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24. (2) Date of repair 5-8-87

(3) Initials of the Referencer lms

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P.W.D. DEPARTMENT

G.O. No. 835 W Press.
B.P. No. Mis.

Dated 27. 3. 1884. 19

Not to be folded or roughly handled

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835/1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Buildings and Roads.
Civil Works.

READ—the following letter from Major J. L. L. MORANT, R.E., Officiating Consulting Architect to Government, to the Chief Engineer, Public Works Department, dated Madras, 25th March 1884, No. 1693 :—

I have the honor to inform you that I asked the Chemical Examiner of Madras to be so good as to examine the efflorescence found on the walls of the Public Works offices, Chepâk, and to suggest a remedy. He most kindly thoroughly examined our lime, sand, mortar, burnt bricks, and the clay from which they are made, and after a careful investigation and mature consideration reports that the efflorescence is due mainly to the mortar. He suggests the following preventive remedies :—

(1) Removing the salt in the sea-shells by having them washed in soft water before they are burnt for lime.

(2) The introduction of damp proof courses in the walls at a convenient level above the ground.

2. Perhaps you may see fit to order the Government officer, in whose charge the burning of shells for lime is, to adopt the first proposed remedy.

3. The Calcutta Engineers have lately taken to building into their walls at about basement level a course of vitrified stoneware bars, called "Taylor's patent damp proof course," obtained from the Broomhall Tile and Brick Company, Cox's Wharf, Upper Ground Street, Blackfriars, London. These might, in the first instance, be obtained from that firm, and perhaps afterwards they might be manufactured in India. The vitrified bars are shaped something like double-headed railway rails and, when laid together in cement, allow an air passage between the hollow chambers thereby formed.

4. That the efflorescence complained of is not solely an Indian product the following extract from a London professional paper will show :—

"The extensive use of red bricks, which have been made of late years for houses and public buildings, has caused a good deal of attention to be paid to a curious disfigurement to which such structures are liable, in the form of a kind of white mould which is apt to creep over their surfaces. The best of buildings are quite as subject to this disfigurement as the worst, the new Technical College at South Kensington, for instance, being just now covered in places with this objectionable kind of eruption, which is not very generally understood, and for which no remedy has yet been found except time. An American paper publishes one or two scientific opinions on the matter, one being that of the President of the Academy of Natural Science. According to this authority, the white efflorescence is simply ordinary Epsom salts, or sulphate of magnesia, and the production of it on brick surfaces must be regarded as evidence of the presence of sulphuric acid in the air, the result of coal burning. There is magnesia in the mortar with which the walls are built, and there is sulphuric acid in the air and *in the presence of moisture* a chemical combination takes place, the result being sulphate of magnesia. This dissolves in the rain and runs down over the bricks, and evaporation leaves the white deposit. Another chemist agrees that this is the way in which the efflorescence is produced, but thinks that it is potash with which the sulphuric acid combines, and that the white is sulphate of potash, while another authority considers it to be sulphate of lime. All agree, however, that it is the sulphuric acid in the air which causes this disfigurement, and this is really the important aspect of the matter."

5. I append a copy of the Chemical Examiner's letter.

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of {1884} Madras.

PUBLIC WORKS.

Dated March, 27th.

Recd.

Encl.

G.O., 27th March 1884, No. 835 W.

MARCH.

Public Works Offices, Chepak

The Consulting Architect directed to make trial of the remedies recommended for removing the efflorescence found on the walls of the —.

P. W. D.

No. 835/3

Consulting Architect's Office,
Chepauk, Madras.
25 March 1884.

No. 1693

From

The Consulting Architect to the Government of Madras

To

The Chief Engineer, Public Works Department

Enclosures,
1 Letter.

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2. Perhaps you may see fit to order the Government Officer, in whose charge the burning of shells for lime is, to adopt the first proposed remedy.

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835/4 12

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"agrees that this is the way in which the efflores
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"with which the Sulphuric acid combines, and
"that the white is sulphate of potash, while
"another Authority considers it to be sulphate
"of lime. All agree however that it is the Sul-
"phuric acid in the air which causes this dis-
"figurement and this is really the important
"aspect of the matter".

5. I append a copy of the Chemical Examiners letter.

I have the honor to be
sir
Your most obedt. servant

Jas Morant
Major R.E.

Offg Consg Archt. to Govt.

Bonglowe
S/P 3

Chemical Examiner's Office.

Madras 29th January 1884

No. 1586

835/5

From

J. K. Rogers Esqre., M.D. F.R.C.S. - F.I.C., F.C.S., Lond;
Chemical Examiner
Madras

To

The Consulting Architect
to Government
Madras.

Sir,

In reply to your letter No. 1389 dated 19th January/84, I have the honor to state that the efflorescence has been found to be chiefly composed of Carbonate of Soda.

2. It was found that Soda Carbonate was present in one of the bricks and also in both samples of clay, but the quantity found was so trifling that it is improbable that the efflorescence could have been to any important extent due to the bricks. The following facts also support this view of the case.

(1) Bricks after simple exposure for many weeks do not show efflorescence beyond a trifling amount.

(2) Bricks frequently wetted with distilled water and allowed to dry gave a similar result.

3. On examining the samples of chunam & cement it was found that they both contained Soda and Soda Carbonate in considerable amount. I think therefore that the chunam and cement are to be regarded as the important sources of the efflorescence of Soda Carbonate.

4. The preventive measures which I would suggest are as follows. viz.

(1) The removal of the camman salt mixed with the sea shells used for making chunam or Cement. This can probably be done by simply washing the shells with sft water before burning them.

(2) The use of dry conroes at a convenient level above the ground. This suggestion is made because it is believed that in certain places a good deal of water rises into the walls from the ground. And when water contained in walls evaporate a considerable portion of the salts which were in solution is deposited on the surface.

I have the honor to be
sir
your most obedt. servant
signed J. K. Rogers M.D. F.R.C.S. F.L.S.
Chemical Examiner

(True Copy)

Jas. Morant
Majr R.E.
Offg Consg Archt. to Government

B[illegible]
Works

83/6

P. W. D.

Roads and Buildings.

From

THE CONSULTING ARCHITECT

TO THE GOVERNMENT OF MADRAS.

To

The Chief Engineer,
P. W. D.

20 MAR 84

No. 1693.

Dated 25th March 1884

Received

No. of Enclosures. 1

Subject.

Submits a report from the Chemical Examiner regarding the efflorescence on the walls of the P. W. office flagstaff.

To W for orders.

The remedy of washing the shells with salt water would of course add to the evil of the lime. It would be required only for the lime used in C.A's work, & I presume C.A. would have to arrange specially with the officer in charge of the kilns to have a specified quantity so prepared for him when required & kept apart from that used for general work in Madras.—

Cl.
26-3-84

837/7

I think C.A. should be instructed to make trial of the remedies recommended;— and to report thereon in due course.—

837/7

26.3.84

837/7

Public Works Department.

THE MADRAS GOVERNMENT.

Under date the March 27 1884

Read the following

H. E. No. 1693 of 25th March/84.

The Consulting Architect will make a trial of the remedies recommended, and report thereon in due course.

Cy.
26-3-84

26.3.84

Br Works

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the

READ the following

From the Consulting Architect to Govt — } H. E. No 1693 of 25th March 84.

5

The Consulting Architect will make a trial of the remedies recommended, and report thereon in due course.

for 3/4
The Comg: Architect to Govt.
Supg. Engr. V Circle

Cy. 26-3-84

26-3-84

2752.

Govt. of [1888] Madras.

PUBLIC WORKS.

(9)

Nos.

Public Works Dept.

The Consulting Architect
has called to make trial
of the remedies recommended
for removing the
efflorescence from the
walls of the

4p
3

Endd in Secret Dept