

From

The Supy Engineer
Second Circle

Recd: 19.10.95

in 2

To The Chief Engineer
P.W. Department

No 2782 W of 2 Nov 1895

Communicated
to the Marine Dept.
in continuation of No 184 W of 24 January 1895

Dated 11 } October 1895
Despatched 17 }

Encls: 2.

No. 260 P.C.

Lightning conductors of
the Seven Pagodas, Pulicat
& Armoogham light houses.

Reporting the results of
further tests made by
the Executive Engineer B.C.B.
to the

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Marine Deptt with
Marine Encls in origl.

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but, to make sure, I have requested the Executive Engineer to make a further test with auxiliary earthplates of 12 sq ft.

Auxiliary earthplates of such a size were used for testing the Pulicat & Armoghon Light House Lightning-Conductor, & the accompanying copy of a report from the Executive Engr., Buckingham Canal shows the results obtained.

5. Pulicat Lighthouse.

The results closely approximate to the tests already reported. Conductivity is perfect, and the resistance of the Conductor earth was found to be 10 ohms. This resistance, though somewhat high, is not uncommonly found in earth under similar conditions. The Conductor earthplate is sunk very deep, and I do not think any better earth can be obtained on the sandy hill on which the Lighthouse is built.

6. Armoghon Lighthouse.

Conductivity, as before, perfect.

As regards the resistance of the Conductor earth

flexions were very small, and the auxiliary earths so suspiciously bad, the real cause must be looked for elsewhere.

On reference to the Telegraph Department for an explanation of the ~~very~~ high resistances, that Department unhesitatingly stated that the high resistances were due to the very small auxiliary earthplates (a little over 1 sq ft.)

used, and considered that auxiliary earthplates of 12 sq ft. should be used. There is no doubt whatever that this opinion is correct, and that the Conductor earth shows a resistance much greater than the actual owing to such small auxiliary earthplates having been used. The same cause accounts for the difficulty experienced at the tests reported in ^{my} former letter.

The Conductors earth, which is carried down deep to permanent water level, is the best that can be obtained, and is, I have no doubt, a good one, but

N^o 260 B.C.

From,

Superintending Engineer

2nd Circle

Dated 15th Decr 1845

Despatch 17th

A. P. Russell Esquire,

Offg Superintending Engineer,

To,

2nd Circle.

The Chief Engineer,

Public Works Department,

Madras.

Enclosures: 2

Sir,

In Continuation of this office

B.C. 1845 22nd Decr 1845

Letter N^o 349 B.C., dated 19th Janu^y 1845,

I have the honour to report the results of

further tests made by the Executive Engineer,

Buckingham Canal, to the lightning

conductors of the Seven Pagodas, Pulicat,

& Armoghon Lighthouses. Whether such tests

are of any real utility, particularly

the test for resistance of earth plates, as

a means of determining whether a

structure can be considered safe from

the effects of lightning, is a point dis-

puted by electricians, and Professor G. Long

has recently published a work proving that the method of testing Conductors by passing a small current through them, (the action of which ~~was~~ ^{is} entirely different from that of lightning) is worthless.

2. As will be seen from my letter above quoted, it was hitherto supposed that the unsatisfactory results of testing the Conductor earths was due to the bad condition of the leads. When the leads however, were submitted for the inspection of the Superintendent of Telegraphs, he considered that, with some patching, they would be quite efficient, but advised that a Sargent Galvanometer be used for testing as being far more trustworthy, where strong earth currents are met, than the Bucknill's Balance hitherto used. A Sargent Galvanometer was thereupon obtained in July last and the following is the results of the tests made.

3. Sivan Pagoda Lighthouse.

Copy of the detailed report submitted by the Executive Engineer is forwarded. The results show that, as before, the Conductivity of the Lightning Conductor is nearly perfect, and amounted to 0.70 ohms.

As regards the resistance of the Lightning Conductor earth, it will be observed, from my letter quoted in para 1 above, that no balance at all could formerly be obtained, and this was formerly attributed to the bad condition of the leads. On the present occasion, after a series of the most thorough tests had been carried out by the Executive Engineer, as will be apparent from his report herewith forwarded, the Conductor earth gave the high resistance of 16 ohms but was found to be much superior to the auxiliary earths. The Executive Engineer attributes this high resistance to an underlying bed of rock, but looking to the fact that the

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