

(1) பக்கங்களின் எண்ணிக்கை 8

(2) புதுக்கித் திருப்பிய நாள் 12/88

(3) ஆதாரங்குறிப்பவர் கருக்கொப்பம் 10/8

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W

துறை

அரசாணை எண். 3925 W
மு. கோப்புத் தாள் எண்.

அச்சகம்
பலவகை

நாள் :

15.12.1888

198

மடிக்கலோ கண்டபடி கையாளலோ கூடாது

3925
15TH DECEMBER 1888, No. 3925 W., PUBLIC WORKS.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Establishment.

READ—the following paper :—

From G. H. D. WALKER, Esq., Under-Secretary to the Government of India, Public Works Department (General), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 30th November 1888, No. 3056 G.

In reply to your letter No. 2860 W., dated the 13th September 1888, requesting the orders of the Government of India as to the date from which the sanction of Colonel Pennycuik's appointment is to take effect, and whether the sanction increases the general establishment of Superintending Engineers from 6 to 7, I am directed to state that, as Colonel Pennycuik is a special Superintending Engineer appointed for five years, he must be considered as outside the ordinary strength of the establishment and appointed to a special temporary post. Under these circumstances, sub. *pro tem.* promotions may be made in his room. His own promotion will be regulated as if he were on the regular Cadre of the Madras establishment. The arrangement will have effect from the date on which Colonel Pennycuik took up special duty and was not available for the ordinary work of a Superintending Engineer.

2. I am to add that sub. *pro tem.* promotions in the executive grades can also be made consequent on Colonel Pennycuik's special duty.

ORDER—dated 15th December 1888, No. 3925 W., Public Works.

Communicated to the Examiner, Public Works Accounts, with reference to his office note No. 2200, dated 5th September 1888.

2. The promotions admissible under the Government of India ruling will be notified in due course.

(True Extract.)

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

To the Examiner, Public Works Accounts.

Exd. J. Henriens.
Spare Copies

GENERAL
ESTABLISHMENT.

Govt. of (1888) Madras.
PUBLIC WORKS.

Dated December, 15th.

Recd.

Encl.

G.O., 15th Dec. 1888, No. 3925 W.

DECEMBER.

Colonel Pennycuik, R.E.

Letter from the Government of India stating that — should be considered as outside the ordinary strength of the establishment, and that sub. *pro tem.* promotions may be made in his room while his own promotion should be regulated as if he were on the regular Cadre of the establishment, communicated to the Examiner, Public Works Accounts.

All communications
should be addressed to
the Secretary.

No. 3056 &
GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.
GENERAL.

To
The Secretary to the Government of Madras,
Public Works Department.

Calcutta, the 30th November 1888

Sir,

In reply to your letter No. 2860 W. dated the 13th September 1888 requesting the orders of the Government of India as to the date from which the sanction of Colonel Pennycuik's appointment is to take effect and whether the sanction increases the general establishment of Superintending Engineers from 6 to 7 I am directed to state that as Colonel Pennycuik is a special Superintending Engineer appointed for 5 years he must be

Lee considered as outside the ordinary strength of the Establishment and appointed to a special temporary post. Under these circumstances sub: pro: tem promotions may be made in his room. His own promotion will be regulated as if he were on the regular cadre of the Madras Establishment. The arrangement will have effect from the date on which Colonel Pennyquick took up special duty and was not available for the ordinary work of a Superintending Engineer.

2. - I am to add that sub: pro: tem promotions in the Executive grades can also be made consequent on Colonel Pennyquick's special duty. -

I have the honour to be,

Sir,

Your most obed^t. Serv^t.,

G H Walker

Under Secy to the Gov^t of India. -

3925
3

10/12
12/12

Memos no 4012C of 20.10.88.
No. B no 2860W of 13.9.88
A. 2568W of 20.8.88
Memos no 3245C of 28.2.88
457C of 3.2.88

188

P. W. DEPARTMENT.

Current No. ✓

From

The Govt of India
P.W. D

ENCLOS.—

No. 3056.G.

Dated 30.11.88

Received

SUBJECT.

Sub. pro: tem. promotions
feasible consequent on
Col. Penrywick's appoint-
ment as Spl. Insp. Engineer

General

Estab. Disposal.

No. 3925 W

Dated

13 Dec

15 Dec 88

Communicated to the
Examiner P.W. Accounts
with reference to his office
note No 2200 dated 5th Sept
1888.

2. The promotions admissible
under the Govt of India ruling
will be notified in due course.

W.M. 10.12.88
E. W. Accounts 22/12

3925
A

B. 10/12
B.L.S. 11/12
11/12/88
15/12/88

Govt. of (1888) Madras.

PUBLIC WORKS.

21/12/1

Dated

Recd.

Encl.

G.O. 15 Dec 1888, No. 3925W

Col Pennington M.E.

Letter of the 1st of India
stating that - should be
considered as outside the
ordinary strength of the
Estab^t & that sub. pro.
tem. promotions may be
made in his case
while his own promotion
should be regulated
as if he were in the
regular cadre of the Estab^t.
and to the Ex^o, M. A. B.

40/2

15/12- 15/12

- (1) பக்கங்களின் எண்ணிக்கை 48
 (2) புதுக்கித் திருப்பிய நாள் 12/88 1/89
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் _____

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W. துறை

அரசாணை எண்.	3934	அச்சகம்
மு. கோப்புத் தாள் எண்.	3935	பலவகை
நாள் : 17. 12. 1888		195

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

(Handwritten signature)

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following papers :—

From A. P. DECLOSETS, Esq., C.E., to the Secretary to Government, Public Works Department, dated 17th November 1888.

I have the honor of sending you the following in connection with the trial artesian boring at Karany (Trivellore taluk).

2. The boring is made in the alluvial valley of the Kortalayár and has reached the depth of 405 feet, that is, 333 feet below mean sea level; the work has been sanctioned by Government to a depth of 420 feet, and the Geological Survey of India recommended to continue the boring till reaching the primary rocks.

3. Until now no gushing waters have been found overflowing the ground; but a sheet of ascending water was tapped at 42 feet below the level of the ground, that is, below the bench mark near the bore hole, and the reduced level of which is 72 feet above mean sea level.

4. This water ascends into the bore hole up to 3 feet below the bench mark during the wet season of the year and to 7 feet below bench mark during the dry portion of the year.

5. Since the commencement of the works, the height of the water into the pipe protecting the bore hole was carefully recorded every day; the monthly average has been—

	1886.						1887.					
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.
Feet below bench mark.	6.80	4.75	5.25	4.80	3.25	4.08	4.00	4.50	5.00	6.10	7.00	7.00

6. The maximum height of the water was 3 feet below and the minimum 7 feet below bench mark.

The reduced level of the bed of the Thambarapaukum supply-channel	FEET.
is (mean sea level taken as datum)	60.00
The reduced level of bench mark near the bore hole	72.00
Reduced level of still water in the pipe during wet season	69.00
Do. do. in dry season	65.00
Do. of average height	67.00

7. The difference of level between the bed of the canal and the maximum level of the water in the pipe is 9 feet and the minimum level with the bed of the canal 3 feet.

8. I believe that this water is in communication with the Pálár river, or perhaps with the Kortalayár itself, as it is said that the Kortalayár valley was in old times a branch of the Pálár; there is every probability that some underground communication exists between that river and the Kortalayár alluvium.

9. I have the honor to call your attention upon the water-bearing stratum tapped by the boring at 42 feet below bench mark, as it may be possible to utilise the ascending waters percolating this stratum and turning them to useful purpose by their diversion into the supply channel of Thambarapaukum passing near the boring at a distance of 106 feet.

10. If an outlet was cut in the pipe protecting the bore hole at a depth of 8 feet below bench mark, the water during the dry season will reach the canal with a fall of

2 feet, but we cannot say what would be the head during the discharge; this head will be certainly less than 12 inches and will depend on the percolation through the stratum below the pipe.

11. If it was possible to let the water from the pipe being discharged through an outlet of a given section and to ascertain during the efflux the constant height of the water-surface above the outlet, it would be easy to find out the volume discharged during a given time.

12. But this constant height or head is what is required for ascertaining the discharging capacity of the Karany water-bearing stratum and also for pipes of a given diameter.

13. For this purpose I will suggest an economical way of making the experiment.

14. It is to sink some of the pipes of 8 inches in hand in the "banquette" of the canal (as shown in the plan annexed), and, after reaching the water stratum at 42 feet, to cut the pipe across at 8 feet below the bench mark and let the water overflowing to be discharged in the canal, and carefully measuring in the mean time the head of the efflux, that is, the difference of level between the surface of the water issuing and the section of the pipe. Knowing then the head and the section of the outlet, it will be easy to calculate the volume of water discharged per minute.

15. The calculation could also be checked by measuring the discharge with a gauged bucket.

16. For instance, supposing that during the discharge of the water from the pipe the head observed was 0.09 foot, the formula $W = 4.71 \sqrt{\frac{D^5 H}{L}}$ for the discharge of pipes will give $W = 40.17$ cubic feet in one minute, D being = 8 inches, $L = 34$ feet, and $H = 0.09$ foot. Now if it is admitted that the volume of water discharged is proportional to the superficial area of percolation through the stratum and that the discharge is proportional (with the same head) to the superficial area discharging, we could, by comparing the discharge from the 8-inch pipe to some other diameter, find out what would be the discharge for a given diameter of pipe. For instance, the pipe of 8-inch diameter with a head of 0.09 foot has given by the formula 40.17 cubic feet per minute, the superficial discharging area of this pipe being 50.26 square inches; if we consider a pipe of 36-inch diameter having a discharging superficial area of 1,017.67 square inches, that is, 20 times greater than for 8-inch pipe, the delivery will be 20 times greater with the same head, or 40.17 cubic feet $\times$ 20 or 803.40 cubic feet.

17. By supposing several heads and diameters of pipes corresponding, I have calculated the probable discharge as per the following table.

It will be therefore important to ascertain the discharge which could be obtained from the water-bearing stratum found at Karany, and, if the result is found favorable, to sink a pipe or well of 36-inch diameter or even more.

The cost of sinking a pipe of 8 inches for the experiment will be trifling and could be estimated as follows—

	Rs.	A.	P.
Tools and piping (in hand)	...	...	Nil.
Temporary legs (casuarina, in place)	...	...	20 0 0
Fifteen days of 6 coolies	...	...	19 11 0
Do. of superintendence	...	...	100 0 0
Contingencies	...	...	11 0 0
Total	...	...	150 0 0

This expenditure will be fully justified, considering the importance of the experiment above.

The discharging capacity of the stratum once established may lead to sink a well of 36-inch diameter near the canal, and some arrangements could be easily made so as to protect the outlet against the floods.

During the floods the efflux of water from the well will be interrupted, but will resume itself as soon as the level of the water in the canal is lower than the orifice of the well.

From personal observation of the water in the pipe of the bore hole, I am inclined to think that, if the pipe was cut at 8 feet below the bench mark, the head of the discharge would be likely 0.02 foot, and, if so, the discharge per minute will be 21.10 cubic feet, and for a pipe or well of 36-inch diameter 422 cubic feet per minute or 7.03 cubic feet per second.

It has been found by experiment that in India the duty for irrigation of a constant flow of 1 cubic foot per second is to irrigate 60 acres of land with paddy crops; the discharge of the well of 36-inch diameter under consideration will therefore irrigate $60 \times 7.03 = 421.80$ acres.

In a report upon the application of artesian wells to irrigation, Col. Mullins, R.E., said that the supply from a well of 8-inch diameter would not pay. But his calculations were made upon the discharge of a well of 8-inch diameter delivering 20 cubic feet per minute under a head of 0.02 foot, that is, 0.33 cubic foot per second; the results of his calculations would have been different if he had considered the proportional discharge of a well of 3 feet diameter with a head of 0.02 foot.

No. 4599 C.

Forwarded to the Superintending Engineer, V Circle, with request that he will now submit a very early reply to this office No. 4143 C., dated 26th October 1888.

(Signed) H. R. MEAD, Colonel, R.E.,
Acting Chief Engineer, P.W.D.

20th November 1888.

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer, Public Works Department, dated Chepák, 4th December 1888, No. 4086.

In reference to your memorandum No. 4143 C., dated 26th October 1888, I have the honor to report that I visited the artesian boring at Karany, in the Kortalayá river basin, on the 28th ultimo. Mr. deClosets (junior), who has been for some time nominally in charge of this work acting for his father, was present. Mr. deClosets (senior) is and has been for some time I understood living at Pondicherry. It would appear that the depth of 405 feet was attained in May last, and but for the collapse of the shed over the boring plant on the 31st May in a cyclone or a gale of wind, the depth of 420 feet would perhaps have been attained. But since then there has been no determined effort on the Messrs. deClosets' part to continue the work. On the other hand, the father makes a proposal on 19th November 1888 to connect the bore hole with the neighbouring supply channel of Cholaveram tank at a cost of Rs. 150, and makes no proposal to continue boring to 420 feet, and the son says he will go on boring, but does not do so.

2. On my asking the latter why he had not continued the boring since May, he said he had been ill with rheumatism, &c.

3. As to the father's proposal (*vide* his letter, dated 19th November 1888), if it is thought necessary to measure quantity of ascending water which would arise from the boring into the supply channel, no doubt such a connection must be made, but owing to the wet season level of the water in the supply channel it cannot be made now, but must be postponed until the dry season, and, on these grounds, I think, it would be best to let the Executive Engineer make the connection in March or April next, or as soon as the depth of water in the supply channel will admit thereof. There are no reasons in my opinion why the boring should go to a greater depth than 405 feet, and as the Messrs. deClosets have been asked to take it down to 420 feet, but have let the work stand idle for six months, I would recommend that the work be closed at once and the plant taken down and brought in. It would be necessary also to securely plug the head of the boring and cover it with 3 or 4 cubic feet of pucca brick work at a trifling cost. The cost of taking down and bringing in the plant will be about Rs. 150. Rs. 8,164 have been expended on the work to date. Mr. deClosets (junior) said to me something about a charge he proposed or his father

proposed to make for passing through a limestone rock. This claim, or in fact any claim to be put forward, can only be safely investigated by the Executive Engineer, in the first instance, after such claim has been definitely made.

4. In the meantime there is nothing that I can find which shows that anything is due to Mr. deClossets.

5. I send herewith a box of specimens of the strata through which the boring has been made as handed to me by Mr. deClossets (junior). I have numbered them as he showed me how in order to accord with the numbers in descriptive list of strata appended hereto.

ENCLOSURE.

List of several strata traversed down to 405 feet.

Nature of strata.	FEET.
1. Vegetable mould clay and sand, mixed, reddish hue ...	4
2. Sand and clay mixed with kunkar, reddish yellow ...	8
3. Brown clay with kunkar ...	4
4. Sand holding water, the same as in the neighbourhood wells ...	3
5. Sand mixed with yellow clay ...	16
6. Yellow clay ...	10
7. Coarse sand similar to river sand—this stratum containing a sheet of water which rose in the pipe to the level of 7 feet below the ground ...	13
8. Clay, yellow and stiff, mixed with sand, pebbles of nodules of grit clay passing to whitish and with some thin layer of grit ...	31
9. Limestone, crystallized and very hard, color yellowish ...	1
10. Yellow clay variegated with black and grey ...	17
11. Black clay (common blue clay) ...	6
12. Yellow clay variegated and similar to No. 10 ...	6
13. Grey clay mixed with black clay, pyrites of iron and nodules of grit ...	44
14. Black clay with grey do. pyrites of iron ...	2
15. Limestone second bed not very hard ...	1
16. Black clay indurated hard and compact with nodules of the same ...	19
17. Grey clay compact with sand ...	10
18. Limestone hard bed ...	1
19. Grey clay indurated with sand and grit and nodules of black clay ...	10
20. Black clay indurated ...	6
21. Limestone 4th bed ...	1
22. Grey clay indurated ...	2
23. Black indurated clay ...	6
24. Limestone 5th bed ...	6
25. Grey sandy conglomerate ...	70
26. The same with indication of shell ...	20
27. Black clay indurated ...	5
28. Limestone 6th bed ...	0.50
29. Black clay indurated ...	2.50
30. Limestone 7th bed ...	1
31. Black clay indurated ...	27
32. Limestone 8th bed ...	1
33. Grey, sandy, hard clay with nodular pyrites of iron ...	2
34. Black clay indurated ...	4
35. Grey, hard clay with pyrites of iron and debris of shells ...	12
36. Limestone 9th bed ...	2
37. Layer of grit ...	0.25
38. Grey, hard, sandy clay with kunkar, decaying wood and print of leaves ...	1
39. Black clay with kunkar, shell pyrites of iron, decaying wood ...	37.76
Total depth of bore hole ...	405

With specimens as handed to me by Mr. deClossets (junior) on 28th November 1888.

4th December 1888.

(Signed) W. H. BURTON, Colonel, R.E.,
Superintending Engineer, V Circle.

From the Superintending Engineer, V Circle, dated 6th December 1888, No. 4137.

Note by the Chief Engineer, Public Works Department.

In letter No. 4086, dated 4th December, the Superintending Engineer reports on the experimented artesian boring at Karany in the Kortalayár river basin, and also briefly on proposals made by Mr. deClossets to endeavour to find out if the sheet of water that was struck when the bore hole was sunk a depth of 42 feet below the bench mark (which rises in the hole to 3 feet below the bench mark during the wet season and to 7 feet in the dry season) could be utilised.

2. This artesian boring was sanctioned in G.O., No. 1128, dated 5th May 1886, and a depth of 60 feet only was proposed at a cost of Rs. 400.

3. In G.O., No. 3179 W., a depth of 200 feet was approved of, and in G.O., No. 3374 W., dated 22nd December, Rs. 3,300 was sanctioned for the work.

4. In G.O., No. 1701 W., dated 24th June 1887, a revised estimate for Rs. 5,200 for sinking the well a depth of 300 feet was sanctioned, and finally in G.O., No. 2560 W., dated 27th September, a depth of 420 feet was approved of and the estimated cost Rs. 8,745 was sanctioned in G.O., No. 3147, dated 21st November 1887.

5. The depth of 300 feet was reached in May 1887; in June 1888 the depth was 371 feet, and now it is reported by the Superintending Engineer to be 405 feet.

6. The first question to be decided is whether the boring should be continued or not.

7. The work is at present practically not in progress, and considering the large expenditure that has been incurred without any result, I cannot recommend the work being again started, and the bore hole being taken down to the gneiss, until the opinion of the Geological Survey has been asked for and received. It is remarked that the last communication received from the Geological Survey is that recorded in G.O., No. 1128, dated 5th May 1886, when a depth of only 60 feet was sanctioned.

8. With regard to Mr. deClossets' proposal to sink an 8-inch pipe to the sheet of water that was struck at a depth of 42 feet below the bench mark, I do not think it likely that the discharge will be as great as he estimates it, but if he will undertake to complete the work on contract for Rs. 200, I recommend that he be allowed to do so. This sum, of course, is to cover all charges except that of the piping.

9. Should there be from this a fair discharge, it can be decided by Government whether a well as proposed 3 feet in diameter should be sunk.

(Signed) H. R. MEAD, Colonel, R.E.,
Ag. Chief Engineer, P.W.D.

8th December 1888.

ORDER—dated 17th December 1888, No. 3934 W., Public Works.

The Government agree in the views expressed by the Chief Engineer, Public Works Department, above recorded, and the Superintending Engineer, V Circle, will ascertain whether Mr. deClossets is willing to undertake on contract for a sum of Rs. 200 to sink an 8-inch pipe to the sheet of water which was struck at 42 feet below the bench mark. If so, arrangements should be made to carry out the work accordingly and the result should be reported in due course.

2. The correspondence will be forwarded to the Superintendent, Geological Survey of India, for an expression of opinion whether the experimental boring which has now reached a depth of 405 feet should be further continued.

(Here enter No. 3935 W., dated 17th December 1888.)

(True Extract.)

Captain, R.E.,
Under-Secy. to Govt., P.W.D.

To the Superintending Engineer, V Circle.
" Chief Engineer for Irrigation.
" Revenue Department.
Exd. J. Henricus.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1888) Madras.
PUBLIC WORKS.

Dated December, 17th.

Recd.

Encl.

G.O., 17th Dec. 1888, No. 3934 W.

DECEMBER.

Artesian boring in the
Kortalayar Valley

Orders on reports on the —.

17TH DECEMBER 1888, No. 3935 W., PUBLIC WORKS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

LETTER—from

COLONEL H. R. MEAD, R.E.,

Ag. Secretary to the Government of Madras,
Public Works Department,

To

THE SUPERINTENDENT, GEOLOGICAL SURVEY OF INDIA.

SIR,

With reference to your letter No. 75, dated 30th January 1886, and to Mr. Bruce-Foote's letters No. 774, dated 6th March 1886, and No. 802, dated 1st April 1888, I am directed to forward copies of the Proceedings of this Government marginally noted containing reports on the experimental artesian boring in the Kortalayar valley near Madras, and to request the favor of your opinion whether it would be advisable to continue the boring which has now reached a depth of 405 feet.

I have the honor to be,
Sir,

Your most obedient servant,

(Signed) H. R. MEAD, Colonel, R.E.,
Ag. Secretary to Govt., P.W.D.

FORT ST. GEORGE,
17th December 1888.

Exd. J. Henricus.
Spare Copies

3934
4

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1888) Madras.
PUBLIC WORKS.

Dated December, 17th.

Recd.

Encl.

17th Dec. 1888, No. 3935 W.

DECEMBER.

Artesian boring in the
Kortalayar Valley.

Forwarding reports on the — and re-
questing opinion as to whether it would be
advisable to continue the boring.

Not by Mr. E. 3935/5

In letter No 400 & dated
4. Dec. Mr. Sub. & E.
reports on the columnar
Artesian Boring at
Rurani in the Kortalayar
river basin and also
briefly on the results made
by Mr. S. Elliott the
Engineer to find out
if the sheet of
water that was struck
when the first hole was
sunk to a depth of 42 ft. — the
water (which rose in the
hole to 3 ft. above the
bank & made during the wet-
season and to 7 ft. in
the dry season) would
be sufficient to irrigate.

2. This experiment was
sanctioned: G.O. No 1120
dated 5. Aug. 06. ~~after~~
and to a depth of 60 ft.
only was pursued at a cost
of Rs 400.

In G.O. No 5179 W. a
depth of 200 ft. was
contemplated. ~~was sanctioned~~
and the same was approved of
on 6. Dec. 1888. 5 Circulars

and in G.O. No 3374 W
dated 22nd Dec 1888 R 3300
was sanctioned for
the work.

In G.O. No 1701 W
dated 24 Jan 87 a
revised estimate for
R 5200 for sinking
the well to a depth of
300 ft was sanctioned

and finally in G.O.
No 2560 W dated
27 Sept a depth
of 420 ft was
estimated and of Rs
was approved of and
the estimated cost

R 5300⁸⁷⁴⁵ was sanctioned
in G.O. No 3147 dated
21 Nov 87.

The depth of 300 ft
was reached in Aug 87
in Jan 88 the depth
was 371 ft and
now it is reported by
the Supt. of the 405 ft

That question to be
settled is whether
the boring should be

continued or not ³⁹²⁴/₆
The work is at present
practically not in progress
and considering the
large expenditure there
has been ^{without any result} incurred
I ~~recommend~~ ^{recommend}
the work be again
stopped
by ^{the} ~~the~~

By ^{the} ~~the~~ ^{advising} ~~the~~
the ^{the} ~~the~~ ^{stopped} ~~the~~
and in accordance ^{with} ~~with~~
with the opinion
of the Geological
Survey the ^{the} ~~the~~ ^{therefore} ~~therefore~~
asked for and received.
It is remarked that
the last communication
received from the Geological
Survey in that regard
in G.O. No 1120 dated
6 Aug 86 when a
depth of only 60 ft
was sanctioned

With regard to the
Dr. Hants ^{found} ~~found~~ ^{the} ~~the~~
sink in ^{the} ~~the~~ ^{the} ~~the~~
with to the extent of
water that was struck
6th Decemr 1888. 5 Cist.

at a depth of 42
 ft below the Bench
 mark. I do not
 think it likely that
 the discharge will be
 as great as his
 estimate is but if
 he will undertake to
 do so I will do
 so. This sum of money
 is a considerable
 sum. That of the
 piling.
 I think from this there
 has been this a fair
 discharge, it can be
 decided by Gov whether
 a well is preferred
 3 ft in diameter or 5
 ft in diameter.
 I do not agree with
 Mr. S. P. that the
 volume of water discharged
 will be

CP 1257

for Dec 8-11-88

7/12/100

3984/7
 No. 4911 C. 2/12-88
 Government of Madras.

PUBLIC WORKS DEPARTMENT,
 Chépak, 6th December 1888.

OFFICE NOTE.

M. S. V.

From

W

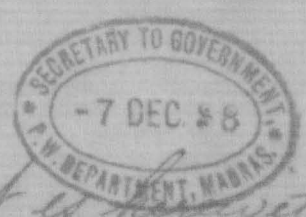
To

S. S. V.

Your letter no
 4086 of 4.12.88.

Please return
 Mr de Claret's report for-
 warded with this office
 no 4599 of 20.11.88.

M. S. V. Chander
 As. Engineer
 No 4137.



The report is herewith
 returned.

W. S. V. Coll. M.
 Superintending Engineer
 6th December 1888. 5 Cms.

Recd. 12/1/98

SECRETARY TO GOVERNMENT
17 NOV. 98
P.W. DEPARTMENT, MADRAS

19 November 1898
3929/P

From:
A. Pierce & Co. Esq. C.E.
Colonel Mead R.E.
Secretary to Government D.P.W.
Chopank.

Sir:

I have the honor of forwarding you the following in connection with the trial of the baring at Marany (travelling table).

The baring is made in the alluvial valley of the Corbilynd and has reached the depth of 405 ft. that is, 333 feet below mean sea level. The work has been sanctioned by Government to a depth of 420 ft. and the Geological Survey of India recommended to continue the baring till reaching the primary rocks.

Until now no gushing water have been found over flowing the ground, but a sheet of ascending water was tapped at 22 feet below the level of the ground, that is below the Bench Mark near the bore hole, and the reduced level of which is 42 feet above mean sea level.

The water ascended into the bore hole up to 2 feet below the B.M. during

3923/4

the wet season of the year, and to 7 feet below B.M. during the dry portion of the year.

Since the commencement of the works, the height of the water into the pipe protecting the bore hole, was carefully recorded, every day. The monthly average has been,

1886	July	August	September	October	November	December	January	February	March	April	May	June	1887
feet below B.M.	6.50	4.75	5.25	4.80	3.25	4.09	4.00	4.50	5.00	5.10	7.00	7.00	feet below B.M.

the maximum height of the water was 3 feet below and the minimum 9 feet below B.M.

The reduced level of the bed of the Tambora canal supply channel is — 60.00 (mean sea level taken at datum)

the reduced level of B.M. near the bore hole ————— 72.00

Reduced level of still water in the pipe during wet season ————— 69.00

Reduced level of do do in dry season ————— 65.00

Reduced level of average height ————— 67.00

The difference of level between the bed of the canal and the maximum level of the water in the pipe is 7 feet and the minimum level with the bed of the canal ————— 3 feet.

I believe that this water is in communication with the Palar River or perhaps with the Collyer itself, as it is said

that the Cortlyar Valley was
in old times a branch of the
Palar, there is every probability
that some underground communication
exists between that river and the
Cortlyar alluvium.

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I have the honor to call
your attention upon the water
bearing stratum tapped by the
boring at 45 feet below B.M., as
it may be possible to utilize
the ascending waters percolating
this stratum and turning them
to useful purpose by their
diversion into the supply
channel of Lembrapucine
passing near the boring at
a distance of 100 feet.

If an outlet was cut in the
pipe protecting the bore hole, at a
depth of 8 feet below B.M. the
water during the dry season,
will reach the canal with a fall
of 2', but we cannot say when
it would be the head during the
discharge, this head will be
certainly less than 12 inches, and
will depend on the percolation
through the stratum below
the pipe.

If it was possible to let the
water from the pipe being discharged
through an outlet of a given
section and to ascertain during
the efflux the constant height

of the water surface above
the outlet, it would be easy
to find out the volume discharged
during a given time.

but this constant height or head
is what is required for ascertaining
the discharging capacity of the
various water bearing strata
and also for pipes of a given
diameter.

For this purpose, I will suggest
an economical way of making
the experiment.

It is to sink some of the pipes of 8"
in head, in the "banquette" of the
canal, (as shown in the plan annexed)
and after reaching the water
station at 8' to cut the pipe
across at 8' below the bench mark
and let the water overflow
to be discharged in the canal
and carefully measuring in the
mean time the head of the
efflux that is the difference of
level between the surface of the
water flowing and the section
of the pipe. - Knowing then
the head and the section of
the outlet, it will be easy
to calculate the volume of
water discharged per minute.

The calculation, could also be
checked by measuring the discharge
with a gauged bucket.

SP 3
for instance, supposing that
during the discharge of the water
from the pipe the head observed
was 0.09. The formula $W = 4.74 \sqrt{H}$
for the discharge of pipes will
give $W = 40.17$ in one minute
if being 8" $L = 36$ feet and $H = 0.09$

Now if it is admitted that the
volume of water discharged
is proportional to the superficial
area of perforation through the
spantum, and that the discharge
is proportional (with the same head)
to the superficial area discharging,
we could, by comparing the
discharge from the 8" pipe to
some other diameter, find out
what would be the discharge
for a given diameter of pipe.
For instance the pipe of 8" diam
with a head of 0.09 has given
by the formula 40.17 per minute.
The superficial discharging area
of this pipe being 50.26 sq. ft.
Consider a pipe of 36" diam
having a discharging superficial
area of 1017.07 sq. ft. or 20 times
greater than for 8" pipe. The
velocity will be 20 times greater
with the same head or 40.17×20 or
803.40

By supposing several heads
and diameters of pipes corresponding
I have calculated the probable
discharge as per the following table.

3925 6P 2

It will be therefore, important
to ascertain the discharge which could
be obtained from the water bearing
stratification found at Karami, and if
the result is found favorable, to sink
a pipe or well of 36" inner diameter
or more more.

The cost of sinking a pipe of 8' more
for the experiment will be trifling
and could be estimated as follows:

Tools and piping (in hand)	—	Super will
Temporary legs (Cassimangas)	—	20.0.0
15 Days of 6 coolies	—	15.0.0
Dr. & Superintendence	—	100.0.0
Contingencies	—	11.0.0
		Total Not 150.0.0

This expenditure will be fully
justified, considering the importance
of the experiment above.

The Discharging Capacity of
the stratum once established, may
lead to sink a well of 36" inner
diameter over the Canal, and some
arrangements could be easily made
so as to protect the outlet against
the floods.
during the floods the efflux of water
from the well will be interrupted
but will resume itself as soon as
the level of the water in the Canal
is lower than the orifice of the well.

From personal observation of
the water in the pipe of the bore
hole, I am inclined to think

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think that if the cut at 8' below the bench mark, the head of the discharge would be likely 0.02, and if so the discharge per minute will be 21.10, and for a pipe or well of 36" diameter 422 ft per minute or 7.03 per second

It has been found by experiment that in Georgia, the duty for irrigation of a constant flow of 1 ft per second, is to irrigate 60 acres of land with good crops. The discharge of the well of 36" in diam under consideration, will therefore irrigate $60 \times 7.03 = 421.80$ acres.

In a report upon the application of water to wells to irrigation, Colonel Mullins R.E. said that the supply of water would not pay, the discharge of a well of 36" diam delivering 422 ft per minute under a head of 1 ft. But his calculations were based upon the discharge of a well of 36" diam delivering 422 ft per minute under a head of 1 ft. But his calculations were based upon the discharge of a well of 36" diam delivering 422 ft per minute under a head of 1 ft. But his calculations were based upon the discharge of a well of 36" diam delivering 422 ft per minute under a head of 1 ft.

yours most obedient
 Dr. Charles
 17 Nov. 1888

V
22/11/88

P. W. Dept.
To be returned with
reply.

8P

Revised 8/11/88
No. 4599, Cd of 20th November 1888.

Forwarded to the
Supt. Engineer V Circle,
with request that he
will now submit a
very early reply to this
Office No 4143C dated 26th
October 1888.

M. M. M. Colonel R. S.
Asst. Ch. Engineer V Circle
22/11/88.
To the S. E. V Circle
(to be returned)

SUPERINTENDING ENGINEER'S OFFICE,

V Circle, Madras,

No. 4086.

Chennai, 4th December 1888.

From

Col. W. H. Burton R.E.

SUPERINTENDING ENGINEER, V CIRCLE,

To

THE

Chief Engineer
P.W. Department

SIR,

Enclosures.

In reference to your Memo
No 4143C dated 26th October 1888,
I have the honor to report that
I visited the Artesian Boring
at Karaim in the Kodallayar
River Basin on the 28th ultimo. Mr.
De Cloet's junior nephew has been for
some time nominally in charge
of this work acting for his father
was present - Mr De Cloet's senior
is & has been for some time, I
understand living at Pondicherry.
It would appear that
the depth of 405 ft was attained
in May last & but for the
collapse of the shed over the
Boring Plant on the 31st May in
a cyclone or a gale of wind
the depth of 420 feet would
perhaps

+ Let Vincent
ins 926 44h 00
comp 11h 37h
then

perhaps have been attained.
But since then there has been
no determined effort on the
Messrs. DeGroot's part to con-
-tinue the work on the other hand
the father makes a proposal
on 19th November 1888 to connect
the borehole with the neighbor-
-ing supply channel of the
Laurens Tank at a cost of
Rs. 150 & makes no proposal
to continue boring to 420' & the
son says he will go on boring
but does not do so.

On my asking the latter why
he had not continued
the boring since May he
said he had been ill with
rheumatism &c. &c.

As to the father's proposal vide
his letter dated 19th November 1888,
if it is thought necessary to
measure quantity of ascend-
-ing water which would arise
from the boring into the sup-
-ply channel. No doubt
such a connection must be
made. But owing to the wet
season level of the water in
the supply channel it can-
-not be made now but must be
postponed

postponed ^{until} the dry
season and on these grounds
I think it would be best to
let the Executive Engineer
make the connection in March
or April next or as soon as the
depth of water in the supply
channel will admit thereof.

There are no reasons in my
opinion why the boring should
go to a greater depth than
405 and as the Messrs. DeGroot
have been asked to take
it down to 420' but have let
the work stand idle with a
lot of expensive Government
Plant, including a 4 H.P.
Engine, for 6 months - I would
recommend that the work
be closed at once and the
Plant taken down & brought
in - It would be necessary
also to securely plug the head
of the boring & pour it with
a ft. of pucca brick work at
a trifling cost. The cost of
taking down & bringing in
the Plant will be about
Rs. 150. Rupees 8164 have
been expended on the
work

was to date. Mr. DeFlores
junior said to me something
about a charge he proposed
or his father proposed to make
for passing through a lime
stone rock. This claim or
in fact any claim to be
put forward can only be
safely investigated by the
Executive Engineer in the
first instance after such
claim has been definitely
made.

In the meantime there is
nothing that I can find
which shows that anything
is due to Mr. DeFlores.

I send herewith a box
of specimens of the strata
through which the boring
has been made as handed
to me by Mr. DeFlores junior.
I have numbered them as he
showed me how in order to
accord with the numbers in
descriptive list of strata ap-
peared hereto.

I am the honor to be
Sir
Yours most Obedt Servt
W. A. Norton Secy. P. E.
Sup. Engineer to Canal

List of several strata trans-
versed down to 405 feet. 994/17

Nature of strata.

- 1 Vegetable mould clay and sand
mixed reddish hue. — 4'
- 2 Sand & clay mixed with Kimkar
reddish yellow — 3'
- 3 Brown clay with Kimkar — 4'
- 4 Sand holding water, the same as
in the neighborhood wells — 3'
- 5 Sand mixed with yellow clay — 10'
- 6 Yellow clay — 10'
- 7 Coarser sand similar to river
sand. This stratum contain-
ing a sheet of water which rose
in the pipe to the level of 7' ft
below the ground — 13'
- 8 Clay yellow & stiff, mixed with
sand, pebbles of muds of grey clay
passing to whitish & with some
thin layers of grit. — 31'
- 9 Lime stone, grey & shelled and
very hard color yellowish — 1'
- 10 Yellow clay variegated with
black and grey — 17'
- 11 Black clay (Common black clay) — 6'
- 12 Yellow clay variegated similar to No. 10 — 6'
- 13 Grey clay mixed with black clay
pyrites of iron & muds of grit — 4'
- 14 Black clay with grey pyrites
of iron — 2'
- 15 Limestone second bed not
very hard — 1'
- 16 Black clay indurated hard &
compact with muds of the
sand — 19'
- 17 Grey clay compact with sand — 10'
- 18 Limestone third bed — 1'
- 19 Grey clay indurated with
sand & grit & muds of
black clay. — 10'

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20	Black clay indurated	6'
21	Limestone 4 th bed	1'
22	Grey clay indurated	2'
23	Black indurated clay	6'
24	Limestone 5 th bed	6'
25	Grey sandy Conglomerate	70'
26	The same with indication of shells	20'
27	Black clay indurated	5'
28	Limestone 6 th bed	0' 50"
29	Black clay indurated	2' 50"
30	Limestone 7 th bed	1'
31	Black clay indurated	2' 7"
32	Limestone 8 th bed	1'
33	Grey sandy hard clay with nodular pyrites of iron	2'
34	Black clay indurated	1'
35	Grey hard clay with pyrites of iron and (debris of shells)	12'
36	Limestone 9 th bed	2'
37	Layer of grit	0' 25"
38	Grey hard sandy clay with Kunkur decaying and print of leaves	1'
39	Black clay with Kunkur, shell pyrites of iron de- caying wood	37' 75"
Total depth of borehole		<u>405</u>

with specimens as handed to me by
M de Cloutis junior on 28 November 1888.
W. D. Norton.

John R. C.
Superintendent Engg.
S. Circle.

4 Dec. 1888.

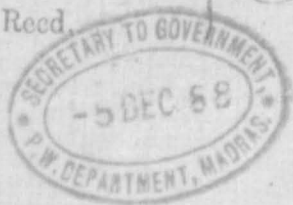
No. 357 3 a/p. 6.80
 " 3129 W a/p. 19.12.84
 " 1732 W a/p. 28.7.85
 " 328 W a/p. 6.2.86.
 " 1128 W a/p. 5.5.86.
 " 1129 W a/p. 5.5.86
 " 3179 W a/p. 12.86
 " 3374 W a/p. 12.86
 " 1701 W a/p. 24.8.87
 " 2560 W a/p. 17.9.87
 " 3147 W a/p. 11.87
 " 2453 C a/p. 28.6.88.
 " 4143 C a/p. 16.10.88
 " 1756 W a/p. 13.5.88
 " 11927 C a/p. 17.5.88
 " 4599 C a/p. 20.11.88

with minor 20 1888 by
 K. - 1-8.9

From *W. L. D. S. E.*
 THE SUPERINTENDING ENGINEER,
 V Circle,

To
 THE *Chief Engineer*
P.W. Department,

Dated 24th December 1888.
 Recd.



ENCLOSURES. 2.

No. 4086

Artesian Boring

Reports on the - at
 Karani in the Korbhalla
 River Basing & Karandi,
 a Box of Specimens of the
 Shale - with a description
 List.

3939 P.W.D.
 11/12/88

Note by the Chief Engineer Madras

Letter from the Superintending Engineer V Circle, No.
 4086, dated 4th December 1888 reporting on the
 Artesian boring at Karani in the Korbhalla
 River basin.

In letter No 4086,
 dated 4th December, the
 Superintending Engineer
 reports on the experimented
 Artesian Boring at Karani
 in the Korbhalla river basin,
 and also briefly on proposals
 made by Mr. De Claret to
 endeavour to find out if the
 sheet of water that was
 struck when the bore hole
 was sunk a depth of 42
 feet below the bench mark
 (which rises in the hole to 3
 feet below the bench mark
 during the wet season and
 to 7 feet in the dry season)
 could

could be utilized.

2. This Artesian Boring was sanctioned in f.o. no 1128, dated 5th May 1886, and a depth of 60 feet only was proposed at a cost of Rs 400/-.

3. In f.o. no 3179 W, a depth of 200 feet was approved of, and in f.o. no 3374 dated 22nd December Rs 3300 was sanctioned for the work.

4. In f.o. no 1701 W, dated 24th June 1887 a revised Estimate for Rs 5200 for sinking the well a depth of 300 feet was sanctioned, and finally in f.o. no 2560 dated 27th September, a depth of 420 feet was approved of and the estimated cost ~~Rs 5200~~ ^{Rs 8745} was sanctioned in f.o. no 3147 dated 21st November 1887.

5.

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5. The depth of 300 feet was reached in May 1887; in June 1888 the depth was 371 feet and now it is reported by the Superintendent Mining Engineer to be 405 feet.

6. The 1st question to be decided is whether the boring should be continued or not.

7. The work is at present practically not in progress and considering the large expenditure that has been incurred without any result, I cannot recommend the work being again started, and the bore hole being taken down to the gneiss, until the opinion of the Geological Survey has been asked for and received. It is remarked that the last communication received from the Geological Survey is

For Review

is that recorded in No 1128, dated 5th May 1886, when a depth of only 60 feet was sanctioned.

8. With regard to Mr. DeClouet's proposal to sink an 8 inch pipe to the sheet of water that was struck at a depth of 42 feet below the bench mark, I do not think it likely that the discharge will be as great as he estimates it, but if he will undertake to complete the work on contract for Rs 200, I recommend that he be allowed to do so. This sum of course is to cover all charges except that of ^{the} piping.

9. Should there be from this a fair discharge, it can be decided by Government whether a well as proposed 3 feet in diameter should be sunk.

Mh

8/12/00 E.W.

Artesian boring
in the Kortalar Valley

~~500 The Hon. Mr. H. B. H. H. H.~~
~~Mr. H. B. H. H. H.~~

C

W.H.

Copy of 1128 paper with this note.
10/12/00
10/12/00
10/12/00

For Review

3934
P. W. Dept.

No 3934. Wd 17 Decr/88

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Letter from A. P. de Clouet Esq. C.S. 17 Nov. 1888.
S. S. V Circle No 4086 2 4137 2
Note for the Chief Engr. P.W. Dept. 8th Decr 1888.

order

The Govt. agree in the views expressed by the Chief Engr. P.W. Dept. above recorded, and the Engr. V Circle will ascertain whether Mr. de Clouet is willing to undertake on contract for a sum of Rs 200, to sink an 8 inch pipe to the sheet of water which was struck at 42 feet below the bench mark. Rs 200, arrangements should be made to carry out the work according, and the result

result should be
reported in due course.

2. The Correspondence
will be forwarded to
the Supt. Geological Survey
of India for an expression
of opinion whether the
the experimental boring
which has now reached
a depth of 405 feet,
should be further
continued.

(H.B. no 3935 W of 17 Decr/88)

To The Supt. Geological
Survey of India

Sir,

With reference to your
letter no 75 dated 30. January
1886, & to Mr. Prince Fortes
letters no 774 of 6 March
1886, & no 502 of 1 April
1888. I am directed
to forward copies of the
Proc. of the Govt. Marginaly
noted

To Mr. S. S. V. C. C. C.
Chief Geologist
Rev. Dept.

no 3179 W of 2 Decr 1886.
" 2560 W of 27 Sept 1887
" 3934 W of 17 Decr 1888
with plan
(copy 1889)

noted, containing reports
on the experimental artesian
boring in the Kortalegar
valley near Madras, and
to request the favour of
your opinion whether it
would be advisable to
continue the boring
which has now reached
a depth of 405 feet

W.M.
17.12.88

17/12/88

Cu

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Prattson
17/12

8-3-05

G.O. of (1888) Madras.
PUBLIC WORKS.

15/12

Dated

Recd.

Encl.

G.O. 17 Dec 1888, No. 3934 W
3935

Artesian boring in
the Kortalayast
valley

Orders on reports on
the

Artesian boring in the
Kortalayast valley

Forward reports on
the - & requesting opinion
as to whether it would be
advisable to continue the
boring.

8/18/12
Gm
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