,669	34,638	4,005	5,978	44,621	12,048	A	* 1,645	44,729		* The shortage is due to starting the irrigation late in the year.
1907-08	12,053	43,433	2,054	57,540	36,327	3,961	4,772	45,060	12,480	A	..	149,769		
1908	12,470	35,929	..	48,399	25,329	2,211	646	28,186	20,213	D	3,530	76,611		
Total ..	..	570,283	19,647	..	436,141	52,766	84,855	573,762	..	..	27,542	1,172,991		

N.B.—(1) Normal irrigation requirement is 36,283.
(2) In 1908 irrigation requirement is 28,859 to end of December.
(3) In 1896 irrigation requirement is 35,623 excepting first half of June.
(4) The tables are worked from 16th June 1896 to end of December 1908.
(5) Figures in column 12 are obtained by deducting the figures in column 6 from the above figures for the respective years.

Exhibit My.-21d.

STATEMENT D.—*Abstract of Working Tables.*

Losses in transit 40 per cent. in June.
Do. 22½ per cent. July to January.

Proportion of the flow at the Cauvery dam to flow at Kannambadi—
1·6 : 1 June to September; 3⅓ : 1 October to January.

Year.	Total flow at Kannambadi in mill. c. ft.	Opening balance on 16th June.	Balance at the end of October.	Case.	Number of days of impounding.	Quantity impoundable (June to January).	Quantity actually stored.	Percentage on Kannambadi flow.	Surplus at Kannambadi. Number of days.	Surplus at Kannambadi. Quantity.	Total flow at the Cauvery dam (June to January).	Resulting flow at Cauvery dam.	Compensation water. Number of days.	Compensation water. Quantity.	Compensation water. Percentage.	Compensation surplussed. Number of days.	Compensation surplussed. Quantity.	Compensation surplussed. Percentage.	Surplus flow at Cauvery dam if impounding is not made. Quantity.	Surplus flow at Cauvery dam if impounding is not made. Number of days.	Surplus flow at Cauvery dam if impounding is done. Quantity.	Surplus flow at Cauvery dam if impounding is done. Number of days.	Minus flow at Cauvery dam. Number of days.	Minus flow at Cauvery dam. Quantity.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1896–97 ..	304,208	4,000	32,200	A	76	253,647	50,250	16·5	56	200,049	681,696	648,818	7	2,595	·39	3	624	·10	392,815	86	257,979	84	..	..	
1897–98 ..	230,162	8,812	34,682	A	66	161,771	49,004	21·3	33	111,590	628,853	595,143	1	706	·12	1	706	·12	357,393	95	326,439	95	..	..	
1898–99 ..	148,984	9,212	35,013	A	48	72,386	52,362	35·1	16	15,813	459,541	420,332	8	3,263	·77	4	1,586	·37	159,322	78	121,353	76	..	..	
1898–99 ..	51,418	19,017	21,803	G & F	18	32,729	27,046	33·2	6	4,331	202,485	182,581	3	910	·49	1	474	·26	52,664	30	33,116	30	1	156	
1900–01 ..	266,367	4,677	28,881	C	62	177,512	46,016	17·3	35	126,132	651,284	614,243	7	3,839	·62	1	1,093	·17	401,547	76	368,135	74	..	..	
1901–02 ..	191,672	3,841	36,604	A	69	110,456	56,825	29·6	36	49,753	449,684	404,833	14	2,997	·74	4	572	·14	165,738	83	120,555	73	..	..	
1902–03 ..	190,202	12,613	34,152	A	50	112,801	52,535	27·6	19	52,858	411,205	357,857	16	5,743	1·90	6	1,380	·46	138,796	68	118,575	60	..	..	
1903–04 ..	250,143	21,579	36,442	A	72	164,261	42,678	17·1	43	120,055	702,416	620,167	4	1,184	·19	2	183	·029	413,420	110	318,169	108	..	..	
1904–05 ..	180,977	22,634	24,921	E	45	97,265	20,420	11·3	29	76,844	326,709	300,504	7	4,462	1·48	2	267	·09	129,674	58	116,906	58	1	106	In Oct.
1905–06 ..	183,894	10,655	28,520	C	26	42,776	39,527	21·5	0	0	240,424	209,402	7	2,498	1·19	1	1,245	·56	63,260	38	31,028	33	..	..	
1906–07 ..	161,451	3,745	35,006	A	41	94,900	50,066	31·01	16	38,838	376,843	334,697	6	3,618	1·08	2	770	·23	157,274	62	116,146	61	2	2,672	In June.
1907–08 ..	254,900	12,816	32,207	A	56	191,604	43,177	16·9	36	144,497	438,902	403,989	7	3,046	·75	0	0	0	208,629	64	174,590	59	1	80	In Nov.
1908	169,022	10,487	24,862	E	45	113,180	36,138	21·4	22	72,782	308,536	254,953	9	3,385	1·32	6	1,598	·62	126,389	46	100,249	42	..	..	To end of Dec.
Total ..	2,613,400	..	..	..	..	..	566,044	21·6	..	1,013,542	5,878,578	5,347,559	96	38,246	·73	..	10,498	·201	..	.	100,249	..	..	..	

Exhibit My.-21e.

STATEMENT E.—*Abstract of Working Tables.*

Proportion 1·6.

TABLE III.

Year.	Balance on 1st June.	Quantity actually stored in the irrigation season up to January.	Quantity stored from February to May.	Total of columns 2, 3 and 4.	Expenditure. Irrigation.	Expenditure. Evaporation.	Expenditure. Power.	Expenditure. Total of columns 6, 7 and 8.	Balance.	Case.	Shortage in irrigation supply.	Surplus.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1896–97	4,000	50,250	1,011	55,261	35,623	4,141	6,593	46,357	8,902	A	..	200,049	
1897–98	8,892	49,004	610	58,506	36,283	4,365	7,886	48,498	10,010	A	..	111,590	
1898–99	10,217	52,362	2,770	65,349	36,283	4,398	8,425	49,106	16,243	A	..	15,813	
1899–00	16,249	27,046	1,273	44,568	26,173	3,594	8,728	38,495	6,073	G &	10,110	4,331	
1900–01	6,049	46,016	514	52,579	31,986	3,898	11,238	47,122	5,457	C	4,297	126,152	
1901–02	5,584	56,825	702	63,111	36,278	4,379	8,610	49,267	13,844	A	..	49,753	
1902–03	13,845	52,535	2,976	69,356	36,283	4,756	5,817	46,856	22,500	A	..	51,464	
1903–04	22,425	42,678	4,683	69,786	36,327	5,014	1,106	42,447	27,339	A	..	120,055	
1904–05	27,339	20,420	2,282	50,041	29,041	4,115	5,685	38,841	11,200	E	7,242	67,230	
1905–06	10,247	39,527	27	50,801	32,090	3,751	9,371	45,212	5,589	C	4,193	..	
1906–07	5,624	50,066	930	56,620	34,772	4,051	5,978	44,801	11,819	A	1,511	38,838	Late starting of monsoon crop irrigation
1907–08	11,829	43,177	2,051	57,060	36,327	4,083	4,772	45,182	11,878	A	..	144,497	
1908	11,914	36,138	..	48,052	25,317	2,202	646	28,165	19,887	E	3,542	72,782	
Total ..	..	563,044	19,647	..	432,783	52,747	84,855	570,385	..	..	30,895	1,002,534	

Exhibit My.-21f.

TABLES I AND III. — STATEMENT F.—*Abstract of Working Tables.* — Proportion 1·6.

Year.		Balance, 1st June.	Quantity actually stored in the irrigation season up to January.	Quantity stored from February to May.	Total of columns 2, 3 and 4.	Expenditure. Irrigation.	Evaporation.	Power.	Total of columns 6, 7 and 8.	Balance.	Case.	Shortage in irrigation supply.	Surplus.	Remarks.
1		2	3	4	5	6	7	8	9	10	11	12	13	14
1896-97	Table I ..	4,000	49,123	896	54,019	33,500	4,082	6,593	44,175	9,844	B	2,123	137,773	(1) The actual irrigation issue would only be 19,950 million cubic feet up to the date when the level falls to the sill of irrigation sluice.
	,, III ..	4,000	50,250	1,011	55,261	35,623	4,141	6,593	46,357	8,902	A	..	200,049	
1897-98	,, I ..	9,858	45,809	550	56,217	36,283	3,972	7,886	48,141	8,076	A	..	67,671	
	,, III ..	8,892	49,004	610	58,506	36,283	4,365	7,886	48,498	10,010	A	..	111,590	
1898-99	,, I ..	8,062	42,376	2,770	53,215	29,260	3,596	8,425	41,281	11,934	H & D	7,023	..	
	,, III ..	10,207	52,362	2,770	65,349	36,283	4,398	8,425	49,106	16,243	A	..	15,813	
1899-00	,, I ..	11,879	18,219	1,273	31,371	(1) 26,088	1,539	8,728	36,365	— 4,994	H	..	..	
	,, III ..	16,249	27,046	1,273	44,568	26,173	3,594	8,728	38,495	6,073	G & F	10,110	4,331	(2) Zero has been taken as the starting balance.
1900-01	,, I ..	— 4,992/0	48,552	504	49,056	30,331	3,541	10,084	43,956	5,100	C	5,952	74,670	
	,, III ..	6,049	46,016	514	52,579	31,986	3,898	11,288	47,122	5,457	C	4,297	126,132	
1901-02	,, I ..	5,098	54,345	702	60,145	36,283	4,155	8,610	49,048	11,097	A	..	11,580	This figure does not include 1,154 million cubic feet issue for power in June. The actual irrigation issue would be 23,142 million cubic feet as in (1). Zero has been taken as the starting balance for 22nd June instead of — 2,391 million cubic feet. This figure does not include 1,785 million cubic feet issue for power in June.
	,, III ..	5,584	56,825	702	63,111	36,278	4,379	8,610	49,267	13,844	A	..	49,753	
1902-03	,, I ..	11,101	55,181	2,976	69,258	36,283	4,676	5,817	46,776	22,482	A	..	25,496	
	,, III ..	13,845	52,535	2,976	69,356	36,283	4,756	5,817	46,856	22,500	A	..	51,464	
1903-04	,, I ..	22,412	42,379	4,683	69,834	36,327	5,047	1,106	42,480	27,354	A	..	70,249	
	,, III ..	22,425	42,678	4,683	69,786	36,327	5,014	1,106	42,447	27,339	A	..	120,055	
1904-05	,, I ..	27,380	21,575	2,282	51,237	30,841	4,141	5,685	40,667	10,570	D	5,442	43,319	
	,, III ..	27,339	20,420	2,282	50,041	29,041	4,115	5,685	38,841	11,200	E	7,242	67,230	
1905-06	,, I ..	10,557	26,084	27	36,668	25,323	2,370	9,371	37,064	— 396	H	..	..	
	,, III ..	11,247	39,527	27	50,801	32,090	3,751	9,371	45,212	5,589	C	4,193	..	
1906-07	,, I ..	— 396/0	47,580	930	48,510	32,890	3,735	4,193	40,818	7,692	B	3,393	14,166	
	,, III ..	5,624	50,066	930	56,620	34,772	4,051	5,978	44,801	11,819	A	1,511	38,838	
1907-08	,, I ..	7,679	45,944	2,054	55,677	34,160	3,955	4,772	42,887	12,790	B	2,123	92,754	
	,, III ..	11,829	43,177	2,054	57,060	36,327	4,083	4,772	45,182	11,878	A	..	144,497	
1908	,, I ..	12,799	34,914	..	47,713	25,329	2,169	646	28,144	19,569	F	3,530	42,250	
	,, III ..	11,914	36,138	..	48,052	25,317	2,202	646	28,165	19,887	E	3,542	72,782	
Total ..	,, I ..	..	532,441	..	..	..	..	..	..	..	..	59,060	..	
	,, III ..	..	563,044	19,647	..	432,783	52,747	84,855	570,385	..	..	30,895	1,002,534	

N.B.—(1) Normal irrigation requirement 36,283.
(2) In 1908 irrigation requirement is 28,859 to the end of December.
(3) In 1896 irrigation requirement is 35,623 excepting first half of June.
(4) The tables are worked from 16th June 1896 to the end of December 1908.
(5) Figures in column 12 are obtained by deducting column 6 from these figures for the respective years.

Exhibit My.-21g.

STATEMENT C.

STATEMENT showing the quantity of compensation water and the number of days on which it becomes due (from 1896–1908).

Proportion / Months.	1896-97. 1·8 4·0 Number of days.	1896-97. 1·8 4·0 Quantity.	1896-97. 1·6 3·33 Number of days.	1896-97. 1·6 3·33 Quantity.	1897-98. 1·8 4·0 Number of days.	1897-98. 1·8 4·0 Quantity.	1897-98. 1·6 3·33 Number of days.	1897-98. 1·6 3·33 Quantity.	1898-99. 1·8 4·0 Number of days.	1898-99. 1·8 4·0 Quantity.	1898-99. 1·6 3·33 Number of days.	1898-99. 1·6 3·33 Quantity.	1899-00. 1·8 4·0 Number of days.	1899-00. 1·8 4·0 Quantity.	1899-00. 1·6 3·33 Number of days.	1899-00. 1·6 3·33 Quantity.	1900-01. 1·8 4·0 Number of days.	1900-01. 1·8 4·0 Quantity.	1900-01. 1·6 3·33 Number of days.	1900-01. 1·6 3·33 Quantity.	1901-02. 1·8 4·0 Number of days.	1901-02. 1·8 4·0 Quantity.	1901-02. 1·6 3·33 Number of days.	1901-02. 1·6 3·33 Quantity.	1902-03. 1·8 4·0 Number of days.	1902-03. 1·8 4·0 Quantity.	1902-03. 1·6 3·33 Number of days.	1902-03. 1·6 3·33 Quantity.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
June	..	..	..	..	1	1,287	*1*	*706*	..	..	..	..	1	777	*1*	*474*	3	1,855	*3*	*1,682*	1	626	*1*	*591*	..	..	..	..
July	3	496	*2*	*44*	2	309	..	..	1	86	..	..	..	..	..	..	..	..	..	..	1	82	..	..	6	3,821	5	*2,989*
August	..	..	..	..	..	..	..	..	4	995	*4*	*1,699*	2	977	*3*	*436*	4	222	*3*	*143*	8	843	*7*	*817*	1	280	*1*	*32*
September	1	580	*1*	*580*	1	124	..	..	3	2,344	*3*	*1,313*	..	..	..	..	1	34	..	..	..	..	..	..	1	3	*6*	*1,759*
October	1	124	*1*	*324*	1	362	..	..	..	..	*1*	*251*	..	..	..	..	6	2,496	*3*	*3,014*	5	531	*1*	*123*	4	576	*3*	*264*
November	3	1,983	*3*	*1,647*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	883	5	*1,466*	2	899	*1*	*699*
December	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
January	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	8	3,183	7	2,595	5	2,082	*1*	*706*	8	3,425	*8*	*3,263*	3	1,754	*3*	*910*	14	4,607	7	*3,839*	20	2,965	*14*	*3,997*	14	5,579	*16*	*5,748*
Percentage ..	..	·49	..	*·39*	..	·34	..	*·12*	..	·88	..	*7*	..	·95	..	*·49*	..	·74	..	*·63*	..	·73	..	*·74*	..	1·5	..	*1·90*

Proportion / Months.	1903-04. 1·8 4·0 Number of days.	1903-04. 1·8 4·0 Quantity.	1903-04. 1·6 3·33 Number of days.	1903-04. 1·6 3·33 Quantity.	1904-05. 1·8 4·0 Number of days.	1904-05. 1·8 4·0 Quantity.	1904-05. 1·6 3·33 Number of days.	1904-05. 1·6 3·33 Quantity.	1905-06. 1·8 4·0 Number of days.	1905-06. 1·8 4·0 Quantity.	1905-06. 1·6 3·33 Number of days.	1905-06. 1·6 3·33 Quantity.	1906-07. 1·8 4·0 Number of days.	1906-07. 1·8 4·0 Quantity.	1906-07. 1·6 3·33 Number of days.	1906-07. 1·6 3·33 Quantity.	1907-08. 1·8 4·0 Number of days.	1907-08. 1·8 4·0 Quantity.	1907-08. 1·6 3·30 Number of days.	1907-08. 1·6 3·30 Quantity.	1908 to end of December. 1·8 4·0 Number of days.	1908 to end of December. 1·8 4·0 Quantity.	1908 to end of December. 1·6 3·33 Number of days.	1908 to end of December. 1·6 3·33 Quantity.	Remarks.
1	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
June	..	..	..	..	..	..	..	..	2	210	..	..	4	4,033	*4*	*3,533*	2	448	..	..	..	..	..	..	
July	..	..	..	..	..	..	..	..	7	3,482	*2*	*1,813*	..	..	..	..	3	760	*1*	*165*	13	5,996	7	*3,284*	
August	3	379	..	..	1	54	*1*	*55*	3	1,158	*3*	*365*	..	..	..	..	..	..	..	..	1	264	*1*	*18*	
September	2	356	..	..	3	2,852	*3*	*1,844*	2	372	..	..	1	143	*2*	*85*	2	877	*2*	*877*	..	..	..	..	
October	5	594	*3*	*1,100*	5	2,994	*3*	*2,563*	3	751	*2*	*320*	2	588	*2*	*528*	4	1,263	*1*	*83*					
November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	*3*	*1,476*	2	1,476	..	..			
December	1	94	*1*	*84*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
January	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Total ..	11	1,423	4	*1,184*	9	5,900	*9*	*4,462*	17	5,989	7	*3,498*	5	4,176	*6*	*3,618*	11	4,139	7	*3,046*	18	7,523	*9*	*3,385*	
Percentage ..	..	·20	..	*·19*	..	1·9	..	*1·48*	..	2·8	..	*1·19*	..	1·28	..	*1·08*	..	1·02	..	*·75*	..	* 2·8	..	*1·32*	

Total number of days 142 with 1·8 and 96 with 1·6. Average percentage 0·96 and 0·73.

Total number of days on which compensation is due is 142 with 1·8 and 96 with 1·6.

Exhibit My-.22.

Reply to the Madras Note on 3rd Issue (Ma. 24) including Examination of the Working Tables.

The award under issue 2 (*b*) was given in two alternative forms, viz., a uniform limit flow of 22,750 cusecs or varying limits ranging from 2·5 to 6·7 feet on the Cauvery dam in the different months according to the actual requirements. Madras have now elected the uniform limit as being the more advantageous to them But they have recorded a protest even against such a uniform limit, which, it must be stated results in a serious disadvantage to Mysore as regards impounding. Mysore have all along been urging that the requirements of the delta irrigation can be duly met by varying limits and that they should be fixed more or less in accordance with the provision made in the Metur project. It was therefore to be expected that in fixing the limits of flow above which impounding may be allowed in Mysore due benefit would be given to them by prescribing suitable varying limits without an alternative being placed at the option of Madras.

2. Three systems of measurement have been discussed by Madras. The first of these may be called the Madras system, the second the Mysore system and the third the proportionate limit system. Madras have shown an inclination towards the third system and in course of their remarks have stated that one of the merits of this system is "while the greatest part of the surplus waters would be impoundable by Mysore, still a small share of every flood would pass to Madras."

3. On the contrary Mysore have repeatedly shown that this third system imposes the greatest restrictions on Mysore and the quantity of water available for impounding under this system is very much less than that due to them under the agreement of 1892 and that it will result in allowing large quantities of the surplus being wasted into the sea without benefiting either party. Any system that may be approved must enable Mysore to impound as large a portion of this surplus as possible whenever it becomes available at their reservoir site after conserving the prescriptive rights of Madras. Mysore have as already stated the first claim to get the full benefit of the surplus waters as far as can be impounded in their reservoir.

4. The third issue clearly states that the principles and rules to be formulated for working the Kannambadi reservoir should ensure to Madras full protection of *their prescriptive rights*. It is clear from this that no further restrictions whatever against impounding in Mysore are to be imposed merely with the idea of enabling Madras to get a share of the surplus waters over and above such prescriptive rights. Any attempt in this direction would be tantamount to raising the prescriptive limits already fixed in full consideration of the facts and figures and to laying an additional and unjustifiable burden on Mysore. Mysore wish to record their protest against any new claim that may now be put forward by Madras regarding the sharing of the surplus waters as contrasted with the protection of their prescriptive rights.

5. Under any system of impounding there is bound to be some surplus waters at the Cauvery dam and while Madras may enjoy the benefit of such floods whenever they come, Mysore cannot accept any system of measurement put forward with an idea of securing to Madras a share of the surplus waters in addition to the conservation of their prescriptive rights. This would restrict the legitimate facilities for impounding in Mysore and such an additional burden would be contrary to the agreement of 1892. This point has already been urged in paragraph 100 My. 9 and paragraphs 85 to 87 in My. 12 and Sir John Benton also has clearly expressed (Ma. 9, paragraph 32 (*i*) of his note, dated 12th May 1911) that "the Mysore Darbar are to have all the surplus supplies to which they have any claim under the existing agreement placed unconditionally at their disposal."

6. The only system of measurement that would ensure the legitimate claims of Mysore to the surplus waters after meeting the prescriptive rights of Madras is that proposed by Mysore. Madras have generally accepted the principles on which this system is based and have never so far disputed the first claim of Mysore to the surplus waters, as far can be impounded in their Reservoir.

7. Madras object to the Mysore system not so much on the ground that the flow within the prescriptive limits would be interfered with but on the ground that it would threaten the prospects and prosperity of the Lower Anicut system. No reservoir would be possible without interfering with the floods. Any objections to the Mysore system would only be tenable if it can be shown that the flow within the 6½ feet limit is materially interfered with and not when the surplus flow above that limit is affected. In this light the references made by Madras to the requirements of the Coleroon irrigation need not be further considered.

8. It is therefore urged that considerations about the *sharing* of the flood waters by Madras over and above the quantities representing their prescriptive rights should not be brought in in judging about the relative merits of the several systems of measurement proposed and in finally adjudicating on the third issue.

9. For discussing the merits of the system of measurement at the four rivers proposed by Madras it would be desirable to find out what proportion of the total flow at the Cauvery dam is contributed by these four rivers.

It has been estimated that the Bhavani contributes 20 per cent. of the total flow at the Cauvery dam. The contribution coming from all the other tributaries between the four places of measurement and the Cauvary dam may safely be taken as about 10 per cent. of the total. Thus the total contribution from the catchment below the four places would amount to 30 per cent. of the total in the the south-west monsoon. This means (100 — 30 =) 70 per cent. of the Cauvery dam discharge is the contibution at the four places named by Madras.

10. The Assessor has also computed that the yield at the Metur site for the two monsoons is 0·74 and 0·34 of that at the Cauvary dam the corresponding figures for the yield at the Kannambadi reservior being 0·48 and 0·14 respectively. Thus the three more important tributaries between the Kannambadi and the Metur reservoir sites, namely, the Kabbini, the Shimsha and the Arkavati together contribute (74 — 48 =) 26 per cent. in the south-west monsoon and (34 — 14 =) 20 per cent. in the north-east monsoon.

11. From the map and diagram prepared by the Assessor (Appendix-A E 7 and 8) the contribution from the Arkavati and Shimsha may be found out to be about one-fifth of the yield between the Kannambadi and the Metur site noted above. Thus the net yield of the Kabbini would be about (four-fifths of 26 per cent. or) 21 per cent. and (four-fifths of 20 per cent. or) 16 per cent. respectively in the two monsoons. Adding to these, the yield at Kannambadi, the combined proportions at the four anicuts proposed by Madras would be (21 + 48 =) 69 per cent. and (16 + 14 =) 30 per cent. respectively for the two monsoons. This result agrees with the proportion of 70 per cent. worked out in paragraph 9 above for the south-west monsoon.

12. While the proportionate contribution from the four places has thus been proved to be 0·70 and 0·30 of the flow at the Cauvery dam for the two monsoons, the demand of Madras namely, that the full limit of flow at the Cauvery dam together with 25 per cent. extra in the south-west monsoon should be reserved at these four places would mean in effect that this limited catchment area concerned contributes 125 per cent. of the flow at the Cauvery dam instead of about 70 per cent. only.

13. Further, Madras themselves have stated that they would accept the third system of measurement, if a proportion of 0·65 for the south-west monsoon were fixed for the Kannambadi catchment which excludes the Kabbini. It has been shown above that the Kabbini catchment contributes 21 per cent. of the total or a fraction of $\frac{21}{48}$ of the Kannambadi yield. Accordingly if Madras are willing to accept a proportion of 0·65 per cent. at the three places they would not be justified in demanding more than (·65 + $\frac{21}{48}$ × ·65 =) ·93 of the total, if measurement is to be made at the four places of measurement suggested by Madras. Thus the demand by Madras according to the method proposed by them, that as much as 125 per cent. of the total flow due at the Cauvery dam should be reserved at the four places is wholly unjustifiable by actual calculation.

14. The principle upon which the Madras system is based obviously involves two untenable conditions. First, that the whole flow due at the Cauvery dam is to be reserved at the four places situated about 250 miles higher than the point where the quantity becomes due and secondly that an addition of 25 per cent. extra is to be added in the south-west monsoon to make up for the transmission losses.

15. It has been clearly shown that the contribution at the four places during the south-west monsoon can only be taken as about 70 per cent. of the flow at the Cauvery dam. If therefore 1,966 million cubic feet per day is due at the Cauvery dam, it would not be fair to demand more than 70 per cent. of 1,966 = 1,376 million cubic feet at the four places on the principle of the proportionate limit system. So while the demand of Madras that the full quantity of 1,966 million cubic feet daily should be reserved at the four places would by itself be quite unfair the further demand of 25 per cent. for transmission losses in addition to the full quantity due at the Cauvery dam would only add to the unreasonableness of the demand. Hence the first system as put forward by Madras cannot be considered as based on correct data and therefore cannot be accepted by any means.

16. But Madras state that either the first or the third system would safeguard their interests. If the principle of the third system is acceptable, the application of this principle to the measurement at the four places mentioned in the first system, should also be acceptable. Madras have shown their inclination to adopt the third system, because this would do away with the computation of compensation water. Mysore are willing to accept what is practically the Madras system if it is duly modified on the principle of the third or the proportionate limit system.

17. Accordingly Mysore propose that if the measurement is to be made at the four places on the principle of the third system, the proportions as below may be accepted and free impounding allowed above these limits—

	Proportion.	Limit.
South-west monsoon	0·75 × 22,750 =	17,062 cusecs.
North-east monsoon	0·33 × 22.750 =	7,583 „

18. The combined system with the above proportions differs from the third system inasmuch as the large flow of the Kabbini forming an important tributary of the Cauvery in the province will be duly included. The very fact that Madras have included the Kabbini with the other three tributaries above the reservoir in their system of measurement clearly shows that the omission of this important tributary would impose undue restrictions against impounding in Mysore.

19. Thus if the principle of the measurement at the four places is to be adopted, the only way this could be made agreable to both the parties is by finding out what proportion of the total flow at the Cauvery dam in the two monsoons is contributed at these four places and fixing limits of impounding by reducing the prescriptive limits in these proportions. Such proportions have been shown to be ·70 and ·30 for the two seasons and Mysore have now allowed ·75 and ·33 to err somewhat on the safe side.

20. The proportions now fixed will be found to be quite fair, considering that the question of transmission losses does not arise at all in the proportionate limit method now proposed to be applied for measurement at the four places—

(*a*) Supposing the flow at Kannambadi is 100 and the corresponding flow at the Cauvery dam is 180, then the proportion that would be applicable to the third method is $\frac{100}{180}$.

In this the question of transmission losses is out of consideration as the calculated discharge at Cauvery dam is after the losses due to evaporation, absorption, etc., on the way have been allowed for.

If 25 per cent. is the transmission loss, then 100 at the Kannambadi reservoir is only worth 75 at the Cauvery dam and the real proportion would then be $\frac{75}{180}$ and not $\frac{100}{180}$.

If the transmission loss factor, viz., $\frac{25}{180}$, is added to this factor $\frac{75}{180}$, then the proportion becomes $\frac{100}{180}$ which is the value of P in the third method by assumption.

Accordingly the already larger value of P does not give scope to the consideration of the transmission losses.

If this is to be considered the smaller proportion of $\frac{75}{180}$ has to be taken.

(*b*) This fact may also be proved in general terms

Let K be the flow as measured at Kannambadi.

And C be the flow as measured at the Cauvery dam.

By assumption P the proportion to be taken for the third method of measurement is evidently $\frac{K}{C}$ and the proportion 48 (paragraph 37 of Assessor's note) between the two discharges has been arrived at by this method.

If t is the transmission loss percentage on the flow at Kannambadi, the value of K at the Cauvery dam would be reduced to $K\frac{(100-t)}{100}$. Then the real proportion between the two discharges as measured at the same place, Cauvey dam after allowing for the transmission losses would be not

$$\frac{K}{C} \text{ but } K\frac{(100-t)}{C} = \frac{K}{C}\frac{(100-t)}{100} = P\ \frac{(100-t)}{100} = P'$$

Where P' is less than P in the proportion of $\frac{(100-t)}{100}$

So it is evident that when the higher conventional proportion P is taken as the basis of the third system of measurement it already allows for the increase of the real proportion P' by the factor $\frac{100}{100-t}$ and so there is no scope for any addition due to the transmission losses.

If this loss t is to be added then the smaller proportion $P' = \frac{100-t}{100} \times P$ has to be taken as the basis of the third system of measurement. It is therefore clear that no transmission losses are to be allowed for if the larger proportion $\frac{K}{C}$ is taken as the basis for the third system or for the combined system based on the third system as now proposed.

21. It may be stated here in passing that when the flow at Kannambadi has been computed as 48 per cent. of that at the Cauvery dam, the above calculations show that there is no scope whatever to allow anything extra to cover transmission losses.

22. It may be stated that the high proportions of 0·625 and 0·30 for the Kannambadi catchment have been proposed by Mysore for their method of measurement simply with the idea of eliminating the question of compensation water from consideration as well as on account of the greater facilities for impounding that would be secured by their method even with these higher proportions.

23. With these general remarks, the working tables may now be examined. Madras have worked out tables as under :—

	Proportions.		Table number.
	South-west.	North-east.	
Mysore system	0·60	0·40	XI
Do.	0·70	0·45	IX
Third system	0·60	0·4	XII
Do.	0·65	0·425	X

24. At the outset, it should be remarked that the proportionate factors for the north-east monsoon have been taken from 0·4 to 0·45 by Madras. A glance at statement A of My. 21 will show that the proportion does not at all exceed 0·30 except in two years. Also, the proportion as worked out by the Assessor is 0·14. It would therefore be quite out of all proportion to take the larger factor of 0·4 or more for the north-east monsoon. Mysore have taken the proportions of 0·25 and 0·30 for their working tables, on the ground that, out of 13 years for which records are available the proportion does not exceed 0·25 in more than three years. At all events any factor above 0·30 would only apply to quite exceptional conditions and cannot be accepted.

25. As regards the proportion for the south-west monsoon, the high factor of 0·70 assumed by Madras is quite out of question, as the estimated flow at Kannambadi is only 0·48 of that at the Cauvery dam and as it has been shown there is no scope for the inclusion of the transmission loss factor in the figure representing this proportion. Mysore have already proposed that a fair factor to be assumed would be 0·55, which could be increased to 0·625 provided the claim for compensation water on their method of measurement is waived.

26. With these remarks, it is hardly necessary to make any comments on table IX worked out by Madras on the Mysore system with proportions of 0·70 and 0·45 for the two seasons. A glance at columns 12 and 13 of the abstract K will show that these high proportions produce a shortage in the reservoir irrigation supply below the normal in 10 out of 13 years, whereas, in one year the balance at the end of June (column 11) is a *minus* quantity, although this is partly due to the very heavy draw-off for power based on incorrect data, as separately shown. The total shortage in the 13 years comes to as much as 61,647 m.c.ft. This shows that very unnecessary restrictions have been placed on impounding in Mysore owing to the very high factors chosen.

27. In table XI, worked out by Madras on the Mysore system, the proportions assumed are 0·6 and 0·4 for the two monsoons. The results of this are abstracted in the statement L. Considering that allowance for compensation has to be made with these factors, the results are more unfavourable than those of the table worked out by Mysore with the proportions of 0·55 and 0·25 (statement C, My. 21). In the latter case, in 8 out of 13 years, the reservoir gets its full and normal supply and the total shortage is 27,542 m.c.ft. (column 12), whereas with the Madras proportions of 0·6 and 0·4 the normal supply is secured in only six years with a shortage of 35,733 m.c.ft. (column 13, statement L). Comparing the same table of Madras (statement L) with the Mysore table with proportions 0·625 and 0·30 (statement E), Mysore will get according to the latter its normal supply in eight years with a shortage of 30,895 m.c.ft. (column 12, statement E) against 35,733 m.c.ft. (column 13, statement L) by the Madras table, even with a more favourable proportion of 0·60. This is due to the fact that proportion chosen by Madras for the north-east monsoon is abnormally high as noted above

28. Coming to the Madras tables (X and X II) on the proportionate limit system, it may be stated that, with the same factors, the shortage by this system during the 13 years would be practically double of that by the Mysore system. Comparing Madras table XI (statement L) and table XII (statement N) both worked out with the same proportions 0·6 and 0·4, it will be seen that the shortage by the Mysore method is only 35,733 m.c ft. (column 13, statement L) extending over seven years, while that by the proportionate method is more than double of this quantity, being as much as 72,177 m.c.ft. (column 13, statement N) extending over ten years. If, on the other hand, table X of Madras on the proportionate limit system with the proportions 0 65 and 0·425 (statement M) is compared with the Mysore table with proportions of 0·625 and 0·30 (My. 21, statement E), it will be seen that the shortage by the Mysore method is only about 30,895 m.c.ft. extending over five years (column 12, statement E), whereas it is as much as 81,400 m.c.ft. by the proportionate limit method and extends over 11 out of 13 years (column 13, statement M). This shows clearly that with the proportions of ·65 and ·425 proposed by Madras the proportionate limit or third system would be disastrous to Mysore interests, as it would mean shortage in the reservoir in 11 out of 13 years. Even the lower proportions of 6 and ·4 cannot be accepted for the proportionate limit system on account of the heavy shortage noted above.

29. This also proves that to give the same results of impounding the proportion factors for the third system will have to be much smaller than for the Mysore system. In fact, it has been proved (My. 21, Appx. V) by an algebraical equation that, to give the same benefit of impounding to Mysore with the same discharge at the Kannambadi reservoir, the factor for the proportionate method will have to be as low as 0·35 to correspond with the factor of 0·625 by the Mysore method. This is fully corroborated and exemplified by the working tables as indicated in the remarks under the preceding paragraph.

30. It may be noted that such undue restrictions against impounding in the Kannambadi reservoir arises from the fact, that Mysore would under the proportionate system be obliged to pass down the natural flow of the river up to a certain limit every day at Kannambadi, even when the flow from the rest of the catchment is more than 22,750 cusecs at the Cauvery dam. The combined discharge from the Kabbini, the Bhavani and the other lower tributaries may on many days be more than sufficient to meet the Madras requirements and the proportionate limit system would impose even on such days, the passing of a flow up to the proportionate limit. It is this feature of the proportionate limit system that operates against legitimate impounding in Mysore.

31. One point that may be urged in favour of the proportionate limit system is that it eliminates the computation of compensation water for shortage in the resulting flow up to a limit of 6½ feet ; but it will be seen from the statement P that this is not true. The statement shows in comparative form the percentage of compensation water on four sets of tables worked out as under for each of the thirteen years :—

Column.	System.	Factors.
1.	Proportionate limit system	0·65 and ·425
2.	Do. do.	0·6 and 0·4
3.	Mysore system	0·6 and 0·4
4.	Do.	0·625 and ·30

32. It will be observed that there would be some shortage in each year under both the systems whatever be the proportion factors adopted. This shows clearly first, that the factors should not be unduly increased against Mysore, as even such an increase cannot from the nature of things do away with all shortage, however small on the total natural flow at the Cauvery dam limited to 1,966 m. c. ft. per day.

33. It will also be seen from the statement H (i) with proportions ·625 and ·30 as worked out by Mysore that, in 11 out of 13 years, the quantity of compensation water does not exceed 2 per cent. of even the comparatively small flow limited to 6½ feet (1,966 m.c.ft.) on the Cauvery dam, while the average comes to only 1·21 per cent. (column 9, statement H-i). This is further reduced to 1·13 per cent. (column 13) if the resulting flow is taken up to a limit of 23,000 m.c.ft. and to 1·08 per cent. only (column 17), of the resulting flow up to 2,944 m.c.ft. limit. This is quite a negligible quantity and on all fair and reasonable considerations can be left out of accounts. This shows that no undue restrictions should be imposed against Mysore merely to avoid such negligible differences, as indeed they are inevitable under any system whether based on a proportionate limit or the Mysore system.

34. It may be stated that Madras have themselves stated in Ma.-24, paragraph 19, as follows :—

"The Government of Madras consider that if in opposition to their contentions, this system is adopted, such proportions should be adopted as will reduce the compensation water with the resulting interference with flow and necessary errors in computation to a small total as regards both quantity and occasions when passing becomes necessary.

The proportions, south-west monsoon ... ... ·70
,, north-east ,, ... ·45

applied to this system are put forward as the smallest which can be said to fulfil this condition."

But even here (statement H-2) the average per cent. of compensation water for the 13 years varies from 0·71 to 0·59 (columns 9, 13 and 17, statement H-2) against 1·21 to 1·08 (columns 9, 13 and 17, statement H-1) with the proportions of 0·625 and 0·30 proposed by Mysore. Thus the gain to Madras is only measured by a quantity lying between 0·50 per cent. and 0·49 per cent. which, in all fairness, is quite negligible so far as Madras supply is concerned.

35. On the other hand, the effect on Mysore, comparing the same two tables, will be that the higher proportion of 0·70 ond 0·45 proposed by Madras, would more than double the shortage, the increase being from 30,895 m.c.ft. (column 12, statement E) to as much as 61,647 m. c. ft. (column 13, statement K). This means that the reservoir will lose on an average

(30,752/13 m.c.ft) 2,366 m.c ft. every year. Considering that the normal supply for irrigation is about 36,000 m. c. ft , the loss amounts to as much as 7 per cent. of the normal supply every year. The deficiency in the Madras supplies is a negligible quantity and is besides made up in most cases by the abundant flow on the immediately succeeding days, while the loss to Mysore would be as much as 7 per cent. on an average every year and cannot from the nature of things be made up.

36. The arguments in the preceding paragraphs may now be summarized—

(*a*) Any system whatever would be acceptable to Mysore in so far as it may be based on the principle of conserving the prescriptive rights of Madras, as clearly defined in the third issue, provided that no extra burden is to be imposed upon Mysore by way of apportioning any share of the surplus waters to Madras. If the third or the proportionate limit system is sought to be introduced with this latter object, Mysore have to strongly object to any such extra burden being imposed, as it would be contrary to the Agreement of 1892.

(*b*) The Madras method of measurement at the four places above the Reservoir has been duly examined and found to be unacceptable, because it altogether ignores the replenishment below these anicuts, while imposing a further unwarranted burden of 25 per cent. for the transmission losses. The only way in which the measurement at the four places proposed by Madras could be rendered acceptable to Mysore is by applying the principle of the proportionate limit or the third system and by fixing suitable factors for the contribution at the four anicuts as compared with the total flow at the Cauvery dam. These factors after due examination have been suggested to be 0·75 and 0·33 for the south-west and the north-east monsoons. It should be stated that the disadvantages of the third system do not altogether disappear by this combined system but are somewhat reduced on account of the inclusion of the Kabbini flow for arriving at the proportionate factors.

(*c*) The only sytem that secures to Mysore their legitimate rights to the surplus waters as far as available at the reservoir site after fulfilling the prescriptive rights of Madras is that proposed by Mysore and this deserves acceptance under all fair and reasonable considerations.

(*d*) The working tables prepared by Madras have been examined. The proportions for the two monsoons assumed by Madras have been shown to be too high. Those adopted by Mysore, viz., 0·55 and 0·25 for the two monsoons with the computation of compensation water, and 0·625 and 0·30 without such compensation, have been shown to be fair to both parties, if the Mysore system of impounding is adopted.

(*e*) A material objection urged against the Mysore method is that it involves the computation of compensation water. But it has been shown that even the proportionate limit method does not eliminate the loss due to shortage below the limit flow at times which may be called compensation water. It would not therefore be justifiable to unduly increase the proportions merely with the idea of avoiding the computation of compensation water.

(*f*) But Mysore have shown their willingness to adopt increased proportions of 0·625 and 0·30 with the idea of eliminating such computation. The loss to Madras by such omission has been shown to be inappreciable. Madras have stated that if they have to submit to this method, they suggest that the factors of 0·70 and 0·45 should be adopted. The difference in the results with two sets of factors have been shown to be only about 0·50 per cent. of the flow at the Cauvery dam whereas the loss to Mysore would be on an average as much as 7 per cent. every year.

(*g*) Coming to the third system, it has been shown (*vide* paragraphs 20 and 21) that, when the proportion of the flow at the two places has been arrived at (0·48 in the present case), there is no scope for increasing this proportion on any consideration of transmission losses. By comparing the results of the third system for different sets of factors with those of the Mysore system it has been shown that the shortage in the reservoir irrigation supply would be 2 to 3 times that arising from the Mysore method. This confirms the calculations that, to give the same facilities for impounding with the third system very much smaller factors should be adopted than for the Mysore system. In fact, this proportionate system, as already stated, would greatly curtail impounding and cannot therefore be accepted.

37. In conclusion, Mysore urge that one of the three alternatives noted below may be finally accepted :—

(i) Mysore system with the proportions of 0·55 and 0·25 with the computation of compensation water.

(ii) Mysore system with the proportions of 0·625 and 0·30 without computation of compensation water.

(iii) Measurement at the four places suggested by Madras, but on the principle of the proportionate limit method with the factors of 0·75 and 0·33 for the two monsoons.

KARPUR SHRINIVASA RAO,
Mysore Representative.

31*st March* 1914.

Exhibit My.-22a.

Note on sample table showing the advantage of the combined system or the third system including the Kabbini over the third system applied to Kannambadi catchment only.

Mysore have always objected to the Madras system on the ground that the replenishment below the four places of measurement is left out of account, while an extra 25 per cent. is added without any justification. If the contribution from the four tributaries is correctly estimated, it will be found that it amounts to about 70 per cent. of the total at the Upper Anicut. If this proportion or something near it is adopted and not (100 + 25 =) 125 per cent., Mysore would not have so much objection against even the proportionate system of measurement as applied to the four rivers including the Kabbini.

2. To exemplify the difference between the proportionate limit system as applied to Kannambadi catchment on the one hand and to the somewhat larger catchment above Kannambadi and the Kabbini on the other, a sample table has been worked out for a few days.

3. Here, the proportion of ·48 has been taken for the Kannambadi discharge and ·75 for that including the Kabbini, and the corresponding limits beyond which impounding is permissible would therefore be ·48 × 1,966 = 944 millions cubic feet in the former case and ·75 × 1,966 = 1,474 millions cubic feet in the latter including the Kabbini. This means that whenever the Kabbini flow is more than (1,474 — 944 =) 530 millions cubic feet, the impounding at Kannambadi may be increased up to this excess quantity.

4. From the table it is clear that the proportionate system as applied to Kannambadi catchment gives 16,904 millions cubic feet for storage against 22,258 millions cubic feet when the Kabbini is included. Thus Mysore will be deprived of a storage of (22,258 — 16,904 =) 5,354 millions cubic feet on the 12 days on which impounding is shown in the sample table.

5. The reason for this difference may be explained as below :—

(i) From columns 5 and 7 it will be seen that on days 1 to 4 the Kabbini discharge alone is more than the combined limit for the four rivers, viz., 1,474 millions cubic feet the whole of the Kannambadi discharge would be available for storage on these days; whereas by confining the proportionate limit to the Kannambadi alone 944 millions cubic feet on each of these four days would not be available for storage amounting to a loss of 944 × 4 = 3,776 millions cubic feet as shown in column 10.

(ii) Even on the days on which the Kabbini discharge is less than the combined limit of 1,474 millions cubic feet, some credit from the Kabbini area would be due at Kannambadi on all the days when the Kabbini discharge is greater than (1,474 — 944 =) 530 millions cubic feet. Thus the extra quantities available for storage from the Kabbini river alone is shown in column 10 and this adds to the Kannambadi storage by 1,400 millions cubic feet. Hence the storage with the combined system would be as shown in column 9 which on each of the five days (5 to 9) exceeds the Kannambadi storage (column 4) by the quantities shown in column 10. This is another advantage in the combined system.

(iii) On the days on which the Kannambadi discharge is lsss than 944 millions cubic feet no storage would be possible. But on some of these days the Kabbini discharge may be more than 530 millions cubic feet (from 10 to 12 days) and this excess (column 10) when added to the Kannambadi discharge may make it exceed 944 millions cubic feet and so there can be some storage at Kannambadi as shown in column 9.

6. But there may be days (13th and 14th) when the excess of the Kabbini flow over 530 millions cubic feet may not make up the deficit in the Kannambadi flow and on such days there will be no storage. There will also be no storage when the Kabbini discharge is less than 530 millions cubic feet and the Kannambadi discharge less than 944 millions cubic feet as on 15th to 18th in the statement.

KARPUR SHRINIVASA RAO,
Mysore Representative.

1st *April* 1914.

ENCLOSURE.

Number.	Third system for 3 rivers above Kannambadi proportion 0·48.			Combined system on the proportionate limit applied to four rivers (*i.e.*), including Kubbani proportion 0·75.						—
	Kannambadi discharge.	Proportionate limit for Kannambadi.	Excess of column 2 over column 3 for available storage.	Kubbani discharge.	Combined discharge of Kannambadi and Kubbani.	Combined limit for Kannambadi and Kubbani.	Excess of column 7 over column 6 for permissible storage.	Storage limit to Kannambadi discharge.	The advantage to the Kannambadi by the Kubbani.	
1	2	3	4	5	6	7	8	9	10	
1	5,000	1,966	4,056	2,400	7,400	1,966	5,926	5,000	944	I
2	4,400	×	3,456	2,200	6,600	× 0·75	5,126	4,400	944	
3	4,200	0·48	3,256	1,900	6,100	..	4,626	4,200	944	3,776
4	3,100	= 944	2,156	1,500	4,600	= 1,474	3,126	3,100	944	
5	2,800	944	1,856	1,200	4,000	944 530	2,526	2,526	670	II
6	2,000	..	1,056	900	2,900	.. ..	1,426	1,426	370	
7	1,600	..	656	800	2,400	.. ..	926	926	270	
8	1,300	..	356	600	1,900	.. ..	426	426	70	
9	1,000	..	56	550	1,550	.. ..	76	76	20	1,400
10	900	944	..	600	1,500	944 530	26	26	70	III
11	850	..	..	700	1,550	.. ..	76	76	170	
12	800	..	..	750	1,550	.. ..	76	76	220	460
13	700	944	..	600	1,300	944 530	..	..	..	..
14	650	..	..	550	1,200	..	..	..	..	..
15	600	..	..	500	1,100	.. ..	..	..	..	..
16	400	..	..	400	800	.. ..	..	..	..	..
17	450	..	..	350	800	.. ..	..	..	..	..
18	500	..	..	300	800	.. ..	..	..	..	..
	..	..	16,904	..	..	.. ..	..	22,258	..	..

My.-221.

Table III.] STATEMENT H (1). [Proportion 1·6 and 3⅛.

Showing percentages of compensation water due on resulting flow up to different limits.

Years.	Compensation water due.		Total resulting flow.		Resulting flow up to limit 1,966.				Resulting flow up to limit 2,300.				Resulting flow up to limit 2,944.				Natural flow up to limit 1,966.	Percentage of column 3 on column 18.
	Number of days.	Quantity.	Quantity.	Percentage.	Number of days above 1,966. Before impounding.	Number of days above 1,966. After impounding.	Quantity.	Percentage.	Number of days above 2,300. Before impounding.	Number of days above 2,300. After impounding.	Quantity.	Percentage.	Number of days above 2,944. Before impounding.	Number of days above 2,944. After impounding.	Quantity.	Percentage.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1896-97	7	2,595	650,010	·39	86	83	290,810	0·89	71	70	316,895	·52	60	57	357,758	·72	291,434	·89
1897-98	1	706	595,489	·12	95	94	273,463	0 26	82	80	305,073	·23	66	63	348,415	·20	274,169	·25
1898-99	8	3,263	422,177	·77	78	76	301,702	1·09	62	52	323,665	1·01	45	35	350,078	·94	303,288	1·07
1899-00	3	910	185,727	·49	30	30	151,086	0 61	24	23	159,227	·57	17	15	170,614	·53	151,560	·66
1900-01	7	3,839	615,261	·63	76	73	248,339	1·56	71	67	274,293	1·41	60	56	314,361	1·23	249,432	1·54
1901-02	14	2,997	407,416	·74	83	75	285,822	1·05	70	62	305,820	·98	56	49	341,876	·87	286,394	1·04
1902-03	16	5,743	371,817	1·55	67	59	263,444	2·21	59	44	281,983	2·06	36	30	305,402	1·91	264,824	2·16
1903-04	4	1,154	667,489	·17	107	107	330,718	0·36	94	93	353,977	·32	79	75	420,178	·28	330,901	.35
1904-05	7	4,462	315,604	1·43	58	58	200,256	2·27	53	51	218,500	2·08	40	38	248,012	1·83	200,523	2 22
1905-06	7	2,498	210,711	1·19	38	32	177,451	1·42	31	19	185,921	1·35	25	12	195,850	1·28	178,696	1·40
1906-07	6	3,618	337,290	1·07	62	62	219,059	1·66	55	56	238,490	1·52	46	44	271,779	1·34	219,809	1·65
1907-08	7	3 046	405,828	75	64	58	231,653	1·32	60	51	244,893	1·26	50	45	280,889	1 09	231,653	1·31
1908	9	3,385	281,403	1·21	45	42	180,754	1·86	35	31	193,650	1·74	31	26	212,437	1·59	182,352	1·85
Total ..	..	38,246	5,466,222	·70	..	.	3,154,537	1·21	..	..	3,412,396	1 13	..	..	3,817,649	1·08	3,168,635	1·20

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My.-222.

Table .] STATEMENT H (2). [Proportion ·7 and ·45

Showing percentages of compensation water due on resulting flow up to different limits.

Years	Compensation water due.		Total resulting flow.		Resulting flow up to limit 1,956.				Resulting flow up to limit 2,300.				Resulting flow up to limit 2,944.				Natural flow up to limit 1,966.	Percentage of column 3 on column 18.
	Number of days.	Quantity.	Quantity.	Percentage.	Number of days above 1,966. Before impounding.	Number of days above 1,966. After impounding.	Quantity.	Percentage.	Number of days above 2,300. Before impounding.	Number of days above 2,300. After impounding.	Quantity.	Percentage.	Number of days above 2,944. Before impounding.	Number of days above 2,944. After impounding.	Quantity.	Percentage.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1896-97	3	736	648,482	·11	86	81	291,434	·26	71	70	317,637	·23	60	58	356,928	·21	291·434	·22
1897-98	2	593	598,442	·09	95	94	273,761	·21	82	81	303,342	·19	66	63	349,298	·17	274,169	·22
1898-99	9	5,462	425,617	1·28	78	72	300,132	1·83	62	55	321,851	1·71	45	36	350,145	1·57	303,288	1·80
1899-00	2	295	185,467	·16	30	30	151,560	·19	24	24	160,879	·18	17	14	173,216	.17	151,560	·19
1900-01	3	1,539	606,106	·25	76	75	248,669	·62	71	68	272,642	·57	60	59	304,113	·51	249,432	·61
1901-02	6	992	404,204	·24	83	79	286,301	·35	70	61	309,657	·32	56	45	342,883	·29	286,394	·34
1902-03	10	2,951	372,713	·79	67	62	261,969	1·12	59	49	280,911	1·04	36	29	304,552	·96	264,824	1·11
1903-04	2	493	633,354	·08	107	106	330,901	·15	94	92	363,831	·13	79	74	416,419	·11	330,901	·14
1904-05	5	2,486	314,718	·80	58	57	200,523	1·27	53	52	218,710	1·16	40	40	248,212	1·02	200,523	1·23
1905-06	3	1,673	214,999	·78	38	35	177,435	·94	31	24	187,811	·87	23	14	198,878	·83	178,696	·93
1906-07	2	3,347	336,058	·90	62	63	219,236	1·52	55	55	238,948	1·40	46	41	271,595	1·23	219,809	1·06
1907-08	3	420	407 611	·10	64	62	231,653	·18	60	57	251,450	·16	50	44	283,940	·14	231,653	·18
1908	5	1,541	279,877	·55	45	43	181,734	·85	35	34	194,573	·79	31	27	214,055	·72	182,352	·84
Total ..	..	22,528	..	·41	..	..	3,155,308	·71	..	..	3,422,242	·65	..	..	3,814,034	·59	..	..

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Madras Table IX.]

My.-223.

STATEMENT K.

Mysore System.

[Proportion ·7 and ·45.

Year.	Balance on 1st June.	Quantity actually stored in the irrigation season up to January.	Quantity stored from February to May.	Total of columns 2, 3 and 4.	Expenditure.					Balance.	Case.	Shortage in the irrigation supply.	Surplus.
					Irrigation.	Extra draw-off for tail tanks.	Evaporation.	Power.	Total, columns 6, 7, 8 and 9.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1896-97	4,000	52,312	981	57,293	31,936	5,712	3,943	7,875	49,466	7,827	C	3,687	1,86,591
1897-98	7,827	50,072	632	58,531	31,160	2,883	4,125	7,842	49,010	9,521	B	2,123	98,135
1898-99	8,767	46,567	2,777	58,101	32,479	..	3,922	8,335	44,736	13,365	H	3,804	..
1899-00	13,225	27,102	1,274	41,601	25,158	..	2,622	13,840	41,620	—19	H	11,125	..
1900-01	..	51,912	504	50,649	30,229	2,912	3,513	12,933	49,025	2,887	C	6,054	1,08,953
1901-02	2,829	60,726	827	64,382	36,229	2,565	4 191	4,277	47,162	17,220	A	54	30,281
1902-03	17,241	51,364	2,823	71,428	36,285	1,491	4,732	6,608	49,116	22,312	A	..	44,797
1903-04	22,246	46,684	4,574	73.504	35,344	4,010	4,961	1,124	45,439	28,065	A	1,037	97,391
1904-05	27,194	21,023	2,321	50,538	27,774	2,352	3,967	5,582	39,675	10,863	H and F	8,509	63,165
1905-06	10,877	34,207	96	45,180	26,881	.	3,451	9,348	39,680	5,500	E	9,402	..
1906-07	5,401 and 0	48,472	796	49,268	27,604	1,578	3,661	4,201	37,044	12,224	B	8,679	29,040
1907-08	12,224	42,334	1,997	56,555	32,640	3,820	3,979	4,552	44,971	11,564	C	3.643	1,32,812
1908	11,722	38,122	..	49,844	25,329	2,308	2,172	1,300	31,109	18,735	E	3,530	66 018

N.B.—1. Normal irrigation requirement is 36,283.
2. In 1908 irrigation requirement is 28,859 to end of December.
3. In 1896 irrigation requirement is 35,623 excepting first half of June.
4. Tables are worked from 16th June 1896 to end of December 1908.

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Madras Table XI.]

My.-224.

STATEMENT L.

Mysore system.

[Proportion ·6 and ·4

Year.	Balance on 1st June.	Quantity actually stored in the Irrigation season up to January.	Quantity stored from February to May.	Total, columns 2, 3 and 4.	Expenditure.					Balance.	Case.	Shortage in the Irrigation supply.	Surplus.
					Irrigation.	Extra draw-off for tail tanks.	Evaporation.	Power.	Total of columns 6, 7, 8 and 9.				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1896-97	4,000	51,642	970	56,612	33,500	4,000	3,928	7,888	49,316	7,296	B	2,123	2,07,753
1897-98	7,305	52,738	632	60,675	36,283	3,169	4,215	7,864	51,535	9,140	A	..	1,06,673
1898-99	9,147	54,088	2,777	65,982	36,283	784	4,391	8,372	49,830	16,152	A	..	6,224
1899-00	16,131	27,959	1,274	45,364	27,670	672	2,879	14,197	45,418	— 54	F	8,613	4,480
1900-01	— 19/0	53,615	504	54,119	30,491	3,811	3,544	12,933	50,779	3,340	C	5,792	1,21,900
1901-02	3,340	62,467	1,005	66,760	36,136	4,112	4,431	4,238	48,887	17,873	A	147	43,431
1902-03	17,830	51,279	2,895	72,004	36,283	2,022	4,836	6,634	49,773	22,231	A	..	53,286
1903-04	22,246	46,700	4,846	73,792	36,327	4,000	5,080	1,124	46,531	27,261	A	..	1,11,248
1904-05	27,261	23,806	2,333	53,402	28,809	3,360	4,124	5,765	42,058	11,344	E	7,474	73,171
1905-06	11,272	39,097	96	50,465	31,577	..	3,782	9,359	44,718	5,477	C	4,706	..
1906-07	5,747	50,621	796	57,164	34,930	1,904	3,807	5,803	46,474	10,690	A	1,323	36,585
1907-08	10,796	35,736	2,106	48,638	34,214	4,000	4,010	4,719	46,943	11,695	B	2,069	1,41,368
1908	11,685	38,488	..	50,173	25,329	2,464	2,188	1,311	31,292	18,881	E	3,486	70,967
Total ..	..	..	..	..	.	..	..	..	..	..	..	35,733	9,77,086

N.B.—1. Normal irrigation requirement is 36,283.
2. In 1908 the irrigation requirement is 28,859 to end of December.
3. In 1896 the irrigation requirement is 35,623 excepting first half of June.
4. Tables are worked from 16th June 1896 to end of December 1908.

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Madras Table XII—Proportionate limit system.]

STATEMENT M.

Mysore system.

[Proportion ·65 and ·425.

Year.	Balance on 1st June.	Quantity actually stored in the Irrigation season up to January.	Quantity stored from February to May.	Total of columns 2, 3 and 4.	Expenditure. Irrigation.	Extra draw-off for tail tanks.	Evaporation.	Power.	Total of columns 6, 7, 8 and 9.	Balance.	Case.	Shortage in irrigation supply.	Surplus.		Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1896-97	4,000	49,575	970	54,545	31,840	4,000	3,800	7,778	47,418	7,127	C	3,783	1,30,237	370	
1897-98	7,127	47,806	632	55,565	34,160	2,084	3,987	7,857	48,088	7,477	B	2,123	86,711	678	
1898-99	7,477	34,706	2,777	44,960	25,323	..	3,040	8,356	36,719	8,241	H	10,960	..	1,295	
1899-00	8,241	17,166	..	25,407	20,397	..	1,133	3,177	24,707	700*	H	15,886	..	..	The reservoir fails in November and the table has been worked to end of November and the balance comes to 2,000. The balance 700 shown is due even in June.
1900-01	..	49,218	504	49,722	27,953	2,016	3,438	12,787	46,194	3,528	B*	8,330	7,099	..	Case B wrongly applied.
1901-02	3,531	51,135	1,004	55,673	31,763	1,991	4,187	4,228	42,169	13,504	B	4,520	8,026	..	Irrigation begins from 4th July.
1902-03	13,501	51,461	2,896	67,858	36,283	1,053	4,548	6,570	48,454	19,404	A	..	24,128	814	Surplussed in November.
1903-04	19,404	47,617	4,824	71,845	36,327	2,464	4,940	1,124	44,855	26,990	A	..	57,637	..	
1904-05	26,998	21,700	2,335	51,028	29,041	1,466	4,032	5,605	40,134	10,894	E	7,242	40,043	..	
1905-06	10,897	23,737	83	34,717	24,603	..	2,363	7,762	34,728	— 11	H	11,680	..	..	
1906-07	..	46,574	701	47,275	26,574	1,120	3,778	4,185	35,657	11,618	B	9,709	11,643	..	
1907-08	11,617	43,386	2,105	57,108	32,640	3,808	3,948	4,719	45,115	11,993*	C	3,643	89,364	886	* Difference is due to the 422 m.c.ft. omitted to be taken on 30th June.
1908	11,671	37,955	..	49,526	25,329	1,942	2,156	1,311	30,738	18,788	D	3,530	..	..	
Total ..	..	..	..	..	..	..	..	..	..	..	..	81,406	3,76,978	..	

N.B.—1. Normal irrigation requirement is 36,283.
2. In 1908, irrigation requirement is 28,859 to end of December.
3. In 1896, irrigation requirement is 35,623 excepting first half of June.
4. The tables are worked from 16th June to end of December 1908.

Madras Table XII—Proportionate limit system.]

STATEMENT N.

[Proportions ·6 and ·4.

Year.	Balance, 1st June.	Quantity actually stored in the irrigation season up to January.	Quantity stored from February to May.	Total of columns 2, 3 and 4.	Expenditure. Irrigation.	Extra draw-off for tail tanks.	Evaporation.	Power.	Total of columns 6, 7, 8 and 9.	Balance.	Case.	Storage in irrigation supply.	Surplus.
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1896-97	4,000	50,202	970	55,172	31,936	400	3,927	7,891	47,754	7,418	C	3,687	136,319
1897-88	7,433	48,492	632	56,557	34,160	2,409	4,093	7,839	48,501	8,056	B	2,123	64,747
1898-99	8,312	37,987	2,777	49,076	25,323	..	3,481	8,380	37,184	11,892	H	10,960	..
1899-00	11,897	18,058	1,274	32,129	22,695	.	1,789	7,798	32,282	— 152	H	13,588	..
1900-01	..	49,978	504	50,482	26,895	2,128	3,619	12,933	45,575	4,907	B	9,388	75,519
1901-02	5,032	53,821	818	59,671	36,285	2,629	4,142	4,228	47,282	12,389	A	*Nil.*	10,781
1902-03	13,399	52,611	2,895	68,905	36,283	1,232	4,522	6,634	48,671	20,234	A	,,	26,814
1903-04	20,171	47,371	4,835	72,377	36,327	2,715	4,955	1,124	45,121	27,256	A	,,	60,135
1904-05	27,264	23,352	2,333	52,949	30,841	1,568	4,230	5,605	42,244	10,705	E	5,442	42,792
1905-06	10,705	25,832	96	36,633	26,260	..	2,460	7,842	36,562	71	H	10,023	..
1906-07	..	47,270	130	47,400	26,480	1,250	3,786	4,201	35,727	11,673	B	9,793	14,240
1907-08	11,690	43,487	2,106	57,283	32,640	3,808	3,948	4,719	45,115	12,168	C	3,643	31,750
1908	12,168	37,597	..	49,765	25,329	2,016	2,172	1,338	30,855	18,910	E	3,530	41,260

N.B.—1. Normal irrigation requirement is 36,283.
2. In 1908 irrigation requirement is 28,859 to end of December.
3. In 1896 irrigation requirement is 35,623 excepting first half of June.
4. The tables are worked from 16th June 1896 to end of December 1908.

STATEMENT P.

Statement showing percentages of quantity lost by Madras under different methods examined on the natural flow up to limit 1,966 millions cubic feet.

Month.	1896-97.				1897-98.				1898-99.				1899-00.				1900-01.				1901-02.				1902-03.				1903-04.				1904-05.				1905-06.				1906-07.				1907-08.				1908.			
	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.	N.		Madras.	Mysore.
	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·425.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·40.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·4.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·4.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·4.	·6 and ·4.	·6 and ·4	·625 and ·3	·65 and ·4.	·6 and ·4.	·6 and ·4	·625 and ·3
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
June	..	..	..	..	·79	..	2·75	2·45	..	..	..	..	·59	·85	2·29	1·98	1·62	1·88	7·58	7·30	..	..	2·64	2·43	·60	1·10	2·95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34·49	38·36	67 32	65·12	..	·12	·61	..	..	..	..	..
July	..	·14	·27	·07	..	1·04	·10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·89	1·60	7·72	6·93	..	..	..	..	..	..	..	..	·86	1·18	4·33	3·82	..	..	..	..	..	..	1·05	·42	1·10	1·95	7·72	6·42
August	..	..	..	..	..	..	..	..	1·49	2·19	4·16	4·29	·71	1·54	3·20	2·46	·30	·41	·51	·24	·72	1·58	2·37	1·43	..	..	·28	·10	..	..	..	..	..	..	..	..	·11	·63	1·62	1·04	..	..	..	..	..	..	..	..	..	..	..	..
September	..	..	..	1·29	..	..	..	..	·65	·82	3·51	2·84	..	..	..	..	..	..	..	..	..	..	..	..	1·12	1 72	4·67	3·82	..	·06	·08	..	3·68	4·80	10·74	8·28	..	·07	·12	..	..	..	..	..	..	..	..	..	..	..	..	..
South-west monsoon.	..	·04	·08	·53	·11	·15	·43	·37	·63	·89	2·29	1 99	·21	·38	·90	·73	.29	·36	1·09	·97	·24	·53	1·15	·84	·72	1·20	4·44	3·57	..	·02	·08	..	·43	·57	1·33	1·10	·35	·63	2·10	1·71	1·37	1 53	2·80	2·65	..	0·01	·47	·54	·41	·74	2·91	2·18
October	..	·02	1·40	0·91	..	..	·37	..	2·95	3·01	·95	·44	·28	..	..	..	..	·54	1·73	5·83	..	..	·62	·24	..	..	·14	·67	·01	·07	·23	1·9	3·12	3·49	8·34	12·35	..	..	..	·93	..	..	..	..	..	..	..	·40				
November	·94	1·25	4·41	6.72	..	..	..	..	..	..	..	..	·66	·93	2·27	3·60	..	·24	77	1·85	..	..	..	..	..	..	..	..	·42	·52	·26	·22	..	..	..	..	..	..	..	..	·85	1·15	3·87	6·86	..	..	..	..				
December	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
January	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
North-east monsoon.	·22	·30	1·57	1·93	..	..	·22	..	1·10	1·13	·36	·16	..	..	..	..	·16	·30	·97	3·29	·23	·33	1·07	1·34	..	·07	·26	·73	·10	·02	·14	·74	2·29	2·55	6·11	9·04	..	..	..	·61	..	..	..	..	·25	·36	1·16	2·43	..	..	..	·05
Total for the year ..	·07	·13	·61	·89	·08	·11	·37	·25	·87	1·01	1·32	1·07	17	·31	·73	·60	·26	·34	1·06	1·53	·24	·45	1·13	1·05	·36	·62	2·28	2·99	·04	·08	·11	·36	·70	·85	2 00	2·22	·25	·45	1·49	1·40	·85	1.00	1·82	1·72	·07	·12	·69	1·31	·32	·58	2·28	1·91

Note.—For each year the percentage shown are in—
Column 1 } Third syste... proportionate limit system.
" 2 }
" 3 } Mysore system as worked by Madras and Mysore respectively.
" 4 }

Exhibit My. 23.

Mysore Rejoinder to the Madras note on third issue, dated the 31st March 1914 (Ma. 25).

Madras, in Ma. 24 and 25, have, for the first time, attempted to put forth a new claim which they had not before presented at any stage of the proceedings. They contend that, while the second term of reference aims at preserving unimpaired the prescriptive rights of Madras, the award under that issue "specifies the limit volume of water at the Upper Anicut, which, "assisted and supplemented by a proportion of all excess flow over the limit, will fully protect "Madras interests." The portion underlined is an unwarranted addition which cannot be accepted by Mysore.

2. Madras state that certain passages in the Assessor's examination can be interpreted to give the above meaning to the award. That Madras should draw such a conclusion from the clear and unmistakable terms of the award only shows that, not being content with the already high award against Mysore, they are trying to put a new and unwarranted meaning into certain expressions in the Assessor's examination of the case. If any weight is to be given to such one-sided interpretation, Mysore have only to observe that this would tantamount to the re-opening of the whole case under the second term of reference. To demonstrate the untenable nature of the contentions put forward by Madras, it is necessary to examine the import of the paragraphs in the Assessor's examination of evidence on which Madras rely for advancing this fresh claim.

3. While referring to possible benefit at times due to occasional floods, paragraph 98, Assessor's examination, clearly states that apart from such occasional floods, there is no reason to fear that the delta irrigation will in any way suffer "provided that the irrigation supplies passed "under the rules and regulations and shown to be necessary for their irrigation in the past are "taken as the basis for the award which must ensure their conservance in future". Here evidently the portion now underlined refers to the quantity of water represented by the award, viz., 6½ ft. limit. The reference to occasional floods is made as a statement of fact and cannot be taken to imply the necessity for any additional supply under the award.

4. It is inevitable under any system of measurement out of the three under consideration—that, on several days or fortnightly period, there should be some surplus over and above the limit of 6½ feet mentioned in the award. But as a full discussion on the several modes of measurement would be naturally out of place in examining the prescriptive rights of Madras, the Assessor has confined his remarks hypothetically to only one mode of measurement as an illustration to show that under this proportionate system there would be some portion of the floods available at the Cauvery dam in addition to the prescriptive limit. It need hardly be remarked that the Assessor has made certain assumptions in these passages in a very guarded manner even in giving such an illustration.

5. It should also be noted that the Assessor has not attempted to examine in the paragraphs under reference the other two modes of measurement proposed by Madras and Mysore respectively. If all this is remembered, the figures under illustration or the remarks about the additional supplies, would not give any scope for the interpretation suggested by Madras to the effect that the award limit is to be "assisted and supplemented by a proportion of all excess flow over this "limit to fully protect Madras interests."

6. If Madras still think that the references made by the Assessor in paragraphs 99 to 103 give room to them for claiming such an additional right, the natural inference must be that in discussing the effects of impounding as an illustration under a particular system of measurement the Assessor had by implication already condemned the other systems and had arrived at the conclusion that these latter need not even receive a passing consideration before being so condemned. Madras have evidently gone too far in forcing such an interpretation.

7. All that can be fairly inferred by the passages referred to by Madras is that, in addition to the quantity specified by the award, which itself as clearly stated in paragraph 103 (A.E.E.) would absolutely secure "the irrigation supplies to Madras under the 1892 agreement", there will be generally a portion of floods available at the Upper Anicut, a condition which would obtain more or less under any of the three systems of measurement so far proposed.

8. A close reading of paragraph 165-A will show that inference drawn by Madras in paragraph 5 of Ma. 25 is not warranted by the words used in the passage referred to.

9. Reference is also made by Madras to paragraphs 173 and 174 to support their view that a proportionate share of all floods is indeed an essential feature of the award on the second issue. A careful reading, however, of these paragraphs will show that, as there would generally be abundant floods available at the Cauvery dam, any slight errors in the fixing of the limits, say, between 6·2 feet and 7·0 feet, would be almost wholly counterbalanced by the surplus floods available in a particular fortnight or period under consideration. It is true that such floods have reference to the illustration given in paragraphs 99 to 103 based on the proportionate system. But here the comparison only refers to the total quantity of supplies including the floods that would be available up to a certain limit. As such extra supplies would also be more or less available under any system of measurement, the passage does not warrant the inference that the particular mode of measurement under illustration was to be finally adopted.

10. If, on the other hand, Madras infer that these explanations of the Assessor give room to the assumption that this system alone has been upheld by the Assessor in preference to the other two, all that can be said is that such an inference is quite untenable in the face of the fact that the merits of the different systems could only be properly discussed when examining the third term of reference and not under any casual illustrative remarks made in dealing with the second issue. In this light it will be readily seen that Madras are taking undue advantage of certain hypothetical facts and figures mentioned by the Assessor in his examination of the evidence and are making a gratuitous assumption that the Assessor's recommendation is based on a preconceived preference to one out of three systems of measurement, without a detailed examination of their relative merits in the light of the award under the second issue.

11. Further Madras are not justified in selecting two or three passages from the elaborate and detailed examination of the case by the Assessor and drawing certain unwarranted conclusions on the strength of such stray passages. On the contrary Mysore can easily quote a number of passages from the same source as well as from the findings by the Arbitrator, all of which prove convincingly that the award of 6½ feet limit by itself was intended to fully preserve unimpaired all the existing rights of Madras in perfect accordance with the wording of the second term of reference and that no additional claim against Mysore in the shape of a proportionate share of the flood waters can be said to have been contemplated when making the award.

12. References to the following passages in the Assessor's examination of evidence with brief explanatory notes will make this point clear:—

"(*a*) *Paragraph* 6.—Madras have defined their claim as a prescriptive right to a limit flow whenever it is available in the river of 2,944 m.c.ft., about 33,500 cusecs which, they state, is connoted by a 7-feet gauge on the Cauvery dam under conditions obtaining at the time the 1896 rules were introduced, and prior to the remodelling of the Upper Anicut in 1899—1902. In support of this claim they rely entirely on the rules and records of regulation. They have made no attempt to show that the quantities of water actually taken into the Cauvery under the working of those rules and limit gauge have been essential to their irrigation in the past, and that they are therefore necessary to its conservance in future.

Vide paragraphs 9, 11, 13 and 15—Ma. 9.

Vide paragraph 13—Ma. 9.

* * * * *

"*Paragraph* 41.—On these grounds, I consider that the limits of the 1882 rules I and III of the Upper Anicut regulation read with the 1893 rules (1) and (2) of the Cauvery and Vennar must be accepted as the intentional limit of what was considered necessary for irrigation supplies and that the provisions of rules (3), (4) and 5 of the Cauvery and Vennar rules must be accepted as for flood distribution between the two rivers."

These two passages show that the mere passing of flood waters or the incidence of flood discharge cannot be considered as necessary to conserve the prescriptive rights of Madras, as contrasted with the quantity of the award based on the actual volumes used for irrigation according to clauses (1) and (2) of the rules of 1893. The question of the new claim made by Madras for sharing floods as being necessary for the protection of their rights is thus excluded.

(*b*) "*Paragraph* 78.—Hence so far as the necessity for the extra supplies passed into the Coleroon under the 1882 rules whether for the Coleroon irrigation or for scour is concerned, I consider that Madras cannot be held to have proved their claim to this specific supply, and I consider that any fair and reasonable treatment of this point in terms of the 1892 agreement demands its exclusion from the estimate of quantities due to Madras for the purpose of the award in this arbitration."

Here it is clear that a specific supply even for the Coleroon irrigation is not considered necessary beyond the award limit. In paragraph 6, Ma.-24, Madras try to make out that, in addition to the award of 6½-feet limit, a proportionate share of the floods would be necessary to meet the requirements of the Coleroon irrigation. But this passage clearly shows that extra claims over and above the award already given are unwarranted and contrary to the terms of the agreement of 1892.

(*c*) "*Paragraph* 103.—Thus we see that while the irrigation supplies due to Madras under the 1892 agreement would be absolutely secured, she would still enjoy in addition increments over and above those necessary supplies."

This is one of the passages referred to by Madras in support of their claim for sharing of the flood waters as an additional burden against Mysore. But the passage underlined distinctly shows that the award by itself would amply protect and conserve all the prescriptive rights of Madras, apart from extra flood discharges, more or less incidental to any system of measurement. Reference to increments over and above the necessary supplies and their being inevitably shared by the two parties are simply matters of actual occurrence and cannot be taken as the conditions of the award.

(*d*) "*Paragraph* 148.—A perusal of this seems to me to show very clearly that Sir John Benton thought the Kannambadi scheme feasible without injury to Madras, whose rights he certainly did not under-rate."

* * * * *

The claim that Sir John Benton was considering is to a 7-feet limit flow and this claim is characterised as being above the Madras prescriptive rights. It may be remarked in passing that, if any claim for the proportionate share of flood waters over and above the prescriptive rights could at all stand in favour of Madras under the agreement of 1892, Sir John Benton would not have declared in unmistakable terms "that the Mysore Darbar are to have all the "surplus supplies to which they have any claim under the existing agreement placed uncondition-"ally at their disposal." True to this recommendation that officer then seriously suggested that the capacity of the Mysore reservoir should be increased from 41,000 million cubic feet to as much as 72,000 million cubic feet.

(*e*) "*Paragraph* 160.—From this examination of the evidence under both these heads I find myself unable to advise the Arbitrator that Madras claim for a 7-feet limit gauge at the Cauvery dam throughout the irrigation season tested by the effect it can be shown to have had on the irrigation in the past can be accepted as having been proved to be essential to the conservance of their irrigation in future."

Here, evidently, the 7-feet limit claimed by Madras has been considered excessive in arriving at the award limit of 6½ feet. It is obvious that, as 7-feet flow itself is considered too much, there is no ground for seeking any supplementary or additional supplies from the floods on the basis of the award.

* * * * *

(*f*) "*Paragraph* 180.— * * * * *

Kannambadi reservoir, if allowed can only intercept the supply from some 4,000 square miles out of a total catchment area at the Cauvery dam of some 26,000 square miles, and in any case, therefore, it can only affect a part of the total supply of the delta, while no impounding can be allowed which would restrict the delta irrigation supplies below the quantity found to have been used in the past and to be necessary for its conservance in future."

(*g*) *Paragraph* 181.—The Madras claims are by prescriptive right to a full and ample supply for the delta irrigation and it is in the nature of an essential principle that the award given in this arbitration shall be such as to conserve those rights unimpaired. . . . ."

Here the passages now underlined distinctly show that the award now given is based on the principle that, by itself it is sufficient to conserve fully the prescriptive right, unassisted and unsupplemented, by any portion of the excess flow over and above this limit.

(*h*) *Paragraph* 185 [*sub-paragraphs* (1), (4) and (5)].—Here sub-paragraph (1) refers to the quantity of award and the same principle, that the award by itself should conserve unimpaired the rights of Madras, is again reiterated;

Sub-paragraph (4) states that all quantities which cannot be shown to be necessary are to be excluded; and

Sub-paragraph (5) lays down that avoidable waste should also be excluded and the water passed into the Coleroon before remodelling is characterised as avoidable waste and as being unnecessary for the Coleroon irrigation. In this light the claim of Madras to a share of the flood waters to meet the Coleroon irrigation or to supplement the supply of the delta proper becomes untenable.

(*j*) "*Paragraph* 187.—Under the interpretation by the Arbitrator of the agreement of 1892 and in consideration of these three calculations, I suggest for consideration of the Arbitrator, that for a fixed limit, if applied to the whole irrigation season, 6·5 feet on the Cauvery dam which, as read from the Madras curve of 1909, is equivalent to a discharge of 22,750 cusecs, will fully safeguard the prescriptive right of Madras and will secure in the future the full irrigation supplies she has enjoyed in the past."

Here it is clear that the 6½-feet limit, or 22,750 cusecs has been considered sufficient to fully meet the Madras rights. None of the proportionate share of flood waters, as attempted to be interpreted by Madras, was considered necessary to aid or supplement the award limit. If such was at all intended, a clear expression to that effect would have been added in the recommendation to the Arbitrator who would also have explicitly referred to it in his award.

13. This is not all. The Arbitrator also has made the import of the award quite clear in unmistakable terms and a few passages may be quoted from his findings on issues 2 (*a*) and 2 (*b*):—

(*a*) *Page* 16.—"I must therefore hold, in agreement with the Assessor, that Madras have failed to establish their claim to a gauge-reading of 7 feet as necessary for the maintenance of their prescriptive rights . . . ."

* * * * *

Here the intention of the Arbitrator as well as of the Assessor has been made as clear as possible and there is no room whatever to support the contention of Madras, viz., the award of 6½ feet by itself is not sufficient to protect their rights and that therefore it should be aided and supplemented by a proportion of the floods.

(*b*) *Page* 16.—"*Primâ facie* it would appear that they are so entitled, but if it could be shown that so-called improvements only remedied defects due in themselves to a wasteful system adopted by Madras, that Government could not in equity be held entitled to the benefit of the waste. From the Assessor's examination of the evidence (paragraphs 56 to 86) it is clear that the system in force before the remodelling was a wasteful one and that large quantities were passed over the Upper Anicut and down the Coleroon which *served no useful purpose*. The Assessor has shown that the area under the Lower Coleroon irrigation system has increased, if anything, since the remodelling. I agree with his final conclusion that the *Madras claim on this point is untenable*." (The italics are ours.)

Here also, the claim for a share in the flood waters to meet the requirements of Coleroon irrigation is clearly declared as untenable

(*c*) *Page* 17.—"I have held *supra*, in agreement with the Assessor, that the Madras rules of 1882 aimed at ensuring when possible a gauge-reading of over 6 feet at the Cauvery dam, and that the Madras contention that the rules were intended to maintain a gauge of 7 feet could not be sustained.

Therefore, the gauge-reading, which according to the Madras Engineers in charge of the delta, *connoted a full and ample supply was something between 6 and 7 feet.*"

Here, the mention of the full and ample supply as lying between the 6 and 7 feet limit would clearly indicate that no additional supply by way of proportionate share of floods over and above the award of 6½ feet was intended as necessary to conserve Madras rights.

(*d*) *Page* 17.—"It is possible that Madras, in claiming the limit gauge of 7 feet, may have in view their new Metur project. That project is designed to irrigate an area of about 350,000 acres after making full provision for the delta irrigation. It would therefore appear that, in the opinion of the Madras Engineers, there is in the river, after meeting all the requirements of the delta irrigation, a surplus sufficient for the irrigation of 350,000 acres It would follow that the gauge limit of 7 feet, which Madras now claim, *is more than sufficient for a full and ample supply to the* existing irrigation."

Here, on the other hand, mention of the Metur project gives an indication that Madras have perhaps put forward their untenable and unwarranted claim to a proportionate share of the flood water merely with the idea of putting unnecessary restrictions against impounding in Mysore, so that the flood waters accruing from such restrictions may all be stored in their Metur reservoir for extending their irrigation and thus increasing the already heavy burden of their prescriptive right against Mysore.

(*e*) *Page* 17.—"Coming now to the volume of water to which Madras is entitled for the conservance of their prescriptive right, I am advised by the Assessor that the supply of 22,750 cusecs, equivalent to a gauge-reading of 6·5 feet at the Cauvery dam as calculated on the Madras curve of 1909, is a reasonable supply *for all the* requirements of Madras irrigation."

Here the specific limit of 22,750 cusecs *unaided by proportionate share of floods* has been declared to be sufficient to meet *all the requirements of Madras.*

14. It is therefore clear that from the numerous passages [(*a*) to (*j*) under paragraph 12 and (*a*) to (*e*) under paragraph 13] quoted above from the Assessor's examination of evidence and the Arbitrator's findings respectively that no scope has been left for Madras to draw the inference that the award of 6½ feet limit was intended to be supplemented by the share of the flood waters for protecting Madras interests.

In the few passages alluded to by Madras, mention made of flood waters can only be taken to mean that, under any system of measurement, Madras may expect to get some portion of flood waters.

15. In the face of the clear exposition both in the Assessor's examination of evidence and the Arbitrator's findings there is no ground for Madras to infer that a share of the flood waters was intended to be an essential feature of the award under the second issue and to draw the conclusion that the passages referred to by them foreshadow the decision of the Arbitrator as regards the third issue, even before the fundamentals of the latter had been considered. Thus it is clear that the award up to a limit of 6½-feet flow was by itself, and without any additional or supplemental supplies over and above that limit, considered sufficient to meet all the prescriptive rights of Madras.

16. The idea of useful surplus was first brought in by Mysore in My.–9, paragraphs 109–110, as a set off against some portion of the compensation water necessitated by the Mysore system of measurement though this was then repudiated by Madras. Mysore then said that under any system of measurement in connection with any reservoir it would be practically impossible not to disturb in the least the flow within the prescriptive limits and that any little diminution such as it was, would be more than counterbalanced by additional natural flow over and above the prescriptive limits, such excess flow being considered useful to Madras up to a certain higher limits specified by Madras themselves. Such extra flow over the prescriptive limits up to the Madras higher limits was considered "useful surplus" intended to make up the more or less

unavoidable deficit due to any system of measurement. It is in this sense that the question of useful surplus can at all come up for consideration and not in the new sense now put forward by Madras to the effect that this useful surplus should be considered as an extra burden on Mysore, in addition to the award of 6½-feet limit. Such an interpretation has been shown to be quite untenable.

17. The statement of Madras that their objection against the expression "useful surplus" was withdrawn as soon as the conditions of the award were declared (Ma. 25, paragraph 7) cannot count for anything at this stage as tending to establish a fresh burden on Mysore in addition to the limit flow of 6½ feet distinctly specified in the award.

18. Madras have stated that their contention that a share in the flood water is necessary to fully protect Madras interests receives support from the passage in the Arbitrator's findings. This requires an examination now.

The Arbitrator, in summing up the case on page 17, states that the gauge reading under the award "*must connote a full and ample supply for the requiremeats of Madras irrigation*. That standard being fixed, it has still to be decided what surplus is available *after Madras requirements have been met*, what proportion of that surplus may reasonably be claimed by Mysore and whether the Mysore project for utilising the surplus is a feasible one."

Here also the reference made to the surplus or even the sharing of it, does not leave any slightest room to contend that the award of 6½ feet by itself is not sufficient to meet the Madras requirements in the face of the portions now underlined in the above passage.

19. Mysore have all along been contending that they have the first claim to the surplus after meeting the Madras requirements as far as available at their reservoir site, or, in other words, as far as can be utilised through their reservoir. It is evidently to settle the quantity of surplus thus to be utilized by Mysore, that the expression "what proportion of that surplus may reasonably be claimed by Mysore" has been used.

In this light, Mysore once more repeat that the terms of the award give no room for imposing an additional burden on Mysore in the shape of a share in the flood waters which Madras now "accept as useful surplus."

20. Even the Mysore system must leave, and actually leaves, a good portion of the surplus at the disposal of Madras on nearly all the days on which impounding is done. The difference between the porportionate limit system and the Mysore system in the matter of leaving some surplus is only one of degree and not of kind. So the arguments about the surplus waters used by the Assessor will not be inapplicable to the Mysore system. To suggest that the remarks of the Assessor in the passages referred to by Madras about the flood supplies at once determine the mode of measurement to be the proportionate system only, is quite unjustifiable.

Ma. 25, paragraph 8.

21. If the new idea of sharing the flood waters is left out of consideration, there is no reason why the Mysore system of measurement must prove seriously detrimental to Madras irrigation in bad years, provided that, on all fair and reasonable considerations, it is found that any slight deficit occasionally occurring on a day or two, is more than amply made up by the useful surplus, this expression being used in the sense intended by Mysore (*vide* paragraph 16 above).

Ma. 25, paragraph 9.

22. Now that it has been shown that the contentions regarding an additional and supplementary supply are untenable and that the limit quantity of the award by itself conserves all the rights of Madras, the original admission of Madras, that the principle of the Mysore system, apart from compensation clauses, is generally acceptable, must be held.

In this light, it is hardly necessary to urge that the Mysore system should be judged in comparison with the other systems only with reference to the conserving of the quantity within the prescriptive limits and not with reference to the sharing of any floods over and above the prescriptive limits. If it is found that the slight deficits in the shape of compensation water are more than made up by the useful surplus immediately available, the system should, on all fair and reasonable considerations, prove acceptable to both the parties.

23. Mysore do not agree with the general objections brought against the Mysore system that it will impair existing rights to full control and development of works in the basin of the Cauvery below Mysore and above the Upper Anicut and that it is impossible to make accurate measurements of compensation water. But as a sort of compromise they have agreed to adopt the somewhat higher proportions of 0·625 and 0·30 instead of 0·55 and 0·25 for the two seasons, the computation of compensation water being then obviated as any slight loss by such ommission would be made up by the useful surplus generally occurring at the time.

Ma. 25, paragraphs 14, 17 and 18.

24. As regards omission of the computation of compensation water with increased factors, Madras state that the system "with the higher factors and without compensation water" is in the view of the Madras Government, decidedly the one to be preferred.

Ma. 25, paragraph 20.

25. It has been made quite clear that the essential principles underlying the examination of the case referred to in paragraph 1 3 A.E.E. can only refer to the inevitable causes producing a surplus flow at the Cauvery dam over and above the award limit on many days under any system of measurement. It has also been shown that, even under the Mysore system, this essential feature of impounding is not materially interfered with as indeed the number of days on which surpluses occur with impounding is not very much less than the number of days without it. As repeatedly stated, the hypothetical remarks of the Assessor can, in no manner, be taken to indicate any premature acceptance of the proportionate limit method.

Ma. 25, paragraphs 21 and 22.

26. Madras state that of the Mysore system and the proportionate system now compared, the proportionate system is the one considered in making the award and the only one which can fulfil the intention of that award. If this were so, there would be no necessity for any discussion now under the third term of reference.

Ma. 25, paragraph 23.

27. Under paragraph 24, Ma. 25, Madras have given a table showing how they are able to get a proportion of the flood on each day when impounding is done in Mysore, but they have omitted to note the most vital point whether such sharing of the floods is really necessary to conserve their prescriptive right. Such a necessity would only arise when the resulting flow at the Cauvery dam under the hypothetical discharges at Kannambadi assumed by Madras, would at all fall short of the 6½ feet limit even under the Mysore system of impounding. The table is revised so as to show this aspect and to readily exhibit that the hypothetical discharges at Kannambadi would give more than ample resulting flow at the Cauvery dam as per column 7 and the surpluses are shown in column 8—*vide* statement A attached. The corresponding surpluses by the proportionate system are shown in column 13. Here under the Mysore system the surplus varies from 525 million cubic feet to 4,600 million cubic feet over and above 1,950 million cubic feet limit. Under the proportionate system the surplus will vary from 645 to 5,595 million cubic feet. This alone would show that such large surpluses cannot be intended to supplement the award limit of 6½ feet and Madras must therefore have a different motive in laying claim to such a large quantity of floods in the face of the fact that it is not required to conserve their prescriptive rights Thus all the arguments brought forward by Madras in favour of the proportionate system and against the Mysore system on the plea of supplementary supply to the award to conserve the prescriptive rights are stultified by the natural conclusions that can be drawn from the very figures given by Madras.

The share in the flood waters cannot, in the face of these figures, be considered as an essential feature of the award for protecting the prescriptive right.

Conclusion.

28. It has already been stated in My. 22 that Mysore strongly object to the contention raised by Madras in Ma. 24 that the sharing of the surplus waters over and above the award of 6½-feet forms a part of the award.

Madras have, in Ma. 25, referred to several passages in the Assessor's examination of the evidence and Arbitrator's finding and have tried to show throughout their note that the sharing of the surplus waters forms an essential feature of the award, but Mysore have adduced sufficient and ample evidence from the same documents to disprove the soundness of the Madras contention.

29. It only remains to offer a few general remarks about the award and the mode of measurement to be selected. While Mysore have, in the presentation of their case on the second issue, contended that a limit of 6 feet in the height of the monsoon and lower limits in other months would meet all the legitimate requirements of Madras irrigation, an award of 6½ feet has been given. Having secured this already large award, there can be no room for Madras to claim any surplus floods in addition as an integral part of the award and contend that the mode of measurement must ensure the passing of such surplus floods. On the other hand, the problem should be what mode of measurement should be adopted so that all available floods over and above the prescriptive limit due to Madras may be impounded in Mysore as far as practicable.

30. The Arbitrator has surmised that Madras in claiming a limit gauge of 7 feet may have in view their new Metur project. The extra claim now put forward by Madras to the surplus waters gives room for a confirmation of this view. If the surplus waters so claimed by Madras are to be utilised for extending their irrigation by means of their reservoir, Mysore have to repeat their argument in My. 1, paragraph 26, here quoted for ready reference: "If Madras "constructs a reservoir in future, the restrictions now sought to be imposed should be relaxed "in favour of Mysore. Also should Madras extend irrigation in future, Mysore should not be "made to submit to any further restrictions arising from rights to be acquired in future on that "account without its previous consent."

31. It is therefore urged that the mode of measurement while allowing due conservance of the Madras prescriptive rights should be such as would not countenance the sharing of floods as an essential feature.

Special attention of the Arbitration Committee is invited to sections 7 and 8, My. 1, and also to paragraph 14 of the Summary of the Mysore case, My. 16, where it has been clearly stated that both the award and the mode of measurement to be settled by this Arbitration should be such as would not put unnecessary restrictions on Mysore in utilising all the surplus waters as far as practicable when the prescriptive rights of Madras are duly fulfilled.

32. In consideration of the large contribution of over two-thirds of the supply of the Cauvery river as it leaves the Mysore territory and in consideration also of the fact that Madras have more than 1,200,000 acres of irrigation under that river, it would not be too much for Mysore to claim that facilities should be given, on all fair and reasonable considerations, to have at least one-fourth of the total area of irrigation in the Cauvery Basin or $\left(\frac{\text{Madras } 1{,}225{,}000 + \text{Mysore } 111{,}000}{4}\right) = 334{,}000$ acres.

It is urged that, if unnecessary restrictions regarding the sharing of surplus waters is to be made one of the features of the mode of measurement, Mysore would be placed in a highly disadvantageous situation, while Madras would be free to have facilities for extending their irrigation out of the very surplus waters which they are now claiming.

It is only by storing the flood waters in large reservoirs similar to the one now proposed that Mysore can extend their irrigation so as to get a fair and proportionate benefit from the large contribution made through their territory.

It is therefore urged that no undue restrictions should be imposed against the construction of reservoirs in Mysore beyond what is necessary to protect the prescriptive rights on all fair and reasonable considerations according to the Agreement of 1892.

9th April 1914.

KARPUR SHRINIVASA RAO.

ENCLOSURE A.

Month and date.	Mysore system.											Proportionate system.				
	Approximations for quantity to be impounded.					Conditions at the Cauvery Dam.										
	Y = Flow at Kannambadi in m.o.ft.	Ny=Probable flow at the Cauvery dam. N = From June to September. N = From October to January.	N-Z = Probable excess over the limit at the Cauvery dam. Z = Limit in column 16.	$\frac{N \cdot Z}{o}$ = Value of column 2 (e) at Kannambadi dam, i.e., of column 2 (c).	Quantity to be impounded at Kannambadi dam column 2 (d) or 2 (a) whichever is less.	Flow at the Cauvery dam in m.o.ft. four days later.	Value of column 2 (e) at the Cauvery dam of column 2 (c).	Net flow at the Cauvery dam column 3 — column 4 + of surplus at Kannambadi, if any.	Compensation water column 3 if less than Z or Z—column 5. Z = Limit in column 16.	Resulting flow at the Cauvery dam column 5 + column 6 four days previous.	Surplus quantity above the limit at the Cauvery dam.	Percentage of column 8 on 1950.	Quantity lost by Mysore by the third system.	Equivalent of above at Cauvery dam.	Total flow at Cauvery dam by proportionate system.	Surplus above 1950.	Percentage on 1950.
1	2a	b	c	d	e	3	4	5	6	7	8	9	10	11	12	13	14
						1,950	..	1,950	..	1,950	..	..	..	..	1,950	..	..
1	1,219	1,950	..	..	..	3,200	1,250	1,950	..	1,950	..	..	832	645	2,595	645	33·1
2	2,000	3,200	1,250	1,613	1,613	3,782	1,832	1,950	..	1,950	..	..	1,219	945	2,895	945	48·4
3	2,364	3,782	..	..	2,364	4,800	2,325	2,475	..	2,475	525	26·9	1,219	945	3,420	1,470	75·3
4	3,000	4,800	..	..	3,000	6,400	3,100	3,300	..	3,300	1,350	69·2	1,219	945	4,245	2,295	117·7
5	4,000	6,400	..	..	4,000	8,000	3,875	4,125	..	4,125	2,175	111·5	1,219	945	5,070	3,120	160·0
6	5,000	8,000	..	..	5,000	9,600	4,650	4,950	..	4,950	3,000	153·8	1,219	945	5,895	3,945	202·3
7	6,000	9,600	..	..	6,000	11,200	5,425	5,775	..	5,775	3,825	196·1	1,219	945	6,720	4,770	244·6
8	7,000	11,200	..	..	7,000	12,800	6,200	6,600	..	6,600	4,650	238·4	1,219	945	7,545	5,595	286·9
9	8,000	12,800	..	.	8,000												

Exhibit My. 24.

Reply of Mysore to Madras Note Ma. 25 Working tables.

The factors proposed by Mysore, viz., 0·55 and 0·25 with compensation water and 0·625 and 0·30 without it, will be found to be fair on a further consideration with the understanding that the results are to be judged with reference to the effect on the four bad years, viz., 1899–1900, 1904-05, 1905–06 and 1908–09.

Reference Madras paragraph 26.

The proportion for the south-west monsoon for these four years varies from ·61 to ·43 and the average comes to 0·53 against 0·55 chosen. Similarly the proportion for the north-east monsoon varies from ·40 to ·17 and averages to about ·27 against ·25 chosen by Mysore. The higher proportions ·625 and 0·3 will be found to be acceptable as they are much higher than the average proportions and in consideration of such higher proportions Mysore claims that the compensation water computation may be waived.

If proportions for the seasons are not acceptable, shorter periods by months may be taken on the same principle of average flow for each month and the impounding limits too should be made dependent on such proportions for the respective months.

2. The abstracts (*a*), (*b*), (*c*), (*d*) and the percentage statements (*a*), (*b*), (*c*), (*d*) based upon these abstracts are worked out on a wrong principle against which Mysore have to record a protest. The quantities and percentages marked in table (*a*), *i.e.*, the deficit due to the impounding in Mysore on the total quantity of natural flow, convey no meaning so far as Madras prescriptive rights are concerned and therefore do not require any further notice.

Reference Madras paragraphs 26 to 31.

Coming to table (*a*) Mysore admit that the deficits there shown are due to the compensation water and this question will be dealt with separately.

As regards the tables (*b*) and (*c*) which show deficits of actual supplies on the totals up to a limit of 2,944 million cubic feet and 2,300 million cubic feet, respectively, it is not understood what Madras want to make out by showing these deficits. Certainly they cannot imply that in the face of the award of 6½ feet or 1,966 million cubic feet dealt with in abstract (*d*), they have got any claim for the flow up to the limit quantities 2,300 or 2,944 million cubic feet; therefore the inferences that they have drawn about the deficits in abstracts (*b*) and (*c*) do not require any notice as Mysore repudiate such assumptions and the consequent inferences.

3. The figures representing the total actual flow up to the limit of 2,300 and 2,944 million cubic feet, however, can be made use of in a different and more reasonable way. The difference between these figures and the total up to a limit flow of 1,966 million cubic feet would constitute really the useful surplus in the sense originally used by Mysore and further fully explained in paragraph 16 of their note My. 23, dated 5th April. This difference between the quantities under abstracts (*c*) and (*a*) or (*b*) and (*a*) would really represent the quantities placed at the disposal of Madras over and above what is due to them by the award and Mysore claim that this extra quantity constituting "the useful surplus" in their sense of the expression should be treated as a set off against the slight differences between the actual and the limit flow shown in abstract (*d*).

4. The percentages marked even in the abstract (*d*), with which alone we have now to deal for reasons explained above, are misleading without the actual quantities from which these percentages have been derived.

Fresh statements have been now prepared showing the compensation water, the useful surplus and the effect on Mysore impounding, etc., for the four years 1899–1900, 1904-05, 1905–06, 1908–09 as the Assessor has desired that he would concentrate his examination of the working tables to these years.

5. Accordingly, four statements have now been prepared by Mysore for each of the four years noted above and in each statement the more important features under the two methods of impounding with different factors have been shown as under :—

Number of tables.	Method.	South-west factors.	North-east factors.
IX	Mysore	·7	·45
X	Proportionate	·65	·425
XI	Mysore	·6	·4
XII	Proportionate	·6	·4
Mysore My. 21-H.	Mysore	·625	·3

6. Taking the year 1899 and comparing the tables XII and XI, the disadvantages of the proportionate system against Mysore as compared with the Mysore system for the same factors ·6 and ·4 can be readily seen—

(*a*) Quantity available for impounding by table XI is 34,086 million cubic feet [column (3)] against only 18,958 million cubic feet [column (3)] by the proportionate system. This means that Mysore only gets a little over half the quantity in the latter.

(*b*) But the quantity actually utilised is 34·34 per cent. [column (2) of the total flow by the Mysore system] against only 23·3 per cent. [column (2) of the total by the proportionate system]. This shows that Mysore get by the proportionate system only about two-thirds of the water they would receive by the Mysore system.

(*c*) The deficit in the quantity necessary for irrigation in table XI is 8,613 million cubic feet [column (6)] against 13,588 million cubic feet [column (6) in table XII] by the proportionate system. The deficit is nearly one and three-fourths times greater in the proportionate system than the corresponding quantity in the Mysore system with the same factors.

7. The effect on the Madras supplies under the two systems for the same year may be examined—

(i) The flow at the Cauvery dam goes beyond 1,966 feet on 30 days [column (3)] in the year without impounding, against the same number of days under both the systems of impounding [column (*g*)]. This alone proves convincingly that it should make no difference to Madras whether table XII or table XI is adopted, whereas the disadvantages to Mysore in the former case are very serious as noted above.

(ii) There is, however, a deficit of 475 million cubic feet [column (*c*)] below the limit flow in the proportionate method although this method has been recommended simply with the idea of avoiding this deficit. It is now seen that such deficit cannot be avoided.

(iii) The deficit of 549 million cubic feet column (*c*) by the Mysore method is more than made up by the large quantity of useful surplus of 9,218 million cubic feet column (*f*) if taken up to limit of 2,300 million cubic feet or of 21,357 million cubic feet column (*h*) if taken up to a limit of 2,944 million cubic feet. So the question of compensation water cannot count as a factor against the Mysore system.

8. Thus the comparison of the tables clearly shows that, while Madras interests are left quite in tact by the Mysore method, extra facilities are given to Mysore for impounding. On the other hand, the adoption of the proportionate method will deprive Mysore of a large quantity of legitimate storage and this cannot by any means prove acceptable to Mysore.

9. Mysore, however, have already consented to increase the factors to ·625 and ·3 provided all account of compensation water is to be obviated and so the effect of adopting this table on Madras may be examined.

(*a*) Here too the number of days when the resulting flow exceeds the limit remains the same, viz., 30 days column (*g*) without impounding.

(*b*) The quantity of deficit below the limit is only 910 million cubic feet column (*c*), but this is amply made up by the very large surplus flow of 9,319 million cubic feet column (*f*) if taken up to 2,300 million cubic feet limit and of 21,576 million cubic feet column (*h*) if taken up to a limit of 2,944 million cubic feet.

10. Thus, so far as the year 1899–1900 is concerned, Madras interests would be perfectly safeguarded by the Mysore method (·625 and ·3 factors) without compensation and there can be no reasonable objection against the Mysore proposal so far as this year is concerned.

11. Now taking the next bad year 1904–05 a comparison of tables XII and XI with the same factors will clearly show that the loss to Mysore regarding the quantity available for impounding is reduced from 102,170 million cubic feet column (3) to 71,144 million cubic feet column (3) and the quantity actually utilised from 13·1 column (2) to 12·9 per cent. column (2) of the total flow at Kannambadi.

The conditions at Cauvery dam so far as the number of days when the resulting flow is greater than the limit of 1,966 million cubic feet are concerned are more advantageous in the Mysore method than even in the proportionate system being 58 and 57 days column (*g*) respectively, against 58 days column (3) with the natural flow. The deficit below the limit is 1,713 million cubic feet column (*c*) by the proportionate method against only 935 column (*c*) by the Mysore method. Hence there can be no justification to choose the proportionate method on the plea of avoiding of such deficits. Even the small deficit is more than made up by the useful surplus under the Mysore system.

12. Now coming to the merits of the factors ·625 and ·3 recommended by Mysore without compensation water, the number of days when the resulting flow is over the limit of 1,966 million cubic feet is 56 column (*g*), against 58 column (3) without impounding, and this cannot be considered as a drawback on all fair and reasonable consideration. The quantity of deficit supply has happened in the second-half of September and the second-half of October, but in the first of these fortnights, it will be observed that the resulting quantities at the Cauvery dam, viz., 12,777 million cubic feet column (*a*) is nearly the same as 13,245 million cubic feet column (49) the quantity provided for in the Metur project.

A somewhat greater deficit however happens in the second-half of October, but the resulting flow in this period is far greater than the quantity provided for in the Metur project column (49). Hence there can be no objection to the Mysore method on the score of deficit below the prescriptive limit. Thus for the year 1904-05 also the tables show that the Mysore proposal can be accepted without any loss to Madras.

13. Taking the next year 1905–06 and comparing the two tables XII and XI, it is found that the quantity available for impounding by Mysore method, viz., 43,825 column (3) is nearly halved by the proportionate method, while the quantity actually impounded is reduced to about two-thirds, *i.e.*, from 21·26 per cent. column (2) to 14·04 per cent. column (2) of the total flow at Kannambadi. The consequence is that the shortage in the supply for irrigation below the normal is increased from 4,706 million cubic feet column (6) to as much as 10,023 million cubic feet column (6). This is an extremely unfavourable condition to Mysore because as much as $(\frac{10,023 - 4,706}{37,080} \times 100)$ 15 per cent. of the normal storage of the reservoir is denied to Mysore by the mere selection of the proportionate system. Examining the effects in the resulting flow at the Cauvery dam it is found that the deficit is 805 million cubic feet column (*c*) under the proportionate system against 1,262 million cubic feet column (*c*) in the Mysore system. This small difference cannot really count for much, as this is also made up by the abundant useful surplus as shown.

14. Coming to the table recommended by Mysore it will be seen that the deficit below the limit of 1,966 million cubic feet is only 3,103 million cubic feet column (*c*) and happens on six days and it will be seen that each of these deficits is abundantly made up by the useful surplus of 8,668 million cubic feet column (*f*) if taken up to a limit of 2,300 million cubic feet. It will also be observed that a deficit of each fortnight is more than made up by the abundant useful surplus occurring in the same fortnight.

Hence it has been shown so far as 1905–06 is concerned, all the Madras interests would be fully and properly served by accepting the Mysore recommendation.

15. Taking the year 1908 for tables XII and XI it is found that the disadvantages to Mysore are serious by adopting the proportionate limit method for the quantity available for impounding by the Mysore method is 114,648 million cubic feet column (3) which is reduced to only 78,857 million cubic feet column (3) by the proportionate method.

The effects on Madras supplies remain more or less the same by the two methods and therefore there is no reason why the proportionate method should be preferred particularly as this would mean so much additional restriction on impounding in Mysore.

16. The results of the system recommended by Mysore show only a deficit of 3,468 million cubic feet column (*c*) which is more than made up by the abundant useful surplus up to 29,368 million cubic feet as shown in column (*h*) factors ·625 and ·3.

17. Thus in all the four years under examination it has been clearly shown by actual facts and figures that the Mysore method with (·625 and ·3) factors and without compensation water would duly safeguard the Madras prescriptive rights and so the objections against the system made on the score of sharing of surplus waters must be held to be quite untenable.

18. It only remains to be stated that the adoption of the proportionate system with factors of ·65 and ·425 and of the Mysore system with factors ·7 and ·45 as recommended by Madras would be quite against Mysore interests on account of the undue restrictions against impounding. Such restrictions, must only result in a very large quantity of the resulting flow at the Upper Anicut being wasted into the sea or being utilised for storage in their proposed Metur reservoir both being quite against the interests of Mysore.

KARPUR SHRINIVASA RAO,
Mysore Representative.

9th April 1914.

Exhibit My. 24 (a).

1899-1900.

Period.	Natural flow up to 1,966 m.c.ft.	Number of days beyond 1,966 m.c.ft.	XII ·6 and ·4 Third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 6. on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	XI ·6 and ·4 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 15 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	My. 21 H. ·625 and ·3 Mysore system without compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 24 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	X ·65 and ·424 Proportionate system or third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity	Deficit up to 1,966 m.c.ft. Number of days	Percentage of column 33 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	IX ·17 and ·45 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days	Percentage of column 42 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	Supply as per Metur project.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
June .. First half ..	4,696	..	*a* 4,696	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,696	*b* 6	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,696	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,696	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,696	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	3,105	
Second half.	19,248	6	19,046	6	202	1	1·0	1,999	6	5,181	5	18,699	9	549	1	2·9	1,898	6	4,474	4	18,774	6	474	1	2·4	1,999	6	4,688	5	19,106	6	142	1	0·74	1,999	6	5,219	5	19,008	6	200	1	1·5	2,019	6	4,744	5	3,105	
July .. First half ..	26,612	13	26,612	9	..	..	..	4,337	13	10,932	12	26,612	1	..	..	..	4,337	13	10,932	12	26,612	9	..	..	..	4,337	13	10,932	12	26,612	9	..	..	..	4,337	13	11,141	12	26,612	9	..	..	..	4,337	13	10,586	12	25,410	
Second half.	16,330	2	16,330	1	..	..	..	365	2	532	1	16,330	2	..	..	..	365	2	532	1	16,330	..	..	..	..	365	2	555	1	16,330	..	..	..	..	365	2	555	1	16,330	..	..	..	..	365	2	555	1	26,000	
August .. First half ..	7,141	..	6,868	2	273	2	3·8	..	..	..	..	7,744	..	567	2	..	..	..	..	..	6,705	2	435	2	6·10	..	..	..	..	7,015	1	126	1	1·76	..	..	..	..	7,046	1	−95	..	..	7,046	..	7,046	..	23,700	
Second half.	10,588	..	10,588	..	..	..	..	..	..	..	..	11,155	..	— 567	2	..	..	..	..	..	10,588	..	..	..	..	..	..	..	..	10,588	..	..	..	..	..	..	..	..	10,683	..	+95	..	..	10,683	..	10,683	..	25,280	
September. First half ..	18,511	3	18,511	..	..	..	..	735	3	1,065	1	18,511	..	..	..	..	735	3	1,065	1	18,511	..	..	..	..	735	3	1,065	1	18,611	..	..	..	..	1,035	3	1,065	1	18,611	..	..	..	..	..	3	..	2	22,305	
Second half.	20,691	6	20,691	1	..	..	..	1,883	6	4,436	5	20,691	1	..	..	..	1,883	6	4,354	5	20,691	1	..	..	..	1,883	6	4,436	5	20,691	1	..	..	..	1,883	6	4,872	5	20,691	1	..	..	..	..	6	..	5	13,245	
October .. First half ..	7,340	..	7,340	..	..	..	..	..	..	..	..	7,340	..	..	..	..	..	..	..	..	7,340	..	..	..	..	..	..	..	..	7,340	..	..	..	..	..	..	..	..	7,340	..	..	..	..	..	..	..	..	9,930	
Second half.	10,315	..	10,315	..	..	..	..	..	..	..	..	10,315	..	..	..	..	..	..	..	..	10,315	..	..	..	..	..	..	..	..	10,315	..	..	..	..	..	..	..	..	10,315	..	..	..	..	..	..	..	..	8,256	
November. First half ..	5,830	..	5,830	..	..	..	..	..	..	..	..	5,830	..	..	..	..	..	..	..	..	5,830	..	..	..	..	..	..	..	..	5,830	..	..	..	..	..	..	..	..	5,830	..	..	..	..	..	..	..	..	7,500	
Second half.	1,504	..	1,504	..	..	..	..	..	..	..	..	1,504	..	..	..	..	..	..	..	..	1,504	..	..	..	..	..	..	..	..	1,504	..	..	..	..	..	..	..	..	1,504	..	..	..	..	..	..	..	..	4,830	
December. First half ..	938	..	938	..	..	..	..	..	..	..	..	938	..	..	..	..	..	..	..	..	938	..	..	..	..	..	..	..	..	938	..	..	..	..	..	..	..	..	938	..	..	..	..	..	..	..	..	1,110	
Second half.	482	..	482	..	..	..	..	..	..	..	..	482	..	..	..	..	..	..	..	..	482	..	..	..	..	..	..	..	..	482	..	..	..	..	..	..	..	..	482	..	..	..	..	..	..	..	..	1,392	
January .. First half ..	782	..	782	..	..	..	..	..	..	..	..	782	..	..	..	..	..	..	..	..	782	..	..	..	..	..	..	..	..	782	..	..	..	..	..	..	..	..	782	..	..	..	..	..	..	..	..	1,890	
Second half.	552	..	552	..	..	..	..	..	..	..	..	552	..	..	..	..	..	..	..	..	552	..	..	..	..	..	..	..	..	552	..	..	..	..	..	..	..	..	552	..	..	..	..	..	..	..	..	..	
Total ..	1,51,560	30	1,51,085	19	475	3	..	9,319	30	22,169	24	151,011	19	549	5	..	9,218	30	21,357	23	150,650	18	910	3	..	9,319	30	21,576	24	..	17	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	177,058	

	XII Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	XI Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	My. 21 H. Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	X Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	IX Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	23·3	23·3	18,958	32,282	H	13,588	..	41·9	34·34	34,086	45,418	F	8,613	4,480	40·2	34·0	32,729	39,167	G & F	10,110	3,659	21·08	21·08	17,166	24,707	H	15,886	..	33·87	33·28	27,558	41,620	H	11,125	..

Exhibit My. 24 (*b*).

1904–1905.

Period.	Natural flow up to 1,966 m.c.ft.	Number of days beyond 1,966 m.c.ft.	XII ·6 and ·4 Third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 6 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	XI ·6 and 4 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 16 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	My. 21 H. ·625 and ·3 Mysore system without compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 24 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	X ·65 and ·425 Proportionate system or third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 33 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	IX ·17 and ·45 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 42 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	Supply as per Metur Project.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
June .. First half ..	15,178	..	*a* 15,178	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 15,178	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	15,178	..	..	..	..	..	..	..	..	*a* 15,178	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	15,178	..	..	..	..	..	..	..	..	3,105
Second half.	28,274	12	28,274	..	..	..	..	3,975	12	10,967	11	28,274	..	..	..	..	3,975	12	10,967	11	28,274	7	..	..	..	3,975	12	10,967	11	28,274	7	..	..	..	3,975	12	10,967	11	28,274	4	..	..	..	..	..	..	..	3,105
July .. First half ..	29,490	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	13,977	15	29,490	15	..	..	..	..	..	..	..	2,940
Second half.	31,349	15	31,349	4	..	..	..	4,855	15	10,730	14	31,349	4	..	..	..	4,855	15	10,730	14	31,349	4	..	..	..	4,855	15	10,792	14	31,349	4	..	..	..	4,855	15	10,913	14	31,349	2	..	..	..	..	..	..	..	4,855
August .. First half ..	26,491	10	26,491	8	..	..	..	3,042	10	8,724	9	26,491	8	..	..	..	3,042	10	8,761	9	26,491	8	..	..	..	3,042	10	8,838	9	26,491	8	..	..	..	3,042	10	8,838	9	26,491	7	..	..	..	..	..	..	..	3,042
Second half.	21,212	5	21,212	5	..	..	..	1,093	5	2,008	2	21,212	5	..	..	..	1,025	4	2,042	2	21,184	4	28	1	·13	1,040	4	2,056	2	21,212	4	..	..	..	..	..	1,259	5	2,251	2	21,212	3	..	..	..	..	..	..	..	1,305
September. First half ..	5,940	..	5,940	..	..	..	..	..	..	..	..	5,940	..	..	..	..	..	..	..	..	5,940	..	..	..	..	..	..	..	..	5,940	..	..	..	..	..	..	..	..	5,940	..	..	..	..	..	..	..	..	22,305
Second half.	14,637	1	13,619	3	988	3	6·8	..	..	..	..	14,504	3	..	133	1	·92	133	1	133	..	2,777	3	1,860	3	12·71	..	..	..	13,880	3	757	3	5·18	104	..	104	..	14,637	3	..	..	..	..	..	..	..	13,245
October .. First half ..	6,674	..	6,674	..	..	..	..	..	..	..	..	6,674	..	..	..	..	..	..	..	..	6,674	..	..	..	..	..	..	..	..	6,674	..	..	..	..	..	..	..	..	6,674	..	..	..	..	..	..	..	..	9,930
Second half.	14,102	..	13,377	2	725	2	5·1	..	..	..	..	13,300	3	802	1	6·03	344	1	802	..	11,539	3	2,563	3	13·17	..	..	..	..	13,463	2	649	2	4·6	..	..	..	..	13,020	2	846	1	7·6	..	..	..	..	8,256
November. First half ..	5,002	..	5,002	..	..	..	..	..	..	..	..	5,002	..	..	..	..	..	..	..	..	5,002	..	..	..	..	..	..	..	..	5,002	..	..	..	..	..	..	..	..	5,002	..	..	..	..	..	..	..	..	7,600
Second half.	1,424	..	1,424	..	..	..	..	..	..	..	..	1,421	..	..	..	..	..	..	..	..	1,424	..	..	..	..	..	..	..	..	1,424	..	..	..	..	..	..	..	..	1,424	..	..	..	..	..	..	..	..	4,830
December First half ..	342	..	342	..	..	..	..	..	..	..	..	342	..	..	..	..	..	..	..	..	342	..	..	..	..	..	..	..	..	322	..	..	..	..	..	..	..	..	322	..	..	..	..	..	..	..	..	1,110
Second half.	282	..	282	..	..	..	..	..	..	..	..	282	..	..	..	..	..	..	..	..	282	..	..	..	..	..	..	..	..	282	..	..	..	..	..	..	..	..	282	..	..	..	..	..	..	..	..	1,392
January .. First half ..	240	..	240	..	..	..	..	..	..	..	..	240	..	..	..	..	..	..	..	..	240	..	..	..	..	..	..	..	..	240	..	..	..	..	..	..	..	..	240	..	..	..	..	..	..	..	..	1,890
Second half.	292	..	292	..	..	..	..	..	..	..	..	292	..	..	..	..	..	..	..	..	292	..	..	..	..	..	..	..	..	292	..	..	..	..	..	..	..	..	292	..	..	..	..	..	..	..	..	..
Total ..	200,929	58	199,216	44	1,713	5	..	17,976	57	47,078	51	199,994	45	935	2	..	18,384	58	48,068	51	196,478	44	4,451	7	..	17,522	56	47,006	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	177,068

	XII Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	XI Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	My. 21 H. Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	X Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	IX Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	39·31	12·9	71,144	42,244	E	5,442	42,792	56·4	13·10	102,175	42,058	E	7,474	73,171	53·7	12·9	97,265	41,926	E	7,242	64,145	34·11	11·99	61,748	40,134	E	7,242	40,043	48·29	11·61	87,395	39,675	F	8,509	63,165

Exhibit My. 24 (*c*).

1905–1906.

Period.	Natural flow up to 1,966 m.c.ft.	Number of days beyond 1,966 m.c.ft.	XII ·6 and ·4 Third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 6 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	XI ·6 and 4. Mysore system with compen	Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 15 on column 2.	Useful s up to m.c	Useful surplus up to 2,300 m.c ft. Number of days beyond 1,966 m.c ft.	Useful surplus up to 2,944 m.c ft. Quantity.	Useful surplus up to 2,944 m.c ft. Number of days beyond 2,300 m.c ft.	My. 21 H. ·625 and ·3 Mysore system without compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 24 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	X ·65 and ·425 Proportionate system or third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 33 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	IX ·7 and ·45 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 47 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	Supply as per Metur Project.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
June .. First half ..	4,336	..	*a* 4,336	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,336	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 4,336	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	4,336	..	..	..	..	..	..	..	..	4,336	..	..	..	..	..	..	..	..	3,105
Second half.	8,246	..	8,246	..	..	..	..	..	..	..	..	8,246	..	..	..	..	..	..	..	..	8,246	..	..	..	..	..	..	..	..	8,246	..	..	..	..	..	..	..	..	8,246	..	..	..	..	..	..	..	..	3,105
July .. First half ..	24,853	9	24,639	3	214	1	·9	2,381	8	6,135	6	23,134	3	1,719 + 1	2	..	2,043	7	5,153	5	24,716	3	1,125	1	4·52	2,058	7	5,197	6	24,716	3	137	1	·56	2,392	8	6,212	7	24,441	..	412	2	1·6	2,058	..	2,858	..	25,410
Second half.	22,608	9	22,260	8	348	1	1·5	2,672	9	7,476	9	23,095	8	1,719	2	..	2,100	7	4,463	5	22,337	8	1,261	1	5·58	2,434	7	5,581	6	22,337	8	271	1	1·20	2,672	9	7,824	9	21,759	..	849	1	3·7	2,434	..	6,130	..	26,000
August .. First half ..	20,598	6	20,437	6	161	2	·8	1,500	5	1,825	3	20,598	6	1,262	1	6·1	604	3	1,248	1	20,277	6	321	1	1·56	558	5	558	..	20,568	6	41	1	·29	1,603	6	2,163	3	20,598	..	..	..	..	..	..	..	..	23,700
Second half.	14,609	2	14,449	1	60	1	·4	..	..	..	..	14,390	1	1,262	..	..	..	..	..	..	14,449	1	60	1	·41	..	..	..	..	14,509	..	..	..	..	..	..	..	..	14,509	..	..	..	..	..	..	..	..	25,280
September. First half .	21,031	5	21,009	2	22	1	·1	407	2	427	1	21,111	2	119	..	..	360	2	380	1	21,031	1	..	..	..	418	2	438	1	21,031	..	..	..	..	457	2	477	1	21,031	..	..	..	..	457	..	477	..	22,305
Second half.	10,600	7	10,600	..	..	..	..	..	..	..	..	10,639	..	39	..	..	..	..	..	..	10,600	..	..	..	..	..	..	..	..	10,600	..	..	..	..	..	..	..	..	10,600	..	..	..	..	..	..	..	..	13,245
October .. First half ..	14,823	..	14,823	..	..	..	..	1,440	5	2,774	3	14,823	..	119	..	..	1,440	5	2,774	3	14,823	..	..	..	..	1,440	5	2,774	3	14,823	..	..	..	..	1,440	5	2,774	3	14,823	..	..	..	..	1,440	..	2,774	..	2,930
Second half.	19,656	5	19,656	5	..	..	..	2,307	7	5,267	6	19,656	5	..	..	..	1,985	7	3,698	4	19,320	7	336	2	1·71	1,760	6	3,426	3	19,656	4	..	..	..	2,338	7	5,379	7	19,656	..	..	..	..	2,311	..	1,396	..	8,256
November. First half	4,338	..	4,338	..	..	..	..	..	..	..	..	4,338	..	..	..	..	..	..	..	..	4,338	..	..	..	..	..	..	..	..	4,338	..	..	..	..	..	..	..	..	4,338	..	..	..	..	..	..	..	..	7,600
Second half.	5,142	..	5,142	..	..	..	..	..	..	..	..	5,142	..	..	..	..	..	..	..	..	5,142	..	..	..	..	..	..	..	..	5,142	..	..	..	..	..	..	..	..	5,142	..	..	..	..	..	..	..	..	4,830
December. First half ..	4,376	..	4,376	..	..	..	..	..	..	..	..	4,376	..	..	..	..	..	..	..	..	4,376	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,110
Second half.	1,974	..	1,974	..	..	..	..	..	..	..	..	1,974	..	..	..	..	..	..	..	..	1,974	..	..	..	..	..	..	..	..	1,974	..	..	..	..	..	..	..	..	1,974	..	..	..	..	..	..	..	..	1,392
January .. First half .	230	..	230	..	..	..	..	..	..	..	..	230	..	..	..	..	..	..	..	..	230	..	..	..	..	..	..	..	..	230	..	..	..	..	..	..	..	..	230	..	..	..	..	..	..	..	..	1,890
Second half.	1,376	..	1,376	..	..	..	..	..	..	..	..	1,376	..	..	..	..	..	..	..	..	1,376	..	..	..	..	..	..	..	..	1,376	..	..	..	..	..	..	..	..	1,376	..	..	..	..	..	..	..	..	..
Total ..	178,696	38	177,891	25	805	6	..	10,707	36	23,904	28	177,434	26	1,262	5	..	8,532	31	17,716	19	175,593	26	3,103	6	..	8,668	32	17,974	18	..	21	449	3	..	..	37	..	30	..	..	..	..	..	..	..	..	..	..	177,058

	XII Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	XI. Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	My. 21 H. Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation pow r.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	X Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	IX Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	14·04	14·04	25,832	36,562	H	10,023	..	23·8	21·26	43·825	44·718	C	4,706	..	23·2	23·2	42,776	45,212	C	4,193	..	12·90	12·90	23,737	34,728	H	11,680	..	18·60	19·77	36·365	39,680	E	9,402	..

1908-1909.

Period.	Natural flow up to 1,966 m.c.ft.	Number of days beyond 1,966 m.c.ft.	XII ·6 and ·4 Third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 6 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,244 m.c.ft. Quantity.	Useful surplus up to 2,244 m.c.ft. Number of days beyond 2,300 m.c.ft.	XI ·6 and ·4 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 15 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	My. 21 H. ·625 and ·3 Mysore system without compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 24 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	X ·65 and ·425 Proportionate system or third system. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 33 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	IX ·7 and ·45 Mysore system with compensation. Actual flow up to 1,966 m.c.ft.	Number of days of impounding.	Deficit up to 1,966 m.c.ft. Quantity.	Deficit up to 1,966 m.c.ft. Number of days.	Percentage of column 42 on column 2.	Useful surplus up to 2,300 m.c.ft. Quantity.	Useful surplus up to 2,300 m.c.ft. Number of days beyond 1,966 m.c.ft.	Useful surplus up to 2,944 m.c.ft. Quantity.	Useful surplus up to 2,944 m.c.ft. Number of days beyond 2,300 m.c.ft.	Supply as per Meter Project.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
June .. First half ..	2,382	..	*a* 2,382	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 2,382	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 2,382	*b* ..	*c* ..	*d* ..	..	*f* ..	*g* ..	*h* ..	*k* ..	*a* 2,382	*b* ..	*c* ..	*d* ..	*e* ..	*f* ..	*g* ..	*h* ..	*k* ..	2,382	..	..	..	..	..	..	..	3,105	
Second half.	5,270	..	5,270	..	..	..	..	..	..	..	..	5,270	..	..	..	..	..	..	..	..	5,270	..	..	..	..	..	..	..	..	5,270	..	..	..	..	..	..	..	..	5,270	..	..	..	..	..	..	..	3,105	
July .. First half ..	20,967	7	20,574	9	393	2	1·88	1,644	6	2,963	3	20,676	9	291	2	1·3	1,000	5	1,505	1	18,915	7	2,052	3	9·79	832	4	1,337	1	20,692	7	275	1	1·31	1,803	5	3,268	..	20,110	7	{−135 −422 −183	} 1	2·07	1,560	5	2,313	3	25,110	
Second half.	30,204	14	29,608	16	596	4	1·97	3,829	11	10,557	10	28,601	16	1,603	4	5·3	4,008	12	11,219	12	28,892	16	1,312	4	4·34	37,76	12	10,549	11	29,915	15	289	3	·96	3,966	11	10,811	..	30,443	12	432 −183	} 2	·60	4,138	13	11,167	·12	26,000	
August .. First half ..	29,490	15	28,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	29,490	15	..	..	..	5,010	15	14,670	15	23,700	
Second half.	26,404	5	26,104	3	40	1	·15	996	5	1,698	2	26,444	3	..	..	..	996	5	1,502	2	26,426	3	18	1	·07	996	5	1,540	2	26,444	2	..	..	..	999	12	1,716	..	26,444	1	..	..	..	996	5	1,748	2	25,280	
September. First half ..	17,757	..	17,757	..	..	..	..	..	..	..	..	17,757	..	..	..	..	..	..	..	..	17,757	..	..	..	..	..	..	..	..	17,757	..	..	..	..	..	..	..	..	17,757	..	..	..	..	..	..	..	22,305	
Second half.	5,964	..	5,964	..	..	..	..	..	..	..	..	5,964	..	..	..	..	..	..	..	..	5,964	..	..	..	..	..	..	..	..	5,964	..	..	..	..	..	..	..	..	5,964	..	..	..	..	..	..	..	13,215	
October .. First half ..	6,374	..	6,374	..	..	..	..	..	..	..	..	6,374	..	..	..	..	..	..	..	..	6,374	..	..	..	..	..	..	..	..	6,374	..	..	..	..	..	..	..	..	6,374	..	..	..	..	..	..	..	9,930	
Second half.	14,252	3	14,252	..	..	..	..	652	3	1,296	1	14,252	2	..	..	..	652	3	1,296	1	14,252	2	..	..	..	509	3	1,153	1	14,252	3	..	..	..	652	1	1,296	..	14,252	..	..	..	..	652	3	1,296	1	8,256	
November. First half ..	12,233	..	12,233	..	..	..	..	149	1	149	..	12,233	..	..	..	..	149	1	149	..	12,150	2	83	1	·68	119	1	119	..	12,233	1	..	..	..	149	..	149	..	12,233	..	..	..	..	149	1	149	..	7,500	
Second half.	2,546	..	2,546	..	..	..	..	..	..	..	..	2,546	..	..	..	..	..	..	..	..	2,546	..	..	..	..	2,546	..	..	..	2,546	..	..	..	..	..	..	..	..	2,546	..	..	..	..	..	..	..	4,830	
December. First half ..	1,334	..	1,334	..	..	..	..	..	..	..	..	1,334	..	..	..	..	..	..	..	..	1,334	..	..	..	..	1,334	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,110	
Second half.	1,696	..	1,696	..	..	..	..	..	..	..	..	1,696	..	..	..	..	..	..	..	..	1,696	..	..	..	..	1,696	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,392	
January .. First half ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Second half.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Total ..	176,913	44	175,884	43	1,029	8	..	12,280	41	31,333	31	175,019	43	1,894	6	..	11,815	41	30,541	31	173,448	45	3,465	9	..	16,818	40	29,368	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	175,168	

	XII							XI					My. 21 H.							X							IX						
	Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	Percentage of quantity available for impounding to total flow at Kannambadi	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.	Percentage of quantity available for impounding to total flow at Kannambadi.	Percentage of quantity impounded to total flow at Kannambadi.	Quantity available for impounding.	Total draw-off including evaporation power.	Case applied.	Shortage in irrigation supply.	Surplus at Kannambadi after satisfying Madras conditions.
1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	46·65	2·22	78,857	30,855	I	3,530	41,280	67·8	22·77	114,648	31,292	E	3,456	70,967	66·9	22·8	113,180	30,577	E	3,542	70,370	44·2	22·45	74,794	30,738	D	3,530	36,839	62·8	22·55	106,128	31,109	E	3,530	66,018

Exhibit My. 25.

In explanation of the draw-off figures given in My. 19-A, it may be stated that the figures represent the average for the whole season in each case.

The total area to be irrigated is about 125,000 acres as given in the project (*vide* paragraph 35, page 7), of which about 40,000 has been assumed as under perennial irrigation (*vide* page 28, paragraph XX).

For the monsoon crop area of 85,000 acres a draw-off of 103 millions cubic feet, generally gives an average duty of 76 against 71 as per data assumed by Madras (*vide* statement attached).

If the irrigation period is taken from 15th June to 15th December only as would be the case in actual practice, the duty will be $\left[\frac{86,000}{1,192}\right] = 71$, same as the Madras figures. The provision is made only as a precaution against late sowing in exceptional parts of the irrigated area.

For the perennial area of 40,000 acres, the average draw-off assumed is 44 millions cubic foot, which gives an average duty of about 78 for the whole season. Considering that the monsoon duty even according to the Madras data is about 71, the average duty of 78 for perennial crops is by no means high.

22*nd April* 1914.

KARPUR SRINIVASA RAO,
Mysore Representative.

ENCLOSURE.

COMPARATIVE statement showing the average duty for monsoon crops.

Period.	As proposed by Madras. Mois on crop. Duty.	Acres.	Cusecs.	As per Mysore scale A. Cusecs.
June, 2nd half .. 1st half	63	85,000	1,417	1,192
July .. 1st ,,	60	85,000	1,417	1,192
.. 2nd ,,	60	85,000	1,417	1,192
August .. 1st ,,	60	85,000	1,417	1,192
.. 2nd ,,	70	85,000	1,214	1,192
September .. 1st ,,	70	85,000	1,214	1,192
.. 2nd ,,	75	85,000	1,133	1,192
October .. 1st ,,	75	85,000	1,133	1,192
.. 2nd ,,	75	85,000	1,133	1,192
November .. 1st ,,	75	85,000	1,133	1,192
.. 2nd ,,	75	85,000	1,133	1,192
December .. 1st ,,	100	85,000	850	799
.. 2nd ,,	120	85,000	708	602
January, 1st half ..	..	..	..	..
Total ..	..	..	16,736	16,706
Average ..	..	..	1,195	1,122

HEMARKS.—I Average duty as per Madras data $\frac{86,000}{1,195} = 71$.

II Average by Mysore scale $\frac{86,000}{1,122} = 76$.

Exhibit My. 26.

That the Mysore system alone would give due facilities for impounding in Mysore according to the agreement of 1892 and that any other system would not be advantageous to Mysore has been stated over and over again in the Mysore case.

2. The disadvantages of the proportionate system and the unwillingness of Mysore to accept the same have been brought to notice on every occasion when this was discussed and pointedly with reference to working tables in My. 21, as summarised in paragraph 23 thereof. In paragraph 24 of the same exhibit, two alternatives both based on Mysore system were suggested for adoption, the first with lower proportions combined with computation of compensation water, and the second with higher proportions without such computation. In paragraph 16, My. 21, it has been clearly shown that the second of these alternatives is less advantageous to Mysore than the first and therefore it was placed second in the order of the alternatives.

3. Madras in their Ma. 24 depending upon certain passages of the Assessor's examination and the award by the Arbitrator urged that the award on the second issue was based on the proportionate system of measurement. It was not then clear whether this contention of Madras would be accepted by the Arbitration Committee. In the event of such acceptance it became necessary for Mysore to consider under what special conditions as a last resort even the generally disadvantageous proportionate system could be at all be made acceptable. Therefore the merits of the fourth system, namely, the measurement at the four places on the proportionate method were discussed in My. 22 as a third alternative to the two proposed in My. 21.

4. But it was distinctly mentioned in paragraph 36 (*c*), My. 22, that even this method was not altogether free from the disadvantages of the third system. On account of such disadvantages, it was placed last in the order of the alternatives shown in the concluding paragraph 37, My. 22. Of the three alternatives mentioned there, the first two were deliberately repeated in the same order in which they were given in My. 21, paragraph 24, for reasons noted in paragraph 2 above, and the third being based on the proportionate system altogether unacceptable to Mysore, was considered less advantageous than even the second and therefore was placed as the last alternative for acceptance in the event of the first or the second being rejected by the Arbitration Committee. The remarks made in paragraphs 16, 17 and 19 of My. 22 can only be taken in this light and not as placing all the three alternatives on the same level as interpreted by Madras.

5. The reference to alternative system, made by Mysore in their telegram, dated the 18th instant had in view an option, similar to what was given to Madras in the award on the second issue, after a full consideration of the case by the Arbitration Committee. This cannot be construed as having any special reference to the three alternatives mentioned in paragraph 37, My. 22, for the simple reason that it was open for the Arbitration Committee to accept any of the methods proposed by Madras or Mysore or reject all of them and suggest any method which they considered most suitable. Even supposing for argument that the option referred to the alternatives mentioned by Mysore the very fact that an option was specially asked for, so that the most advantageous method may be chosen by them, unmistakably indicates that the several alternatives were not considered by Mysore as having the same value, the last alternative being the least advantageous to them as explained.

KARPUR SHRINIVASA RAO,
Mysore Representative.

23rd April 1914.

Exhibit My. 27.

STATEMENT of daily draw-off for monsoon and perennial irrigation to be applied for the working tables.

Case.	A		B		C		D		E		F		G		H		Remarks.
Month.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	Monsoon.	Perennial.	
October	103	54	103	54	103	54	103	54	103	54	103	54	103	54	51·5	54	Storage at the end of October. Storage at the end of September.
November	103	54	69	54	61·5	54	51·5	36	51·5	36	51·5	36	51·5	36	51·5	27	Class.
December	69	54	46	54	34	54	34	27	34	27	34	27	34	27	23	27	A 23,500 ..
January { 1st half	51·5	54	26	54	26	54	26	27	26	27	26	27	26	27	..	27	B 31,500 ..
2nd half	..	54	..	54	..	54	..	27	..	27	..	27	..	27	..	27	C 29,500 ..
February	..	54	..	54	..	54	..	45	..	22·5	..	18	..	13·5	..	13·5	D 27,500 ..
March	..	54	..	54	..	54	..	45	..	22·5	..	18	..	13·5	..	13·5	E 26,500 ..
April	..	54	..	54	..	54	..	45	..	22·5	..	18	..	13·5	..	13·5	F 23,500 ..
May	..	54	..	54	..	54	..	45	..	22·5	..	18	..	13·5	..	13·5	G .. at about 26,500 or less
June, 1st half ..	..	54	..	54	..	54	..	45	..	22·5	..	18	..	13·5	..	13·5	H .. at about 24,500 or less.

KARPUR SHRINIVASA RAO,
Mysore Representative.

23rd April 1914.

Exhibit My. 28.

Mysore Reply to the Madras Exhibits Ma. 28 *and Ma.* 29.

Madras have put in two statements (Ma. 28 and Ma. 29) as a preliminary to the consideration of the fourth term of reference and they have based their remarks mainly on general considerations and certain unwarranted assumptions. Their arguments may be considered under the following heads :—

(i) The wording and intention of the fourth term of reference.
(ii) Scope of the Agreement of 1892.
(iii) Precautions for protecting Madras rights.
(iv) Certain assumptions of Madras regarding regulating staff.
(v) Sir John Benton's views.

(i) *The wording and intention of the fourth term of reference.*

2. The fourth issue runs as follows :—" Will the construction and the working of the Kannambadi dam necessarily prevent the passing on to Madras of the quantity of water due to Madras ?"

The correct answer to this issue is indicated by Madras in Ma. 28 in these words :—" If the above issue is to be literally construed the answer must be in the negative, because the mere existence of the dam would not necessarily prevent the passing on to Madras of the quantity of water due to that Presidency, provided that the dam is worked in accordance with the decisions of the Arbitration on the issues 2 and 3." This is a significant admission by Madras and forms in itself a sufficient reply to both Ma. 28 and Ma. 29. There is no reason why the reservoir should not be worked strictly in accorance with the rules which may be framed and accepted by both parties.

3. In regard to a certain written statement read by the Madras Representative prior to the framing of the issue and referred to in paragraph 2, Ma. 29, the Arbitrator has recorded his opinion thus :—" As to the suggested terms of reference, item 4, it is understood that the term of reference set out above will include a full examination of the project from its Engineering aspects including controlling agency and other matters relevant to the working of the project." It has to be noted that the first portion of the statement read out, which refers to " a full examination of the water-supplies, draw-off and details, etc.," has not been included in the proceedings.

4. The saving clause " it is understood ", which governs the whole of the opinion of the Arbitrator, clearly indicates that, on account of the insufficient information then available, it was not possible for the Arbitration Committee to decide whether the contention of Madras regarding the examination of the project should be conceded or not. It was therefore natural that the contentious matter in the Madras statement was not included in the wording of the fourth term ; the only relevant question raised in it being whether the dam would " necessarily prevent " the passing on to Madras of the quantity of water due to Madras."

5. The examination of the materials supplied by the both parties in the course of the Arbitration proceedings afforded ample indication that the claim of Madras for a scrutiny of the project was untenable. It was perhaps for this reason that the Assessor gave expression to the following view referred to by Madras in paragraph 4, Ma. 28 :—

" Whether the reservoir can be safely worked or whether the prospects of the success of " the project are reasonably assured are matters beyond the realm of Madras objections as long " as their prescriptive rights are preserved unimpaired."

(ii) *Scope of the Agreement of* 1892.

6. Madras contend that " the implied intention of the Agreement of 1892 is that Madras " are justified in refusing their assent to any reservoir which cannot be shown to have well assured " prospects of success." Such a claim is not warranted by the Agreement. There is no mention of any such intention in the protracted discussions that led to the Agreement—*vide* Ma. 11, Appendix A. All that Madras can claim strictly in terms of the Agreement is that the reservoir should not interfere with their prescriptive rights.

7. This is not the first time after the Agreement of 1892 that a large reservoir has been proposed and constructed by Mysore. All that Madras insisted upon when the large Marikanave reservoir was constructed, was the condition that the level of water required for their irrigation at a certain anicut should not be interferred with. Beyond this they did not put forth any such claim, as they are now doing, for an examination of the feasibility of the project or other Engineering details. A reference to the correspondence on this subject (My. 11) will make the matter clear. The Madras Government did not trouble themselves on that occasion to enquire

whether the project would succeed or not. It should be noted that, if there was any scope for such an examination of the project under the Agreement, Madras would not have missed the first opportunity to exercise that right in connection with such a large project coming immediately after the Agreement of 1892.

8. It may be true that the interests of Madras involved in the present case are greater. But the principle remains the same. Once a decision is reached regarding the extent of prescriptive right and the mode of exercising it, there can be no legitimate reason for Madras to assume, as they have done, that Mysore, will fail to give full effect to the final decision or will not be able to prevent the infringement of the Madras rights by the subordinate staff.

(iii) *Precautions for protecting Madras rights.*

9. All that is necessary to ensure the passing on to Madras of the quantityof water due to them, is careful measurement of the inflow into the reservoir at three selected places above it and the outflow from it at the place just below it. As long as the measurements upon these four places are carefully taken and watched from day to day, all the information necessary to protect the prescriptive rights of the Madras unimpaired will be readily available. Also, automatic gauge recorders kept under responsible control can be easily fixed at the four places noted above and this will be an effective check on the sluice discharges. Thus the question of tampering with the sluices " at night " in any manner contrary to prescribed rules will not arise at all. The engineering aspects, etc., referred to in the Arbitration proceedings of 7th August 1913, can only have reference to these measures. This perhaps justifies the view referred to in paragraph 5 above.

10. In connection with the more or less uncontrolled natural river system serving the Cauvery delta, it may not be possible to realise the extent of refinement that can be secured in respect of the adjustment of demand and supply possible under a large reservoir. A study of the system of the management of large reservoirs in Bombay, will show that not infrequently, the supply falls short of the demand and that, on such occasions, the area of irrigation is reduced and the distribution of water correspondingly adjusted and kept under perfect control. Mysore propose to adopt an equally efficient system in the case of their reservoir. There can be no reasonable ground for apprehending any interference with the supplies to be passed on to Madras.

(iv) *Assumptions of Madras regarding regulating staff.*

11. But the greater part of the argument in Ma. 28 and Ma. 29 is based on certain assumptions about " temptations to tamper with the regulation " and " occasional altering for a " few hours at nights the regulations of sluices " by subordinates and such other remarks.

It is incredible that Mysore, after having spent such a large amount on an important reservoir commanding such an extensive area, would leave its management to the tender mercies of irresponsible subordinates, particularly when Mysore have to respect their obligations to Madras.

12. Madras do not confine their remarks against the Mysore subordinate staff alone but also state that the controlling officers too may not be " very vigilant " in managing their subordinate staff.

Madras also state that " even if the examination of working conditions showed that the Mysore project could be worked successfully within the limits of draw-off proposed, Madras would be still subjected to some risks on account of the very natural sympathies of the local staff with the local ryots, etc."

Madras have even suggested that the Mysore Darbar were not properly advised as regards the prospects of the project.

These statements are altogether unwarranted and it is regretted that they should find a place in an officicial document.

13. Madras no doubt guard themselves by stating that they would maintain a like opposition if a similar project had been put forward by the Bombay or the Bengal Government. But the Government of India would never have allowed Madras to go to such extremes if such a dispute had arisen with Bombay or Bengal. The Supreme Government would have taken the whole question into their own hands and effectively prevented all unnecessary interference on the part of Madras.

(v) *Sir John Benton's views.*

14. Madras lay great store by certain remarks of Sir John Benton about the capacity of the Mysose reservoir. That officer examined the details of the reservoir on the basis of the Mysore requirements on the one hand and of the Madras prescriptive rights on the other. Under both these heads he had not sufficient data at his disposal at that time to arrive at a proper conclusion.

15. As regards the Mysore requirements, the total area dependent on the reservoir proper was taken as 150,000 acres and, on this basis, it was recommended by Sir John Benton that the capacity of the reservoir should be increased by 13,000 millions cubic feet for irrigation purposes. But if due deduction is made for 25,000 acres proposed under tail tanks fed by leakage and surplus water when available, the shortage in the reservoir, even according to his standard, would have been much smaller than the figure actually given by him.

Also, as regards the Madras prescriptive rights, Sir John Benton naturally took the word of Madras as his basis and formed rather exaggerated estimates about requirements of Madras irrigation. But the actual prescriptive requirements of Madras, as now arrived at, are much less than what were roughly estimated by Sir John Benton on insufficient data.

Further, the mode of measurement under consideration when Sir John Benton examined the project was the one proposed by Madras which imposed a very heavy burden on Mysore.

If all the data now available had been at his disposal, Sir John Benton would doubtless have arrived at very different conclusions.

16. In this connection Madras have also referred to the suggestion of the Government of India to increase the size of reservoir; but this was on the basis of figures arrived at by Sir John Benton, which, as stated above, require considerable modification. So long as the prescriptive rights of Madras are properly safeguarded and the regulation of the supply is in undeviating accordance with the accepted rules, the size of the reservoir or other details of the project can be of no consequence to Madras.

It may be stated here that the section of the dam as now calculated admits of its being raised by about 6 feet. Even if the dam is raised by 4 feet, an additional storage of about 5,000 million cubic feet will be secured. It should be open to Mysore to increase the size of the reservoir to this extent if they find it necessary to do so at any future time.

17. In conclusion, Mysore desire to state that they are resolved to perfect their gauging and regulating operations so that the supply due to Madras may be correctly passed on from day to day and the obligations of Mysore scrupulously fulfilled.

KARPUR SHRINIVASA RAO,
Mysore Representative.

26*th April* 1914.

Exhibit My. 29.

The award on the second issue specifies that a limit of 6·5 feet on the Cauvery dam will fully safeguard the Madras prescriptive rights in the irrigation season. This season is defined as the period from 1st June to 31st January, the rest of the year from 1st February to 31st May, being considered the hot weather. All these dates have reference to the Cauvery dam only according to the award.

2. Throughout the discussions and for the purpose of trial working tables, it was agreed that the Cauvery dam dates should be taken as the basis and that the period 1st June to 30th September is to be considered the south-west monsoon and the period 1st October to 31st January, the north-east monsoon. The corresponding dates at the Kannambadi dam should, therefore, be four days prior to each of the above dates for each season.

3. The award on the third issue specifies separate proportions for the south-west and the north-east monsoons. The period of the south-west monsoon as referring to Kannambadi dam can only be taken as extending from 28th May to 26th September inclusive and the north-east monsoon from the 27th September to 27th January inclusive.

KARPUR SHRINIVASA RAO,
Mysore Representative.

1*st May* 1914.

Exhibit My. 30.

Letter—from KARPUR SHRINIVASA RAO, Esq., B.Sc., L.C.E., Mysore Representative.
To—Sir H. D. GRIFFIN, *Kt.*, I.C.S., Arbitrator, Madras Arbitration, Camp, Ootacamund.
Dated—Camp, Bhavani View, Fern Hill, the 2nd May 1914.
No.—C. 123/E—one.

In the meeting held yesterday by the Assessor to discuss professional matters, the question of the application of tables I and II was again brought up and a fresh ruling was given by the Assessor in supersession of the two rulings already given for the purpose of explaining the intention of the award.

2. This fresh ruling has necessitated a modification in the working tables already prepared according to the previous rulings; and the results show that the quantities available for storage have been considerably reduced, thus placing Mysore at some disadvantage.

3. This has naturally led to a re-examination of the duty tables prepared by Mysore to suit the smaller quantity of storage now available in some years than that indicated by the lowest scale H shown in My. 27; and it has become necessary to apply a still lower scale for such years.

I therefore request that the scale K now sent may be treated as a supplement to the scales A to H already shown in My. 27 and be duly applied for the low stage of storage indicated by it, *i.e.*, for storage below 20,000 millions cubic feet at the end of September.

4. I am adopting this additional scale K where necessary in revising the Mysore working tables and I request that due intimation may be kindly sent to Madras also to follow a similar course.

5. I am sending a copy of this to the Assessor and to the Madras Representative to-day.

ENCLOSURE.

Supplemental scale of duties.

Case K—Storage less than 20,000 millions cubit feet at the end of September.

Period.	Monsoon crop. M. C.FT.	Perennial crop. M. C.FT.
October	51·5	27
November	34	18
December 1st half	23	18
,, 2nd ,, ...	*Nil.*	18
January 1st ,, ...	*Nil.*	18
,, 2nd ,, ...	..	*Nil.*
February	..	*Nil.* *
March	..	10·8
April	..	10·8
May	..	10·8
June 1st half	..	10·8

* Transplantation of new perennial crop will be started from 1st March instead of 1st February.

KARPUR SHRINIVASA RAO,
Mysore Representative.

2*nd May* 1914.

Exhibit My. 31.

Letter—from KARPUR SHRINIVASA RAO, Esq., B.Sc., L. C. E., Representative of the Mysore Government, Mysore-Madras Arbitration.
To—Sir H. D. GRIFFIN, *Kt.*, I.C.S., Arbitrator, Mysore-Madras Arbitation, Ootacamaund.
Dated—Camp, Fern Hill, Ootacamund, the 4th May 1914.
No—C. No. 126/E—Two.

I have the honour, by desire of the Mysore Government, to forward herewith in advance a copy of the note on the question of the hot-weather flow of the Cauvery river which will be presented at the next meeting of the Arbitration Committee and request that the specific points therein brought to notice may be kindly considered and an award based on the prescriptive right of Madras granted as an alternative to the one already given. The full reasons why Mysore ask for such an alternative have already been given in My. 19 and My. 20 and are again briefly reiterated in the accompanying note.

2. In short, Mysore are constrained to press for an alternative award because.

(i) it would be impossible to act up to the award when the first stage of the reservior comes into operation next year in accordance with the contract of the Mysore Government with the mining companies; and this stage, as already stated in paragraph 6 (*a*), My. 20, fully provides for all the requirements of the mining companies. (The contract-deed will be produced for inspection, if required); and

(ii) even in the second stage the award would be unworkable unless the storage in the Kannambadi river is, to some extent, to be set apart for the benefit of Madras without any reference to the actual demand for power.

3. I am sending a copy of this letter with accompaniments to the Assessor and to the Madras Representative.

ENCLOSURES.

(1)

Note on hot-weather flow.

As the time for closing the proceedings of the Arbitration is approaching, Mysore have once more to bring the matter in connection with hot-weather supply to the notice of the Arbitration Committee.

2. The accompanying summary of the whole case explains the attitude taken up by Mysore and Madras from the beginning of the Arbitration proceedings in regard to this question. This clearly shows—

(*a*) that Mysore did not at any stage of the enquiry agree to bind themselves to pass down a continuous flow of 900 cusecs, but requested that Madras prescriptive rights should be defined with reference to their hot-weather irrigation, as it is the only basis upon which Madras can have any claim against Mysore according to the Agreement of 1892, and

(*b*) that Madras too had always in view a limit flow based on the prescriptive right to their hot-weather irrigation and that they only expressed their willingness to exchange it for a continuous flow of 900 cusecs so long as it could be maintained for power purposes.

3. As the award already given is not in accordance with the position taken up by both the Governments, Mysore immediately put in two statements My. 19 and My. 20 explaining the whole case and requesting the Arbitration Committee to give an alternative award based on the prescriptive rights of Madras to safeguard their hot-weather irrigation. The ruling given by the Arbitrator on these statements was to the effect that "having considered My. 19 and My. 20, I am of opinion that no cause has been shown for re-opening the case as to the hot-weather supply."

4. Although there may be a difference of opinion as to whether sufficient cause has been shown or not for re-opening the question of 900 cusecs based on the power requirements, there can be no doubt that the question of the prescriptive right of Madras for their hot-weather irrigation has not been examined, though expressly asked for by both the Governments at all stages of the proceedings as can be seen from the accompanying summary.

5. It is therefore requested that the question of an alternative award on the basis of the prescriptive right may now be duly considered with reference to the area of hot-weather irrigation in Madras.

The matter is very important for Mysore as without such an alternative award the present award would mean that Mysore should pass down 900 cusecs whether this quantity is required for generating power or not. It has been shown in My. 20 that there is no prospect of such a large demand arising for power generation. This would therefore impose an unnecessary burden on the reservior, particularly as the natural flow goes down to 90 cusecs at times (discharge in this year has gone down to less than *150* cusecs at Sivasamudram).

6. If Mysore have to be bound to the present award, assured supply of 900 cusecs at Sivasamudram will be freely made available for use in Madras. With such an assured supply even at the moderate duty of 60 acres per cusec as much as 900 ×60=54,000 acres of sugarcane irrigation can be secured. It is obvious that the outturn due to such an assured supply would be much better than that due to the present precarious natural flow. The value of such crop may be taken as Rs. 300 per acre. This would secure to the Madras Government a revenue of 8 lakhs (15 × Rs. 54,000=Rs. 8,10,000) even at the moderate rate of Rs. 15 per acre. Making an allowance of about 50 per cent of this revenue as derivable from natural flow there will be a clear gain of 4 lakhs of rupees to Madras annually without any expenditure on their part. This would only mean that Mysore should build and work their reservior to the benefit of Madras.

7. Viewed in this light, the award as now given without an alternative would subject Mysore to an unjustifiable burden. The Assessor too has recognised that Mysore *is* justified in objecting to such a perpetual burden being imposed on them whether the water is required for power or not (Paragraphs 115 and 116—A.E.E. II).

In A.E.E. II, paragraph 117, he has also recognised that it is desirable and necessary to make the question of the prescriptive right of Madras for their hot-weather irrigation "a specific item of the present Arbitration."

8. Arbitrator (*vide* page 14 of the award on second term of reference) while quoting the summary of the Mysore contentions in this respect under three pertinent heads, has unfortunately not considered the question under any of these heads.

It is therefore earnestly urged that the question about the prescriptive right of Madras to the hot-weather flow may not be left undecided but may now be duly considered and an award based on such prescriptive right given as an alternative to the one already given to safeguard the vital interests of Mysore.

(2)

Summary of the case of Mysore and Madras regarding the hot-weather flow.

	HOT-WEATHER FLOW.
Ma. 1	In Ma. 1 no claim was put forward by Madras in respect of the hot-weather flow.
My. 1, paragraph 32.	2. But Mysore on the other hand, pointed out the advantage of the continuous hot-weather flow in securing sugarcane crops to the extent of 60,000 acres with revenue of four to six lakhs in the Madras territory and claimed some credit as a return for this.
Ma. 3, paragraphs 3 and. 4.	3. In Ma. 3 Madras, for the first time, put forward a claim for 900 cusecs continuous flow at Sivasamudram.
My. 4, paragraphs 3 and 4.	4. Mysore objected to the passing down of 900 cusecs continuously, demanded by Madras without any reason and stated that the hot-weather flow in the river goes down as low as 94 cusecs.
Ma. 4, paragraphs 3 and 4.	5. To this Madras replied that if the claim of 900 cusecs was denied by Mysore, Madras would claim, as an alternative throughout this period, the whole natural flow of the river up to the limits stated in Ma. 3. part II(i), this limit being expressed as 7 feet flow in the Agunda Cauvery prior to re-modelling.
My. 7, paragraph 78.	6. As Madras had previously waived their claim to the hot-weather flow and as they withdrew that waiver subsequently claiming as an alternative the whole natural flow up to the limit of 7 feet on the Cauvery dam at the Upper Anicut as noted above, Mysore, while denying the claim of Madras for constant flow 900 cusecs as being not based on prescriptive right, implied their willingness to respect the Madras right to the natural flow in the very sense claimed by Madras, the point remaining to be settled being whether 7 feet at the Cauvery dam as claimed or some other limit L to be fixed under the second term of reference as stated by Madras in paragraph 77, part IV, would represent the prescriptive right of Madras for their hot-weather irrigation.
Ma. 10, paragraph 77, part IV.	7. Thus regarding the question that the hot-weather flow due to Madras should be fixed on the basis of prescriptive right for their irrigation requirements, there was so far no difference between the position taken up by Madras and Mysore.
Ma. 12, Part VI, paragraph 99.	8. Madras again confirmed their attitude that the claim for 900 cusecs was not based on precriptive right, but that their right to the water required for their irrigation, as used in the past years by means of korambus, should be respected, *i.e.*, to the whole natural flow up to the limit of 7 feet noted above.
My. 9, paragraph 88.	9. As a limit flow of 7 feet claimed by Madras could not be realised in the hot-weather season and as even if it could be had for a few days in exceptional years it would not be fully used for irrigation, Mysore suggested that the prescriptive rights of Madras might be limited to the average estimated natural flow in the hot weather and not to 7 feet as claimed by Madras.

Ma. 14, Part IX, paragraph 99.

10. Madras objected to the prescriptive right being limited to the average estimated natural flow, and adhered to their original claim for the whole natural flow up to their own limit of 7 feet, on the strength of the supposed admission of such a right by Mysore in My. 7, paragraph 78.

My. 12, paragraphs 11 to 16 and paragraphs 72 to 75.

11. As there was evidently some misunderstanding on the part of Madras as regards the intention of paragraph 78, My. 7 the question of the hot-weather flow was fully explained by Mysore both in its legal and engineering aspects in paragraphs 11 to 16 and 72 to 75 of My. 12.

12. In this Mysore have clearly shown:—

(*a*) that the power supply is not a constant factor for various reasons and can give no sort of prescriptive right to Madras;

(*b*) that the only basis for settling the prescriptive right of Madras according to the agreement of 1892, is with reference to the quantity of water required by them for their hot-weather irrigation; and

(*c*) that such rights should be defined by reasonable limits of flow required for the areas of actual hot-weather irrigation, as practised in the previous years based on the figures supplied by Madras.

Ma. 22, Part XI, paragraph 6.
Ma. 22, Part XII, paragraphs 42—47.

13. In reply to this Madras also made the whole question from their point of view clear by stating—

(i) that they did not suggest that the question of prescription would not arise with reference to the hot-weather flow—paragraph 6, Part XI;

(ii) that the expression "whole natural flow" used by Madras was *always* subject to the understood limit of 7 feet at the Cauvery dam claimed by them;

(iii) that, in consideration of the actual area of hot-weather irrigation and having regard to the safety of the korambus, they withdrew their original claim to the unnecessarily high limit of 7 feet and restricted it to a limit of 9,000 cusecs; and

(iv), that they were willing to waive their right to this limit flow of 9,000 cusecs in consideration of 900 cusecs continuous flow if passed down; failing which that their right to the limit of 9,000 cusecs must be recognised and unimpaired.

14. From all the above, two important points are prominently brought to view:—

(1) that Mysore never at any stage agreed *to bind themselves to Madras* for passing a continuous flow of 900 cusecs, and

(2) that Madras had always in view a limit flow based on their prescriptive right to their hot-weather irrigation and that they were willing to exchange it for a continuous flow of 900 cusecs so long as it could be maintained.

Exhibit My. 32.

I

Note on the rules for working the Kannambadi reservoir.

A set of the tentative rules prepared by Mysore is hereto attached for working the reservoir in accordance with the awards on issues 2 and 3.

2. Mysore have been from the beginning stating that when there is heavy rainfall in the delta area, the demand on canal water would be wholly or partially reduced and that on such days, the restrictions on impounding should be correspondingly relaxed. Madras too have admitted that such a concession is reasonable, but have only considered the rules put forward by Mysore as unworkable. Mysore, however, maintain that the rules so far as they go are simple and workable. If any modifications are desirable, they may now be suggested.

3. It is well known that the delta lands are generally flooded in the north-east monsoon, so much so that the crops are damaged in many years. While the river water would thus be of no use to Madras on such occasions, but would, in fact prove harmful if let into the fields in addition to the rain water, Mysore would be greatly benefited by any concessions on account of rainfall towards extra storage in the north-east monsoon. Accordingly, in the tentative rules for working the reservoir now put forward a few clauses have been added for giving effect to these concessions.

4. As regards the question how far the rules should be tentative, Mysore have already stated that the two factors fixing the proportion between the flow at Kannambadi and the Cauvery dam in the two seasons and also the transmission factors for the seasons might be considered tentative. These may be finally fixed after careful observations have been taken for about six years the average results of which being taken as the final factors in both the cases.

5. For finding the proportions in the two seasons, the stages of flow above 6 feet on Cauvery dam, shall be taken as no impounding will be done below the limit. The total flow should be computed for each period when the above limit is exceeded. The totals of all such periods should be calculated and taken as the figure representing the total flow at the Cauvery dam as the basis for fixing the proportions.

The flow at Kannambadi for all the days corresponding to those on which the flow at Cauvery dam has been recorded as above should also be computed and the proportions which these totals at the two places bear to each other should be taken for each year. The average of such observations for six years may then be found and finally adopted.

6. Here it may be stated that proper measure should be taken to find out the correct flow at high stages of the river at the Cauvery dam as it is understood that the present figures give too low discharges. The correct figures thus arrived at should be taken for fixing these proportions.

7. As regards the factors of transmission losses, it is essential that observations should be taken at three or four selected reaches to make up for different conditions of the bed and sides of the river. A fairly long reach of the river where there is no inflow to vitiate the transmission factor would be the best suited for the purpose. Simultaneous observations at the two ends of each reach so selected would give sufficient data for finding the exact factor due to transmission losses. The factors for the whole series of observations of each year may be fixed for each monsoon and after completing similar observations for six years the average of the six years may be struck separately for the two seasons and finally adopted.

Mysore suggest that out of the three reaches one may be between Kannambadi reservoir and the confluence of the Kabbani, the second between junctions of the Bhavani and the Noyel and the third between the Amaravati junction and the Cauvery dam.

8. Mysore desire to place on record that these rules based upon the awards on Issues 2 and 3 should not be taken as an indication of their final acceptance of the award in every respect and that they are put forward with a reservation that Mysore may make any representation that they think proper to the Government of India.

KARPUR SHRINIVASA RAO,
Mysore Representative.

5th May 1914.

II

Tentative Rules for working the Kannambadi reservoir.

The total flow in the Agunda Cauvery at the Upper Anicut up to a limit of 6·5 feet on the Cauvery dam equivalent to a discharge of 22,750 cusecs or a limit of 1,996 millions cubic feet in 24 hours shall be considered as the supply due by prescriptive right to Madras according to rule 3 of the Agreement of 1892 during the months 1st June to 31st January inclusive.

2. All excess flow in the river at the Upper Anicut shall be considered as available for impounding in the Kannambadi reservoir duly increased by the transmission factor between the Cauvery dam and Kannambadi.

3. This transmission factor is tentatively taken as 20 per cent. and 17 per cent. over the flow at Kannambadi, during the south-west and north-east monsoon, respectively, *i.e.*, a flow of 100at Kannambadi would be represented by 80 when it reaches Cauvery dam during the south-west monsoon and by 83 during the north-east monsoon and *vice versa*.

From 1st February to 31st May the flow in the river at Sivasamudram in excess of 900 cusecs shall be available for impounding in the reservoir so long as a continuous flow of 900 cusecs is actually utilized for generation of power supply.

4. The impounding in the Kannambadi reservoir during the period 1st June to 31st January shall be regulated by standard tables I and II accompanying in the following manner:—

(*a*) *South-west monsoon.*—(i) In the south-west monsoon impounding shall be regulated by table I as soon as the flow at Kannambadi exceeds (0·625 × 22,750 cusecs) 14,219 cusecs provided that the flow in the Agunda Cauvery at the Upper Anicut had exceeded 18,850 cusecs at any time during the preceding four days equivalent to a gauge-reading of 6 feet on the Cauvery dam.

(ii) But if the gauge-reading had not so exceeded 6 feet at any time during the preceding four days, the impounding shall be regulated by table II.

(iii) During the period of operation of table II, a change shall be made to table I after Kannambadi flow reaches a rate of discharge of 15,277 cusecs equivalent to 1,330 millions cubic feet in 24 hours and continues at that rate for twelve hours, provided also that the Cauvery dam gauge had exceeded 6 feet at any time during the preceding four days, the exact time at which the 6 feet limit is exceeded being communicated by telegram. For this purpose the mere gauge-reading on the Cauvery dam should not be the criterion, but the gauge corresponding to the total flow in the Agunda Cauvery including any discharge through the Upper anicut sluices.

(*b*) *North-east monsoon.*—Throughout the north-east monsoon, the impounding shall be regulated by table I, provided the discharge at Kannambadi exceeds (·3 × 22,750 cusecs) 6,825 cusecs.

5. The south-west monsoon shall be considered to extend from 1st June to 30th September inclusive at Kannambadi and the north-east monsoon from 1st October to 31st January inclusive, at Kannambadi.

6. The limits above which impounding should commence at Kannambadi in the south-west and the north-east monsoons shall be reduced according to the scale mentioned in the table below on days of heavy rainfall in the delta area:—

Rainfall.	Rainfall over whole area.		Rainfall over three-fourths area.		Rainfall over one-half area.	
	Number of days to which the reduced limit applies.	Proportion of reduction in limit.	Number of days to which the reduced limit appplies.	Proportion of reduction in limit.	Number of days which the reduced limit applies.	Proportion of reduction in limit.
				PER CENT.		PER CENT.
1¼ inches	1	Full ..	..	..	..	..
1½ ,, ...	2	Do. ..	1	75	..	..
1¾ ,, ...	3	Do. ..	2	75	1	50
2 ,, ...	4	Do. ..	3	75	2	50
2¼ ,, ...	5	Do. ..	4	75	3	50
2½ ,, ...	6	Do. ..	5	75	4	50

7. For the above purpose, telegrams should be sent to the officer at Kannambadi between the months of June to January on all days on which the rainfall is 1 inch or over. If the rain-gauge stations are not telegraph stations, the gaugings may be telephoned to the nearest telegraph station for transmission to the officer at Kannambadi.

8. For determining the river discharges to regulate impounding as above, automatic gauge recorders shall be maintained at the following places:—

(*a*) Above the Kannambadi reservoir—
(1) On the main Cauvery.
(2) On the Hemavati.
(3) On the Lakshmanathirtha.
(*b*) At the reservoir.
(*c*) On the Cauvery below the reservoir.
(*d*) At the Cauvery dam.

The exact points at which the gaugings should be taken shall be selected by mutual agreement.

9. The gauges at the above places shall ordinarily be read at least twice a day, that is, at 6 A.M. and 6 P.M. But during the floods they should be read at intervals of at least every three hours and communicated by telegram by each party to the other.

10. The gauge registers shall be maintained in printed forms approved by both the parties and copies shall be forwarded by each Government to the other every day.

11. The discharge corresponding to the gauge-readings at the places noted above shall be computed by means of carefully plotted curves arrived at by means of velocity observations specially conducted for the purpose and checked independently by weir discharges wherever possible.

The curves may be revised by mutual consent from time to time by further observations so tion as to make allowance for change in the regime of the rivers.

12. The gauge records and other observations of one Government shall be open to inspec- by officers deputed by the other Government.

5th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

Exhibit My. 33.

Note on working tables.

Working tables have been prepared on the basis of the awards on the second and third issues for thirteen years 1896 to 1908 and the results of these tables may be here summarised.

2. Full normal conditions of supply with the duties approved by the Assessor for the area proposed to be irrigated under the reservoir, are secured for six out of thirteen years as denoted by the classification A in the fortnightly statement of balances attached.

3. There are two years (1900–01 and 1907–08) in which the supply at the end of October falls short of the full normal requirements by about 2,000 millions cubic feet (classification B) and two more years (1896–97 and 1904–05) when the supply falls short of the normal by about 4,000 millions cubic feet at the end of October (classification C). But it will be observed that, in all these four years, the closing balance is more than the shortage quantities noted above, even after allowing for a minimum storage of about 3,000 to 4,000 millions cubic feet, as a starting balance for the succeeding year. Soon after it was known that extra supplies had been stored in the reservoir, a portion of the same could have been diverted by judicious regulation so as to improve the classification from C to B or B to A.

4. These scales of draw-off, B and C, differ from the normal scale A by a reduction of supplies made quite at the end of the season without any change in the areas of crops. The project provides for raising only a single crop of rice in the monsoon as is usual in the province; this requires water for about five months only, though the working tables provide for a supply extending over seven months to meet the contingency of late sowings here and there. Further, there was good rainfall in the month of November in all the years under consideration except 1904. For these reasons, the reduction due to the introduction of scales B and C would not have affected the condition of the monsoon crops to any appreciable extent.

5. As regards the condition of the perennial crops in these years, the draw-off under scale B is the same as that under scale A; while the slight reduction in the scale C is confined only to the very last out of twelve months assumed as the crop period. It may be noted that sugar-cane usually planted under river channels in Mysore requires water for only ten to eleven months and the slight reduction of supplies made in the twelfth month cannot be said to affect the crop outturn. So it can be safely assumed that in (6 + 4 =) ten years out of thirteen, the reservoir would meet practically all the normal requirements of irrigation both of the monsoon and the perennial crops.

6. There now remain only three years to be considered. Of these, the years 1905–06 and 1908–09 go under classes E and F, although, in the former, the supplies had to be partially curtailed in October. The scale of draw-off for the monsoon crop under cases E and F is the same as in case C, as can be seen from the duty table. It has been shown above that the reductions as per case C do not materially affect the monsoon crop outturn. So the monsoon crop may be said to be practically unaffected in twelve out of thirteen years. As regards the perennial crop, the reduction in supplies made as per scales E and F is secured partly by curtailing the new area of perennial irrigation and partly by resorting to supply by turns for the last two out of the assumed twelve months of crop season. All this can be done without any difficulty by timely notices to the cultivators and by proper regulation.

7. Now coming to the year 1899–1900 the worst on record, it must be admitted that, owing to the scanty rainfall in both the monsoons, the quantity available for storage is very limited, so much so that the reservoir did not at all surplus in that year. Accordingly, the monsoon as well as the perennial crops would get less than their normal supplies. By applying the scale of draw-off K to suit this limited storage, the regulation could be done without much difficulty. It is recognised that the crops would suffer both in outturn and area in this year But such a contingency is more or less unavoidable in an exceptionally bad year.

8. In fact, the working tables of the Metur reservoir, which is claimed to have been made sufficiently large to meet the conditions of the bad years, also show similar deficits of storage. In the very years in which the Mysore reservoir conditions necessitate reduced draw-off, the

Metur reservoir also shows large *minus* balances (*vide* Volume III, Madras Project, pages 120, 121 and 162). The remarks on pages 13 and 14, Volume I, clearly show that the cultivation would have suffered both in extent and outturn. Similar instances of partial deficits in bad years can be quoted from the big reservoirs in Bombay which are in actual working.

9. No reservoirs are designed to meet such exceptionally bad conditions; and if they were so designed, they would not prove remunerative. The test of success of the present reservoir should also be viewed in this light, Mysore, however, have already stated in My. 28 that, if found necessary, they might, at their option, increase the size of the reservoir by about 4,000 millions cubic feet.

10. It may be here remarked that the working tables have been based on discharges at Kannambadi computed on certain questionable assumptions, as already stated in Ex. A–3 (*b*). The results of the working tables based on such discharges cannot therefore be taken as giving a true representation of the conditions of actual working.

11. It may be also stated here that in these working tables, the draw-off for power purposes has been calculated on a basis of 1,000 cusecs at Sivasamudram, though the power requirements were estimated in the project on a smaller discharge at Sivasamudram corresponding to 1,000 cusecs at the reservoir. The quantity now allowed in the working tables on the basis of 1,000 cusecs at Sivasamudram thus increases the power draw-off by more than 25 per cent. as can be seen from the attached statement B, column 4. This matter has been fully explained in My. 19 and although this representation with all the facts and figures supporting it was not favourably considered and a ruling contrary to the project provision was recorded, the fact still remains that the project as prepared by Mysore does not provide for passing 1,000 cusecs at Sivasamudram, as such a flow would mean the generation of a much larger amount of power than is contemplated in the Mysore project.

12. Accordingly, if the working tables made on a basis of a larger draw-off for power than allowed in the project show that the reservoir would not fully meet the normal demand in some exceptionally bad years, the results of such years cannot evidently be taken as an argument against the success of the reservoir.

13. If, however, the provision actually made in the project viz., 1,000 cusecs as at Kannambadi, be taken as the basis, then the storage required at the end of October or September for the different scales of draw-off A to K would be reduced by about 3,500 millions cubic feet, in each case as shown below:—

Scale of draw-off.	As per ruling.	As per project.	Storage at the end of
A	33,500	30,000	October.
B	31,500	28,000	,,
C	29,500	26,000	,,
D	27,500	24,000	,,
E	25,500	22,000	,,
F	23,500	20,000	,,
G	26,500 or less	23,000 or less	September.
H	24,500 ,,	21,000 ,,	,,
K	20,000 ,,	17,000 ,,	,,

14. Working on the basis of scales altered as per project, it would be found that the reservoir would fully meet all normal demands as in class A, in eleven out of thirteen years as indicated by block letters in statement A attached, while one year would fall under class D. But, in the single year 1899–1900, when the rainfall was abnormally low, the scale of draw-off as per class H would have to be resorted to against class K according to the working tables on the basis of the extra draw-off for power. Thus it is clear that, judged on its own merits, apart from the ruling necessitating an increased draw-off for power in the working tables, the project as prepared by Mysore fulfils practically all the requirements except in only one out of thirteen years. Agreeably to the remarks in paragraph 9 above, the project deserves to be accepted in every way as having been prepared on a sound and practical basis.

15. As regards the precautions to be adopted for ensuring a non-infringement of the Madras rights during the working of the reservoir, all that is necessary has been stated in My. 28. Mysore once more repeat that it would be their special concern to see that the gauging operations and regulation of the sluices are conducted strictly according to the rules that may now be framed and approved. There could therefore be no cause for apprehending that the passing down of the water due to Madras will in any way be prevented by the working of the Kannambadi reservoir.

16. It should be stated here that these working tables have been produced only with the object of giving some idea of what may be expected from the reservoir and cannot be binding on Mysore. The utilization of the storage must depend on the exigencies of demand for power supply and irrigation. The stored water would be utilized for whatever purposes Mysore may find it most paying. It is therefore needless to state that Mysore would be at liberty consistently with the protection of Madras prescriptive rights to alter the distribution of crop area, draw-off for different purposes and all such internal arrangements.

5th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

STATEMENT A.

STATEMENT showing balance at end of each fortnight from 1896 to 1908.

Fortnights.		A 1896-97. C	A 1897-98. A	A 1898-99. A	H 1899-00. K	A 1900-01. B	A 1901-02 A	A 1902-03. A	A 1903-04. A	B 1904-05. C	B 1905-06. II & E	A 1906-07 A	A 1907-08. B	D 1908. F
1		2	3	4	5	6	7	8	9	10	11	12	13	14
June	I	3,000	9,099	5,577	15,203	92	5,411	12,046	20,690	25,293	8,170	4,995	11,069	10,259
	II	37,080	22,334	7,652	21,442	16,421	5,208	9,565	18,175	37,080	5,705	4,178	9,121	7,773
July	I	37,080	36,993	5,205	29,736	37,080	37,080	30,719	28,447	36,898	8,541	1,754	11,683	21,677
	II	37,080	37,080	24,598	27,045	37,080	37,030	36,016	37,080	34,308	31,798	37,080	37,080	37,080
August	I	37,080	37,080	28,056	24,783	37,080	37,080	33,472	35,821	37,080	29,750	34,532	37,080	36,740
	II	35,882	36,910	25,365	22,119	35,612	35,380	30,783	36,591	34,362	27,071	37,080	36,910	34,024
September	I	33,332	34,728	26,328	19,609	33,366	32,830	37,066	34,038	33,133	24,556	35,025	34,357	31,480
	II	30,793	34,512	27,302	17,528	30,828	30,298	34,568	32,504	30,538	22,032	32,477	32,340	28,943
October	I	32,068	34 420	36,406	16,229	30,082	32,639	36,951	36,230	28,007	25,523	35,886	31,765	26,425
	II	29,358	33,515	34,870	14,847	30,848	36,404	34,233	36,379	28,630	25,737	34,297	30,516	23,978
November	I	27,526	30,698	37,080	13,953	29,048	36,199	33,472	37,080	26,872	24,248	31,753	30,389	22,648
	II	28,034	28,432	34,694	13,062	27,248	36,229	30,929	37,080	25,121	22,768	29,217	28,360	21,262
December	I	26,549	26,419	32,666	11,697	25,952	34,194	35,544	35,585	23,645	21,564	27,365	26,691	20,210
	II	24,971	24,280	30,511	10,614	24,574	32,032	34,373	33,417	22,079	20,286	25,397	24,920	18,713
January	I	24,023	22,544	28,693	9,041	23,203	30,263	32,607	31,654	21,129	18,840	23,897	23,567	..
	II	23,434	21,523	26,742	7,614	21,660	29,040	31,623	30,604	20,537	18,192	23,483	22,546	..
February	I	22,762	20,419	25,067	6,315	19,809	26,989	30,463	30,170	19,509	17,251	22,429	21,350	..
	II	21,202	18,718	23,537	5,319	18,077	25,045	29,006	29,612	17,968	15,978	20,764	19,521	..
March	I	19,381	17,220	21,339	4,514	16,164	23,034	27,277	28,384	16,274	14,394	18,913	17,581	..
	II	17,407	14,991	19,010	3,603	14,004	20,651	25,227	26,900	14,024	12,522	16,720	16,391	..
April	I	15,282	12,646	17,861	2,780	11,850	18,617	22,973	25,535	11,901	10,611	14,957	13,411	..
	II	13,944	10,619	18,881	2,669	9,923	16,555	20,814	24,256	9,997	8,664	14,242	12,756	..
May	I	11,383	8,733	16,709	2,224	7,926	14,767	19,179	23,690	8,145	7,766	13,245	12,631	..
	II	10,652	6,870	14,366	1,441	6,421	13,416	21,674	26,132	9,235	6,548	12,174	11,842	..

STATEMENT B.

Months.	Case A. On Sivasamudram basis. As per ruling by the Assessor. 33,500 m c. ft. at the end of October. Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Evaporation.	Case A. On Kannambadi basis. As per project provision. — Draw-off for monsoon crop.	Draw-off for perennial crop.	Draw-off for power.	Evaporation.
September	..	..	..	..	..	..	..	..
October	3,193	1,674	..	..	3,193	1,674	..	..
November	3,090	1,620	..	..	3,090	1,620	..	..
December	2,129	1,674	..	..	2,129	1,674	..	..
January 1st half	772	810	506	..	772	810	126	..
,, 2nd ,, ...	..	864	80	..	..	864		..
February	..	1,512	1,263	..	..	1,512	641	..
March	..	1,674	2,383	..	..	1,674	1,653	..
April	..	1,620	2,786	..	..	1,620	2,113	..
May	..	1,674	2,103	..	..	1,674	1,438	..
June 1st half	..	810	1,122	..	..	810	742	..
	5,991	12,258	100,243	2,320	5,991	12,258	6,733	2,320

	Storage at the end of October.		Storage at the end of October
Case A	33,500	Case A	30,000
,, B	31,500	,, B	28,000
,, C	29,500	,, C	26,000
,, D	27,500	,, D	24,000
,, E	25,500	,, E	22,000
,, F	23,500	,, F	2,000
	Storage at the end of September		Storage at the end of September.
Case G	26,500	Case G	23,000
,, H	24,500	,, H	21,000
,, K	20,000	,, K	17,000

N.B.—The power demand has been based on the recorded Sivasamudram discharges for 1906.
(i) For the Sivasamudram basis the draw-off from the reservoir for power is $D = \frac{4}{5}(1{,}000 - S)$ where S is the flow at Sivasamudram.
(ii) For the project provision basis $D = (1{,}000 - \frac{4}{5}S)$ where S is the flow at Sivasamudram.

Exhibit My. 34.

Note on the provision made in the project for power supply.

The provision for power discharge made in the project for the final state is 1,000 cusecs as at Kannambadi and not at Sivasamudram—*vide* table II on page 31 of the project.

2. The total quantity of power water to be let out from the reservoir at Kannambadi comes to 6,352 millions cubic feet—*vide* paragraph 18, page 4 of the project.

3. This quantity of 6,352 millions cubic feet tallies nearly with the quantity (6,700 millions cubic feet) now arrived at by taking 1,000 cusecs as at Kannambadi as shown in statement B attached to My. 32.

4. If 1,000 cusecs at Sivasamudram be taken as the basis, the quantity of water to be reserved in the reservoir for power calculated on the discharges of the worst recorded summer comes to 10,240 millions cubic feet against only 6,352 millions cubic feet provided in the project.

5. The storage available in the same summer season with 1,000 cusecs at Sivasamudram is *nil* as against the expenditure from the reservoir of 10,240 millions cubic feet to maintain this large flow of 1,000 cusecs at Sivasamudram.

6. The corresponding storage available in summer with 1,000 cusecs as at Kannambadi would be 53 millions cubic feet against an expenditure of about 6,700 millions cubic feet.

7. Madras demanded of 900 cusecs flow, because 1,000 cusecs was provided in the project. The quantity should evidently be taken in the same terms in which it was intended and specified in the project.

8. The award of 900 cusecs too should be taken in the same sense in which 1,000 cusecs has been provided for in the project. This sense has been shown to be that the 1,000 cusecs should be taken as at Kannambadi and not at Sivasamudram.

9. It is true that Madras referred to Sivasamudram as the place of flow in their demand, but this has been shown to be based on insufficient information.

10. Mysore did not specifically contradict Madras regarding the demand of 1,000 cusecs at Sivasamudram, because

(*a*) Mysore always objected to the very principle of the Madras demand being based on the naturally varying power supply and not on their prescriptive right for protecting their hot-weather irrigation, and

(*b*) they had no reason to believe that the project already put in as an exhibit would not be duly examined before arriving at a final decision.

11. When the award was against both the above natural courses, Mysore, in their My. 19, took the earliest opportunity of clearly explaining the provision in the project to arrive at a proper basis for preparing the working tables.

12. The ruling given by the Assessor may, on the proper examination of the figures presented, be altered to be in keeping with the project as has always been done by the Assessor, whenever any errors in professional matters have been pointed out by either party.

7th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

Exhibit My. 35.

Mysore reply to the Madras statement of case on issues 3 (*b*) *and* 4 (*Ma.* 35).

Most of the points contained in the Madras statement referring to the rules of regulation and the engineering details relating to the working of the sluices, gauging the river discharges, etc., have been fully discussed at a meeting before the Assessor on the 7th instant and the points of agreement have all been noted by that officer. This matter has been dealt with very fully by Madras, and Mysore have readily accepted most of the Madras proposals.

2. There are, however, some points in which Mysore cannot agree with the view taken by Madras.

These are—

(i) Extension of irrigation above and below the reservoir.
(ii) Results of working tables.
(iii) Controlling agency for operating the reservoir.
(iv) Information to be supplied to Madras.

(i) *Extension of irrigation above and below the reservoir.*

3. In their letter No. 1133/1751, dated the 6th September 1913, Mysore have already supplied to the Madras Government in the Public Works Department details of the areas of extensions on existing channels taking off from the existing anicuts above the reservoir. The same information was also simultaneously supplied to the Assessor.

4. The details then supplied may be quoted here for ready reference :—

	ACS.
Area of wet land to be submerged	6,624
Do. garden	650
Do. land classed as dry for which wet rate is charged	2,000
Total wet cultivation submerged ..	9,274
add one-third more for area that can be irrigated with the same water by improving the duty	3,091
Total area ..	12,365
Total area proposed to be irrigated by extending the channels is ..	20,000
Net new area to be irrigated	7,635

5. Thus it will be seen that the real extension is to be only 7,635 acres. The only point about which there can be any difference is regarding the increase of the one-third of the submerged area (3,091 acres) with improved duties shown above. Madras themselves have, in paragraph 3, Rule III (*c*) of Ma. 35, admitted an increase of 10 per cent. on this account. But the present duty in these old channels is very low, the channels being very crude and the distribution quite uncontrolled. It will not therefore be too much to expect an increase of about one-third in the duty figures. If, for instance, the duty of the existing channels were taken as 30, it will not be very difficult to improve it to 40 by minimising the waste of water in tail channels.

Accordingly, 12,365 acres can be easily irrigated with the same water that was being used for the submerged lands as shown above. Thus the balance of the area which would require extra water is only 7,635 acres and this will be distributed under three anicuts, viz., Chamaraj, Mandagere and Hemargere anikats, giving a comparatively small extent under each of them.

This area of 7,635 acres is so insignificant as compared with the large extent of $1\frac{1}{4}$ millions acres in Madras on the same river, as not to merit any discussion at all.

6. Further, all these anikats, as will be seen from the attached tracing, are far above the Ramasami anicut on the Cauvery, specified in rule II of the Agreement of 1892, as the limit above which Mysore irrigation extensions, by means of anicuts across this river, could be freely carried out. According to this specific rule in the Agreement, Madras have no voice to object to the construction of even new anicuts and much less to the extension of irrigation under the old anicuts.

The mere fact that the extensions are to be made simultaneously with the construction of the reservoir with the object of settling the expropriated landowners, cannot take away this legitimate right of Mysore. Any objection of Madras, notwithstanding the specific clause in the Agreement, if countenanced, would be tantamount to a repudiation of the Agreement of 1892.

7. Supposing, for a moment, that these extensions had been carried out before the question of the reservoir was mooted, then any balance in the river, after meeting the requirements of the extensions, would have been naturally taken up partly or wholly by the irrigation below the reservoir and Madras could not evidently have raised any objection to such an arrangement. The mere fact that the river water, after meeting the requirements of the higher extensions, passes through the reservoir instead of through the natural river course, cannot make any difference to Madras, as long as the exact quantities of inflow and outflow are properly measured and accounted for agreeably to the rules and regulations for operating the reservoir.

8. It is quite obvious that the reservoir itself cannot supply water to any area above it. If at all, it can only help the areas situated below it. The quantity of water that can be stored in the reservoir is limited. The new area proposed to be irrigated under the reservoir will require all the water that can be stored in it. Madras have also been arguing that the storage available is insufficient even for the new area proposed. In the face of all these facts, it is not understood how Madras deem it practicable to feed all the area of about 40,000 acres of existing anicut irrigation below Kannambadi by the reservoir itself except by curtailing the new area of 125,000 acres proposed under the reservoir.

9. If this curtailment is not effected, the only way by which Mysore can give away the storage water for such lower irrigation without affecting their new irrigation of 125,000 acres can only be under one of two conditions. Either the inflow or the outflow should be intentionally under-estimated. Neither of these conditions is possible with the very efficient and scientific regulation proposed at the reservoir. Mysore have repeatedly stated that their first concern will be to see that there will not be the slightest infringement of the rules once they are accepted. It is therefore obvious that no help could be given to the 40,000 acres of the existing irrigation below the reservoir without trenching on the 125,000 acres of new irrigation.

10. If, however, any real extensions under the lower channels are made involving a change in the existing head works, Mysore have already expressed their willingness to debit such extra water to the reservoir account. This would naturally mean that the new irrigation of 125,000 acres would be correspondingly reduced. Under the Agreement of 1892, Mysore have a right to extend their irrigation even under the anicuts below the reservoir if they are situated above the Ramaswami anicut. But, on account of the disturbing conditions of the reservoir, they are willing to forego this right at noted above to treat such extensions if undertaken as a part of the area fed by the reservoir. With this concession and with the efficient arrangements for measuring the inflow and the outflow, Mysore are sure that Madras will readily give up their untenable objection that the extensions above the reservoir should be treated as depending on the reservoir, and that due credit should be given to them by including in the inflow the amount of water that may be consumed by the comparatively very small extension of 7,635 acres now proposed under existing anicuts above the reservoir.

11. In this connection, Mysore have also to urge that, if any extensions under minor channels in the Madras territory above the Upper Anicut are undertaken, so as to involve a change in the nature and dimensions of the head works, Mysore claim that they should be given due credit for water consumed for such extensions by deducting the same from the limit flow due to Madras.

In fact, the Assessor has distinctly expressed an opinion to this effect in paragraph 130, page 25 of A.E. E. II quoted here for ready reference :—

"130. What in my opinion might be held reasonably to debar a claim to future supply for increases in the irrigated area since 1890 would be any proved material alteration of, or addition to, the original works or inception of a new work since that date ; in which case I take it that prescriptive right could only be held to have matured under the 1892 Agreement subject to the usual limitations and with reference to the date of the addition. This view would, in fact, place these works on exactly the same footing as was accorded to similar works in Mysore by the 1892 Agreement and is consistent with the opinion I have already expressed with regard to the Mysore rights on these channels—*vide* paragragh 128."

This condition would apply to the channels below the reservoir in Mysore as conceded by Mysore above, and for the channels above the Upper Anicut in Madras.

(ii) *The results of working tables.*

12. As regards the results of the working tables, Mysore have already shown in paragraphs 1 to 7, My. 33, that material shortage in the reservoir is confined to only one year out of thirteen and in all other years by judicious regulation, the conditions of irrigation can be more or less efficiently maintained.

They have also shown that the results, if judged by the requirements of power supply as provided in their project, are in every way satisfactory, coming up to the standard of any such big reservoir in India—*vide* paragraphs 13 and 14, My. 33.

The Madras contention that Mysore officers have not realised "that reasonable forecast of working prospects indicate material failures" cannot be sustained.

13. It is only reasonable to request that the Mysore project should be judged from the data distinctly given in the project and not upon assumptions inconsistent with the provision made in the project. Such an assumption is made in taking 1,000 cusecs as the demand for power at Sivasamudram instead of at Kannambadi as shown in the project. This increases the demand on the reservoir and naturally shows it at a disadvantage as compared with the real project, which, as already stated in paragraph 14, My. 33, is worked out on a sound and practical basis.

14. At the request of the Assessor, alternative results with the award figure of 900 cusecs at Sivasamudram have been worked out and they show that the classification of the following years has improved :—

1896–97	from	C to B.
1905–06	„	E to C.
1908–09	„	F to E.

This is a distinct improvement which would be still more marked if the project figure of 1,000 at Kannambadi equivalent to 800 at Sivasamudram were taken.

15. A few remarks are necessary about what Madras say regarding the views of the Government of India on the project. At the time when the matter was referred to the Government of India in 1911, all the information that is now available regarding the method of impounding, rules of regulation, method of control and the daily working tables, etc., were not before them. The opinion then expressed by the Government of India was that with the insufficient information before them it was not possible to make sure that the Madras interests would be safeguarded.

Regular working tables, with the detailed scales of the draw-off to suit the different stages of storage, have now been provided and examined. The special precautions that should be observed for measuring the inflow and the outflow so as to ensure passing on to Madras of the quantity of water due to them, have also been fully discussed now. With the system of automatic control and the regulation of the distribution under scales A to K according to the different conditions of the storage in the reservoir proposed to be adopted there is no room for any doubt that the Madras interests would be at all affected by the working of the Mysore reservoir. If all this detailed information had been available then, the Government of India would have been satisfied that, consistently with the protection of the Madras interests, the reservoir could be properly operated even though the full normal supply may not be realised in all years.

16. Mysore have already shown their willingness to increase the size of their reservoir by 4,000 millions cubic feet if they find it necessary when irrigation developes under it. This increase would secure full irrigation under classification A in ten years out of thirteen. It has been shown—*vide* paragraph 14, My. 33—that a more or less similar result could be secured by reserving power water only to the extent actually provided in the project.

17. Madras have doubted that all the 25,000 acres proposed to be irrigated under the tail tanks can be met by the surplus water. It must be remembered that the surplus is not the only source of supply to this area. To this is to be added the comparatively large amount of seepage and leakage from the extensive area of 125,000 acres to be irrigated under the reservoir. The tanks have their own catchment areas. Many of them are in need of restoration. When they are so restored, a further supply can be secured. With these sources of supply in all average years, a full supply can be obtained for the area of 25,000 acres proposed under them, although there may be some shortage in bad years as should be expected.

(iii) *Controlling agency.*

18. Madras have made a proposal to entrust the control of the reservoir regulation to an officer not under the control of the Mysore Government. On the face of it this proposal cannot bear a close examination. Even supposing, for a moment, that an outside officer is appointed and made independent both of Mysore and Madras, it is difficult to realise how he will be guided and controlled from Delhi or Simla on every occasion such guidance or control would be necessary unless very wide powers of discretion are given to such an officer.

That a mere Executive Engineer, even if appointed by the Government of India, should be an object of greater trust to Madras than the Mysore Government itself, is indeed surprising. Mysore have given no cause for any distrust on the part of Madras and strongly object to a proposal which would virtually amount to a cession of jurisdiction and control over a reservoir built by Mysore in their territory and for the benefit of their irrigation.

19. Mysore accept, as indeed they would be bound to accept, full responsibility for arranging to efficiently carry out all the duties that Madras would entrust to an outside Executive Engineer, by putting an efficient Executive Engineer of their own Public Works Department in charge of the reservoir with a competent staff under him. It will be their special concern to see that the officer so selected will operate the reservoir in strict and undeviating accordance with the rules that may be framed. It has also been conceded that any authorized Madras officer may come and inspect as often as Madras may consider necessary and that every facility would be afforded for such inspections. With these assurances and precautions Mysore fully hope that the proposal of Madras, based on a policy of suspicion, would not in any way be countenanced.

(iv) *Information regarding the details of the project.*

20. As regards the nature of information to be supplied to Madras regarding the details of the project, they have themselves specified what is essentially necessary for them in the following words "Generally Madras are concerned with the soundness and the safety of the works and "the operation of the provisions for passing water to Madras without risk of failure." Mysore are quite willing to supply this essential information.

21. But the claim of Madras to be supplied with full details relating to the alignment of the canals and the distribution of irrigation, etc., relating to the internal administration of the canal system are matters which cannot affect Madras so long as their prescriptive right is maintained unimpaired by Mysore. The information contained in the printed project book, if carefully examined, will be found quite sufficient to form a clear idea of the project and this has been supplemented by duty table and other data in connection with the preparation of the working tables. Mysore consider that no further details are really necessary.

22. Rule III of the Agreement of 1892 prescribes that "when the Mysore Government "desires to construct 'Any New Irrigation Reservoir' then full information regarding the "proposed work shall be forwarded to the Madras Government." And rule I gives a definition of "New Irrigation Reservoirs" and other similar expressions occurring in the agreement.

The same rule also specified only the quantity of water to be impounded and the area to be irrigated in addition to the constructive details of the reservoir, as points about which information may have to be supplied by Mysore. Although these items are mentioned in connection with the "repair or irrigation reservoirs" they can be taken to apply to "New Irrigation Reservoirs" also. Nothing is stated about the supplying of information as to where the area relative to the reservoir lies of how the canals are aligned, etc.

23. If it was the intention that such detailed information concerning internal arrangements should be supplied in connection with the reservoirs, surely some mention would have been made of the same in the preamble of the Agreement or in the correspondence that led to it. In the face of an explicit and restricted definition occurring in the agreement itself as to what is meant by "New Irrigation Reservoirs", there is now no justification to give an extended meaning to that expression. The "full information regarding the proposed work," viz., "New Irrigation Reservoirs" is to be supplied and not 'full details of the project" as contended by Madras. Thus, according to the Agreement, Madras cannot claim to be furnished with the details of the canal system, the distribution of areas, etc., about which they are not really concerned.

24. In this connection, Madras also desire to place some restriction on the draw-off for the new irrigation and bind Mysore down to the quantities shown in the working tables.

Mysore cannot by any means consent to such restrictions being imposed and cannot see what bearing these can have on the maintenance of the prescriptive right of Madras so long as the draw-off for the irrigation is out of the water to which they are entitled. As already stated in paragraph 16, My. 33, Mysore should have the full liberty to utilize the stored water in a manner best calculated to secure a proper return on the large amount spent on the reservoir.

A proper account of all the draw-off from the reservoir for irrigation will, however, be maintained. This will give all the information that Madras may reasonably require.

25. As regards the cost of gauging operations being fully borne by Mysore for two years Mysore have to record a protest against the unwarranted remarks made by Madras in this connection and regret that such expressions should have found a place in an official document. Mysore, while agreeing to bear all expenses of gauging operations conducted in their territory by their own staff, expected Madras to bear the cost of any establishment that they may choose to employ on the same operations for their own satisfaction.

8th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

Exhibit My. 36.

Memorandum on revised classification with 900 cusecs basis.

The issue for power with 900 cusecs at Sivasamudram will amount to 8,599 millions cubic feet against 10,242 millions cubic feet with 1,000 cusecs for the summer of 1906 which has been taken as standard for preparing duty tables.

2. Thus the power demand will be less by 1,644 millions cubic feet with the lower limit of 900 cusecs. For normal case A the balance required at the end of October with an allowance of 10,243 millions cubic feet for power was calculated as 33,500. So far a power requirement of 8,599 millions cubic feet only a balance of (33,500 — 1,644) or 31,856 or say 32,000 millions cubic feet will be required for the normal case A keeping all the other things equal.

3. Accordingly the balances required for the other cases will be as below with the same differences between class and class as before :—

Case A	32,000	at the end of October.
„ B	30,000	
„ C	28,000	„
„ D	26,000	„
„ E	24,000	„
„ F	22,000	„
„ G	25,000	at the end of September.
„ H	23,000	„
„ K	18,500	„

With this revised scale the classification of the following year with the Madras balances will change as under :—

	Classification with original scale on 1,000 cusecs basis.		Classification for revited scale on 900 cusecs basis.	
	Balance.	Case.	Balance.	Case.
1896–97	29,372	C	29,372	B
1905–06	26,145	H & E	27,168	H & C
1907–08	23,986	F	23,986	E

4. With this explanation there will be no difference between Mysore and Madras classifications for the years noted above.

8th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

Exhibit My. 36-1.

Years.	With 1,000 cusecs at Sivasamudram.		With 900 cusecs at Sivasamudram.		Original scale.	Revised scale.
	Balance at the end of September or October.	Classification.	Balance.	Classification.		
1896–97	29,372	C	29,372	B	Case A 33,500	Case A 32,000
1897–98	33,495	A	33,495	A	B 31,500	B 30,000
1898–99	31,870	A	31,870	A	C 29,500	C 28,000
1899–1900	17,614	K	18,884	K	D 27,500	D 26,000
1900–01	30,870	B	30,870	B	E 25,500	E 24,000
1901–02	36,573	A	36,573	A	F 23,500	F 22,000
					at the end of September.	at the end of September.
1902–03	34,228	A	34,228	A	G 26,500	G 25,000
1903–04	36,376	A	36,376	A	H 25,500	H 23,000
1904–05	28,637	C	28,637	C	K 20,000	K 18,500
1905–06	22,413 September. / 26,145 October.	H & E	23,447 September. / 27,168 October.	H & C	.. / ..	.. / ..
1906–07	34,276	A	34,276	A	..	..
1907–08	30,520	B	30,520	B	..	..
1908 ...	23,986	F	23,906	E	..	..

Note.—The balances here given are taken from the Madras tables.

8th May 1914.

KARPUR SHRINIVASA RAO,
Mysore Representative.

C

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