Proceedings of the Madras Government, Public Works Department,
12*th* *August* 1875.

No. 210. Read the following letter from Colonel F. T. HAIG, R.E., Joint Secretary to the Government of Bengal, Public Works Department, (Irrigation Branch), to Major J. O. HASTED, R.E., Officiating Chief Engineer for Irrigation Public Works Department, Madras, dated Fort William, 27th July 1875, No. 723 I. :—

I AM directed to forward, herewith, copy of a letter from Mr. Dejoux, Executive Engineer, Cement Experiments Division, No. 716, dated 17th July 1875, submitting observations on the importance of securing a mortar capable of resisting the action of sea water for the construction of the intended port at Madras, and to state that Mr. Dejoux has been very successful here in the manufacture of cements. If the investigation he suggests is likely in your opinion to be of any service, this Government will be happy to order Mr. Dejoux to conduct it on receipt of the various specimens of limestones specified in his letter.

From P. DEJOUX, Esq., Executive Engineer, Cement Experiments Division, to Colonel J. STODDARD, M.S.C., Superintending Engineer, South-western Circle, dated Calcutta, 17th July 1875, No. 716.

HAVING heard that the Government of Madras intends soon to commence the works connected with the port of that Presidency, and considering it of the highest importance to secure a mortar capable of resisting the action of sea water, I have the honor to submit the following observations for the consideration of the Chief Engineer, Bengal, and through him of that of the authorities in the Public Works Department at Madras.

2. It is a well known fact, based on the opinion of Vicât and other French Engineers, and which has been practically tested with great success on a large scale by the American Engineers, (as stated in General Gilmore's Treatise on Limes, Hydraulic Cements and Mortars,) that the presence of Magnesia in a mortar immersed in sea water increases both its strength and durability very much.

3. The celebrated American cement stones are composed of a natural mixture of Carbonate of Lime and Magnesia and common clay.

The Rosendale cements are obtained by the calcination of these stones, and the mortars made with them answered remarkably well for sea-water works.

I found in the quarries of the Kymore Hills inexhaustible beds of Argillaceous Magnesian Limestones, which possess in every respect the same composition and the same properties as the American stones used for the Rosendale cements.

A small factory is at present worked by Government at Dehree, and the stones are extracted from the Margahi quarry.

It is evident that this cement would be the best to use for the Madras Port, but I am afraid that the price will be rather high on account of the cost of carriage from Dehree. I do not think it could be delivered at Madras at a lower price than Rupees 1-4-0 to 1-5-0 per cubic foot.

4. I have lately commenced a series of experiments, having for object the transformation into cement or limes eminently hydraulic, the Dolomites and other magnesian limes, which are common in India, which generally do not contain sufficient clay to be turned directly into Magnesia cement of the kind of the Margahi cement, and which when used alone gives very meagre lime.

The process is very simple, as it consists only in the addition of certain proportions of clay to the burnt magnesian lime, and in reburning the mixture, as it is done for artificial cement, made with slaked lime.

The results of these experiments up to date have been very satisfactory, and both quick and slow setting cements of good quality have been obtained.

5. As I am aware of the existence of magnesian limestones of various compositions in the Madras Presidency as well as in Mysore, and of a pure carbonate of Magnesia at *Salem*, I would now propose to add to the experiments I am conducting some of these magnesian limestones, so as to ascertain if a cement suitable for sea water works can be made with them, and at what cost.

6. In case it is considered advisable for me to do so, I would request the despatch of a certain quantity, say, about 2 cubic feet of, 1*st*, every magnesian limestone found in the Madras Presidency or at Mysore from places where the quarries can be advantageously worked, so as to enable me to commence experiments immediately upon them, and to manufacture a small quantity of cement with which blocks can be made and sent to Madras for immersion in sea-water.

2*ndly*. Two cubic feet, for every specimen of limestone sent, of the purest clay (free from sand) which can be found near the place where the cement could be manufactured, and, lastly, 3 cubic feet, for every specimen of limestone sent, of the sand which will be used for the works.

7. The cost of limestone, clay, fuel and the rate of labor should be detailed, so as to enable me to calculate the total cost of the cement.

8. As Dr. Nicholson, Lime Analyser of the Madras Presidency, may have analysed many of these specimens, I shall be glad to receive the results of his analysis or experiments, as such data will assist me considerably in my researches.

No. 211.

ORDER THEREON, 12th August 1875, No. 2,327.

CIVIL WORKS, No. 14.

ORDERED that the foregoing papers be communicated to the Superintendent, Madras Harbour Works, together with a copy of the Proceedings* containing Dr. Nicholson's Reports on Limestones, and a set† of the Reports by Mr. Dejoux on the same subject.

* G. O., No. 1,267, dated 5th May 1873.
" No. 427, " 21st Feb. 1874.
" No. 3,468, " 10th Dec. "
† Mis. No. 97, " 9th March 1874.
" 73, " 16th May "
" 71, " 18th Oct. "

(Here enter No. 2,328, dated 12th August 1875.)

(True Extract.)

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

To the Superintendent, Madras Harbour Works.

Exd. S. T. Austin.
Spare Copies

PUBLIC WORKS DEPARTMENT,
OOTACAMUND, 12*th* August 1875.

No. 212.

No. 2,328.

FROM

MAJOR-GENERAL G. W. WALKER, R.E.,
Secretary to the Government of Madras,
Public Works Department.

To

THE JOINT SECRETARY TO THE GOVERNMENT OF BENGAL,
Public Works Department, Irrigation Branch.

CIVIL WORKS, No. 15.

No. 1,267, dated 5th May 1873.
" 427, " 21st Feb. 1874.
" 3,468, " 10th Dec. "

SIR,—In reply to your letter No. 723 I., dated 27th ultimo, I am directed to transmit two copies of the Proceedings of this Government as per margin, containing the Reports of Dr. Nicholson on the Limestones of this Presidency examined by him, and to state that Mr. Dejoux's paper, on the requisites of serviceable mortar in Marine works, will be communicated to the Superintendent of the Madras Harbour Works.

I have the honor to be,
Sir,
Your most obedient servant,

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

Exd. S. T. Austin.
Spare Copies

No. 723 I.

F. F. Haig

FROM COL. ~~H. W. GULLIVER~~, R. E.,

~~Offg.~~ *Joint Secy. to the Govt. of Bengal*
in the P. W. Department,
Irrigation Branch,

To The Chief Engineer
Irrig^n^ Madras

Dated Fort William, 27th July 1875.

IRRIGATION.

SIR,

I am directed to forward herewith copy of a letter from Mr. Dejoux, Executive Engineer, Cement Experiments Division, No. 716, dated 17th July/75—submitting observations on the importance of securing a mortar capable of resisting the action of sea water for the construction of the intended Port at Madras and to state that Mr. Dejoux has been very successful here in the manufacture of Cements. Of the investigation he suggests is likely in your opinion to be

be of any service, this Government will be happy to order Mr. Dejoux to conduct it on receipt of the various specimens of limestones specified in his letter.

I have the honor to be
Sir
Your most obedt. Servt.
H. Macy Colebr.
Joint Secretary

Public Works Dept.

No 2327

Proceedings of the Madras Govt.
Under date 12th August/75
Read the following.

From
Govt. of India ---- No. 923 I. dd. 27th July/75.

Ordered that the foregoing papers be communicated to the Superintendent Madras Harbour Works, together with a copy of the Proceedings containing Dr. Nicholson's reports on limestones, and a list of the reports by Mr. Dejoux on the same subject

W. 9/8

Supdt Madras Harbour Works. 2 cc to 10 in the margin 20/8-30-8-75.

G.O. No 1267 dd/ 5th May/73
G.O. No 427 dd/ 21st Febry/74.
G.O. No 3468 dd/ 10th Dec/74.

Mis: No 97 dd/ 9th March/74.
do- 73 dd/ 16th May/74
do No 71 dd/ 13th Dec/74.

G.O. 12th August/75 No 2327
Read 25th Augt/75
Read 2 Augt/75
" 11th " "

From Govt. of India
No 723

From Govt. of India
No 1875 dated 21st May/74 No 406-410
Rec'd 29th " "

Transmits copy of letter
No 716-17 July/75 from
Supt. Dejoux to Engineer
in Chief & Secretary
Criminal Judicial Dept.
calling on the undertaker
to secure a Quarter
Cascalle of granite the
action of sea water upon the
construction of the embankments
Port Canning

No 210

Cir:- 9-8-75 Old 12-8-75
Rec'd 3 Augt.

Public Work Dept.

No 2328 Ootacamund. 12 Aug/75.

To,
The Joint Secy: to the
Govt. of Bengal, P.W.D.
Irrigation Branch.

Sir

In reply to
your letter No. 723 J
dated 27th Ultimo, I
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2 copies of the Proceed-
ing of this Govt. as per
margin containing the
reports of Dr. Nicholson
on the limestones of this
Presidency examined by
him, and to state that
Mr. Dejoux's paper

on

No. 1267 of 5th May 1873
" 427 " 21st Feby 1874
" 3468 " 10th Dec. "

on the requisites of serviceable mortar in Marine works will be communicated to the Superintendent of the Madras Harbour Works.

Ex. 9/8

6 sc & 2 encls
& Enclosures referred
to in the margin of
the letter -

Exp - 30-8-75

Ex^d Art.

5250

Govt. of Madras. 1875.

PUBLIC WORKS.

To

Dated

Rec'd.

Encl.

G. O., 12th Aug: 1875, No. 2327 2328

Nos. 240 - 241 212

Manufacture of mortar for the Madras Harbour Works

Forwg. orders on letter from the Govt: of Bengal forwarding copy of a letter from Mr. Dejoux relative to the

Transmitting two copies of Progs: containing the report of Dr. Nicholson on the limestones of the Presidency examined by him & intimating that Mr. Dejoux's paper on the requisites of serviceable mortar in Marine Works will be communicated to the Supt: of the Madras Harbour Works.