

IX.—NORMAN DECORATION IN DURHAM CATHEDRAL.

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The decoration of the column shafts of the great arcades of Durham cathedral is sometimes cited as a rare instance, in Norman work, of the carving of ornament *in situ*.

The columns occur at the intermediate stages in the great double bays of the choir, transepts and nave. Those in the choir date between 1093-96, and in the transepts between 1096-99. The easternmost pair in the nave were probably completed before 1100. The remainder in the nave followed at a longer interval, forming part of the second stage of the cathedral building operations presumed to have been commenced about 1110.

Each of the series in the choir and transepts has a cluster of shafts on the back to give support to the ribs of the aisle vaults. The nave columns, including the earlier easternmost pair, are completely circular in plan.

All the decoration is geometric, but the patterns and mouldings are widely varied. Usually the designs form pairs in occupying corresponding positions in respect of the main east-to-west axis of the cathedral, but the southern column of the south transept is of quite individual design.

There are only four motifs of pattern: the spiral, lozenge, chevron and flute. Repeating pairs of designs of chevron and spiral are differentiated in the mouldings, but there is only one pair each of the lozenge and flute.

All patterns but the flute are particularly difficult to

set out on the cylindrical shaft of a column. How were they here contrived with such apparent precision and regularity?

Norman masonry facing at Durham is invariably arranged in regular courses, but these courses are of somewhat varied heights and the individual stones therein are of different lengths. Very rarely are any two units identical in size. The beds of the stones are fairly carefully worked, but the sides are only squared for a short distance back from the face, and then tail roughly away into the rubble and mortar wall core. The back of the stones also is left in the rough. The face is "finished" with the axe, the tool marks being plain to view. Stones average about 200 lb. in weight.

Economy in material, in labour of tooling, and ease of transport and fixing were obviously highly important considerations. There was little or no wastage, practically all the stone quarried finding its place in the building with a minimum of preparatory cutting; in one or other of the graded facing courses or in the wall core as the rubble of the matrix. The size of even the largest stones readily permitted haulage and handling into position.

Mortar joints were very thick, normally a little over one inch, but in the earliest work one and a half inches and occasionally two. A thick joint is properly part of the technique of the rubble cored wall, as otherwise, in the initial settlement, all the weight would tend to pass on to the facing stones, the core, with its greater proportion of mortar, being the more compressible.

The Norman masonry everywhere answers to this description except that used for the columns. The change in technique is obviously related to the decoration. The courses are now all of the same height, and all the stones of the same width. Joints are much thinner, somewhat over half an inch in the earlier columns to one-eighth of an inch in the latest. Each stone bears the same decorative unit or a second or third part of that unit.

Thus it is clear that a decorative scheme for the column

shafts was conceived along with the design of the building itself and before a single stone of the shaft was cut. But there is no proof in the arrangement as to whether the patterns were cut before or after erection. The regularity of the units would just as well have formed a grid for the marking out of the pattern as it would make possible the assemblage of prepared units into a preconceived pattern. It would simplify tremendously either process.

The tooling of the undecorated portion of the separate stones naturally shows individual handling, but the mouldings of the decoration proper have unmistakably been *finished* in their present position. This again does not make the facts for either case any more clear, since even with the most rare perfection in Norman workmanship there might still occur some slight discrepancies in the fitting of previously decorated stones, necessitating a touching up *in situ*.

Nevertheless there exist very definite proofs of the procedure adopted, and it may be said forthwith that all the decoration, with some small exceptions where there were gross discrepancies to be concealed or rectified, was carved beforehand and assembled into the various patterns. Here again we have conformity with the usual Norman practice.

The masoncraft of the columns, though exceptionally good for its period, is by no means so accurate as appears at first sight. The Norman builders invariably seem to have found exactitude irksome, and only to be attempted, as here, under compulsion of circumstance. All the decoration proves on close examination to abound in minor irregularities, and it is the nature and the consistency of certain of these which prove the method of procedure adopted.

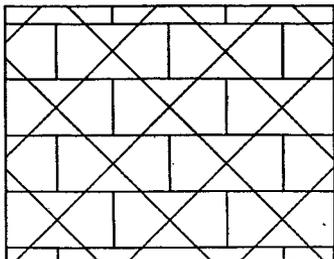
In the use of architectural ornament of repeating pattern the Normans ordinarily paid little attention to regularity of rhythm. Voussoirs of vault ribs or arches might vary greatly in width, but each would bear the same unit of decoration, carved before erection. Thus in

planning designs on the shafts of the Durham columns, the idea of identifying each separate stone with a unit of decoration would immediately commend itself, this association again permitting carving in advance of erection, though since these designs were to be geometric, of large scale and wrought on a broad cylindrical surface, the stones in this case must be precisely alike in face dimensions or the pattern would fail to emerge. The fluted columns, however, did not demand such absolute uniformity as did those in which the motif is based on diagonal axes, and thus in this pair alone we find that whilst all the stones throughout each column are equal in width, the courses are varied in height.

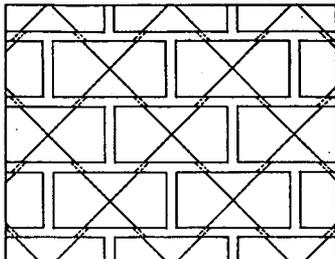
Similarly, there was no real necessity to preserve the identical size of unit stone from column to column. Each column therefore has a different sized unit, the dimensions being dictated only by convenience. The actual variation of dimensions, though decisive, is not very great, except that the group of nave columns, with their completely circular plan, have markedly larger units than the earlier set in the choir and transepts.

Again, the proportion of the unit stone is not a matter of much moment. In view of the necessity for bonding, only a proportion of 2 in width to 1 in height will produce diagonal axes intersecting exactly at 90 degrees; but it would be difficult on a curved surface to observe slight departures from the correct angle of incidence in the lines of the decoration. Actually no column is found to be quite correctly set out in this regard. The unit stones of choir and transept columns are too narrow on bed and those of the nave columns too wide on bed, to ensure the correct incidence.

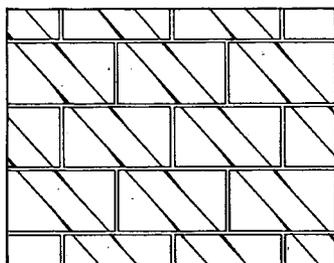
A far more serious error crept in when the template for the decoration was being struck; an error which caused difficulties from first to last. The template was struck from a few stones, cut to the selected size, built up dry and therefore close jointed. It was erroneously presumed that since the deduction from each stone to be made for



(a) DIAGRAM SHOWING SYSTEM OF SETTING OUT DECORATION BEFORE ERECTION. STONES WERE BUILT UP TEMPORARILY, DRY AND MORTARLESS.

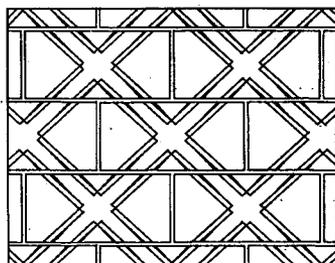


(b) DIAGRAM SHOWING NATURE OF ERROR WHEN STONES OF DIAG (a) ARE BUILT UP WITH WIDE MORTAR JOINTS.

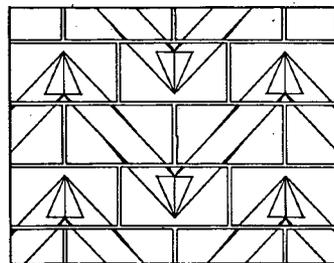


1 TYPE 1 'SPIRAL' DECORATION. IN CHOIR AND TRANSEPTS. ALTERNATIVE SECTION.

THICKENED LINES SHOW PARING AWAY TO ELIMINATE SETTING-OUT ERROR.



3 TYPE 3. 'LOZENGE' EASTERN PAIR IN NAVE.



2 TYPE 2 'CHEVRON'. SOUTH COLUMN IN SOUTH TRANSEPT. ALTERNATIVE SECTION.

THICKENED LINES SHOW PARING AWAY TO ELIMINATE SETTING OUT ERROR.



4 TYPE 4. FLUTE AND REED. WESTERN PAIR IN NAVE.

the joints was equal in both the horizontal and vertical directions, the ultimate thickness of the joints could be disregarded in the setting out. Diagram (a) shows the stones as set out, with the close dry joint. In diagram (b) the thickness of the mortar joints is greatly exaggerated to show the discrepancy of correspondence in the lines of the decoration which occurs when the stones are afterwards built in position. Where the mouldings of the decoration cross a horizontal joint they have then been broken by a vertical distance equal to the thickness of the mortar joint, but by a horizontal distance equal only to half the thickness of a joint. Hence the true angle of the diagonal axes to the horizontal is changed when the stones are mortared in position and a template struck from the dry jointed stones becomes incorrect.

In the earlier group of columns, where the joint thickness averages over half an inch, the error was sufficiently substantial to require that the mouldings be tooled over again almost completely. Where the motif was the spiral, with its simple mould of a hollow groove, it was not difficult to score deeper and wider to obliterate the fault. Even so, the correction is sufficiently roughly done to leave clear evidence of the nature of the error. Of the other decorative motifs, the chevron and the lozenge are less easy to adjust, and the results of working over the joints *in situ* can be plainly seen in the case of almost every stone. In the diagrams 1, 2 and 3, the portions blacked in show the small sections of stone which thus have been pared away after erection. Had the decoration been set out after instead of before erection, the lines of the moulds would have passed continuously from stone to stone. In actual fact there is a slight change of direction at every mortar joint, the diagonal axes of the decoration on each stone striking at too low an angle to the horizontal. These facts show perfectly clearly that the decoration has been worked before erection, as the discrepancies could only have occurred in the manner shown.

It will be observed, too, that vertical joints incline to

be wider than the horizontal. In some cases they are twice as wide. Had all the vertical joints been of double thickness, the perimeter of the columns being thus increased, the initial error made in setting out the decoration would have been wholly eliminated, though the solution would not have been a happy one. An indecisive attempt on these lines is made in the south column of the south transept.

In the nave columns the troublesome joint is reduced to three-eighths of an inch and then to a bare quarter inch. The faults are minimized but still plainly observable. In the last pair of all the diagonal forms of decoration are finally abandoned in favour of vertical fluting and reeding, and the joints are further reduced to one-eighth of an inch (diagram 4). The stones are fitted with an accuracy rare in Norman work, but there is no great precision in the mouldings, the lines of which waver slightly, the vertical joints not being set quite truly above one another.

The circumference of the nave shafts is almost exactly equal to the height of the shaft. This correspondence in dimension may have been premeditated, but no advantage was taken of the obvious facilities offered thereby for the easy and accurate setting out of the decoration. There are twelve stones in the perimeter of each course of all six columns. Had the whole height been divided into twenty-four courses, the decoration would have been perfectly regular, with diagonal axes meeting at 90 degrees. Actually two pairs of columns have twenty-five courses, and the central pair, bearing chevron ornament, though having twenty-four courses, has an additional shallow necking course which reduces the effective height below the dimension of the perimeter. Thus the advantages of the equality of the two overall dimensions is lost in all cases.