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# MADRAS RECORD OFFICE

## Government of Madras

*Public Works* DEPARTMENT

|                     |      |     |                 |
|---------------------|------|-----|-----------------|
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| Dated               | 3.9. |     | 1875.           |

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,  
3rd September 1875.*

Read the following papers —

No 64. From Major J BEATTY, R E, Acting Superintending Engineer, Godavery District, to Major J. O HASTED, R E, Officiating Chief Engineer for Irrigation and Joint Secretary to Government, Public Works Department, dated Camp Koder, 7th August 1875, No 1,450

1 Original design for shutters and gearing  
1 Memorandum to accompany original design  
1 Revised design  
1 Report to accompany revised design  
1 Estimate do do  
3 Sketches

WITH reference to your memorandum, No 212, of 17th February 1875, I have now the honor to forward an estimate for one set of under sluice shutters of Mr Larminie's design, together with

his new proposal for raising all the shutters by means of one or two screws.

2 Captain Brockman is revising his design and preparing an estimate for one set of shutters, which will probably be ready within a fortnight, and will be sent separately.

3 Mr Larminie's new plan is simply an adaptation of the method of raising sluice shutters in use at the Dumagudiem scouring sluices, which, however, Mr Larminie has never seen. He seems, however, to have had some account of it after Major Hasted's visit to Dumagudiem in December last.

4 The principal difference between the Dumagudiem plan and that proposed by Mr Larminie is in the manner that the screw, which is there carried by a travelling winch, is fastened to each of the spear heads attached to the sluice shutters.

5 At Dumagudiem the lower end of the descending screw is fastened to the top of the iron spear attached to the shutter by means of a flat piece of iron, which should, I believe, be called a "cotter," as shown at A B in the accompanying rough sketch.

Fig 1

6 The method of fastening adopted at Dumagudiem answers very well there for two reasons —

(1) — It is not necessary or desirable that the scouring sluice shutters should be opened at all during the freshes, and in practice they are only opened to scour out the channel of approach to the head lock after the freshes, when the river is low and falling.

(2) — The top of the wall on which the Dumagudiem travelling winch is worked is 34 feet above the sill of the sluices. The tops of the spears are more than 17 feet above the sluice sills, and the iron keys can therefore conveniently be applied by a lascar above water level. There is a lower platform at a suitable height for the lascar to do this.

7. At Dowlashweram it would not be convenient to have the platform for the travelling winch at any great height above the level of the anicut, so that Mr Larminie's arrangement of the enlarged boss with female screw attached to the shutters is an important improvement, if it be found in practice to work well, of which I have little doubt.

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3rd September 1875.*

8. But from a recent inspection of the Dumagudiem sluices, where I had the travelling winch worked and the screw spear keyed on to one of the shutter spears. I am led to suggest two improvements on Mr Larminie's design (1)—The short length of spear attached to the shutter might perhaps with advantage (as at Dumagudiem) be hinged to the shutter, as shown in the accompanying sketch,\* so that it may have a very

\* Fig 2

little play to the right and left, instead of being rigidly fixed to the shutter arrangement (2)—The bottom of the boss containing the female screw should be cone-shaped,† so as more readily to find and grasp the short length of spear head. This Mr Larminie accepts

† Fig 3

9 And I recommend Mr Larminie's "alternative arrangement for one screw with a transverse sliding motion," as much stronger at the point of junction with the shutter than that by means of two screws

10 I consider that this system, if the "alternative arrangement" be adopted, with the trifling alteration suggested in paragraph 8, would be a great improvement on the designs previously submitted. In time of high freshes all spear heads would, of course, disappear, and the cost of the new gearing would be very greatly reduced by one screw being thus made to do the work of many

11 Your suggestions regarding the distance pieces between the beams, and placing the grooves further back, will be attended to. The new grooves will be placed  $1\frac{1}{2}$  or 2 feet behind the old ones. Mr Larminie is confident of the strength of his gear box, and wishes to leave it unaltered, and as regards the brass worm-wheel nuts, he prefers keeping the brass, as neater work can be done in that metal and he will now have only one of them, so that it will not add much to the cost

12 It will be most convenient to try Mr Larminie's design at Vijaishwaram under sluices, where the roadway over the sluices is about 16' 6" above the level of the ancient, &c, about 2 feet above the level of the great fresh of 1861. If successful, the whole of those sluices may be worked in that manner, and if Captain Brockman's work equally well they can be applied to the whole of the Dowlaishwaram set of sluices

13 I send herewith, for convenience of reference, Mr Larminie's original design, with the memorandum and estimate which accompanied it. The new design is accompanied by an estimate for a traveller with pair of screws, &c, and one set of shutters

From J C LARMINIE, Esq. Assistant Engineer in charge of Southern Sub-Division, to Major J BEATTY, RE, District Engineer, Godavery District, dated Thapashwaram, 21th May 1875

With reference to your memorandum, No 3,869, of 15th March, and No 212 from the Chief Engineer for Irrigation I have the honor to inform you that there is no difficulty in applying Captain Brockman's method of lifting two shutters by means of one screw, to the shutters with rollers, proposed by me for the Dowlaishwaram Ancient under sluices

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3rd September 1875.*

2 When Major Hasted was in the district some time ago, he impressed on me the advantages to be derived from some method by which a travelling screw might be made to do the work of the number of screws provided for in both Captain Brockman's and my own estimate

3 After some consideration it occurred to me that the arrangement (applicable to either Captain Brockman's or the roller shutters) for which I now have the honor to submit a plan\* and estimate (for one set of experimental shutters) may succeed

\* Already handed over, 24th May 1875

4 The idea is simply this, to the top of each shutter, is attached a short length (6 inches) of screw, and to the end of the lifting screw or screws, mounted on a travelling frame, is forged an enlarged boss with a female screw topped therein, both the boss and short length (6 inches) of screw attached to the shutters being similar to the joint of a boring rod

5 Through the whole length of the threaded part of the lifting screws is cut a half inch slot, in which works an iron catch, shown at II on plan, the object of this slot (for which there is a precedent at Dumagudiem) is twofold.

1st—When lowering the screw on to the shutter by means of the endless screw and female nut, were it (the screw) not prevented from revolving by means of the catch, working in the slot, the screw would not descend

2ndly—The shutter having been lifted (and hung on to the beams by means of the lever hooks), the lifting screw can be detached by means of the ratchet spanner furnished with a projection which works in the slot

6 When the screw has been lowered to the shutter, to attach the lifting screw to the 6-inch length, the ordinary spanner must be applied to the head of the screw, when a few turns will lock it on to the shutter, and I may here remark that the action of lifting will only tend to screw it on all the tighter to the shutter

7 For screwing down the shutter it is not essential that the screw should be attached thereto, were it screwed on, the action of screwing down would unscrew it again, so I have provided for a female pintle nut, to be screwed into the female boss of the lifting screw prior to lowering the shutters, this pintle bears on a corresponding one turned on the 6-inch length of screw attached to each shutter, and in screwing down the longitudinal slot cut through the thread of the lifting screw comes into play again in preventing the screw from revolving

8 In the lower left hand corner of the plan I have shown an alternative arrangement, by which, I think, one screw could be made to do the work, in this the female lifting nut, &c, is mounted on a plate which slides in cast iron grooves, so that the screw may be moved until vertically over either shutter. This arrangement would be a little cheaper and simpler than the one with two screws, as the endless screw working the female lifting nut might then be dispensed with and an ordinary spanner applied direct to the female nut

9 Regarding the likelihood of the proposed arrangements working successfully, the only difficulty I can at all see likely to arise is the getting of the lifting screw, vertically over the small screw attached to the shutter, prior to its being screwed on to the latter, but with the revised form of wheel and rail (shown at bottom of plan), and the correct position for the traveller, accurately marked in each bay of the under sluices before the freshes come down, I do not think there is much to fear on this score. If the lower shutter be invariably lifted first, the screw will always descend in still water with nothing to cause a deviation from the perpendicular, and with accurately fitting shutters on rollers, or, as in Captain Brockman's plan, in planed cast iron grooves, it appears to me that the only objection vanishes

10 The original plan and estimate are herewith returned for reference. The only change in the general elevation required, should the travelling screw prove a success, will be the omission of the cut stone caps to the piers

*Proceedings of the Madras Government, Public Works Department,  
3rd September 1875.*

No 943

No 64-A *Note by the Chief Engineer for Irrigation*

THE problem of a suitable design for gearing for working the shutters in the under sluices of the Godavery and Kistna anicuts is one which has long been awaiting solution. It presents much greater difficulties than in the case of head sluice shutters, because the shutters have to be worked from a comparatively low level, and the platforms being in some cases below high flood level, it is essential that the gear should offer little or no obstruction, so as to avoid risk of damage by drift wood or of strain by the accumulation of brushwood.

2 Captain Brockman and Mr Larmine have turned their attention to the subject, and in January last the District Engineer submitted their designs which were reviewed and certain improvements suggested. Mr Larmine has now prepared a revised design, with the important modification of a traveller with one set of lifting gear for a set of under sluices instead of separate gear for each vent.

3 The arrangements suggested indicate that much care has been taken to provide for the requirements of such gear, and Major Beatty proposes that, with certain minor modifications, the plan of working under sluice shutters by a traveller with a single screw should be tried at the Vijeshwaram under sluices, the platform of which is about 2 feet above the level of the great fresh of 1861.

4 The estimate for the traveller and shutters for one vent is Rupees 1,327, and the cost of the traveller and gear attached thereto should have been shown separately for the head sluice of the Eastern Delta. There is no provision in the Godavery Delta completion gear may therefore be met from the Minor New Works grant under Capital, and it is recommended that Rupees 1,500 be sanctioned for the purpose out of the sum at the disposal of Government.

5 Captain Brockman's revised design will shortly be ready, and it is intended to try his plan at the Dowlashwaram under sluices which are differently circumstanced, the platform being liable to submergence. He has already designed gear for the head sluice of the Eastern Delta Main Canal, and four vents therewith fitted have been successfully worked this year, as reported by the District Engineer in transmitting a few days ago particulars of a high fresh in the river.

6 Both these officers deserve much credit for their endeavours to overcome the difficulties which have hitherto attended the working of the shutters of large sluices will be of much value not only to the Godavery but to the Kistna Delta also.

7 Complete drawings of all the new gear as constructed will be required in due course, in order that they may be lithographed and made available for the information of officers requiring similar appliances elsewhere.

OOTACAMUND,  
24th August 1875

(Signed) JOHN MULLINS, Lieut.-Colonel, R.E.,  
Chief Engineer for Irrigation

*Proceedings of the Madras Government, Public Works Department,  
3rd September 1875.*

No 65

ORDER THEREON, 3rd September 1875, No 2,514

IRRIGATION, No 6

Account

THE Honorable the Governor in Council sanctions a sum of Rupees 1,500, from the Minor New Works grant at the disposal of Government, for the construction of an experimental set of gear for working the Vijeshwaram under sluices of the Godavery anicut, and His Excellency views with much satisfaction the endeavours which are being made by Major Beatty, Captain Brockman, and Mr Larmine to introduce improved arrangements at the regulating sluices of the anicut.

(True Extract)

Major-General, R.E.,  
Secretary to Government.

To the District Engineer, Godavery  
" Chief Engineer for Irrigation  
" Controller of Public Works Accounts

Ed S T Austin  
Spure Copies

No 943

Note by the Chief Engineer for Irrigation

The problem of a suitable design for <sup>the</sup> gearing for working the shutters in the under sluices of the Godavery and Krishna anicut is one which has long been awaiting solution. It presents much greater difficulties than in the case of head sluice shutters, because the shutters have to be worked from a comparatively low level, and the platforms being in some cases below high flood level, it is essential that the gear should offer little or no obstruction, so as to avoid risk of damage by drift wood or of straining by the accumulation of brushwood.

3. Captain Brockman and Mr. Larmine have turned their attention to the subject, and in January last the District Engineer submitted their designs which were reviewed and certain improvements suggested. Mr. Larmine has now prepared a revised design with the important modification of a traveller with one set of lifting gear

No 3088-6 Jan.

" 213-17 Feb.

for a set of undersluices instead of separate gear for each vent.

3- The arrangements suggested indicate that much care has been taken to provide for the requirements of such gear, and Major Beatty proposes that, with certain minor modifications, the plan of working under sluice shutters by a traveller with a single screw should be tried at the Vijeshwararam under sluices, the platform of which is about 2 feet above the level of the great fresh of 1861.

4- The estimate for the traveller and shutters for one vent is Rupees 1327, and the cost of the traveller and gear attached thereto should have been shown separately of the former only one will be needed for all the vents of these sluices. There is no provision in the Godavery Delta commission estimates for these improvements to the under sluices, and the cost of the experimental gear may therefore be met from the minor new

new works grant under Capital and it is recommended that Rupees 1,500 be sanctioned for the purpose out of the sum at the disposal of Government. 5 ✓

5- Captain Brockman's revised design will shortly be ready, and it is intended to try his plan at the Dawlaishwararam under sluices which are differently circumstanced, the platform being liable to submergence. He has already designed gear for the head sluice of the Eastern Delta Main Canal, and 4 vents therewith fitted have been successfully worked this year, as reported by the District Engineer in transmitting a few days ago particulars of a high fresh in the river.

6- Both these officers deserve much credit for their endeavours to overcome the difficulties which have hitherto attended the working of the shutters of large sluices under pressure from considerable heads of water, and their services in this respect will be of much value not only to the

Godavery but to the Krishna Delta also.

4- Complete drawings of all the new gear as constructed will be required in due course, in order that they may be lithographed and made available for the information of officers requiring similar appliances elsewhere.

Wm Luntz Lieut Col U.S.  
Chief Engineer for Irrigation

Ostacumund  
21<sup>st</sup> August 1846

To The Secretary Government

3712

Feb 12. 1912. 1912. 1912.

6-2-1971

I have not yet  
 seen the first  
 of the new  
 for which I am  
 very much interested  
 that I am sure

P. W. 1895 Sept.  
No. 5730

From

The Chief Engr.  
for Irrigation

Dated 21 Aug.  
Recd. 6 Sept 1895

S.G. No. 943.

Notes on a new design  
by Mr. Asst. Engr. Loe.  
minic for improvement  
in connection with  
under-irrigation, farming,  
Godavery Dist.

26 Sept 1895 K 2574

No 64a

### Memorandum

The sanction is proposed to be given for the Vigraharan under-irrigation, from the Ordinary Agricultural Grant, and the expenditure on this first set as well as against the whole of the under-irrigation hereafter will be a capital charge against the Delta works. It would of course be feasible to make a special application to the Government of India please to charge the work to Extraordinary, but it is thought that in cases of this kind in which it may be necessary to ascertain the most suitable arrangements before deciding finally upon the design, the minor works grant under Ordinary is a proper fund to

draw upon

by 2/9

730

Handwritten text in a columnar format, likely a ledger or account book, with multiple entries and some numbers.

No 2514  
 N.H. Dec 21/9

Proceedings of the Madras Government  
 (to order the 3<sup>rd</sup> Sept 1891)  
 (Read the following:-  
 Note by the Chief Engineer  
 for Irrigation) {H. E. D. 21/9 of 21/9/91}

The Honorable the  
 Governor in Council  
 sanctions a sum of Rupees  
 1,500, from the Minor New  
 Works grant at the dispo-  
 -sal of Government, for  
 the construction of an  
 experimental set of gear  
 for working the Vijesh-  
 -warum under sluices  
 of the Godavery aicut,  
 and His Excellency views  
 with much satisfaction  
 the endeavours which are  
 being made by Major  
 Beatty, Captain Brockman

and Mr. Lammie to intro-  
 -duce improved arrange-  
 -ments at the regulating sluices  
 of the canal.

~~11/11~~  $\frac{23}{8}$

12

$\frac{64}{5}$   $\frac{36}{4}$

De foderary 9 -  
 of the 5 - with 8 enclosures  
 Ant. M. W. 5 - with 1 estimate

SC. Drapd - 20 - 8 - 75

115730

Act of 1873  
PUBLIC WORKS.

Met. High.  
Gadamer

1. m

1. m

1. m

200 Sept. 25/4

Dec. 14/85  
62 minutes

Experimental Act of 1873  
for the improvement of the  
under sluices of the Godavari  
Ancient. Sanctioning the  
sum of Rs. 1500 for the con-  
struction of an — and drawing  
with satisfaction the endowments  
made by certain officers to in-  
crease improved arrangements  
at the regulating sluices of the  
River Godavari.