

Acoustic Pottery.

COMMUNICATED BY

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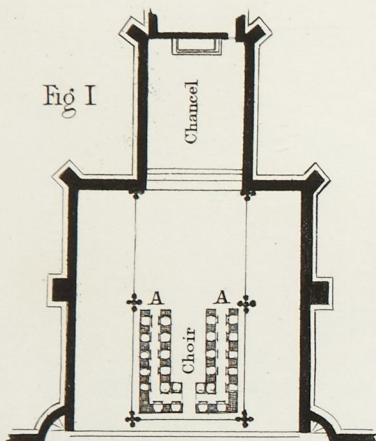
THE principles of acoustics, as applied to churches and public buildings, are now but little understood; their fitness or unfitness for the conveyance of sound is accidental, rather than the result of any system employed by our architects in their construction. It is well known that the Greeks and Romans employed means for repercussion, and increasing the volume of sound in their theatres; and Vitruvius¹ describes vessels of bronze, (*ἄρχεῖα*) in some cases of clay, which were placed under the seats and in cells constructed for this purpose, of which practice traces have been found in the ancient theatres of Italy, and various parts of the Greek provinces.²

This statement of Vitruvius received but little credence, and his theory was regarded as puerile, until the discovery of a series of acoustic vases was made in the church of St. Blaise, at Arles, in the year 1842; when the question was revived by M. Huard, Director of the Museum at Arles, in a communication to the *Bulletin Archéologique*,³ and the

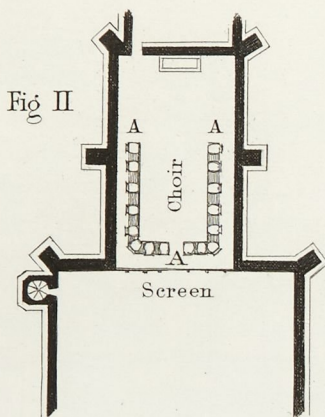
¹ *Vitruvius*, lib. v. c. 5. Smith's *Dictionary of Roman Antiquities*. Art. "Theatrum."

² *Gentleman's Magazine*, vol. ccxv. p. 750 (1863).

³ *Bulletin Archéologique*, vol ii. p. 440.



Plan. St. Peter's Mancroft.



St. Peter's per Mountergate.

AA. Scite of Trench & Wall containing Acoustic Jars.

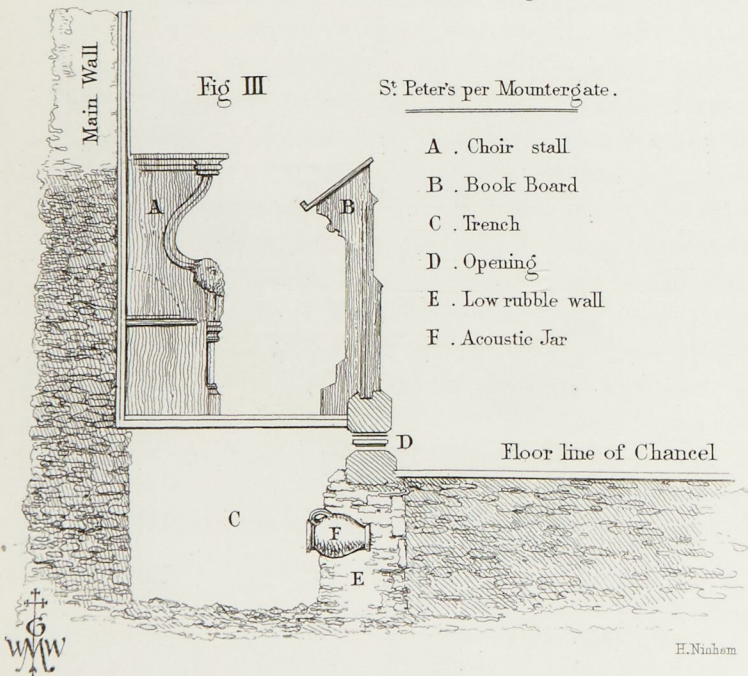


Fig III

St. Peter's per Mountergate.

- A . Choir stall
- B . Book Board
- C . Trench
- D . Opening
- E . Low rubble wall
- F . Acoustic Jar

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ACOUSTIC POTTERY IN NORWICH CHURCHES.

existence of a like practice in mediæval times was fully established. Since that time similar discoveries have been made in various parts of Great Britain. In Ireland, at the church of St. Mary, Youghal, co. Cork, a series of orifices, five in number, were observed at the western ends of the north and south walls of the choir, giving vent to an equal number of earthen jars lying on their sides, and placed immediately behind them.⁴ At Fountain's Abbey, in 1854, earthen jars were found embedded in the base of the choir screen, and the attention of our Society was called to the subject by similar discoveries in the churches of St. Peter Mancroft and St. Peter per Mountergate, Norwich, of which record is made in our proceedings.⁵

Theories, most opposite and vague, have been suggested to account for the existence of these remains, and, upon the discovery at Fountain's Abbey, the subject was opened in the pages of *Notes and Queries*⁶ by a correspondent, who conjectures their purpose to have been to burn incense. Those at St. Peter Mancroft, having been found under the stalls of the choir, were intended, according to another correspondent, to receive the ashes of the hearts of canons attached to the church. Purposes of a secular character were also suggested, viz., that such jars were filled with some generous beverage, with which success was drunk to the commencing building; that they were intended for the feathered tribe; in fact, for dove-cotes or columbaries; and, more curious still, that they formed part of a warming apparatus. As pots, or pipes of earth, were, and are even now, in Italy frequently employed, where strength and lightness are required, or placed beneath the pavement for ventilation, and in damp situations to obviate the humidity of the soil, these purposes were also suggested; but the

⁴ *Transactions of Kilkenny Archaeological Society*, vol. iii. p. 303.

⁵ *Norfolk Archaeology*, vols. iv. 352; vi. 382.

⁶ *Notes and Queries*, vol. x. p. 386, seq. Nov. 11, 1854.

position and arrangement of the jars oppose such explanations. The other reasons advanced are so absurd that they cannot for one moment occupy serious attention. Another theory remained, and, as it now appears, the true one; that such jars were inserted for acoustic purposes. This, however, received but little credence, from the doubtful effect of such an arrangement, and the absence of any historical testimony to such a practice in the middle ages. Thanks to the intelligence of our French brethren, and especially to M. Didron, the editor of *Annales Archéologiques*, this testimony is now no longer wanting.

The question first received the attention of French archæologists, upon the discovery at Arles, and was a second time brought under their notice in 1861 by a Swedish architect, M. Mandelgren, and two Russian architects, MM. Stassoff and Gornostaeff, who made inquiry of the Parisian *savants*, whether "cornets," or pots of baked earth, were found in the interior walls, or in vaults of French churches, as was frequently the case in the churches of Sweden and Denmark. M. Didron replied in the *Journal* which he directs,⁷ citing the discovery in the church of St. Blaise, at Arles, as a French instance of the practice, and brought forward a passage from a manuscript of the fifteenth century, which has thrown so much light on this subject, that whatever doubt may have justly been entertained as to the effect, there can now no longer be any as to the purpose of such jars, when found incorporated into the fabric of ecclesiastical edifices.

This passage, of so much value, occurs in a Chronicle of the Celestins of Metz, and is quoted by M. Boutéillier in his notice of that order, and their establishment in the ancient Austrasia or Rhenish France. Under the date 1432, the chronicler writes as follows: "In the month of August in

⁷ *Annales Archéologiques*, vol. xxii. p. 294--97.

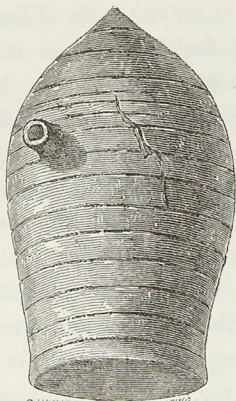
this year, on the vigil of the Assumption, after brother Odo le Roy, the prior, had returned from the before-mentioned general chapter, it was ordered that pots should be put into the choir of the church of this place, he stating that he had seen such in a church elsewhere; thinking that they made the singing better, and resound more, they were put up there in one day by taking as many workmen as were necessary."⁸ The chronicler goes on, and pleasantly ridicules Prior Odo le Roy, who caused these appliances to be placed in the walls of his church for the feast of the Assumption, expressing his disbelief that they sang any the better for what was done. A later hand has written on the margin of the manuscript, "*ecce risu digna*," and thereby shows his scepticism and ridicule also.

The learned Abbé Cochet, in a communication to the Academy of Rouen,⁹ has given the result of his observations on the subject of acoustic pottery, and reports several occasions upon which he has met with vases of this character. At Montivilliers, jars with a simple neck moulding and a conical base were found at the four angles of the vault of the choir which was under the tower of the abbey church. Again at Fry, canton Argueil, four jars of ordinary domestic shape were found, having handles, and resembling those at

⁸ "En cest année dessus dit au mois daoust, le vigile de l assumption de Nostre Dame, aprèz ceu que frère Ode le Roy, priour de seans, fuit retournez du chapitre gral de dessus dit, il fit et ordonnoit de mettre les pots au cuer de leglise de seans, portant qu'il avoit vu altepart en aucune église et pensant qu'il y fesoit milleur chanter et que il ly resonneroit plusfort. Et y furent mis tuis en ung jour on pont tant douvriers quil suffisoit. Mais ie ne seay si on chante miez que on ne faisoit. Et cest une chose à croire que lez murs en furet grandement crolley, et deshochiet et becop de gens qui viennent seans sont bien merveillex que y soie fait. Et dixent aucune foix qui valeoit mieux quil furet aprésen dehors, portant que bon pensoyt il seroit là mis pour en prendre et jouyr à plaisir aux foulx."—*Notice sur le Couvent de Célestins de Metz*, par M. Ed. Bouteiller. Metz, 1862.

⁹ "Précis Analytique des Travaux de l'Académie Impériale de Rouen."—1863-64. Rouen, Boissel.

St. Peter per Mountergate, Norwich. The third and most interesting example, cited by the Abbé, is from St. Laurent en Caux, where the workmen engaged in pulling down the old church discovered a large earthen vessel placed in one of the angles of the choir and entirely enveloped in mortar.



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ST. LAURENT EN CAUX,
NORMANDY.

a neck issuing from the shoulders and appearing on the face of the wall. The exterior is furrowed with horizontal lines of thirteenth-century character: from its form it appears well adapted for acoustic purposes and entirely unsuited for any other. With these examples, he furnishes an additional and singular historical proof of their purpose from a diatribe of the seventeenth century, entitled "*L'Apocalypse de Meliton*," written against the religious orders, and attributed to the Abbé Saint Leger. "Of fifty choristers, that

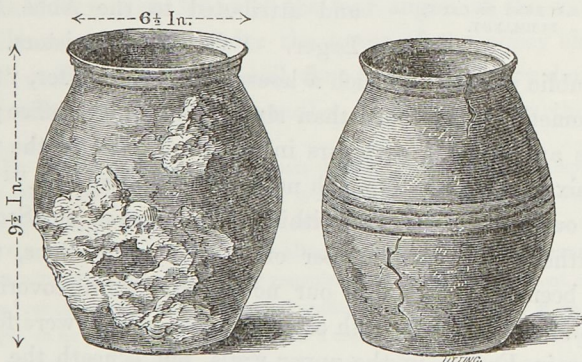
the public maintain in such a house," says the writer, "there are sometimes not more than six present at the office; the choirs are so fitted with jars in the vaults and in the walls that six voices make as much noise as forty elsewhere."¹

In our own county, and within the province of our Society, notwithstanding the number of church restorations, there have been brought under our notice but two discoveries of acoustic pottery. In both cases the pots or jars were found, not as in France in the upper walls, but beneath the floor of the choir, where they were placed to give sonority to

¹ "De cinquante choristers que le public entretient dedans telle maison, quelquefois ils ne seront pas six à l'office; les chœurs sont accomodez avec des pots dans la voûte, et dans les murailles, de sorte que six voix y feront autant de bruit que quarante ailleurs."—*L'Apocalypse de Meliton*, p. 34, edit. 1665.

that part of the building. The first of these discoveries was made in the church of St. Peter Mancroft, Norwich, during the restorations of 1850; where beneath the wooden floor and joists of the old pews, and immediately under that part of the church formerly occupied by the choir stalls, were found two trenches, running eastward as far as the stalls probably extended, being returned towards the west where the screen stood, and discontinued for the space of four feet at the entrance of the choir: in fact, lying like two letters, \perp placed face to face. The arrangement can be better understood by reference to the accompanying plate, fig. 1. Each trench measured thirty inches wide, about three feet deep, paved at the bottom with yellow glazed tiles about eight inches square, and lined or bounded on either side by a low rubble wall one foot in thickness, into which wall were built numerous red earthen jars, having their mouths directed towards each other, within the trench, and presenting the appearance of guns projecting from a ship's side.

These jars were all of the same character. Of the two here



ST. PETER MANCROFT, NORWICH.

engraved, one is preserved in the Norwich Museum, the other, with fragments of mortar attached, is in the possession of our Secretary, Mr. Fitch, who was present at the discovery, and has most obligingly, upon the spot, described the cir-

cumstances under which they were found. He assures us that the jars themselves were entirely free from ashes, or any substance which could warrant the supposition that they were of funereal character.

Ten years later, during the restorations at St. Peter per Moutergate in 1860, a second discovery of acoustic pottery was made in Norwich. In this church, the choir stalls, of which the panelling at the back remains, were confined to the chancel. Immediately under the floor upon which they stood, on either side the choir, was found a trench three feet in depth, bounded by a single low brick wall, running parallel with, and at about four feet from, the north and south walls, and returned on the eastern side of the screen, (fig. 2) exactly in the same manner as at St. Peter Mancroft. About midway in this low wall, were inserted jars, less numerous than at Mancroft, (this church being much smaller) and differing from those, having ears or handles, and being, like those found at Fry in France, of a domestic character.



ST. PETER PER MOUNTERGATE, NORWICH.

The two here given have been secured for the Norwich Museum: they are of a dark ash colour and partially glazed.

The others were all dispersed or destroyed, some being sold by auction among the old materials and fittings of the church, and very many broken in the attempt to remove them. The low wall was levelled, and no trace of this curious arrangement any longer exists.²

It is to be regretted that no case has yet occurred where these jars have been found intact, and in places where the original choir stalls exist, from which we might more perfectly understand the principle. At St. Peter Mancroft, not a fragment of these stalls remained; and at St. Peter per Mountergate, of the curious *miserere* seats which were there in Blomefield's time,³ some perpendicular panelling at the back was all that existed in 1860. Sufficient however remained, in the latter church, to form a probable conjecture of the system as there carried out, which by reference to the plate (fig. 3) may be thus explained. The choir seats being constructed over the trench which contained the jars, it was necessary to establish some communication between the outer air and the acoustic instruments within. This may have been effected by holes, or quatrefoils, pierced in the plinth of wood or stone at the base of the book-board, usually found in front of stalls of this character. Such holes may often be observed in this position, perhaps more frequently for ventilation, but would also have served for a purpose of this kind. Whether such an arrangement would conduce to improve the chanting, may be questioned. There may be some who, like the Chronieler of Metz and his commentator, are inclined to ridicule this idea, but there is no doubt the idea existed; most certainly a note sung in proximity with one of these

² I must here acknowledge my obligations to Mr. John L'Estrange, who kindly placed at my disposal a copy of a letter which he addressed to the Rev. J. Bulwer, describing the consecration crosses found at St. Peter per Mountergate, and containing some particulars respecting the position and arrangement of these jars.

³ Blomefield's *Norfolk*, vol. iv., p. 968, 8vo. edition.

jars, is increased in volume *crede experto*. It is also asserted that churches, in which these jars have been found, were rendered more sonorous thereby. The church of St. Mary, Youghal, is said to have been peculiarly easy for the exercise of the voice. At "Bloisseville ès Plain," the curé assured the Abbé Cochet that his church was singularly well adapted for singing and preaching, and at St. Pierre, Caen, on account of its sonority, some such arrangement is suspected, as I am informed by M. Trebutien, the intelligent librarian and historian of that town, to whom I am much indebted for directing my attention to sources of information on this subject.

Supposing the system of Vitruvius and the great architects of the middle ages to be puerile, or found inefficacious, and therefore abandoned, we are surely less ingenious if, with increased knowledge on scientific subjects, we give little attention to, and make no provision for, a requirement so necessary in the construction of buildings for ecclesiastical or civil purposes. Now that interest has been excited, and the subject illustrated by archæologists, it is hoped that the attention of architects and professors of acoustics may also be directed to a point of great importance and so much interest.