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MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 599 Press / Mis-

431-32

Dated 22 - 2 1870.

Not to be folded or roughly handled

No. 431. Read the following :—

No. 31.

Note by the Acting Chief Engineer for Irrigation.

I HAVE been in correspondence with Captain Smith on the subject of the position and number of river gauges required, and I have furnished that officer with the necessary instructions.

2. Captain Smith should take into account, in selecting sites for the bunds of reservoirs, the possibility of carrying out the earth-work by means of silting. The cost of depositing a cubic yard of soil by this process is so much below that of manual labour, that it is of importance that bund sites should, wherever practicable, be fixed with reference to the facilities which may exist for executing the work in this way.

FORT ST. GEORGE,
10*th February* 1870.

(Signed) J. MULLINS, Major, R. E.,
Acting Chief Engineer for Irrigation.

From Captain C. J. SMITH, R. E., Executive Engineer on Special Duty, to Major J. MULLINS, R. E., Acting Chief Engineer for Irrigation, dated Camp at Bhowany, 31st January 1870, No. 7.

I HAVE the honour to forward my Monthly Report for the month of January.

MONTHLY REPORT OF THE OPERATIONS CONNECTED WITH THE CAUVERY RESERVOIR PROJECT.

Examination of sites for Reservoirs.—During the month of January I have personally examined the course of the Bhowany river from Nelitooray to its junction with the Moyaur, and considerable portions of it here and there from the Moyaur Junction to the Cauvery.

2. I have visited the gorges of the only promising valleys along the southern slopes of the Neilgherry Hills and the valley of the Moyaur as far as four miles above Gazelhutti, and have made a more detailed examination of the Bhowany river-bed from the Moyaur Junction to a little east of Sattiamungalam.

3. No sites, in my opinion, offer themselves for further investigation between Metapalem and Cotamungalum. The gorge in the valley of the Moyaur, near Tappathoray above Gazelhutti, (I believe noticed by Captain Francis,) does not seem to me worthy of further investigation, though a tempting site to an observer from Gazelhutti. The valley above is inconsiderable, the fall heavy, and the gorge wide.

4. I think there are good grounds for supposing that a very effective reservoir may be constructed near Cotamungalum by connecting some of the small detached hills which extend across at intervals from the Collegal Plateau to the Iramberry Peak some miles up the Bhowany valley.

5. I have examined the greater part of the Arkuncota Channel, the Codavely Anicut, and the gorge of the Congarayapalem valley; this latter, coupled with a peculiarly favourable disposition of drainage on the plateau above, as seen on the map, suggests the idea of turning the drainage, now flowing away northward, into the valley mentioned. A close inspection of the gorge dispels this idea.

6. With regard to the site at Cotamungalum, the length of bank as at Nelitooray is an objection, but the following advantages appear to me to warrant the prosecution of further inquiry :—

(1.) The diminution of "head," and, therefore, risk of accident.

(2.) The lessening of damage to the country below, in case of accident, after completion.

(3.) The facilities apparently offered for disposing of the surplus in portions instead of *en masse* by the several saddles connecting the hills on either flank.

(4.) The absence of the necessity for having any outlet in the main dam.

(5.) The apparently more abundant supply of soil in proportion to requirements.

(6.) The better climate and means of communication and resulting decrease in rates.

(7.) The possibility of raising the dam and adjoining saddles gradually and tentatively during a succession of years.

The levels for this project will be commenced as soon as an Assistant is available.

7. *Registration of River Discharge.*—I have fixed upon the following sites for the erection of gauges :—

(1.)	Bhowany	1. Metapalem Bridge. 2. A masonry pillar. 3. do.
(2.)	,,	Vellamandy Anicut (four gauges.)
(3.)	Moyaur	200 yards above junction with Bhowany.
	Bhowany	Below junction, on a face of rock.
	,,	Do. a masonry pillar.
(4.)	,,	Sattiamungalum Bridge. A face of rock near Fort.
(5.)	,,	Codavely Anicut (two gauges.) Head works (four do.)

8. The valley above Metapalem is so unhealthy and sparsely populated, while the river is so difficult to gauge, except by the nearly impossible arrangement of a dam, that I have decided to erect the first gauge at the Metapalem Bridge.

9. The observations here may be checked by those at the Vellamandy Anicut if we can induce any one by a high rate of pay to undertake the required observations. I think perhaps the man who takes charge of the chuttrum three miles off, or some member of his family, might be persuaded to take them.

10. The next spot where gauging is practicable is just below the junction of the Moyaur. The banks of this latter river are so densely overgrown and so favourite a resort of large game, that I can get no registry taken higher up than about two hundred yards above the junction with the Bhowany. A masonry pillar may be erected here ; a large face of rock a little below the junction will carry a second gauge ; and a masonry pillar must be erected further down for the third.

11. At Sattiamungalum, a gauge on the lower face of the bridge, and a second on the Fort face, some three hundred yards lower down, will enable me, by comparison with the Vellamandy Anicut results, to gauge the Moyaur supply as a check on the Cottamungalum series, which must, from the position, I am afraid be less reliable than the rest.

12. At Codavely, five miles or so lower down, very good observations are practicable owing to the height of the anicut there.

13. At Bhowany I have not yet decided upon the arrangements. The river-beds are so irregular and so dry, the Moyaur Anicut so oblique, irregular in section, and uneven in crest level, that I would suggest, for the consideration of the Acting Chief Engineer for Irrigation, whether, remembering the unsteady surface of water passing through a bridge under such a high velocity of approach, it would be worth while endeavouring to ascertain by gauge readings the heads on the bridges themselves, t king, for instance, the difference of level between the backwater pools usually formed on the upper and lower wing faces, the velocity of approach being deduced from the surface fall as observed by a third gauge erected above the bridge.

14. *Employment of Assistants.*—Mr. Larminie has during the month been engaged in surveying the Nelitooray site.

His transverse section of proposed site for dam being sufficiently favourable, he continued the level up the Bhowany valley, and has, I believe, nearly completed this line. He will shortly commence levelling in the adjoining (Motemputty) valley.

Proceedings of the Madras Government, Public Works Department, 22nd Febuary 1870.

15. *Registration of Rainfall.*—I have procured from the various districts, Coimbatore and Mysore excepted, all existing rain records, and am having them abstracted. Books are being opened in my office for the regular monthly registry of the rainfall of all the districts drained by the Cauvery.

16. *Proposed occupation for coming month.*—I propose, after completing my examination of the Nerinjipet project, on which I am at present engaged, to continue the selection of various sites for gauging the discharge of the larger Salem feeders, of the Noyel, and Amravatty, after which I shall commence my examination of the upper hill sites and all those in the higher valleys approachable during the fever season, and hope to be able to submit the Nerinjipet project finally for sanction.

17. *Climate.*—I beg to record, for the benefit of any one who may hereafter take the Cauvery project off my hands, my experience of the climate as regards fever.

In December at Nelitooray I had one bad case.

In January fever was prevalent, more or less, all along the foot of the hills, (Nilgiri and Collegal), but especially at Vellamandy, Gazelhutti, Arkuncota, and Andiyoor, attributable by nearly all the inhabitants asked on the subject to rice cultivation.

Of my establishment, consisting of 16, I had—

Contracted, I have not the least doubt, at Arkunkota.	At Sattiamungalum	...	...	...	1 case.
	1st day, at Arkuncota	...	...	...	2 ,,
	2nd ,, at do.	...	...	...	5 ,,
	1st ,, at Attani	...	...	...	2 ,,
	1st ,, at Bhowany	...	...	...	2 ,,
	2nd ,, at do.	...	...	...	2 ,,
					14 ,,

I experienced a slight attack myself, and I understand that the three European subordinates employed in this neighbourhood are at present in Bhowany with similar ailment.

18. I am informed everywhere that fever is most prevalent in this and the Cauvery Valley, as also in Collegal Talook, from November to January inclusive.

My establishment all slept under cover, were provided with blankets, and wore thick cloth suits.

Most of the cases of fever were "testian" and have yielded in time to ipecacuanha and quinine.

19. *Requests for assistance.*—In conclusion, I venture to express a hope that I may be furnished with assistance as soon as possible, and I would particularly request that, if practicable, I may be permitted the services of Mr. Gaynor, at present employed in the irrigation gauge, as he surveyed and is thoroughly acquainted with the site of all bench-mark stones, etc., and the details of the Nerinjipet project, and could, therefore, best complete the few additional lines of level necessary to enable me to re-design the masonry works and submit the project for sanction. I submit this request subject to the approval and consent of the Superintending Engineer of the Division and Supervisor in charge of the irrigation range, to whom I have not referred the matter.

(Signed) C. J. SMITH, Captain, R. E.,
Executive Engineer on Special Duty.

No. 432. ORDER THEREON, 22nd February 1870, No. 599.

IRRIGATION, No. 23.

THE Government regret to learn from this report that the establishments at work under Captain Smith have already suffered to some extent from fever. Careful inquiry should be made as to the healthy and unhealthy seasons in each part of the country to be investigated, and the examinations should be confined to those seasons in which there may be the least risk of sickness. Captain Smith should, in communication with the Civil

Surgeon at Coimbatore, indent for such medicines as will be of most service in preventing or curing fever and other diseases common in the country in which the officers and subordinates may be employed; and, if the establishments will be sufficiently concentrated to make the services of a Dresser useful, the Government will be prepared to sanction the employment of one.

2. The Superintending Engineer of the 7th Division will be requested to report whether Mr. Gaynor can be spared from the Irrigation Range of the Coimbatore District.

(True Extract.)

(Signed) J. MULLINS, Major, R. E.,
Acting Joint Secretary to Government.

To Captain C. J. Smith, R. E.
To the Superintending Engineer, 7th Division.
,, Public Department.

Exd. A. S. Rodgers.

Monthly Report
of the operations connected with
the Cavery Reservoir Project
=

Examination of Sites for Reservoirs

1. During the month of January, I have personally examined the course of the Bowany river, from Sellioray to its junction with the Moyaur, and considerable portions of it, here and there, from the Moyaur Junction to the Cavery

2. I have visited the gorges of the only promising vallies along the southern slopes of the Nilgiri Hills & the valley of the Moyaur as far as four miles above Jagelhutty and have made a more detailed examination of the Bowany river bed, from the Moyaur junction to a little east of Vellianayakan

3. Ho Sites in my opinion offer themselves for further investigation, between Jhetapalem and Cotamangalam; The gorge, in the valley of the Noyyan near Joppattoray, above Gazelhatti. (I believe noticed by Capt. Francis) does not seem to me worthy of further investigation, though a tempting site to an observer from Gazelhatti; The valley above is inconsiderable the fall heavy and the gorge wide.

4. I think there are good grounds for supposing that a very effective reservoir may be constructed near Cotamangalam, by connecting some of the small detached hills that extend across, at intervals, from the College Plateau to the Cranberry Peak, some miles up the Bowany valley

5. I have examined the greater part of the Arkumbota Dr., the Codavely Anikats and the gorge of the Bongarayapalem valley

this latter, combined with a peculiarly favorable disposition of drainage, as seen on the map above, suggests the idea of turning the drainage, now flowing away northward, into the valley mentioned; a close inspection of the gorge dispels this idea

With regard to the site at Cotamangalam, the height of bank, as at Jhetapalem, is an objection, but the following advantages appear to me to warrant the prosecution of further enquiry

(1) The diminution of head and consequent risk of accident

(2) The lessening of damage to the country below, in case of accident after completion

(3) The facilities apparently offered for

for disposing of the surplus in portions, instead of "in mass", by the several saddles connecting the hills on either flank.

(4) The absence of the necessity to having any outlet in the main dam.

(5) The apparently more abundant supply of soil, in proportion to requirements

(6) The better climate & means of communication and dwelling [illegible] in rates.

(7) The possibility of raising the Dam and adjoining saddles, gradually and tentatively during a succession of years.

The levels for this project will be commenced as soon as an assistant is available

7. I have fixed upon the following sites for the erection of gauges.

Registration of river discharge

11. Bhowany { 1. Metapalem bridge. 2. a masonry pillar 3. " — "

12. Bhowany Pellamandy anicut (four gauges)

13. { Moyaru / Bhowany } { 200 yds above junction with Bhowany / Below junction, on a face of rock / " " a masonry pillar

4 Bhowany { Sattiamangalam Bridge / a face of rock near Ont.

5. " Codavely Anicut (two gauges). Head Works -- (four ")

8. The valley above Metapalem is so unhealthy and sparsely populated, while the work is so difficult to gauge, & [illegible] by the nearly impossible arrangement of a dam, that I have decided to erect the first gauge at the Metapalem bridge—

9. The observations here may be checked by those at the Pellamandy anicut if we can induce any one, by a high rate of pay to undertake the [illegible] observations; I think perhaps the man who takes charge of the Chattram, 3 miles off, or some member of his family, might be persuaded to take them.

10. The next spot where gauging is [illegible] is just below the junction of the Moyaru & the—

the banks of this latter river are so densely overgrown, and so favorite a resort of large game, that I can get no registry taken higher up than about 200 yards above the junction with the Blowany, a masonry pillar may be erected here, a large face of rock a little below the junction - will carry a decent gauge. and a masonry pillar must be erected further down for the third

11. At Sattiamangalam, a gauge on the lower face of the bridge, and a second on the 4th face. some 3 hundred yards lower down, will enable me, by comparison with the Kellamanj Ambut results, to gauge the Bhavani supply as a check on the Coldamanjel series, which must, from the position, I am afraid, be less reliable than the last;

12 At Coldavely 5 miles or so lower down,

very good observations are impracticable, owing to the height of the Ambats there;

13. At Bhavany I have not yet decided upon the arrangements. The river beds are so irregular and rocky, the gauges Ambats so obliquely, irregularly in section and uneven in crest level, that, I would suggest for the consideration of the Chief Engr. for Irrigation Water, remembering the uneven surface of water passing through a bridge, under such a high velocity of approach, it would be worth while endeavouring to ascertain by gauge-readings, the heads on the bridges themselves, taking for instance the difference of level between the backwater pools, usually formed on the upper and lower wing faces of the

velocity of approach being deduced from the surface fall as observed by a third gauge erected above the bridge —

14. Mr. Darmine has during the Employment of Assistants month been engaged in surveying the Kelitoray site; his transverse section of proposed site for dam being sufficiently favorable, he continued the work up the Bhowany valley, and has I believe nearly completed this line. He will shortly commence levelling in the adjoining Bhotenpatty valley.

15. Registration of rainfall. I have procured from the various Districts Combatore & Salem Collectorates all existing rain records and am having them abstracted. Books are being opened in my office for the regular monthly registry of the rain-fall of all the districts drained by the Cauvery

16. Proposed Investigations during coming month. I propose, after completing my examination of the Kunjipatty project, on which I am at present engaged, to continue the selection of various sites for Sangam, the discharge of the larger Salem feeders, of the Anjal, and Amravatty, after which I shall commence my examination of the upper hill sites, and all those in the higher valleys above the fever-season. and during the fever-season. and hope to be able to submit the Kunjipatty project finally for sanction;

17. Climate. I beg to record for the benefit of any one who may be asked to take the Cauvery project, that my

hands., Inj^s & perience of the climate
as Eyards fever.
In Decembr at Pelitonay I had
one bad case.
In January fever was prevalent
Jun miles, all along the foot
of the Hills. (Nilgiri & Coleghl.
but specially at Vellamandy
Gazlehutti, Arkumbota & Sudjipi
attributable by nearly all the
inhabitants, owned to the subject
to ric cultivation —.

Of Inj^s Contracting of 16.
I had at Sathiamangalam 1. Case.
1st Jan — Arkumbota — 2. "
2d Jan — " — 5 "
Contracted I had not the least doubt at Arkumbota { 3d: Jan & Attani .... 2. "
1st " " Bovany .... 2 "
2d: " " " ..... 2 "
11
I experienced a slight attack
myself and I understand that
the three European Subordinates
employed in this neighbourhood
are at present: in Bovany with
similar ailment.

18. I am informed Neyyoor
that fever is most prevalent
in this & the Casey Valley
as also in Coloyal Taloob.
from. Dec^r to January
inclusive —.
My Stab^s all cloth underCoat
are provided with blankets &
bore. thick cotton suits —.
Most of the cases of fever have
"certain" and have yielded in
time to Ipecacuanha & Quinine

19. In conclusion I venture to
Requests for assistance — express a hope that I may be
furnished with assistance
as soon as possible, and
I would particularly request
that, if practicable, I may
be permitted the services of
Mr. Gayner, at present
employed in the irrigation
gauge, as he surveyed and
thoroughly —

acquainted with the site of the
bench marks Stones &c. and the
details of the Remijfick project
and could therefore best
complete the few additional
lines of level necessary to
enable me to design the
Masonry works and submit
the project for Sanction. —
I submit this Report Subject
to the approval and Consent of
the Supt. Engr of the Div and
Supt. in charge of the Irrigation
Range to whom I have not
referred the matter. —

C Wilmot Capt R.E.
Asst. Engineer in Charge

Camp. Blowany
31st January 1870

9

From
Capt. C. S. Smith R.E.
Asst. Engr. on Special duty

To Major J. Gullies R.E.
Dy. Chief Engr. for Irrigation

Sir I have the honor to
forward my Monthly Report
for the Month of January.
I have the honor to remain
Sir
Your obedient Servant
C Wilmot Smith Capt R.E.

Enclosure 1.

Camp. Blowany.
January 31st 1870.

P. W. Department.

No 599 ... 10 ...

Proceedings of the Madras Govern.t

Under date the 22d Feby/70.

Read the following.

From. The Ag. Chief Engineer for Irrigation. — G/A. E. No 31 of 10th February 1870

The Government regret to learn from this report that the establishments at work under Captain Smith have already suffered to some extent from fever —

Careful enquiry should be made as to the healthy and unhealthy seasons in each part of the country to be investigated, and the examinations should be confined to those seasons in which there may

From
The Secretary to Govt.
Public Works Dept.

To
The Chief Engineer
for Irrigation.

Dated 19th Feby 1870.

Sir,

I am directed by the Hon.ble the Lieut. Governor in Council to request that you will be pleased to report for the information of Government whether the unhealthiness of the Cauvery Project referred to in the Government Order noted in the margin, is confined to the Cauvery Delta, or whether it extends to the Periyar Project.

I have the honor to be
Sir
Your most obedient Servant
Secretary to Govt.

No 599 - 22nd Feby 1870.

may be the least risk
of sickness. Captain
Smith should, in com
munication with the
Civil Surgeon at Coimbatore,
indent for such medicines
as will be of most service
in preventing or curing
fever and the diseases
common in the country
in which the Officials
and Subordinates may
be employed; and, if the
Establishments will be
sufficiently concentrated
to make the services of a
Dresser useful, the
Govt will be prepared
to sanction the employment
of one.

The

11/12

The Supt Surgn of the
7th Dn will be requested
to report whether Mr
Gaynor can be spared
from the Irrigation
Range of the Coimbatore
Drill.

Mad. 14/1/70

28

To Coll C J Smith RE
Supt Surgn 7th Dn
Public Depts

Mn. s depts Tall 22/2/70.
P-C 12/3/70

Gobt. of Utahs.

PUBLIC WORKS.

To Captain C. J. Smith
R. E.

Dated

Rec'd. Encl. 2

G. O. 22 Feby 1870, No. 599

Hos. 431-432

Canon Reservoir Project Estimates on the Improvements from the Springs & Ditches submitting with remarks the progress report & works connected with the Canon Reservoir project in the Contracted Dist for January 1870—