M.R.O. 1—77,006—8-6-37.

(1) Number of pages_____

(2) Date of repair_____

(3) Initials of the Referencer_____

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

G.O. No. 2422 Press Misc.
377-78
Dated 22-9- 1877.

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Works Department, 22nd September 1871.

No. 377. Read the following docket from the Deputy Secretary to the Government of India, Public Works Department, (Irrigation,) No. 431-I. :—

Read the following despatch from the Government of India, Public Works Department, (Irrigation,) to the Right Honourable the Secretary of State for India, dated Simla, 1st September 1871, No. 111.

In continuation of our despatch, Public Works, No. 66, dated the 3rd June last, and for the purpose suggested in paragraph 2 thereof, we have the honour to transmit copies of reports received lately from the Government of Bombay in regard to the self-registering hydrometer devised by Colonel Sankey.

2. With reference to Mr. Secretary Thornton's letter of the 27th ultimo, we avail ourselves of this opportunity to enclose three lithographed copies of each of the drawings of this instrument, received with your Grace's despatch No. 110, dated the 28th December last.

Copy of this despatch and of the reports forwarded to the Governments of Madras, Bengal, North-Western Provinces, and Punjab; the Chief Commissioners of Oudh, Central Provinces, British Burman, and Mysore, for information.

(Signed) W. H. RUNDALL, Colonel, R.E.,
Dy. Secy. to the Govt. of India.

From the Acting Under-Secretary to the Government of Bombay, to the Secretary to the Government of India, (111, Irrigation,) dated Bombay, 19th July 1871, No. 120-I.—1,326.

With reference to your letter No. 64-I., dated 21st February 1871, regarding Lieutenant-Colonel Sankey's self-registering hydrometer for rivers and tideways, I am directed by the Right Honourable the Governor in Council to forward copies of the papers noted in the margin.

Memorandum from the Chief Engineer for Irrigation, No. 1,487, dated 6th July 1871, and accompaniments.
Letter from the Superintending Engineer for Irrigation in Sindh, No. 1,758, dated 4th May 1871.

From the Superintending Engineer for Irrigation in Sindh, to the Chief Engineer and Under-Secretary to Government, (Irrigation branch), Bombay, dated Kurrachee, 4th May 1871, No. 1,758.

Referring to Government Resolution No. 36-I., dated 9th March 1871, I have the honour to inform you that all the Executive Engineers of Divisions in Sindh, to whom the Government resolution and accompaniments have been sent, are of opinion that Lieutenant-Colonel Sankey's self-registering hydrometer is not suitable for Sindh, chiefly on the ground that the float would get clogged and weighted with silt, and would not work after a few days.

2. I also am of opinion that it would not be of much use.

MEMORANDUM.

No. 1,487 of 1871.

WITH reference to Government Resolution No. 36-I.—397, dated 9th March 1871, the undersigned has the honour to report that none of the self-registering gauges of the form designed by Colonel Sankey are required at present, but he will be glad to receive copies of any reports by officers who have made use of them. The experience gained in Madras and Bengal as to their utility will be of great use.

2. Five extracts from some of the opinions of the Executive Engineers in this department on this instrument are attached.

POONA,
6th July 1871.

(Signed) C. J. MERRIMAN, Lieut.-Colonel, R.E.,
Ag. Chief Engineer for Irrigation.

Extract from letter No. 210, dated 20th June 1871, from the Executive Engineer for Irrigation, Taptee Survey, to the Chief Engineer for Irrigation.

* * * "In my opinion the self-registering hydrometer designed by Lieutenant-Colonel Sankey, R.E., is not likely to prove of much use in the gauging of rivers, unless accompanied by a self-registering apparatus of the mean velocity of the stream, as I believe the errors to which the returns are subject arise, in a much greater degree, from inaccuracy of observation of velocity, than from erroneous returns of gauge readings in the wet season, when the surface of rivers are liable to considerable fluctuations; even though the person in charge of the gauges should not be on the spot at the time of a sudden rise in the river, its marks will be apparent for some time after." * * *

Extract paragraphs 2, 3, 4, and 5 from letter No. 149, dated 29th June 1871, from the Executive Engineer for Irrigation on special duty, Belgaum and Kolapoor.

"2. The main source of difficulty and cause of error we have to contend with is the velocity, and until this is taken by some more accurate means, such as a current metre, etc., it is vain to expect more than an approach to accuracy, and other refinements are useless.

"3. There is nothing new whatsoever in the instrument, it being simply a modification of the ordinary tidal gauge universally adopted in ports to give the exact height of tides, and also sometimes in large storage reservoirs and at measuring weirs for the purpose of obtaining diagrams of the expenditure of water.

"4. As an adjunct for the more accurate calculation of the discharge of rivers, its present form is decidedly less so (owing to the small scale of the diagram) than that now in use.

"5. On examining the returns of the river Mulpurba for July 1870, which I take as exhibiting the maximum variation on record, I find that, as a rule, the daily variation of the depth of water is not more than a few tenths of a foot in six hours, and that on the 27th and 28th, when an extraordinary flood came down, the maximum rise was 0·68 foot per hour; moreover, this rise was uniform between 6 P.M. on the 27th and 6 A.M. on the 28th, and also between 6 A.M. and noon on the 28th, both periods giving the same rise of 0·68 foot per hour. The proposed diagrams being at a scale of 1-30th vertical, and, no doubt, very small horizontal scale, could not possibly give the depths as accurately as these direct observations from a permanent post; indeed, the very small variations of 0 01 foot to 0 10 foot could not possibly be detected. In addition to the error from the impossibility of preserving a point on the pencil, there is another very serious source of inaccuracy (which does not exist in ordinary tidal gauges, as the pointer works directly from the float rod), and that is, when the water is high, and the band coiled on the cylinder, the angular motion must be greater than when the water is low."

Proceedings of the Madras Government, Public Works Department, 22nd September 1871.

Extract from letter No. 479, dated 19th June 1871, from the Executive Engineer for Irrigation, Ahmednuggur and Nassick.

* * * "I do not think it suited for such rivers as those in this division, unless some modification of the design were made to prevent the choking up of the inlet openings at the base of the hollow pile, which, as shown in the drawings, would probably be closed by a deposit of tenacious clay, or a sand bank 3 or 4 feet high, after every heavy flood."

Extract paragraph 3 from letter No. 709, dated 20th June 1871, from the Executive Engineer for Irrigation, Ahmedabad.

"3. I think that an instrument of the kind might be usefully employed at various points of our canals whenever the water in them shall have been taken up fully by the cultivators, but it should be much smaller and cheaper than that shown in the illustrations."

Extract from letter No. 252, dated 22nd June 1871, from the Executive Engineer for Irrigation on special duty, Neera river.

* * * "I have the honour to report that I think the instrument would be very useful at intervals along the proposed Neera canal as a continuous register of the actual quantities of water delivered at all times for irrigation."

No. 378. ORDER THEREON, 22nd September 1871, No. 2,522.

IRRIGATION, No. 21.

COMMUNICATED to the Chief Engineer for Irrigation.

(True Extract.)

Captain, R.E.,
Under-Secretary to Government.

To the Chief Engineer for Irrigation.

Exd. E. C. Shunker.

Govt. of {1871} India

PUBLIC WORKS.

To

THE CHIEF ENGINEER FOR IRRIGATION

Dated September, 22nd.

Recd. Encl

G. O., 22nd September 1871, No. 2422

SEPTEMBER.

Nos. 377-378

Self-registering Hydrometer.—Do
from the Government of India forward
copies of reports received from the Gove
ment of Bombay in regard to the
registering hydrometer devised
Colonel Sankey, communicated to
Chief Engineer for Irrigation.

3

No. 120 of 1326 of 1871

Public Works Department

Bombay, 19th July 1871

From

The Acting Under Secretary to the
Government of Bombay

To

The Secretary to the Govt. of India

III.— Irrigation.

Sir,

With reference to your letter No. 64 I,
dated 24th February 1871 regarding
Lieutenant Colonel Sankey's
self-registering Hydrometer
for rivers and tideways, I am
directed by the Right Honorable the Governor
in Council to forward copies of the papers noted in
the margin.

Memorandum from the Chief Engineer
for Irrigation No. 1487, dated 6th July 1871,
and accompaniments.

Letter from the Superintending Engineer
for Irrigation in Sind, No. 1753, dated 4th
May 1871.

Govt. of {1871} India

PUBLIC WORKS.

To

THE CHIEF ENGINEER FOR IRRIGATION.

Dated September, 22nd.

Read.

Ans.

G. O., 22nd September 1871, No. 242

SEPTEMBER.

Nos. 377-378

Self-registering Hydrometer.—Do from the Government of India forward copies of reports received from the Gov ment of Bombay in regard to the registering hydrometer devised Colonel Sankey, communicated to Chief Engineer for Irrigation.

3

No. 120 of 1326 of 1871

Public Works Department

Bombay, 19th July 1871

From

The Acting Under Secretary to the Government of Bombay

To

The Secretary to the Govt. of India

III.—Irrigation.

Sir,

With reference to your letter No. 643, dated 21st February 1871 regarding Lieutenant Colonel Sankey's self-registering Hydrometer for rivers and tideways, I am directed by the Right Honorable the Governor in Council, to forward copies of the papers noted in the margin.

Memorandum from the Chief Engineer for Irrigation, No. 1487, dated 6th July 1871, and accompaniments:—

Letter from the Superintending Engineer for Irrigation, in Sind, No. 1758, dated 4th May 1871.

Govt. of {1871} Madra.

PUBLIC WORKS.

To

THE CHIEF ENGINEER FOR IRRIGATI

Dated September, 22nd.

Recd.

Encl.

G. O., 22nd September 1871, No. 2,422

SEPTEMBER.

Nos. 377-378

Self-registering Hydrometer.—Doc
from the Government of India forward
copies of reports received from the Gove
ment of Bombay in regard to the
registering hydrometer devised
Colonel Sankey, communicated to
Chief Engineer for Irrigation.

3

No. 120 I. 1326 of 1871.

Public Works Department

Bombay, 19th July 1871

From

The Acting Under Secretary to the
Government of Bombay

To

The Secretary to the Govt. of India

III.— Irrigation.

Sir,

With reference to your letter No. 643,
dated 24th February 1871 regarding
Lieutenant Colonel Sankey's
self-registering Hydrometer
for rivers and tideways, I am
directed by the Right Honorable the Governor
in Council to forward copies of the papers noted in
the margin.

Memorandum from the Chief Engineer for Irrigation, No. 1487, dated 6th July 1871, and accompaniments.

Letter from the Superintending Engineer for Irrigation in Sind, No. 1783, dated 4th May 1871.

Encl 1

No. 111 PUBLIC WORKS.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.

To His Grace

The Right Hon'ble the DUKE OF ARGYLL, K.T.,

Secretary of State for India.

Simla, September 1, 1871.

My Lord Duke,

In continuation of our despatch, Public Works No. 66, dated the 3rd June last, and for the purpose suggested in paragraph 2 thereof, we have the honor to transmit copies of reports received lately from the Government of Bombay in regard to the self-registering hydrometer devised by Colonel Sankey.

2. With reference to Mr. Secretary Thornton's letter of the 27th ultimo, we avail ourselves of this opportunity to enclose three lithographed copies of each of the drawings of this instrument received with your Grace's despatch No. 110, dated the 28th December last.

We have the honor to be,

My Lord Duke,

Your Grace's most obedient, humble Servants,

MAYO.

NAPIER OF MAGDALA.

JOHN STRACHEY.

R. TEMPLE.

J. F. STEPHEN.

B. H. ELLIS.

H. W. NORMAN.

No. 43 I.

Copy of this despatch and of the reports forwarded to the Governments of Madras, Bengal, North-Western Provinces, and Punjab; the Chief Commissioners of Ondh, Central Provinces, British Burmah and Mysore, for information.

H. W. Rundall Colonel, R. E.

Deputy Secretary to the Govt. of India.

To. The Govt. of Madras

P. W. Department

P.W. 1871 Sept.

No 4336.

Copy.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.

To

THE RIGHT HON'BLE
THE SECY. OF STATE FOR INDIA.

No. 111 PUBLIC WORKS.

Dated Simla, 1st September 1871.

Received 13th September 71

Encl: 2.

Ext. J. Govt. 22 Sept 71

For Irrigation.

Communicated to the Chief Engineer for Irrigation.

No 2422.

Madras 23/9/71

Forwards copies of reports received from the Government of Bombay in regard to the self-registering hydrometer devised by Colonel Sankey, together with three lithographed copies of each of the drawings of the instrument.

No 2422 dated 22nd September 71

Clo 4336

Govt. of {1871} Madras.

PUBLIC WORKS.

To The Chief Engr for Irrigation

Dated

Recd. Encl. 2

G. O. 22 Sept. 71, No 2422.

Nos. 377 & 378

Self-registering hydrometer

Letter from the Govt of India forwarding Copies of reports received from the Govt of Bombay in regard to the self-registering hydrometer devised by Colonel Sankey, together with lithographed copies of the drawings of the instrument