M.R.O. 1—12,400—23-11-48.

MADRAS RECORD OFFICE.

Government of Madras.

Public (Law) DEPARTMENT.

G.O. Ms. 2/48-2/51

G.O. No. 1020 Press Mis.

1920

Dated / / 18

Not to be folded or roughly handled

No. 19. Read the following letter from Major E. LAWFORD, Superintending Engineer Southern Circle, in charge of the Central Office of Public Works; to W. H. BAYLEY, Esq., Acting Secretary to Government, dated 7th June 1858, No. 912.

SIR,

The ventilation of Saint Stephen's Church at Ootacamund, has long been felt to be very defective, and various plans have been proposed for its improvement, but all have been attended with more or less objection and have been set aside.

2. Mr. Fraser, Acting District Engineer, has now submitted a plan and estimate for ventilating the Church by means of a tube running along the roof, and opening up to the atmosphere at the top of the Tower, by means of which and the aid of a charcoal fire, the vitiated air will be driven off.

3. The plan is so clearly described by Mr. Fraser in the accompanying report, that I do not think it necessary to enter further into particulars, but would merely state, that as the Trustees have engaged for the maintenance of the fire, I am of opinion there is no reasonable doubt of the success of the plan.

4. The Venerable the Archdeacon having been consulted, has expressed his opinion in favor of the work, and I beg to recommend the estimate Rupees (1,060) one thousand and sixty, for sanction accordingly.

Letter from Captain P. M. FRANCIS, District Engineer of Coimbatore; to Colonel C. E. FABER, Chief Engineer, dated Camp Jackatallah, 15th April 1858, No. 45.

SIR,

With reference to your letter No. 8740, dated 1st Instant, I have the honor to submit 3 estimates amounting respectively to Rupees 700, 1,055 and 919 for repairing and ventilating the Church at Ootacamund, and it remains for the Chief Engineer to decide which of the two latter he will recommend to Government. I have also the honor to forward copies of letters* from Mr. Fraser and the Reverend Mr. Rogers in explanation, from which it appears that the Church Committee agree to defray the expense of keeping up the fire.

* No. dated 12th April 1858.
No, dated 9th April 1858.

Letter from WILLIAM FRASER, Esq., Civil Engineer; to Captain P. M. FRANCIS, District Engineer, of Coimbatore, dated Ootacamund, 12th April 1858.

SIR,

In returning the papers relating to the repairing and ventilating of the Church at Ootacamund, I have the honor to state that I have divided the estimate for repairs and new works as required, and, as suggested by Major Lawford, have added to the estimate an item (of 100 Rupees) to meet the cost of a fire place—and extra case in connecting it with the horizontal air tubes.

With regard to the cost of keeping a fire in the upright tube, I had ascertained from the Chaplain (before I sent in the estimate) that the congregation would bear this expense. My not stating this, was an oversight, as I knew it was essential to the efficiency of the design. I now however append an official letter from the Chaplain as President of the Church Committee and the Lay Trustees, consenting to the arrangement, which will set this question at rest.

The Chief Engineer has expressed no opinion with reference to having two timber tubes inside, or one iron tube outside the roof.

It occurs to me, that the Chief Engineer may eventually seek the opinion of the Lay Trustees on this question, as it is one affecting the appearance of the Church.

If you think this is probable, I could get their opinion at once, which would save time.

In conclusion, I have to remark, that the repairs of the outer wood work and painting should be set about immediately ; as it is desirable that it should be finished before the rain sets in.

Letter from the Church Committee, Ootacamund ; to WILLIAM FRASER, Esq., Civil Engineer, dated Ootacamund, 9th April 1858.

SIR,

In reply to your letter of the 7th Instant, we have the honor to inform you, for the information of the Governor in Council, that the congregation will readily defray the cost of a fire in the proposed tube for ventilation, during the time of Divine Service.

(Signed) A. J. ROGERS, M. A.,
Chaplain & President of Church Committee.

(Signed) L. W. WATSON, Major Genl. } Lay Trustees.
(„) A. C. HADFIELD, Lt. Col. }

Memorandum to accompany Mr. FRASER'S Estimate for the repairing and ventilation of Ootacamund Church.

1. The repairing of the window shutters and the painting of all the wood work are absolutely necessary for the preservation of the timber.

2. The flooring of the Vestry and retiring rooms with timber is considered necessary ; the present floors are of chunam, and are, I understand very comfortless in wet weather : one dwarf wall must be built across each room to support the joists.

3. Many of the Seats, the Pulpit door, Altar railings, &c., are in a rickety condition, and must be repaired.

4. There are no shutters to the Tower windows, and the wind and rain beat in, especially during the monsoon, to the injury of the floors and walls, and the great discomfort of the Bell Ringer.

5. There are, at present, two ladders in the Tower—one from the gallery floor to the bell room ; the other, from that to the clock ; but they are so shaky and really insecure, that there is some risk in making use of them : there is no way of getting from the bell room to the top of the Tower : I have therefore estimated for three proper step ladders, by which the top of the Tower may be reached.

It will be necessary to have access to the top of the Tower, if the mode of ventilation now proposed be adopted.

6. To allow of the shutters of the upper windows in the Tower being got at, for the purpose of opening and closing them ; about two feet in width, all round must be floored ; the beams of the bell frame can be made available for this purpose, as they are at the level required : A hand-rail must also be provided.

7. One of the clock weights lately fell through the floor, breaking a Mural Tablet of white marble in its descent : Both the floor and Tablet must be repaired. The estimate for the latter, I have taken from Mr. Bennet the Church School Master ; who, the Chaplain informs me understands working in marble.

It appears that those weights have a habit of falling through the floor and doing considerable mischief, I would therefore recommend a proper clock rope being procured, as the ropes are clearly in fault ; and in the mean time, I have recommended that a bundle of furze or a box of saw-dust shall be placed under each weight, to prevent any injury should the ropes break again.

8. At present the rain water passes from the roof through 16 short spouts at the base of the parapets : the streams of water, when the wind blows fresh, are driven against the walls ; and the water falling upon the ground at the base of the walls, keeps the whole in a very unsightly and damp state : I have therefore estimated for four pipes, one at each angle, to carry the water

from the roof, free of the walls : I have estimated for teak pipes, coated with tar and sand, but I would prefer cast iron or zinc pipes : a total length of 80 feet, 4 inches in diameter would be required.

9. *Ventilation.*—This is the most important item in the estimate, and as the plan now proposed differs from that already put forward, a few words of explanation may be necessary.

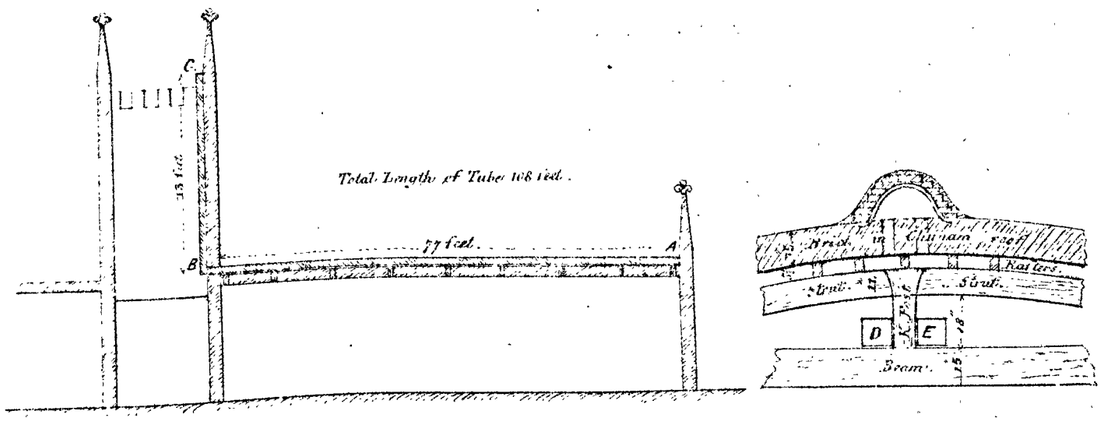
That ventilation is required, the following figures will show. The cubical content of the Church is about 48,000 feet ; including the space occupied by the congregation—Seats—columns, &c. &c. The maximum congregation is about 400 people ; and if we assume 5 cubic feet of air per minute for each individual, to be necessary for healthy and comfortable respiration, it will show that the whole quantity of air in the Church must be changed once in every 24 minutes, or about 7 times during Divine Service : and if Dr. Reid's estimate of 10 cubic feet per minute for each individual be assumed correct, the air should be entirely changed once in every 12 minutes ; except what may escape by the doors and windows, the respired and impure air has now no means of getting away : it is no wonder then, that delicate members of the congregation complain of head-aches, faintings, &c.

For the purpose of carrying off the vitiated air, it has been proposed to make a considerable number of small openings in the roof ; and to admit cold air through openings at the tops of the windows.

Were the roof lofty and open, as are those of most Churches, so that the space actually occupied by the congregation would be but a small proportion of the entire space, this plan might answer ; but, in the present case, when the roof is very low, and almost horizontal, no reasonable number of openings in it, would, in my opinion, effect the ventilation of the Church ; because, such a mode of ventilation would, with a low roof, be slow ; while the low roof and the fact of the congregation occupying an unusually large proportion of the entire space of the Church, require that the ventilation, to be effective, must be rapid.

We must, therefore, resort to some means of drawing rapidly, the vitiated air from the body of the Church ; and after some consideration, I am disposed to recommend the following plan, as not only being the best suited to the circumstances of this Church, but as occasioning the least amount of alteration now, and of maintenance hereafter.

The following Sketches will illustrate the Plan proposed.



It is proposed to lay along the centre of the roof, an air trunk or tube A. B. C., from the west end of the Church to the Tower ; turning up inside, and opening to the atmosphere at the top of the Tower.

Apertures at intervals of a few feet, and alternately on each side of the ridge pole, t pierced through the roof, for the purpose of conveying the vitiated air from the body o church into the tube.

It is presumed that the difference in weight between the heated column of air B. C., an surrounding atmosphere, will cause such a draught through the tube, as will thoroughly ver the space below—but should this not be the case, any required intensity of draught can be duced, by placing, during the time of Divine Service, a vessel of lighted charcoal in the tu B—upon the top of the tube a cowl should be placed, to prevent, during the high winds, regurgitation of the foul air.

The cross section will show how the sheet iron forming the tube, is proposed to be p upon the roof: it must be protected by some substance which is a bad conductor of heat, a chunamed over, to throw off the rain—for were the rain allowed to fall upon the iron ar evaporate from its surface, its temperature and that of the air inside might be so much low as to cause the latter to fall again into the body of the Church and descend to the level of congregation.

The area of the tube is proposed to be 1½ square feet ; which is about the result of a c lation made on the supposition, that the greatest number of people in the Church at any one is 400, and that each person will require 5 cubic feet of fresh air per minute. I do not de necessary to go further into this part of the question, as it is one which hardly admits of calculation—for, according to the best authorities, the quantity of fresh air required for eac dividual, ranges from 3 to 10 cubic feet per minute—besides by having a fire and a damper a point B. the draught can be regulated to suit any required degree of ventilation.

I do not approve of letting the fresh air in by openings in the windows.

At the present time, some inconvenience is felt from the wind blowing down, and these probably be very much increased where a thorough draught is established through the proj air-tube.

I have therefore estimated few air-tubes all round the Church to convey air from outsi under the seats—and opening into the aisles. There may be four of these tubes on each and one at the west end of the Church ; their aggregate area to be about 8 square feet ; of w (supposing one half to be occupied by the iron grating with which their outer ends must be tected) one half, or 4 square feet, will be available for the ingress of pure air. These tubes s be carefully coated with tar and sand, or some other substance which will protect them from d the inner openings to be covered with perforated zinc or cocoanut fibre cloth, to diffuse the air prevent a strong current setting in any direction ; care being taken that the free space shal greater at the inner, than at the outer end. As openings, have been already made in the win for the admission of pure air, this part of the project might be postponed, until we shall hav certained the effects of the proposed exhausting tube.

With regard to this mode of ventilation, I have only to remark, that its efficiency cann doubted ; as its principle has been carried out successfully in many cases in England and where.

Instead of constructing one sheet iron tube *upon* the roof,—two smaller tubes of tin one on each side of the ring post, might be laid upon the beams *under* the roof as shown at letters D. E., on the cross section : they—after passing through the wall at the back of the Ga —could be connected with a single up-cast shaft of sheet iron in the Tower, as already prop this would avoid any interference whatever with the roof, and as the tubes could be ma timber would be a cheaper plan, than that already described :—it is however objected to, a supposed the tubes would disfigure the appearance of the Church.

In conclusion, I would observe, that I consider the estimate ample for the work propos it could be executed now :—but the cost of labour, and materials is increasing so rapidly a station, that I cannot be answerable for the efficiency of the estimate a month hence.

Ootacamund,
19th March 1858.

(Signed) WILLIAM FRASER,

Civil Engin

Letter from the Venerable VINCENT SHORTLAND, Archdeacon of Madras ; to Colonel C. E. FABER, Chief Engineer, dated Palmanair, 10th May 1858, No. 189.

SIR,

I have had much pleasure in receiving your letter No. 69 of the 5th Instant, with its 3 enclosures, herewith returned.

I am exceedingly happy to hear, that you have been able to sanction the estimate for the repairs of St. Stephen's Church at Ootacamund, which, I am aware, have long been much required.

It is very gratifying also to hear, that the long contemplated ventilation of this Church is likely to be so satisfactorily accomplished, and I cannot doubt, that the plan of which you have approved at a probable expense of Rupees 1,060, with the iron ventilating tube carried outside the Church, will be very preferable to the introduction of wooden tubes inside the Sacred Edifice, by which it could not fail to be much disfigured.

I apprehend that there can be no question that this Church with its very low roof, was built on a defective principle, especially, in a climate where the doors and windows are necessarily closed, a great part of the year. In the prospect of other Churches being built on the Neilgherry Hills, a repetition of this oversight will, I doubt not, be effectually prevented.

No. 20. ORDER THEREON, No. 1308 ; dated 7th July 1858.

Referred to the Ecclesiastical Department for consideration. The estimate submitted with the above letter, it is observed does not provide exclusively for the ventilation of St. Stephen's Church at Ootacamund, as might be understood from Major Lawford's letter, but for other improvements to the buildings ; the total cost of the several works proposed being Rupees 1,060.

(Signed) T. PYCROFT,
Chief Secretary.

Central Office of Works
Parliament Square
7 June 1858

No 912

Sir

I have the honour to enclose a Report of Mr Fraser
one of the Engineers of this Office of Works

To

The Secretary to Government
Public Works Department

Sir

Enclosure and Return

I have considered of plans and estimates
which at Colonel Colebrooke's request were prepared
for the improvement but all have been attended with
more or less objection which have been set aside.

2 Mr Fraser, Acting Executive
Engineer, has now submitted a plan and estimate
for rebuilding the Church by means of an inclined
passage along the road and opening into the
Verandahs at the top of the Tower by means
of which, under the aide of a charcoal fire the
intruders will be driven off.

3 The plan is so clearly described
by Mr Fraser in the accompaining report that

I

I do not think it necessary to enter further into particulars, but would merely state that as the Brahmins have engaged for the maintenance of the fire, I am of opinion there is no reasonable doubt of the success of the plan.—

The Venerable the Archdeacon having been consulted has expressed his opinions in favor of the work, and I beg to recommend the Estimate Rupees (1,060) one thousand and sixty for sanction accordingly.—

I have the honor to be,

Sir,

Your Most Obed.t Serv.t

Fort St. George
7th June 1858

Supt. Engineer Fort St. Davids in ch.
of the Central Office of P.W.

To
The Secretary to Government
P.W.D.

No. 1308

Referred to the Ecclesiastical Department, for consideration. The Estimate as submitted with the above letter, it is observed, does not provide any thing for the ventilation of Saint Stephen's Church but it is recommended, as mentioned by Major Sandford's letter, that for other improvements to the Buildings; the total cost of the several works proposed being £1,960

Front Downing Street
7th July 1858

W. H. B.

Copies to the Ecc. Dept
with a Letter Dirs 8

No. 1272

Dated 7th
Received 7th June 1858.

No. 912

Encls = 5 = Returned
Ecc. Dept 8th July 1858
Copies to the Ecclesiastical Dept 8th July 1858
Encls 5 Returned
Sd. 1308 - 7th July 1858

Submits, for sanction,
the Estimate amounting to
Stg. £1960, for Ventilating
Saint Stephen's Church &c.
Recommended.
Notes and Orders.

No. 1920

C. 18th June R 25th