

## MADRAS RECORD OFFICE.

Government of Madras.

*Revenue* DEPARTMENT.

G.O. No. 1643

Press  
~~Mts.~~

Dated

5-7-

1886

Not to be folded or roughly handled

*Proceedings of the Madras Government, Revenue Department,  
5th July 1866.*

No. 65. Read the following Proceedings of the Madras Government in the  
Public Works Department :—

Passing orders on Executive Engineer Mr.  
Fraser's Memorandum, reporting in what  
state of progress he left the investigations  
which were entrusted to him for ascertain-  
ing the means of storing water in the val-  
leys of the Bhowany, Moyaur, and Noyel  
rivers in Coimbatore District. } (Here enter 28th June 1866, No. 2,043.)

No. 66. ORDER THEREON, 5th July 1866, No. 1,643.

Miscellaneous.

Communicated to the Revenue Board and to the  
Collector of Coimbatore.

(True Extract.)

(Signed) J. GROSE,

*Under Secretary to Government.*

To the Board of Revenue,  
,, the Collector of Coimbatore, } with Proceedings Public Works Department, No. 2,043.)

Exd. S. T. Augustin.

*Proceedings of the Madras Government, Public Works Department,  
23th June 1866.*

Read the following papers:—

No. 672. From the Superintending Engineer, 7th Division, to the Secretary to Government, Department Public Works, dated Coimbatore, 8th June 1866, No. 37.

Hoping to avail myself of the services of at least one of the Assistant Engineers, lately appointed and placed at my disposal, on projects connected with the irrigation of the Coimbatore District, I have the honor to request that you will be so good as to cause the transmission to my Office of all surveys, plans, and observations connected with the subject, which may have been prepared by Mr. William Fraser, C.E., while employed on special duty in that District.

No. 673. Memorandum on the proposed large Reservoirs on and about the Neilgherry Hills by W. FRASER, Esq., C. E., dated 11th June 1866.

1. In the Proceedings of the Madras Government No. 597, dated the 20th February 1866, I am directed—

I. To inform the Government in what state of progress the investigations which were entrusted to me, for ascertaining the means of storing water in the valleys of the Bhowany, the Moyaur, and the Noyel\* were left when my examination of those rivers was suspended.

II. To submit, at once, all plans and documents connected with these investigations that may be in my possession.

2. In replying to this order, I shall endeavour to give a brief account of what was done up to the time the investigation was suspended, and what I would recommend should now be done, if the Government are disposed to renew the enquiry.

3. In April 1855, when I came to India, I was directed to make myself familiar with the Madras system of irrigation, especially as practised in the District of Tanjore. At that time the Government were in the habit of making large remissions annually to the Merassidars for losses arising from deficient crops from deficiency of water.

I saw that this necessity arose from the system of depending altogether on the natural flow of the rivers for supplying the irrigation channels; and having no reservoir to fall back upon. It was not only when the monsoon was scanty that this deficiency occurred; it was almost equally bad when the usual quantity of rain fell, but in a short space of time, producing an unusually high flood, which filled the channels to overflowing, but which rapidly went down again, the water passing to the sea unused. This rapid discharge of the floods has often occurred; and there can be no doubt but that as clearing and cultivation extend in the upper regions of the rivers it will, from another cause, become their normal condition.\*

4. I was aware that the natural remedy for this evil was the formation of reservoirs; and an inspection of the Indian Atlas led me to believe that, on the upper portions of the Cauvery and of its tributaries, there were many places where

\* NOTE.—In Major Sankey's Report and the papers connected with it, this is treated as a newly discovered fact. It has long been known as an established fact in England, and on the Continent. When I was employed under the "Irish Arterial Drainage Commission" it was frequently a cause of litigation between Mill owners and Land owners. The Millers discovered that the clearing and draining of the lands upon the rivers above the sites of their mills, produced overwhelming floods during the rains, and an insufficient quantity of water during the rest of the year. They appealed to the law for compensation, and were sometimes successful.

reservoirs of great capacity could be constructed at small expense, as the requisite embankments would be short.

5. I submitted my opinions on this subject to Government, and recommended that the upper regions of these rivers should be examined. Up to this time I was not aware that Colonel Arthur Cotton, R.E., and one or two other parties had, many years previously, urged the construction of similar reservoirs; but, notwithstanding all that had been written on the subject, no actual investigation or survey had ever been made.

6. The Government quite agreed with the views I put forward, but they declined to undertake any investigation, and I was directed to proceed to Tanjore to become personally acquainted with the irrigation works of that Province.

A few months afterwards, a project which had been frequently brought up within the previous twenty or thirty years, was again urged on the consideration of Government, viz., the restoration of the Neriujapat anicut. This ruined anicut is across the Cavery, at the point marked A<sup>3</sup> on the accompanying sheet of the Atlas, and its restoration would bring under cultivation an immense tract of land in the Districts of Salem and Coimbatore; but, after much consideration, Government were obliged to reject the proposition again, because the reconstruction of the anicut would probably have rendered still more uncertain the cultivation in Tanjore and the adjacent Districts.

7. I took advantage of this circumstance to again bring before Government the advantage of constructing large reservoirs in the hill country; for I believed that if a few such reservoirs were on the tributaries which enter the Cavery below the site of the anicut, they would render the cultivation of the lower Districts so secure that there might be no hesitation about the execution of so useful and profitable a work as the restoration of that anicut would be.

The Government were then convinced of the importance of, at all events, getting some accurate information as to what could be done, and in August 1855, I was appointed to make the investigation.

8. I reached the Bhowany on the 4th of November 1855, and immediately proceeded with the examination of that river and its tributaries.

In August 1856 I sent up a preliminary report on thirty-two sites on the Bhowany, Moyaur, and Manar rivers; and one site at Yeumamangalam on the Kurchi stream, which flows into the Cavery about ten miles north of Bhowany. Those sites are marked upon the accompanying map (sheet 61 of the Atlas), they were fully described in the report, and sketch sections were given of the best sites for the embankments.

This report was the result of a careful examination of about 500 miles of river course, and three or four times as many square miles of country, nearly the whole of which was a wild, uninhabited, and unhealthy jungle.

At the same time I recommended that certain sites, which seemed to be particularly favorable, should be surveyed in more or less detail, according as their advantages became apparent during the survey.

After some delay the Government sanctioned this proposition, and in 1856-57 five sites were surveyed, two on the Moyaur marked A<sup>2</sup> and B<sup>1</sup>;\* one (No. 31) on

\* Note.—These were subsequently considered as one.

the Manal Kava; one in Arungadu valley near Coonoor; and one at Palavur on the Bhowany numbered 7. No. 33, on the Kurchi stream was also surveyed, but in a general way.

The first five sites were all surveyed in detail, but No. 31, and that at Palavur were carefully contoured as they were the most favorable.

9. Of No. 31 detailed plans, estimate, and report were sent up to Government in September 1857. The plans of those in the Moyaur and Arungadu valleys were never completed, as the Surveyor who had them in hands was withdrawn before he could finish his work.

The field work of the Palavur site was completed towards the close of 1857, the rough plans, and the details of the designs were then completed; but at this stage of their progress the two Assistants I had were withdrawn to the Executive Department, and as I was soon after appointed District Engineer of Coimbatore, I had no means of getting fair copies, estimates, &c., prepared, as Government declined to allow me to employ a Draughtsman for the purpose. This was the period when all works which were not absolutely and immediately necessary were stopped.

10. These plans of the Palavur basin are still with me, and as soon as those of No. 31, which are now in hands, are sent up, they will be finished and the estimates, &c., submitted to Government.

11. The plans, estimates, &c., of No. 31, which were submitted in September 1857, were forwarded by Government to Colonel Arthur Cotton, R.E., and to Colonel Lawford, R.E., then Superintending Engineer, for their opinion. They were subsequently returned to me to consider some objections raised by Colonel Cotton; after some discussion I re-submitted them; but they were finally returned to me with an intimation that under present circumstances it was not necessary to send up any designs for large works.

The plans have since remained with me, but I have only the original draft of the report and estimate. These have to be revised and copied, and some of the calculations re-made. They are now in hands, and so soon as they are in a satisfactory state I will submit the whole project to Government.

12. GENERAL REMARKS. *The Bhowany.*—I would refer to the accompanying map in explanation of these remarks.

From the junction of the Bhowany with the Cavery, to the junction of the Moyaur, there is no favorable site for a large reservoir. The country is generally flat, and nothing better than the usual long-banded, wide-spread, and shallow tanks could be constructed in that reach.

13. A short distance below the confluence of the Bhowany and Moyaur (about one mile) a bund might be thrown across the valley at a place where a rocky ridge, which approaches the river on the south side, is surmounted by a small pagoda not far from the village of Causipalliam. This would not be a favorable site so far as length of embankment is concerned, and there is also the objection that a large reservoir would swamp a considerable area of cultivated land on both rivers, two or three unmade public roads, and some villages; but it is so favorably situated, at the confluence of these two rivers which drain the whole of the Neilgherries and

a large part of the Mysore plateau, that if, in an engineering point of view, it turned out to be a good site, I would not allow those objections to prevail against it.

The catchment basin above this point is about 1,600 square miles, or 4,953 millions of square yards, and taking into account that by far the greater part of this area is upon the Neilgherries, a constant supply to a reservoir here would be certain. It would also have the advantage of catching any surplus water that might pass the other basins, supposing that a series of them were constructed on the rivers higher up. If a reservoir capable of holding 1,000 millions of cubic yards were constructed at this site, it would require about five inches in depth off the whole catchment basin to fill it, or about one-seventeenth of the average rain-fall upon Dodabetta. Such a reservoir could probably be filled twice in a year. I would recommend an examination of this site.

14. Between the junction of the Moyaur and No. 7 at Palavur there is no favorable site for a large reservoir, although there are several good sites for small ones.

This part of the Bhowany requires no further examination.

15. The site No. 7 at Palavur has already been alluded to in paragraphs 9 and 10, but, pending the submission of the plans and estimates, a short statement regarding the character of the natural basin may be interesting.

I propose to place the surplus weir 155 feet above the bed of the river at the site of the dam. At this height the area is nearly 20 millions of square yards, or about  $6\frac{1}{2}$  square miles, or about 4,200 acres.

The circumference at the same height is about 45 miles.

The capacity up to the same level is  $507\frac{1}{4}$  millions of cubic yards.

The width of the valley to be embanked across is, at the level of the surplus weir, 837 yards, and, at that of the top of the bund, (10 feet higher,) 852 yards.

Nearly the whole of the site is a wild, and almost uninhabited jungle.

The catchment basin is 304 square miles, or about 942 millions of square yards. Nearly the whole of it is exposed to the south-west monsoon, and must therefore receive probably not less than 120 inches of rain in the year.

16. Above Palavur, on the Bhowany, there are two good sites for comparatively small reservoirs at the villages of Sheramungundy and Sherakudavu. And on the Siruvani there are three or four favorable sites; one, especially, No. 5, near the village of Hugly, is singularly favorable; a ridge about 50 or 60 feet high runs across the valley on the west side of the river, and a nearly similar ridge approaches it on the opposite side, leaving only a narrow gorge for the river to pass through.

But all these sites above No. 7 would require no further consideration, until observations had shown that the proposed reservoir at Palavur was not sufficient to store the whole of the surplus water.

17. *The Moyaur river.*—I examined carefully the whole of the Moyaur from its source, under Makurty peak, to its junction with the Bhowany, and I am of opinion that it does not present even one very favorable site for the construction of a large reservoir, such as that at Palavur.

There are several places where comparatively small basins could be formed, especially on the plateau of the Neilgherries, where though the basins would be small, they would be favorable as regards cost of storage.

18. Near Gajelhatty, at the point marked A<sup>2</sup>. Captain (now Colonel) Ludlow recommended, many years ago, that a reservoir should be formed by embanking across the Moyaur. I have been informed that his report on the subject has been printed, but I could never get a copy of it; I saw, however, the original plan from which he made all his calculations.

It consisted of a section in the line of the proposed bund, and one contour line at the level of the proposed calingulah, partly surveyed and partly sketched.

Very early, in the course of my enquiry, I examined this site, and ran some lines of fly levels through it, but it turned out so far short of what I had expected that I passed on in the expectation of finding something much better.

I had no opportunity of renewing my examination, or I would have done so, for although, from my cursory examination at that time, I formed an unfavorable opinion of the site, I subsequently, from the perusal of many of his early reports, saw that Captain Ludlow was not likely to have put forward any thing that had not much to recommend it.

At the same time, I believe, he saw the site from only one side of the river, and that the Surveyor who prepared the plan did his work very carelessly, and thus misled him.\*

The next site on the Moyaur is where the one alluded to in paragraph 9 was surveyed. It is a good site, but I can say little about it as the surveys were never plotted. The place was so unhealthy that we remained out surveying nearly all day, intending to plot the work in a healthier climate; but, as before stated, the Surveyor who had the principal part of the work in hands was not allowed to remain to plot it.

I would consider this site unnecessary if that at Gajelhatty were approved of.

19. Between this point and that marked 30, there is no good site for a large reservoir.†

20. Site No. 30 is a good one and should, I think, be further examined.

The following extract from my first Report in August 1856, will explain the nature of this site:—

“As before stated, the river becomes sluggish near the Sawyer's village. Here it takes a sweep towards the west, to get round a large spur thrown out from “Chellavaroyenbetta. The spur runs nearly due west, and ends abruptly at the “river.

\* Note.—This Gajelhatty is a most dangerous place, on account of jungle fever. Few Europeans have ever gone there without being attacked, and no stranger should be allowed to go there without ample warning.

The fever is of a most virulent description, and difficult to be got rid of.

† Note.—At the point marked B<sup>3</sup>, known as the *Darshekundy Pass*, the Moyaur valley which, up to this, is wide undulating, and teeming with tributaries on both sides, suddenly narrows, and we then enter the lower end of what is called the “Moyaur ditch,” which extends from this place up nearly to Lippakadu. It is evident, from the configuration of this valley that the Darshekundy Pass is the termination of an ancient estuary. There are many places along the sides of the valley, where the ancient sea margins can be traced distinctly. The “Moyaur ditch,” which commences here, is a very singular instance of the action of a river in deepening its bed. It ranges, in depth, from 100 feet near the upper end to about

600 feet at the lower. Its cross sectional shape is that of a



with a level bit at the bottom, about

120 feet in width through which the river flows. The sides are very steep and are practically impassable. In approaching the ditch it is not seen until one comes close to its edge, as the land is at the same level on both sides.

" On the opposite side the land rises rapidly from the water, and then slopes upwards to the top of a conical hill called Pwinga-ghery-goody, or Pwinga-mally, about half a mile from the river, and about 500 feet above the level of the valley.

" The line of this spur seems to be the best one for an embankment.

" The reservoir would consist of the valley of the main river, that of the Shree-Maddurah river, (a considerable stream which flows from the west,) and that of the stream that enters near the Sawyer's village.

" The catchment basin is  $113\frac{1}{2}$  square miles, or 351,577,600 square yards, off which we might safely calculate on storing 500 millions of cubic yards, and I consider that if filled twice in the year this quantity might be stored by a bund 90 feet in height and not exceeding 400 yards in length.

" From Chellavaroyenbetta other spurs run down to the river on the north side of the one alluded to above; and as they are all met by the high ground on the opposite side of the river, it may be that one of them would answer better for the bund than the one described. The forest here is so close, that nothing but levels can decide this question, but I am of opinion that No. 30 is the best site this locality affords."

21. Upon the Neilgherries the Moyaur is called the Bakkary river, sometimes the Makurty river.

In this reach there are seven sites from No. 23 to No. 29 inclusive, where reservoirs, sufficiently large for their respective catchment basins, could be formed. Of these seven sites I prefer those numbered 25 and 28.

22. The former though small is a singularly favorable site, as the bund would be very short, and the basin flat and extensive. It is the flat reach which is crossed by the bridle-path from Ootacamund to Makurty peak, and it has all the appearance of being the bed of a former lake.

The two streams whose catchment basins are marked L. and M. on the map, can be turned into No. 25, as they lie at a much higher level.

The catchment basin of No. 25 is  $25\frac{1}{2}$  square miles, or nearly 79 millions of square yards. The rain-fall at this place is probably over 100 inches per annum, so that we might calculate on being able to conserve 120 millions of cubic yards. To accomplish this a very small bund would be required.

23. At No. 28 the catchment basin is 42 square miles, or about 130 millions of square yards, off which could probably be stored 200 millions of cubic yards.

If it be considered advisable to have reservoirs upon the Neilgherries, I would recommend the further examination of these two sites.

24. Besides Nos. 25, 28, and 31 already described, the following sites would, I think, be found favorable for small reservoirs upon the hills.

I. At the head of the Bhowany, near a place known as the "Long Valley," on the road from Ootacamund to Sissupare.

I have only ridden over this site, and can therefore give but a general opinion that I consider it would be found a favorable one.

II. The stream which rises on the west side of Dodabetta, and flows through Love Dale, that which flows by the west side of Bishop's Downs, and the streams

which flow from the neighbourhood of Manjanad, Mel Cowah, &c., all unite in an extensive flat which lies above the point marked No. 10. I do not know what changes may have taken place in this locality during the last ten years, but at that time very little cultivated land would have been interfered with by the formation of a reservoir there, as the site was then almost entirely grass-land, but the road from Ootacamund to Sissupare should have been diverted, and the bridle-path which then led from Ooty to Melur altered.

The place selected for the bund was a narrow rocky gorge of a V shape, with very steep sides, at the lower end of the flat alluded to above: and it would be difficult to find a site more favorable for an embankment.

The catchment basin at No. 10 is fifteen square miles, or 46,464,000 square yards.

The rain-fall is probably about 90 inches per annum, and assuming that we stored 54 inches off the whole area, it would yield about 70 millions of cubic yards.

On my inspection I was of opinion that a bund 70 to 80 feet in height would accomplish this.

25. A small basin, No. 22, was surveyed at Arungadu, but I presume that in that locality vested interests have so increased since I was there, that I need not further allude to it.

26. I examined all the streams on the south-east side of the hills, and although I met with many sites for small basins I would not recommend any of them for further examination.

27. On the north side there are two streams which I did not examine; the Mausri river, whose catchment basin is marked T, and the stream east of it marked O.

The result of enquiries I made about them was that, on the latter, no good site was likely to be found, but that the Mausri river was likely to afford one or more good ones. I think that this stream should be looked at.

28. For the sake of clearness I will now re-capitulate what I have recommended:—

I. An examination of the site at A<sup>1</sup>, below the confluence of the Bhowany and Moyaur.

II. An examination of the site A<sup>2</sup> near Gajelhatty.

III. Do. do. A<sup>3</sup> at Mangadu.

IV. Do. do. No. 30 near the Sawyer's village.

V. Do. do. No. 28.

VI. Do. do. No. 25.

VII. Do. do. in the "Long Valley."

At the head of the Bhowany, near the Sissupare road—

VIII. An examination of the site No. 10 on the Manar river.

IX. Do. do. of the Mausri river.

X. In addition to the above I would suggest the examination of the site at A<sup>4</sup> on the Bakkary or Moyaur river.

This is at a place called Kok-mally, where the river tumbles from the plateau of the Neilgherries to the plains.

On the only occasion on which I was able to visit this place, a thick fog prevented my seeing much, but I believe the site is a favorable one.

23th June 1866.

29. In conclusion, I beg to state that I have been able to put together the whole of the original draft of my first Report, which was sent up in August 1856. In it all the sites numbered on the map, and the rivers, are described, and sketch sections in the lines of the proposed bunds are given. Should the Government desire to have this report, as a record, I will have it copied and sent in, as I suppose the original could hardly be found now.

Should the Government decide on having any of the sites in the jungles surveyed, I shall be happy to afford information regarding the proper routes, places for halting, &c., which might be useful should the party be a stranger to jungle life.

I append a table of the areas of the several catchment basins, and a copy of the registry of rain-fall upon Dodabetta from the year 1847 to 1855 inclusive.

(Signed) W. FRASER, C. E.,  
Special Executive Engineer.

23th June 1866.

Table of Catchment Basins—See the accompanying Plan.

BHOWANY.

| Letter on Map. | Description.                                                  | No. of sites. | Square miles. | Square yards. | Square miles. | Square yards. |
|----------------|---------------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|
| A.             | Catchment basin of site ...                                   | 1             | ...           | ...           | 91.6          | 283,740,160   |
| B.             | Do. do. of site at Hugly ...                                  | 5             | 57.6          | 178,421,760   | ...           | ...           |
| C.             | Do. do. of the Hugly stream ...                               | ...           | 9.4           | ...           | ...           | ...           |
|                | Catchment basin of site ...                                   | 6             | 67.0          | 207,539,200   | 67.0          | 207,539,200   |
| D.             | Do. do. of the Vora-gar river, &c... ..                       | ...           | ...           | ...           | 145.4         | ...           |
|                | Catchment basin of site at Pa-lavur ... ..                    | 7             | ...           | ...           | 304.0         | 941,670,400   |
|                | <i>The Kondah river.</i>                                      |               |               |               |               |               |
| E.             | Catchment basin of site ...                                   | 10            | 15.0          | 46,464,000    | ...           | ...           |
| F.             | ... ..                                                        | ...           | 11.0          | ...           | ...           | ...           |
|                | Do. do. of ... ..                                             | 13            | 26.0          | 80,537,600    | ...           | ...           |
| G.             | Do. do. of Attaboil stream ... ..                             | ...           | 28.0          | ...           | ...           | ...           |
|                | Do. do. of ... ..                                             | 14            | 54.0          | 167,270,400   | ...           | ...           |
| H.             | Remainder of the catchment of Manar river ... ..              | ...           | 60.0          | ...           | ...           | ...           |
|                | Catchment basin of the Manar river ... ..                     | ...           | 114.0         | 353,126,400   | 114.0         | ...           |
| I.             | ... ..                                                        | ...           | ...           | ...           | 24.5          | ...           |
|                | Do. do. of site at Tondoy ...                                 | 17            | ...           | ...           | 442.5         | ...           |
| J.             | Do. do. of the Neera-lay river, &c... ..                      | ...           | ...           | ...           | 70.5          | ...           |
|                | Do. do. of site at Oo-shernulley ... ..                       | 20            | ...           | ...           | 513.0         | ...           |
| K.             | ... ..                                                        | ...           | ...           | ...           | 389.0         | ...           |
|                | Do. do. of the Bhowa-ny at the junction of the Moyaur ... ..  | ...           | ...           | ...           | 902.0         | 2,794,035,200 |
| L.             | Do. do. of site ...                                           | 23            | 6.0           | ...           | ...           | ...           |
| M.             | ... ..                                                        | ...           | 9.5           | ...           | ...           | ...           |
|                | Do. do. of site ...                                           | 24            | 15.5          | 48,012,800    | ...           | ...           |
| N.             | Do. do. of site ...                                           | 25            | 10.0          | ...           | ...           | ...           |
|                | Do. do. of No. 25, if Nos. 23 and 24 be con-veyed to it... .. | 25            | 25.5          | 78,988,800    | ...           | ...           |
| O.             | ... ..                                                        | ...           | 16.5          | ...           | ...           | ...           |

*Proceedings of the Madras Government, Public Works Department,  
23th June 1866.*

*Table of Catchment Basins—(Concluded.)*

| Letter on Map. | Description.                                                | No. of sites.                              | Square miles. | Square yards. | Square miles. | Square yards. |
|----------------|-------------------------------------------------------------|--------------------------------------------|---------------|---------------|---------------|---------------|
| P.             | Catchment basin of site ...                                 | 28                                         | 42.0          | 130,099,200   |               |               |
|                | ... ..                                                      | ...                                        | 71.50         |               |               |               |
|                | Do. do. of site ...                                         | 30                                         | 113.50        | 351,577,600   |               |               |
| Q.             | Includes part of Mysore ...                                 | ...                                        | 132.75        |               |               |               |
| R.             | Catchment basin of site at Nairgoonamundu ...               | 31                                         | 18.0          | 55,756,800    |               |               |
| S.             | Remainder of the catchment basin of the Seegoor river... .. | ...                                        | 77.0          |               |               |               |
|                | Catchment basin of site ...                                 | 32                                         | 341.25        | 1,057,056,000 |               |               |
| T.             | ... ..                                                      | ...                                        | 82.50         |               |               |               |
| U.             | ... ..                                                      | ...                                        | 57.25         |               |               |               |
| V.             | ... ..                                                      | ...                                        | 129.0         |               |               |               |
| W.             | Do. do. of site at Gajelhatty ... ..                        | ...                                        | 610.00        | 1,889,536,000 |               |               |
|                | ... ..                                                      | ...                                        | 87.0          |               |               |               |
|                | Do. do. of the Moyaur ...                                   | ...                                        | 697.0         | ...           | 697.0         | 2,159,027,200 |
| X.             | Do. do. of the Bhowany and Moyaur at their junction ... ..  | ...                                        | ...           | ...           | 1,599.0       | 4,953,062,400 |
|                | ... ..                                                      | ...                                        | ...           | ...           | 849.0         |               |
|                | Y.                                                          | Do. do. of part of the Andloor river... .. | ...           | ...           | ...           | 22½           |
|                | Total catchment basin of the Bhowany ... ..                 | ...                                        | ...           | ...           | 2,470         | 7,651,072,000 |

11th June 1866.

(Signed) W. FRASER, C. E.

*Proceedings of the Madras Government, Public Works Department,  
23th June 1866.*

*Registry of rain on Uoodabetta, Nairtheries, from 1847 to 1855 inclusive.*

| Months.       | 1847.   | 1848.   | 1849.   | 1850.   | 1851.   | 1852.   | 1853.   | 1854.   | 1855.   | Total.  | Average of months. |
|---------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------|
|               | Inches. | Inches. | Inches. | Inches. | Inches. | Inches. | Inches. | Inches. | Inches. | Inches. | months.            |
| January ...   | 1.70    | .12     | 1.77    | .49     | .08     | 1.51    | 5.14    | .35     | 4.05    | 15.21   | 1.69               |
| February ...  | 7.43    | .....   | .....   | 2.63    | .....   | .....   | .74     | .....   | 3.16    | 13.96   | 1.55               |
| March ...     | 3.62    | .55     | 2.15    | .69     | .49     | 2.17    | 9.88    | .57     | 3.73    | 23.85   | 2.65               |
| April ...     | 19.18   | 2.09    | 7.72    | 5.50    | 1.75    | 3.39    | 4.89    | 2.94    | 4.58    | 52.06   | 5.85               |
| May ...       | 4.86    | 6.40    | 6.06    | 6.45    | 8.23    | 18.61   | 6.78    | 4.94    | 1.70    | 64.02   | 7.11               |
| June ...      | 4.55    | 5.66    | 8.45    | 6.60    | 5.15    | 7.71    | 7.32    | 4.53    | 7.63    | 57.60   | 6.40               |
| July ...      | 7.41    | 13.06   | 10.59   | 9.84    | 20.11   | 13.00   | 8.86    | 10.29   | 5.52    | 98.68   | 10.96              |
| August ...    | 9.32    | 8.63    | 9.51    | 19.55   | 10.40   | 39.16   | 21.15   | 19.02   | 9.90    | 120.67  | 13.40              |
| September ... | 7.52    | 14.05   | 12.26   | 9.09    | 5.56    | 7.37    | 7.34    | 8.31    | 11.99   | 83.23   | 9.25               |
| October ...   | 12.49   | 4.36    | 15.37   | 12.56   | 13.13   | 9.44    | 9.74    | 25.48   | 13.77   | 116.34  | 12.92              |
| November ...  | 11.85   | 8.48    | 6.50    | 10.06   | 68.53   | 4.33    | 3.37    | 11.68   | 1.60    | 76.25   | 8.47               |
| December ...  | 12.28   | 2.59    | 1.87    | 4.91    | 2.58    | 13.52   | .....   | 1.98    | 13.22   | 52.95   | 5.88               |
| Yearly Total  | 102.83  | 65.99   | 82.24   | 88.40   | 35.66   | 94.21   | 85.21   | 90.09   | 80      | 775.48  | 86.13              |

\* Not observed, but calculated from the average of other years

(Signed) W. FRASER, C. E.

11th June 1866.

*Proceedings of the Madras Government, Public Works Department.*  
28th June 1866.

No. 674.

ORDER THEREON, 28th June 1866, No. 2,043.

CIVIL WORKS, No. 105.

1. In the Proceedings of Government, No. 597, under date the 20th February 1866, Mr. W. Fraser, Executive Engineer, was directed to report in what state of progress he left the investigations which had been entrusted to him for ascertaining the means of storing water in the valleys of the Bhowany, Moyaur, and Noyel rivers, in the Coimbatore District. The Memorandum above recorded, which is Mr. Fraser's reply, will be communicated to the Superintending Engineer of the 7th Division, with a view to his considering the advisability of completing the investigation of one or more of the projects which are noticed therein.

2. Mr. Fraser will be requested to forward at once to Government all the papers, plans, and surveys connected with these projects which are in his possession, for transmission to Lieutenant-Colonel Walker.

(True Extract.)

(Signed) CHARLES A. ORR, Colonel, R. E.,  
Secretary to Government.

*True Copy*  
*Charles A. Orr*  
*Secretary to Government*

To the Superintending Engineer, 7th Division, with Atlas sheet No. 61.

To W. Fraser, Esq., C. E.

To the Revenue Department.

Exd. S. T. Augustin.

*Copy of the above sent to the Coimbatore District Engineer on 28th June 1866.*

*5th July 1866*

*7th 1866*

