

DALE ABBEY: THE SOUTH RANGE EXCAVATIONS AND SURVEY, 1985-87

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SUMMARY

In 1985, a rescue excavation was undertaken to examine part of the early/mid-thirteenth century South Range of Dale Abbey (SK437387). The Range comprised a ground floor Undercroft, 10.5 metres wide, divided longitudinally by a row of stone columns, carrying two bays of quadripartite vaults, which supported a first-floor Frater. The vault had fallen and overlying it was part of a tile pavement. Analysis of the clay and designs indicates that the floor-tiles were made at Dale in the late-fourteenth or fifteenth centuries. At the Dissolution some materials were stripped from the South Range; a quantity of animal bone was subsequently deposited in the Undercroft. The South Range was largely demolished in the mid- or late- seventeenth century, with the exception of part of the north wall which was incorporated into a cow-house. In 1987, an oven and chimney, incorporated into a mid-eighteenth century cottage, was surveyed; it formed part of a structure abutting and contemporary with the south wall of the South Range. In 1986-87, a watching-brief located a buttress and part of the west wall of the Kitchen, lying at the south-east corner of the claustral buildings.

INTRODUCTION

The site (Fig. 1)

The parish of Dale Abbey lies in the south-eastern part of the county of Derbyshire, in an undulating landscape of small valleys and hills, typical of the county's southern lowlands. The Abbey is situated at 76 metres O.D. at the head of a small secluded valley, from which the Sow brook flows east-north-east. The soil is a heavy keuper marl, and sandstone outcrops on the steeply-sloping southern side of the valley to form the Dale Hills. The valley floor is poorly drained, and in the twelfth century the land lay within royal forest (Colvin, 1940: 1). The remoteness of the site from towns and other centres of population may have been the particular attraction for its monastic colonists. Contemporary, though perhaps conventional, descriptions stress the seclusion of the Abbey, beside a swamp "exceedingly dreadful and far distant from every habitation of man" (Cox, 1907: 70). However, the site was not far from roads (Colvin, 1940: 1); and in the fourteenth century the monastery spent heavily on providing hospitality for guests (Colvin, 1941b: 37).

The development of the Abbey (Fig. 1)

Possibly the earliest religious feature of the site is a man-made cave (Fig. 1:4) in the Dale Hills, excavated by a hermit. His sanctity ("he served God in hunger, thirst and nakedness": Cox, 1907:

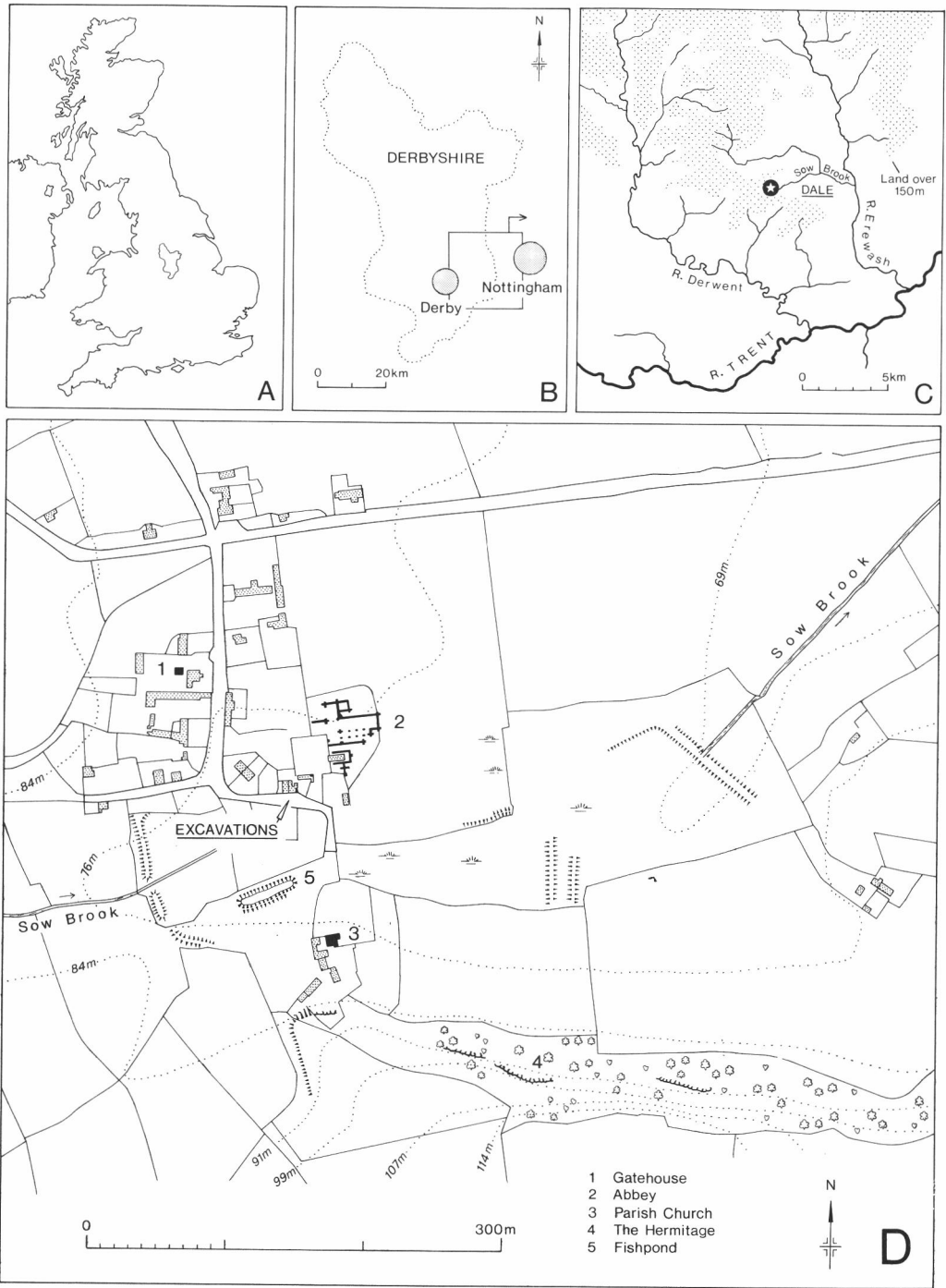


Fig. 1 Dale Abbey. A-C: location; D: topography.

70) was rewarded with a vision, and on its site he built his chapel of 'Depedale', reputedly part of the present parish church (Fig. 1:3; Ward, 1891). In the latter half of the twelfth century there were three short-lived attempts to found a small priory, initially of Augustinian and subsequently of Premonstratensian canons, by Serlo de Grendon and his son William on their land at Ockbrook, which included Depedale. Next, in the late-twelfth century, Depedale and other lands of the family of de Grendon were granted to a relative, William f. Ralph, his daughter Matilda, and her husband, Geoffrey de Salicosa Mara, to found the Abbey of St Mary of Stanley Park, subsequently called Dale Abbey (Colvin, 1940: 5-6). Royal assent to the foundation was obtained in 1196; a colony of Premonstratensian monks from Newhouse, Lincolnshire, had arrived by 1200; and by 1204 the church was begun or consecrated (Colvin, 1940: 5-6). The community comprised some twenty-four canons, declining to sixteen in the fifteenth century. The possessions of the monastery included over 24,000 acres of land in Derbyshire, Leicestershire, Northamptonshire and Nottinghamshire; constant litigation and occasional force of arms were used to protect and promote the interests of the Abbey (Cox, 1907: 71-4). From 1475 to 1500 fuller details concerning the condition of Dale Abbey appear in the careful records of the visitations of Richard Redman, Vicar-General in England of the Abbot of Premontre. Reports in 1474 of "public ill fame" (Colvin, 1941a: 43) contrast with Redman's record of a well-managed monastery, without debts and enjoying "an abundant supply of grain and livestock". In 1493 the quality of management and discipline had declined, a temporary lapse attributed to the "imbecility and incompetence" of an ageing abbot, who was soon replaced; in 1494 the monastery was "wonderfully well stocked with animals and grain" (Colvin, 1941a: 51-4). The *Valor Ecclesiasticus* of 1535 recorded an annual income of over £144. As a lesser house, with an income below £200 per annum, Dale Abbey avoided suppression in 1537 only by payment; in 1538 the Abbey and all its possessions was surrendered to the Crown (Colvin, 1943: 5-6).

The Abbey's stock, furnishings and fittings were dispersed at the Dissolution; and the sale of the roof, glass, iron and paving stones of the Church, Cloisters, Frater and Chapter House indicates that a substantial number of its buildings were then stripped and rendered uninhabitable (Colvin, 1943: 7-8). The ruined buildings formed a convenient source of building material over the next two hundred and fifty years (Colvin, 1943: 18-19). Ownership of the manor of Dale, which included the site of the Abbey, changed frequently. None of its secular owners appears to have lived there; and there is no evidence that any of its conventual buildings were converted to form a residence for them (Colvin, 1943: 16-18).

Antiquarian and archaeological research to 1985 (Figs 2, 3; Plates 1, 2)

Antiquarian interest began in 1662 when Elias Ashmole recorded a monumental inscription in the Chapter House (Colvin, 1943: 10). William Stukeley's sketch of the buildings in 1710 (Gough Maps, IV, folio 25b, reproduced in Colvin, 1943: 21) broadly corroborates the view by Samuel and Nathaniel Buck in 1727 (Pl. 1). Both show that by the early-eighteenth century parts of the west door of the Chapter House, flanked by lancet windows, and the north wall of the South Range were still standing; the south wall of the nave of the Church survived to clerestory level. The West Range alone was habitable, retaining its roof and its ceilings, "well wainscotted with oak" (Stukeley, 1724: 53). On Stukeley's sketch plan of the ruins in 1730 (a copy is reproduced in St John Hope, 1880: pl. 11), the internal arrangements — the fireplaces and windows — of the West Range alone are depicted. The outline plan of the South and East Ranges and the Church is discernible, but significant features, including the Chapter House, the nave and aisle of the Church and the Lady Chapel, are absent. By 1789, with the exception of the east window of the Church, little survived above ground (Colvin, 1943: 22).

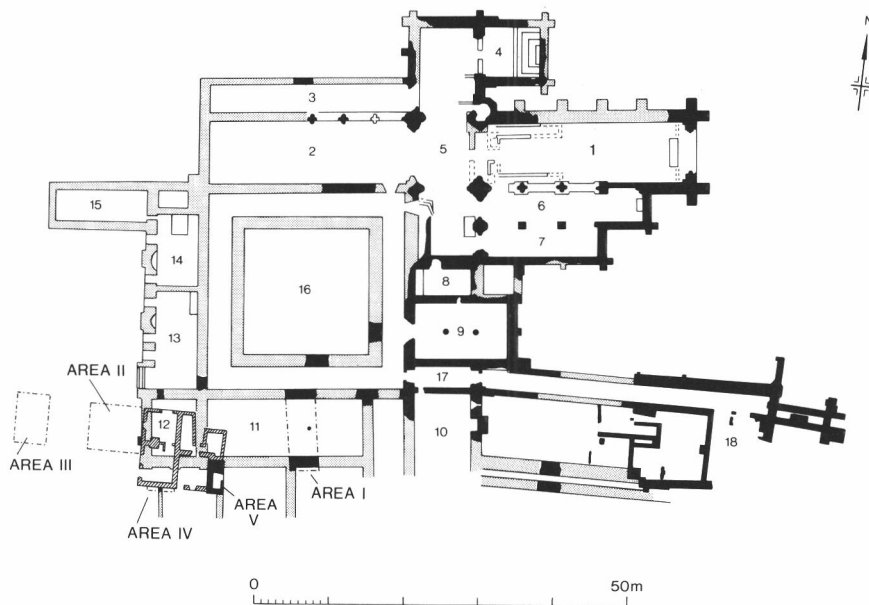


Fig. 2 Dale Abbey. The plan of the claustral buildings (after Stukeley, 1789; St John Hope, 1879; Clapham, 1923; and Colvin, 1938), Dale Abbey/Manor House (hatched) and the areas excavated and surveyed in the period 1985-7. Excavated features are shown in black and projected features are shaded. Key: 1: Presbytery; 2: Nave; 3: Aisle; 4: Lady Chapel; 5: Crossing; 6: Chapel; 7: Chapel; 8: Vestry (Dorter above); 9: Chapter House (Dorter above); 10: Warming House (Dorter above); 11: Undercroft (Frater above); 12: Kitchen; 13: Prior's Lodge(?) (Undercroft below); 14: Guest Hall(?) (Undercroft below); 15: Guest Solar(?) (Undercroft below); 16: Cloister garth; 17: Parlour and passage; 18: Infirmary.

In the late-nineteenth century, the discovery of Stukeley's plan of the Abbey stimulated Sir William St John Hope and the nascent Derbyshire Archaeological Society to conduct excavations on the site. In 1878, in a space of eight weeks, the bulk of the transepts and eastern end of the Church, and of the Chapter House, was cleared (St John Hope, 1879; pl. 2). Work was completed in these areas in 1879, and the nave and its aisle exposed. All these areas were placed upon permanent display and a hut, the Earl of Chesterfield's Museum, was placed over parts of the Chapter House to protect its monuments and to contain the finds from the excavation. St John Hope's exploration of the Cloister and the South and West Ranges was limited to the cutting of a few trial holes (St John Hope, 1880). In 1938, a mass of foundations to the south-east, interpreted as part of the Infirmary, was excavated and backfilled (Colvin, 1938).

North of the excavated areas lies the Abbey Gatehouse, one side of which has been incorporated into a barn (Fig. 1:1). Its arched structure, spanning a road, appears on Buck's drawing (Pl. 1), and was described by Stukeley as a "magnificent gatehouse just dropping". Within the excavated areas, a fragment of the north wall [AAS] of the South Range was incorporated into a cowhouse (Structure 1, Fig. 3:AAS), and part of a chimney into a cottage, called Dale Abbey House (Fig. 3:AFA). In the nineteenth century there were reports of further buildings, perhaps an Outer Court to the south of the South Range, in the fields south of Abbey/Manor House (St John Hope, 1880: 133). South of the conventual buildings, linear earthworks

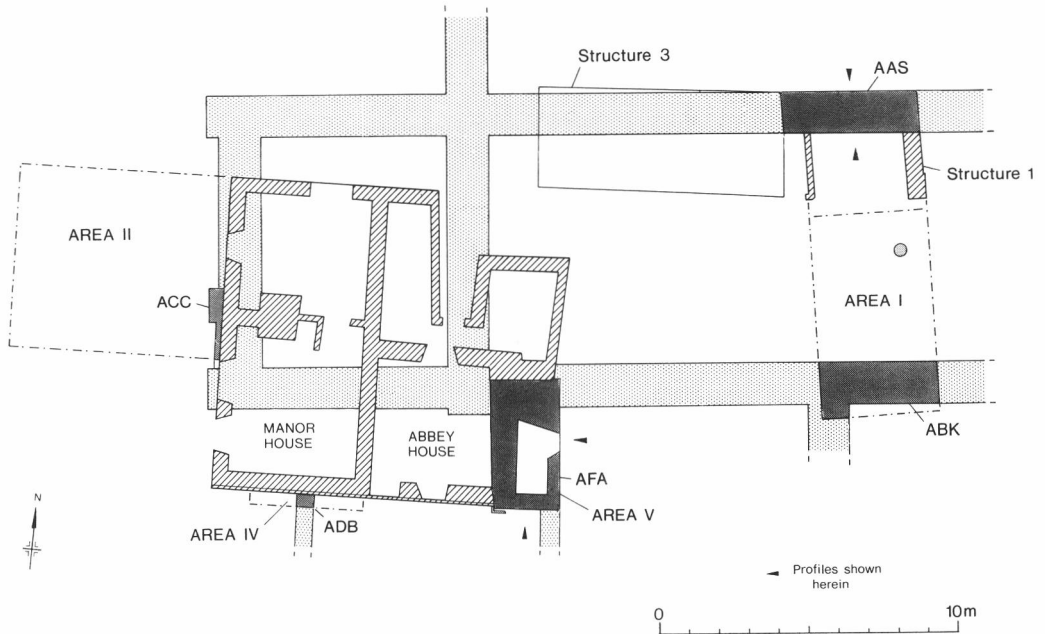


Fig. 3 Dale Abbey. The South Range and Kitchen, Abbey/Manor House (hatched), and Areas I, II, IV and V. Surviving and excavated monastic structures are black; projected features are shaded.

and a single fishpond are discernible (Fig. 1:5); these form part of an extensive and unsurveyed complex of dams, leats and fishponds, served by the Sow brook.

The plan of the Abbey (Fig. 2)

As revealed by excavation, Stukeley's plan, antiquarian drawings and documentary references, the plan of Dale Abbey (Fig. 2) follows the usual Premonstratensian arrangement, with the Cloister lying to the south of the Church (Clapham, 1923: 127). The majority of the stone buildings are attributed to the thirteenth century (Ward, 1892: 65; St John Hope, 1880; Clapham, 1923: 135); construction is thought to have begun soon after 1200 (St John Hope, 1879: 102) with relatively minor subsequent rebuilding and additions. The Church comprises a nave, transepts and chancel of thirteenth-century construction; it was extensively remodelled in the late-thirteenth century, when a north aisle, a chapel (possibly a Lady Chapel) on the north transept, and two southern, transeptal chapels were added (Colvin, 1941a: 34). During the fourteenth century, the piers of the crossing were reinforced, to strengthen the central tower or, possibly, to support a spire. Clerestories were inserted in the nave under the rule of Abbot John Spondon (1439-72), and in the quire in the early-sixteenth century, when a new roof was provided for the Lady Chapel (Colvin, 1941a: 57). The East Range contained the Vestry and Chapter House, with the canons' Dorter on the first floor; the Chapter House was remodelled in the mid-thirteenth century (St John Hope, 1879: 111). The West Range has not been excavated; on the evidence of Stukeley's plan and by analogy, the ground floor would have been devoted to storage, with a Guest House and Abbot's Lodging above. The range projecting to the west may be an associated solar chamber. Documentary sources provide some evidence for later reconstruction: Abbot William De Horseley (1338-48/54) had a reputation as a builder; Abbot

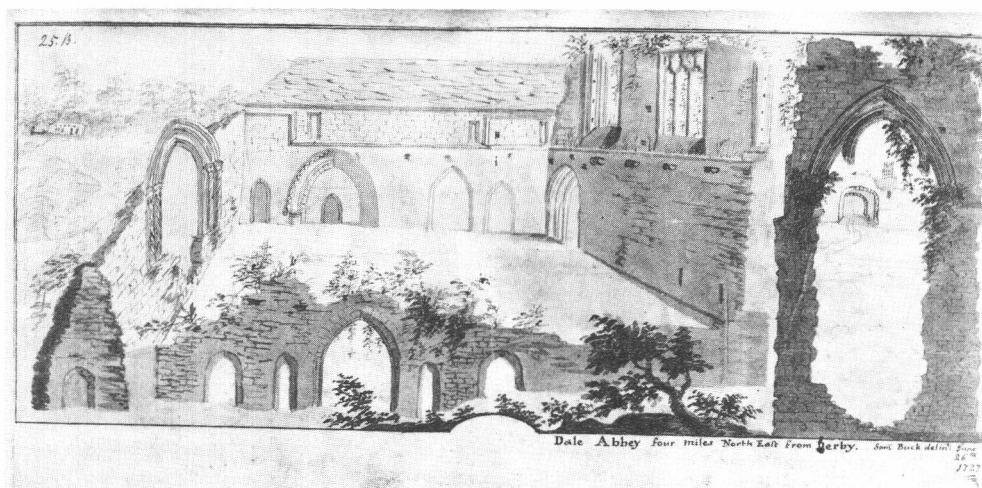


Plate 1 Dale Abbey. Samuel Buck's drawing of the ruins made on June 26th, 1727. The principal view (centre) faces west across the Cloister, showing the west wall of the East Range (five arched openings), the north wall of the South Range, including the doorway to the first-floor Frater, the still-roofed West Range and the south side of the Church. Right is a view of the east window and inside it a view of the Gatehouse. Left is a view of the Hermitage from the south (Bodleian Library *Ms Gough Maps 4, fol. 25*).

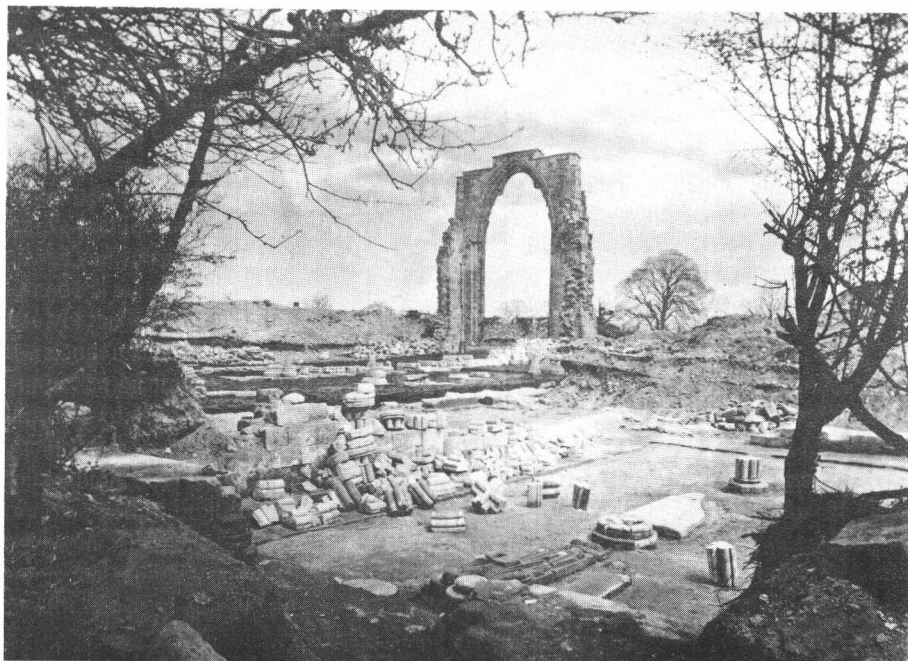


Plate 2 Dale Abbey. View, probably taken in 1878, facing north-east showing the Chapter House (foreground) and, beyond, the east window of the Church (Bodleian Library *Ms Top. Eccles. B 27, fol. 84*).

William De Boney (1358- 1400) “re-edified many ruinous tenements”; Abbot John Spondon (1439-72), “of memory to be cherished”, carried out an extensive rebuilding of the Church (Colvin, 1941a: 38-9); and Abbot John Stanley (1472-91) rebuilt the cloister (Colvin, 1941a: 48).

THE EXCAVATIONS

The present report summarises three seasons of work at Dale Abbey, in the vicinity of Abbey/Manor House at the south-west corner of the claustral ranges (Figs 2, 3). In 1985 a rescue excavation (Area I) was carried out in advance of the reconstruction and extension of Structure 1 to form a garage; the excavation was funded by the Historic Buildings and Monuments Commission for England (HBMCE). In 1986-7 excavation for the construction of an extension and detached garage to the west of Manor House (Areas II-IV) was monitored by the Trent and Peak Archaeological Trust (T&PAT) in a watching-brief funded by HBMCE. There was no excavation or watching-brief in 1985-6, when an extension was constructed on the east side of Abbey House, replacing Structure 3. In 1987, T&PAT prepared elevation drawings of monastic structures incorporated into the south-east corner of Abbey House (Area V) and the north side of Structure 1 (Fig. 3:AAS); this work was funded by Derbyshire County Council. The present report was completed in 1987/88.

Primary and processed records of work at Dale Abbey 1985-7 are deposited, along with the finds (excluding certain architectural fragments) in Derby City Museum and Art Gallery. The archive comprises the primary and processed records of the Dale Abbey House 1985 excavation and the Dale Manor House 1986-7 watching brief, along with copies of the primary and processed records of the Dale Abbey House 1987 survey. The originals of the primary and processed records of the Dale Abbey House 1987 survey are deposited with the Derbyshire County Council Sites and Monuments Record.

Abbey/Manor House and outbuildings (Fig. 3)

Abbey House forms the east side, and Manor House the west side, of a building overlying the south-west corner of the claustral buildings. Now altered and extended, the structure was formerly an ‘L’-shaped, single storey building, constructed of re-used ashlar of sandstone, with ancillary or out-buildings to the north-east. The south-east corner of Abbey House incorporates part of an earlier, monastic, structure: a chimney [AFA], which in the late-nineteenth century was called the “kitchen” (Ward, 1890: 63); further structures formerly extended to the east of the chimney. The south front of Abbey/Manor House rises from a re-used, plain chamfered plinth. There are no readily dateable structural features; the building does not appear on early-eighteenth century illustrations, but is probably referred to in the late-eighteenth century (Pilkington, 1789: 217-8), and a mid-eighteenth century construction date is likely. The purpose of the structure is uncertain. None of the lords of the manor resided at Dale. Although the surviving door and window openings are probably secondary, the building has no features consistent with high status domestic occupation. Equally, there are no features consistent with its use as a barn, although the absence of windows on the west side of the south front perhaps suggests storage in this area. Manor House derives its name from meetings of the manor court, which it may have been constructed to accommodate (Colvin, 1943: 23). Residential occupation by a bailiff or manorial official cannot be discounted, although this is more likely in Phase 2 when the walls and roof were raised and a second storey was inserted. The south front and west side were raised with ashlar, probably re-used; the north gable was built in a narrow brick; the floor joists are re-used timber. An internal doorway at first-floor-level, now blocked, suggests that the property remained in single occupation. The date of the Phase 2 alterations is unknown; narrow

bricks remained in use until the mid- or late-nineteenth century. By 1890 the building had been subdivided (Phase 3) to form the present two cottages, Manor House and Abbey House.

North-east of Abbey House was a range of outbuildings, constructed in the mid- or late-eighteenth century (Pilkington, 1789: 217-8) and remodelled in the nineteenth century to form a store and pig-sties (Structure 3) and a cow house (Structure 1); subsequently, a brick-built earth closet (Structure 2) had been constructed on the south end of the cow house. With the exception of part of Structure 1 (which included the surviving, standing fragment of the monastic South Range [AAS]), the stone-built north wall of the pig-sties and store (Structure 3), these outbuildings were demolished in 1985-6 and replaced with a garage and house extension.

Areas II, III, IV: watching-brief 1986-7 (Figs 2, 3; Plate 3)

A house extension foundation, measuring 6.0 x 7.0 metres (Area II), and a garage foundation, measuring 6.0 x 4.0 metres (Area III), were excavated to a depth of approximately 0.43 metre below modern ground surface; at the edge of each foundation a strip 0.3 metre wide was excavated to a depth of 0.6 metre. The foundations were dug by hand and flooded during excavation. No artefacts of any significance were recorded. In each area the revealed strata comprised a layer of topsoil 0.45-0.6 metre deep containing post-medieval and modern pottery and animal bones. Below this in places was a yellow-grey clay with dense charcoal inclusions. At the east side of Area II the foundations of the west wall of Manor House incorporated and overlay part of an earlier structure, comprising a stretch (1.4 metres long and 0.46 metre high) of sandstone ashlar walling, two courses high, and a plain chamfered buttress [ACC], 1.06 metres wide, projecting 0.2 metre to the west (Pl. 3). The buttress and length of wall are interpreted as part of the west wall of the Kitchen (Fig. 2:12) planned by Stukeley.

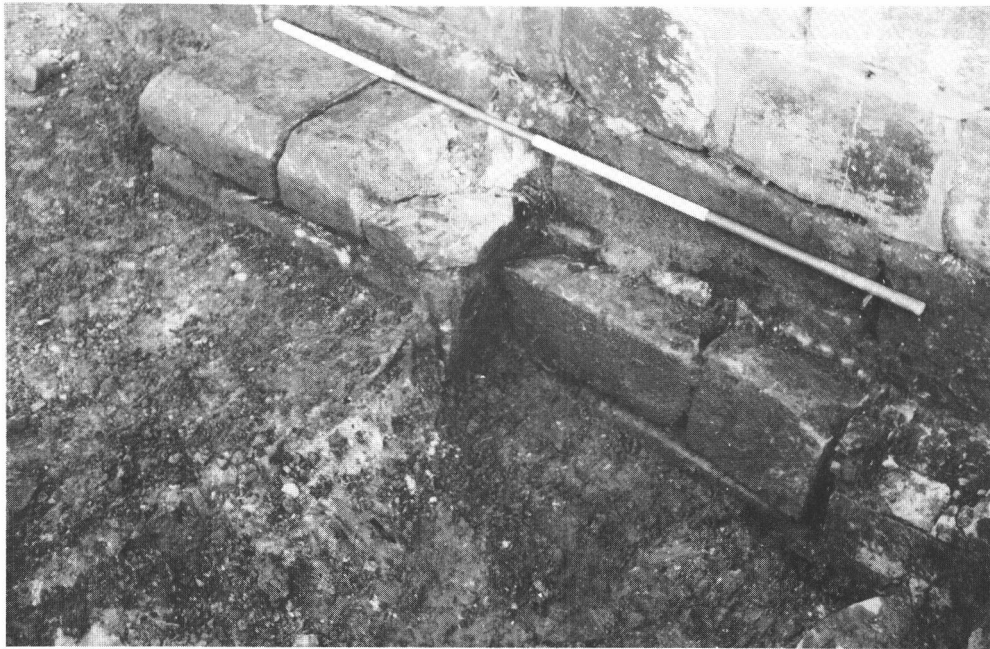


Plate 3 Dale Abbey. Area II: view facing east, showing buttress [ACC] overlain by the west wall of Abbey/Manor House.

Removal of an area of turf on the south side of Manor House (Area IV) revealed the top of a wall [ADB], 0.55 metre wide and constructed of sandstone rubble, which extended to the south (Fig. 3). If the wall is indeed part of the monastery, then the presence of structures to the south of the South Range is indicated.

Area V: the chimney (Figs 3, 4; Pl. 4)

The fragment of monastic walling [AFA] incorporated into the south-east corner of Abbey/Manor House comprises a rectangular area of masonry, 2.3 x 4.3 metres at its base. The masonry rises 6.0 metres and reduces, through a series of five plain chamfered courses, to 1.3 x 2.6 metres at the top. The south face and the upper part of the east face are external wall faces, constructed of sandstone ashlars. The south-east corner is rebuilt; toothings on the south face indicate that a wall, over 0.9 metre wide, formerly extended to the south. Toothings and an area of rubble core at the north-east corner and an area of rubble core forming the north face (visible only above cottage roof level) indicate that it formerly joined a continuation of the south wall of the two-storey South Range. The west face is not exposed; the two lower chamfer courses on the south face appear to return suggesting that at least part of the west face was originally exposed. On the east face a projecting string-course at the base of the ashlars has been largely dressed off; it

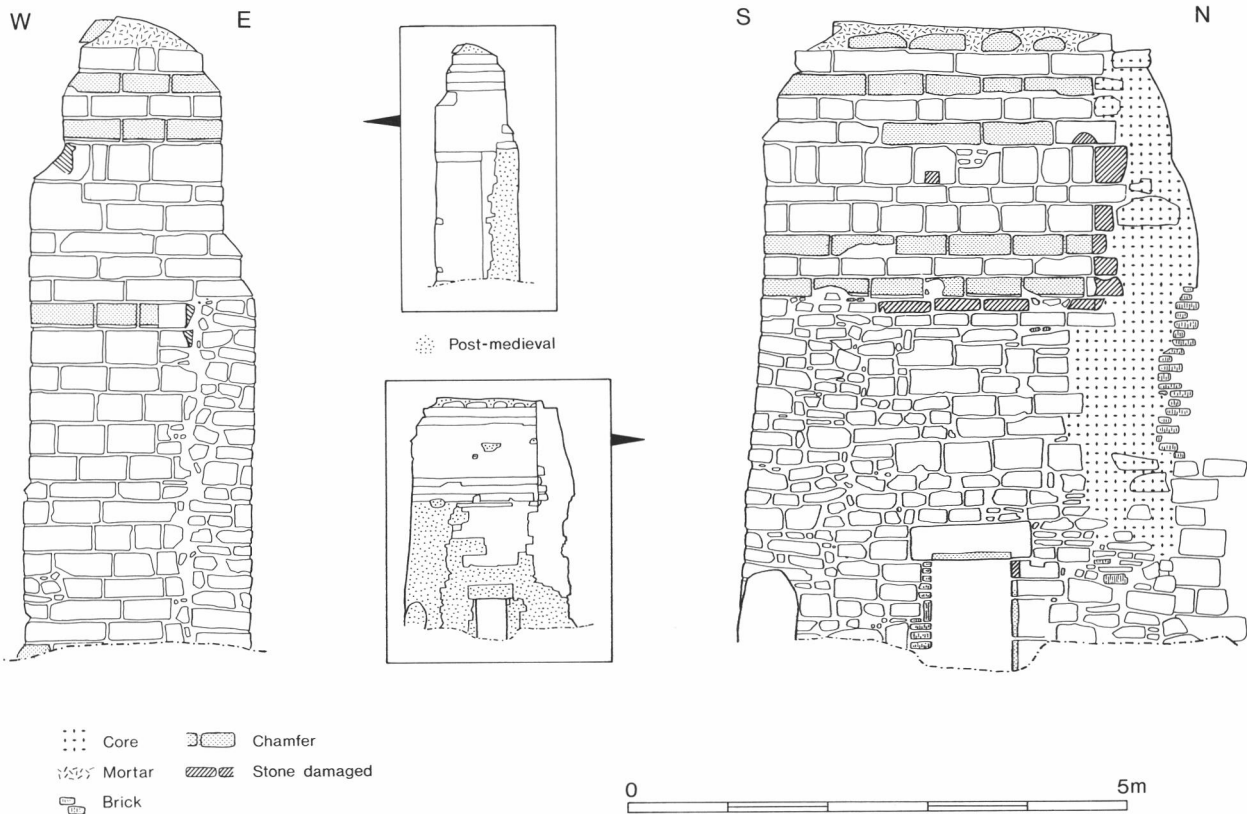


Fig. 4 Dale Abbey. Area V: elevation of the standing chimney [AFA], incorporated into the south-east corner of Abbey House. Core and damaged stonework of the eastern elevation indicate the junction with the south wall of the South Range.



Plate 4 Dale Abbey. Areas I and V: view facing east, showing the south wall of the South Range [ABK] and, in the background, the chimney [AFA] and the east wall of Abbey/Manor House. Note core and damaged stonework at the junction with the south wall of the South Range.

appears to mark roof level. A plain projecting corbel possibly supported part of the roof structure. Below the string-course, coursed block work indicates a former, internal wall face. The lower part of the east face has been rebuilt, incorporating a re-used window as an opening; the south jamb has been damaged and patched with brick. The base contains a chamber, 2.3 x 1.1 metres and 1.54 metres high; the chamber was formerly covered by two spans of vaulting. The north side of the roof is vaulted with finely-jointed voussoirs; these appear to have fallen away on the south side exposing rubble core. The south and west walls are rubble core, with much recent rendering. The north wall, constructed of ashlars, is splayed.

AFA comprises an oven and chimney contained in a buttress on the west side of a range lying to the south of the South Range. The upper, chamfered courses formed a chimney stack. The chamber appears to be part of an oven, formerly incorporated within a larger fireplace; the flue presumably rose through AFA and now serves a modern fireplace on the west side, the interior of Abbey House. The postulated larger fireplace has been reduced to form a smaller fireplace; there are traces of scorching on the re-used window forming the fireplace opening. It is probable that the smaller fireplace served a structure east of Abbey House, whose roof was carried on timbers, supported on sockets cut out of the east face of AFA. The structure may be contemporary with the remainder of Abbey House.

Area I: excavation 1985 (Figs 3, 5, 6; Plates 4-9)

The location of the area of excavation, measuring 7.0 x 4.0 metres, was determined by the

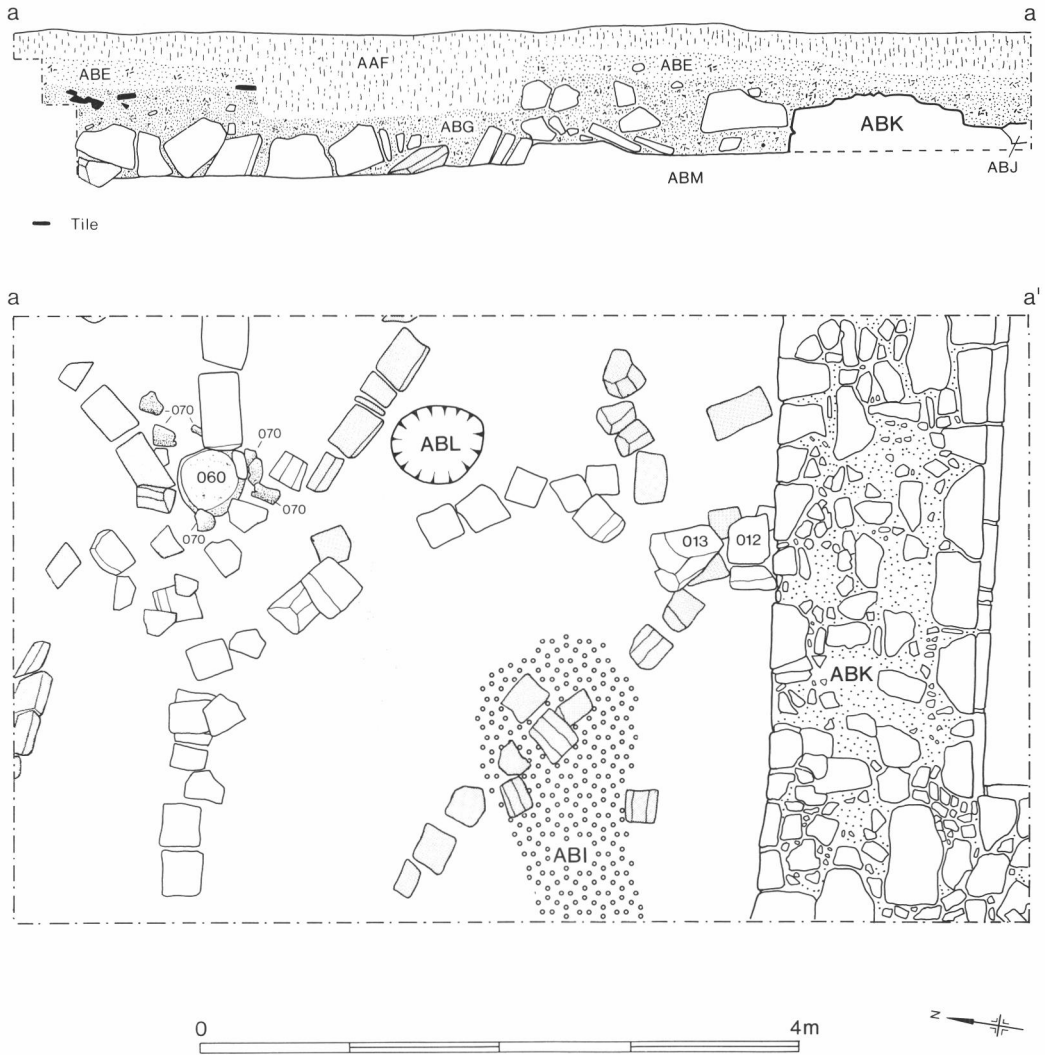


Fig. 5 Dale Abbey. Area I: plan and section. The plan shows the location of the displaced tile floor [ABI] and the architectural stonework of the collapsed vault [ABG], 012 corbel, 013 springer, 060 column base and 070 smashed capital; transverse ribs are plain and diagonal ribs are shaded.

position of a proposed garage, which it was intended to construct by the partial demolition and subsequent extension of Structure 1. The cutting, which lay across the South Range, was excavated to a depth of approximately 1.0 metre, to the top of the first intact archaeological horizon [ABM] below the required formation level of the garage foundation.

Removal of topsoil, the foundations of Structure 2 and the southern part of Structure 1, and several recent features revealed a layer of yellow-brown sandy soil [ABE] up to 0.2 metre thick, with occasional scatters of mortar debris, rubble, roofing slates, and window glass. Below ABE, in the centre [ABI] and at the north-east [ABH] and north-west [ABD] corners of the excavation,

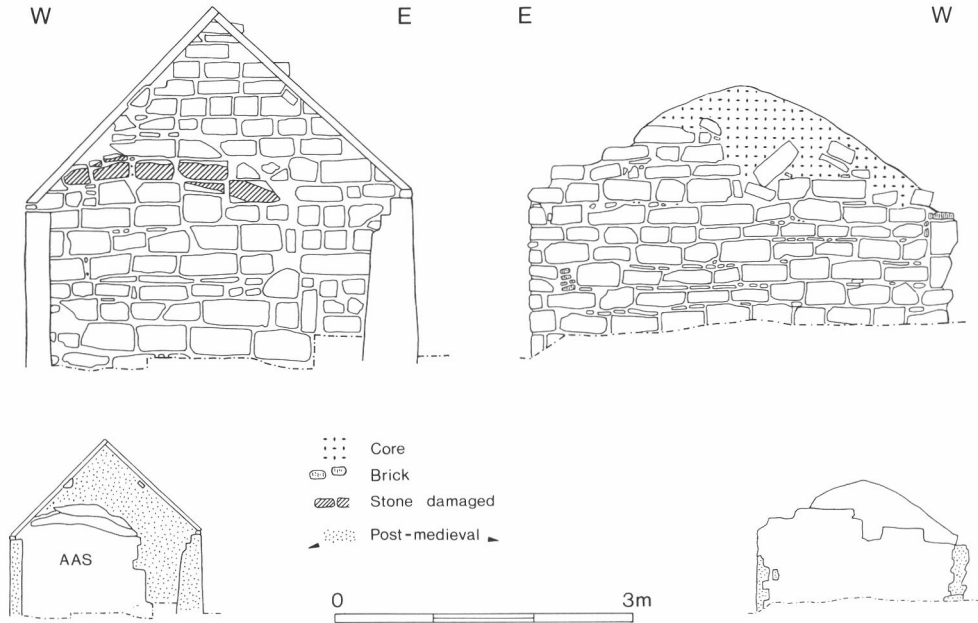


Fig. 6 Dale Abbey. Area I: elevation of AAS, the standing fragment of the north wall of the South Range. Damaged stonework on the south elevation indicates the line of the vault, supporting the first-floor Frater.



Plate 5 Dale Abbey. Area I: view facing north showing, in the foreground, the excavated south wall of the South Range and architectural stonework of the collapsed vault. Beyond is the remnant of Structure 1 and the north wall of the South Range; note the scar left by the collapsed vaulting.

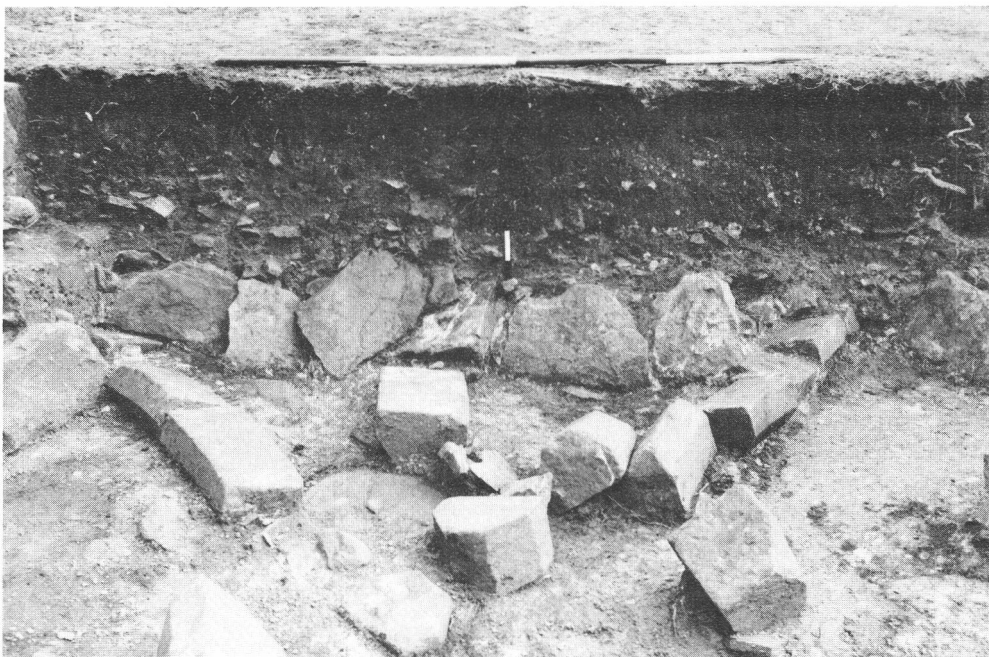


Plate 6 Dale Abbey. Area I: view facing east, showing the column base, smashed capital, ribs and (in section) pendant stones of the collapsed vault.



Plate 7 Dale Abbey. Area I: view facing east, showing the column base, smashed capital and rib of the collapsed vault. The column base is only partially exposed, being covered by a layer [ABM] which accumulated around the column prior to its removal.



Plate 8 Dale Abbey. Area I: floor-tiles [ABI] partially excavated.

were discrete concentrations of floor tiles, in a yellow-brown sandy soil. The concentrations at ABH and ABD contained up to three layers of tiles, some upside down, but there was no trace of a mortar bed for laying the tiles. There were up to three layers of tiles in ABI, which overlay a mortar bed and were interpreted as a patch of flooring which had collapsed from the first floor of the South Range (Plates 8, 9).

Below ABE and the concentrations of floor-tiles was a layer [ABG] of yellow-brown sandy soil, pitched stones, and architectural fragments, including plain-chamfered ribs, a springer, a corbel, and seventeen pieces of a smashed capital (Figs 5, 7-9). The debris represents the collapse of the earthen infill, the web or pendant stones, and ribs of the vaulting which had formerly supported the first floor of the South Range. Two sizes of rib were recognised, representing the transverse and diagonal ribs of a quadripartite vault. A smashed capital [070] and a column base [060] indicate that the vault had been supported by a central pillar, which had been removed and the capital broken prior to the collapse (Plates 5-7). The collapse sealed a layer of grey-black, sandy soil [ABM], which had built up around, and therefore pre-dated, the removal of the supporting column. A shallow bowl-shaped scoop or pit [ABL], filled with yellow-brown soil, had been dug into ABM. Quantities of animal bones were recovered from the interface [ABZ] of ABG and ABM. ABM was sampled, and an area measuring 1.0 x 1.0 metre was removed, revealing a yellow sandy clay, perhaps re-deposited natural, which abutted the column base. At the southern end of the site was a wall [ABK], abutted and in part overlain by the collapsed first-

Plate 9 Dale Abbey. Area I: floor-tiles [ABI], partially excavated; note mortar bed.



floor vault, and abutted by layer ABM. ABK was 1.4 metres wide, and extended west-east across the excavation, with an offset or plain chamfered plinth, 0.12 metre wide, on its southern face. The wall was constructed of sandstone set in a hard yellow mortar; two courses of ashlar were exposed on the southern, external face; and there were four courses of blockwork on the northern, internal face. At the south-west corner a projection indicated a contemporary wall or buttress at right angles to it. ABK, parallel to the north wall of the south range [AAS] and of a similar width and style of construction, formed the south wall of the South Range, and formerly extended west to join the chimney [AFA] (Pl. 4). On the south side of ABK was a layer of brown sandy soil [ABJ], a former topsoil buried beneath layer ABG. The fragment of AAS incorporated into Structure 1 was 1.4 metres wide and stood up to 2.4 metres above ground level. The wall was constructed of coursed sandstone rubble and rubble blocks; on its southern face, an arc of damaged stones indicates the position of the vault supporting the first floor of the South Range (Fig. 6; Pl. 5).

THE FINDS

The finds included: charcoal, oyster shell, one clay pipe stem, eight sherds of post-medieval pottery, and one sherd of vessel glass. Metalwork comprised nine pieces of iron (four objects, four nails and one fragment), and eight pieces of lead (two off-cuts, one fragment and five cames). Animal bones and building-materials, including window-glass, floor-tiles, roofing-

material and architectural stonework are discussed below. A catalogue of finds is contained in Archive section 3 G.

Architectural stonework (Figs 7-9)

The building stone is crawshaw sandstone, a medium- to coarse-grained sub-arkose containing about 8% felspar; the colour ranges from orange-buff to buff-grey and there is ferric iron staining. There are outcrops to the east, in the adjacent parish of Stanton-by-Dale, which were quarried in the post-medieval period (Fairey, 1811: 743). Dale Abbey received a grant of quarries at Stanton in the mid-thirteenth century (Saltman; 1966: 166). The lithology and colour of sandstone at Quarry Hill (SK471378) offer close parallels with those of the building stone at Dale Abbey.

The roll-moulded capital [070] (Fig. 7:1) had been broken, and was incomplete. It had been cut from a relatively coarse-grained piece of stone. The form cannot be closely dated, but occurs from c. 1225-1300. The plain chamfered corbel [012] (Fig. 8:2) has a similar date range. The column base [060] (Fig. 9:6) was left *in situ*. The top has a shallow incised line.

Sixty-four vaulting ribs were recovered (Fig. 5); transverse ribs (Fig. 9:5), used to divide the bays of vaulting, were wider (250-260 mm) than diagonal ribs (Fig. 9:4) (width 210-220 mm). Six diagonal ribs, three lying close to the column base [060] and three lying close to the springer [013] (Fig. 8:3), were asymmetrical and damaged, but had irregular rebates; the remainder of the ribs were flat backed and had no rebates. One or each of the ends of the ribs was commonly marked with a deeply incised cross; the soffits might also have a shallow incised cross. A mason's mark, a faintly incised double-axe motif of two triangles joined at the apex, was observed on thirty ribs, usually on the soffit. After the mid-thirteenth century, ribs generally have rebates, to accommodate the pendant stones forming the cell of the vaulting (CBA, 1987: 27); a date in the first half of the thirteenth century is therefore likely.

Stone and ceramic roofing-material

Four complete stone roof-tiles, and fragments of a further fifteen, were recovered; eight were manufactured from charnwood slate, five from magnesian limestone, three from limestone, one from mudstone and one from sandstone. The stone roof-tiles were recovered from contexts over-

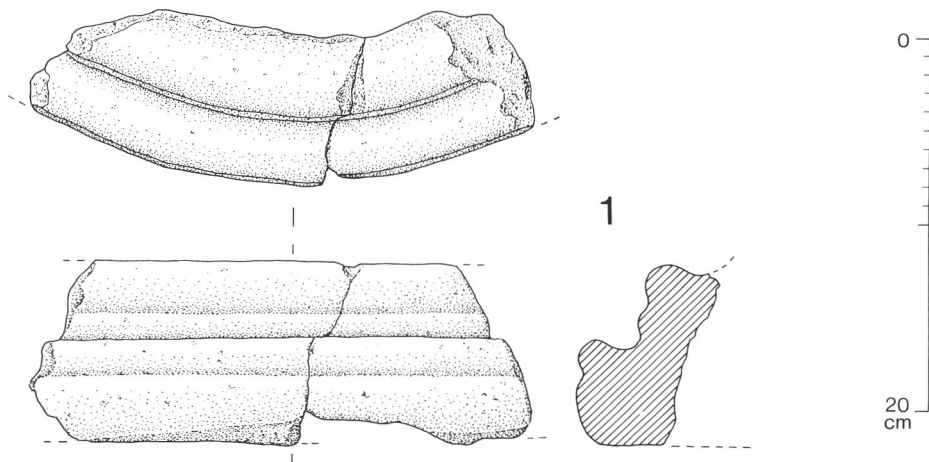


Fig. 7 Dale Abbey. Architectural stonework. 1: capital [070].

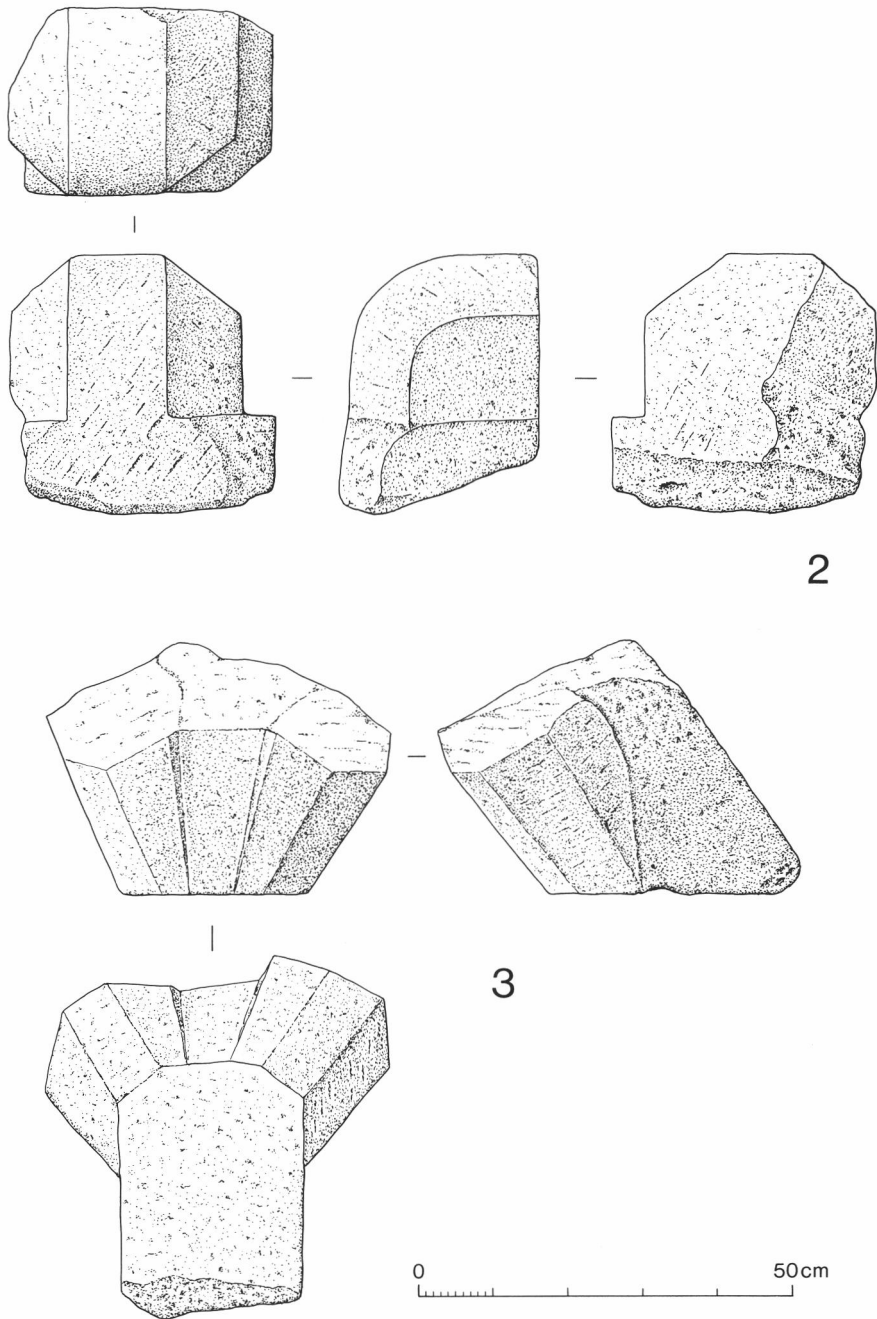


Fig. 8 Dale Abbey. Architectural stonework. 2: corbel [012]; 3: springer [013].

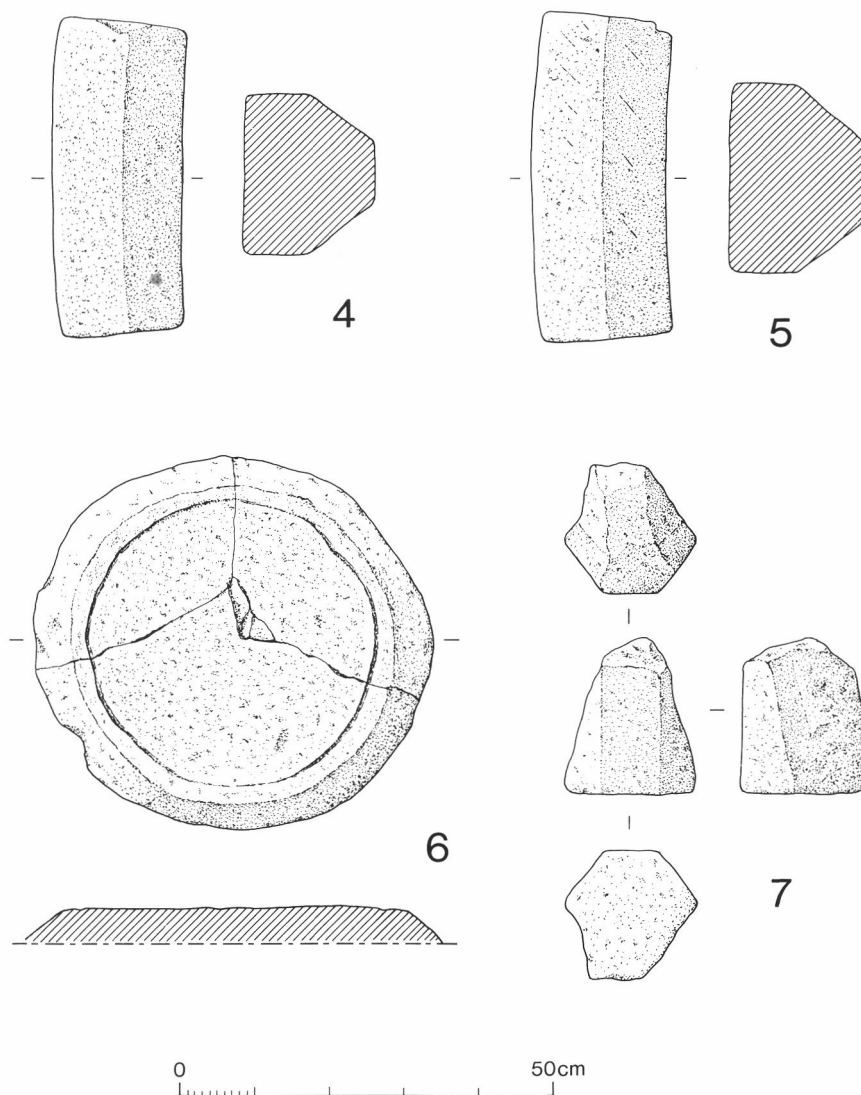


Fig. 9 Dale Abbey. Architectural stonework. 4: diagonal rib; 5: transverse rib; 6: column base [060]; 7: transverse rib with rebate.

lying the collapse of the vaulting [ABG], and could come from any part of the monastery. Thirty fragments (5.5 kgs) of ceramic roof tile were recovered; the majority (4.6 kgs) were amongst the collapsed vaulting [ABG] and may represent the remnants of the roof of the South Range.

Window glass (Fig. 10)

380 pieces of window glass, 150 with painted decoration, were recovered. The glass was widely distributed through the excavated contexts and represents a relatively small glazed area, less than 0.3 metre square. The excavated glass is a residue following the removal of complete windows for re-use, or melting down; the paucity of lead cames — only five small pieces were recovered

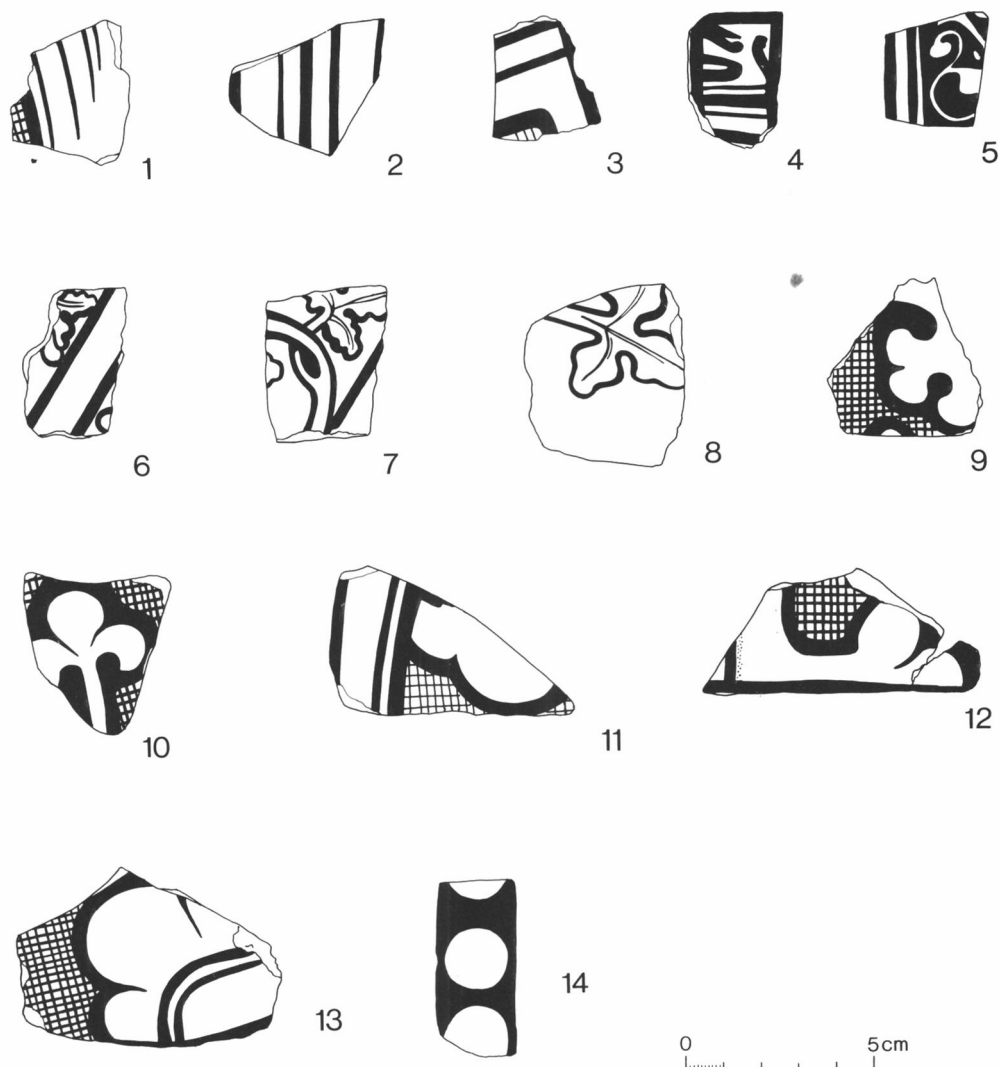


Fig.10 Dale Abbey. Painted window glass.

— suggests that the metal was carefully salvaged: windows may have been smashed merely to obtain the lead. The glass is almost certainly from the windows of the Frater on the first floor of the South Range.

A representative sample of the painted glass is illustrated (Fig. 10). With the exception of four fragments which also have a creamy-white paint, the decoration is restricted to red paint; the motifs include stiff leaf foliage, cross-hatching and trails of foliage. The quarries are irregular; some examples are rectangular, but the majority are triangular or diamond-shaped. The glass, on account of the style of decoration and the motifs employed, may be dated to the fourteenth century; it is quite different to the fifteenth-century glass from the Cloister, now at Morley Church, Derbyshire (Colvin, 1939a).

Floor-tiles

507 complete floor-tiles, and over 58 kgs of fragments — the equivalent by weight of a further 116 complete tiles — were recovered. Three kinds of decorated floor-tiles were recognised: counter-relief tiles (21.41% of site total), two-colour tiles (39.24%) and plain, glazed tiles (30.59%): for terminology see below and *Census of Medieval Tiles ... Draft Guidelines*. 8.57% were unidentifiable. On the basis of design, fifteen types were recognised. The illustrations of the tiles (Figs 11-13) are based on 1:1 tracings and the intention is to depict a complete example of each design; there has been no attempt to idealise the design, the common practice of nineteenth-century illustrators (e.g. Ward, 1892). On account of wear, poor manufacture and breakage, the 1:1 tracings are usually built up from several examples of each design; no missing details have been reconstructed. (This method of illustration follows the *Draft Guidelines*.)

Catalogue of design-types (Figs 11, 12)

'Ward F16', 'Eames 222', 'Whitcomb 97' etc., refer to the catalogue numbers of specific designs published in Ward, 1892; Parker, 1932; Whitcomb, 1956; and Eames, 1980. 'Allen Collection' refers to an unpublished catalogue of 81 design-types in the Earl of Chesterfield's Museum at Dale (Appleton, 1988). The quantity of each design includes the total of complete tiles and fragments; the latter are expressed as tile-equivalents by weight, with 0.5 kg of fragments taken to represent one tile.

1 Counter-relief tile; Fig. 11:1.

No. of tiles 34.9; 5.60% of site-total.

Design of four intersecting quadrants of a circle with four smaller, zig-zag, quadrants at the corners. Similar patterns, based on a central motif of four intersecting quadrants occur in Derbyshire, Leicestershire and Staffordshire (Whitcomb 236), but the present design with four smaller zig-zag quadrants at the corners has been previously recorded only at Dale (Allen Collection: counter-relief 4), and at St Michael's, Lichfield (Wilson, 1981: 73). An unprovenanced example (described as "line-impressed") has been provisionally attributed to a Cheshire workshop and dated to the fifteenth century (Eames 182).

2 Counter-relief tile; Fig. 11:2.

No. of tiles 50.2; 8.06% of site-total.

Part of a four-tile pattern, of concentric plain and zig-zag circles enclosing four circles, linked by an interlaced circle concentric with the outer bands. Spaces within the outer bands contain a circular motif of five dots. In each corner of the design is a fleur-de-lis. The design has been previously recorded at Dale (Allen Collection: counter-relief 5), and a date in the fourteenth or fifteenth century is probable. Similar types of design are recorded at Dale (Ward F16; Allen Collection: slip-decorated 10) and in Leicestershire (Whitcomb 97-98).

3 Counter-relief tile; Fig. 11:3.

No. of tiles 41.9; 6.72% of site-total.

Probably part of a four-tile pattern. The design has a stylised flower at the corner, above a framework containing a zig-zag quadrant or semi-circle at two sides. The design has been previously recorded at Dale (Allen Collection: counter-relief 6) and at St Michael's Lichfield (Wilson, 1981: 73). A fourteenth/fifteenth century date has been suggested (Eames 221, described as "line-impressed").

4 Counter-relief tile; Fig. 11:4.

No. of tiles 6.4; 1.03% of site- total.

The principal motif is based upon a stylised church or a diptych surmounted by a cross;



Fig. 11 Dale Abbey. Floor-tile types: 1-4, counter-relief; 5-9, slip-decorated.

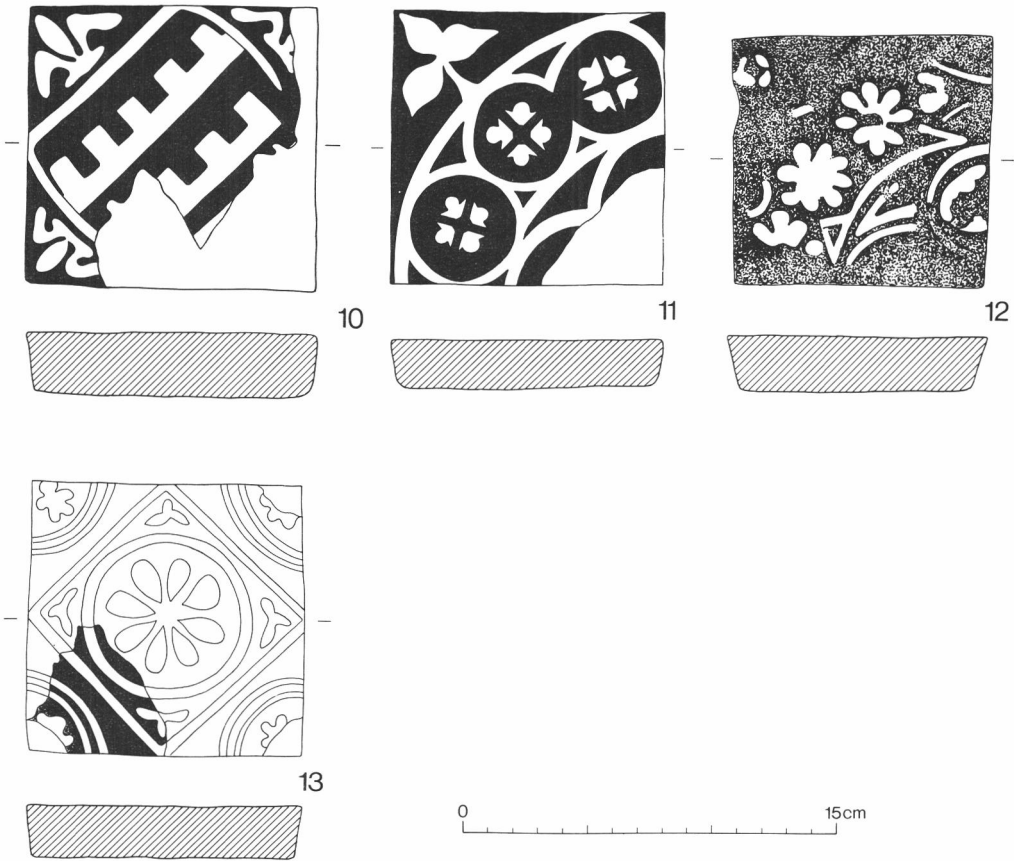


Fig. 12 Dale Abbey. Floor-tile types: 10 and 13, inlaid; 11, 12, slip-decorated.

- below is a six lobed figure; in the corners are stylised oak leaves and a tendril; the latter springs from the side of the central motif. The design has been previously recorded at Dale (Allen Collection: counter-relief 7). A similar design is widely recorded in Leicestershire (Whitcomb 88); on the Leicestershire examples, all inlaid tiles, the design is contained within a narrow border and below the principal motif is a six petalled rosette.
- 5 Slip-decorated tile; Fig. 11:5.
No. of tiles 69.5; 11.15% of site-total.
The principal motif is composed of four intersecting arcs, which form a central lozenge containing five spots. Arcs across the corners support a stylised leaf motif and contain quatrefoils. This design has been previously recorded at Dale (Allen Collection: slip-decorated 12; Ward E15).
 - 6 Slip-decorated tile; Fig. 11:6.
No. of tiles 73.7; 11.83% of site-total.
The principal motif is a central cross of stylised oak leaves. The corner motif contains a quatrefoil, within a pointed band. The design is recorded at Dale (Allen Collection: slip-decorated 13). (A similar design has been previously recorded from Dale, but the

- quatrefoil is contained within a circular band (Ward E17); this may be the result of a draughtsman's error.)
- 7, 8 Slip-decorated tile; Fig. 11:7, 8.
No. of tiles 70.9; 11.38% of site-total.
The design is of opposed leaves on a sinuous stem curving diagonally across the flan; there are tendrils at the intersection of stem and leaf. The design has been previously recorded at Dale (Allen Collection: slip-decorated 14, 15). A similar design is also recorded at Dale, but the tendrils terminate in a trefoil (Ward F14); this may be the result of a draughtsman's error.
- 9 Slip-decorated tile; Fig. 11:9.
No. of tiles 23.7; 3.80% of site-total.
Design of a lion, probably crowned, with feathered tail and five spots on the flank. There are lobed figures at the corners. The design has been previously recorded at Dale (Allen Collection: slip-decorated 16). A similar design, the lion reversed and with triangles at the corners, is recorded at Morley, Derbyshire (Ward F7); this may be the result of a draughtsman's error.
- 10 Inlaid tile; Fig. 12:10.
No. of tiles 1; 0.16% of site-total.
The design is based on the arms, gules, three bars embattled argent, of Barry of Tollerton or of Roclaveston Manor, Nottinghamshire. The shield is placed diagonally, with a fleur-de-lis above and on either side. Five complete tiles and fragments of fourteen others have been previously recorded at Dale (Allen Collection: inlaid tiles [small series] 52); one is manufactured from a stamp which has two cracks in the top of the shield. Examples with the same fault are recorded in Leicestershire. The stamp appears to have cracked during the production of tiles for Dale and was used subsequently for tiles in Leicestershire (Whitcomb 59); the design is attributed to the later-fourteenth century (Eames 1629).
- 11 Slip-decorated tile; Fig. 12:11.
No. of tiles 4.5; 0.72% of site-total.
Probably part of a four-tile pattern. A quadrant supports a stylised leaf motif in the corner and contains three circular bands, each containing a rosette of four sharply-faceted petals. The design has also been previously recorded at Dale (Allen Collection: slip-decorated 9).
- 12 Slip-decorated tile; Fig. 12:12.
No. of tiles 1; 0.16% of site-total.
Probably part of a four-tile pattern. The design includes a quadrant of eight-lobed flowers. There is an unprovenanced example, perhaps from a fifteenth-century Midlands centre (Eames 2804).
- 13 Inlaid tile; Fig. 12:13.
Only a single corner fragment survives. The design comprises a stylised, eight-lobed, flower within a circle within a square, with three-lobed figures at the angles; the corners each contain a five-lobed figure, within two arcs. The design has been previously recorded at Dale (Allen Collection: inlaid 49), and elsewhere in Derbyshire (Ward E7), Nottinghamshire (Parker 81), Leicestershire (Whitcomb 101) and Yorkshire.
- 14 Plain, glazed tile; not illustrated.
No. of tiles 189.6; 30.43% of site-total.

- 15 A single fragment of a slip-decorated tile 30 mm thick, in a fine, hard fabric; not illustrated. There are five designs at Dale which utilise larger (up to 206 mm) and correspondingly thicker flans (Allen Collection: single colour tiles 1 and 2, slip-decorated 1-3).

Neutron activation analysis of clays (MJH, JC, MNL)

Neutron activation analysis is an established technique for ceramic provenance studies (for reviews see Perlman and Asaro, 1969; Harbottle, 1976); it provides a detailed chemical analysis of the body of a ceramic, which may be employed to identify the geographical source of its clay and place of production. A project on North Midland medieval floor-tiles has shown that known kiln sites can be readily distinguished from each other; where kilns used several sources of clay the results are, however, less clear cut (Hughes *et al.*, 1982; Cherry, 1986; Leese *et al.*, 1986). The technique requires the removal of a small representative sample of the body fabric, encapsulation of a weighed amount of this sample in silica tubing, and its irradiation in batches of about 50-60, together with six control batches of a standard clay of known composition. The isotopes produced are detected and measured to obtain figures for the presence of twenty-three elements in the fabric (for further details of the technique see Main and Hughes, 1983).

The present group of tiles from Dale presented an interesting opportunity for continuing the programme of analysis. The fabric of the three kinds of tile (two-colour tiles, counter-relief tiles and plain tiles) could be compared to each other and to those tiles from Dale, now in the collections of the British Museum, which had been analysed previously. Twenty-one tiles were therefore selected and analysed; samples were taken from two examples of the counter-relief tiles (Types 1-4) and two of the two-colour tiles (Types 5-9); three plain tiles (Type 14) were also sampled. Uncommon and incomplete tiles (Types 10-13 and 15) were not sampled.

Several statistical techniques were used to examine the data and to compare them with those from the North Midland tiles already analysed. Principal components analysis (Cooley and Lohnes, 1971) showed that the present tiles formed a fairly compact group, with no obvious outliers (tiles of very different composition). They were also distinct from the Dale and North Midland tiles previously analysed. Cluster analysis (Wishart, 1978; 1982) was applied to the same data, and this also showed the present group of tiles to be distinct, but with some evidence for two sub-clusters. These sub-clusters did not, however, correspond to any combination of design or kind of tile, and it seems that they represent only very fine distinctions. The tiles are best described as having the kind of variation in clay composition which is normally found within a single clay source, e.g. a single clay pit. The average composition of the 21 tiles, expressed as a mean and standard deviation (in brackets) in parts per million in the clay (except where a percentage is indicated) is as follows:

iron 5.27% (0.57); sodium 0.134% (0.013); potassium 2.53% (0.20); chromium 150 (11); cobalt 11.9 (1.5); scandium 21.3 (1.9); rubidium 166 (16); caesium 12.6 (1.4); barium 648 (151); lanthanum 36.9 (3.6); cerium 70.0 (8.1); europium 1.15 (0.20); samarium 5.38 (1.00); ytterbium 2.55 (0.20); lutetium 0.420 (0.036); hafnium 4.00 (0.33); terbium 0.68 (0.10); tantalum 0.92 (0.15); arsenic 27.9 (7.3); antimony 1.10 (0.16); thorium 15.5 (1.36); uranium 3.21 (0.32).

Four samples had about 3% calcium but the rest were below 1%. Fourteen elements show a standard deviation of about 10% of the mean which is typical from one source of clay.

The statistical tests differed slightly from those of the previous work (Leese *et al.*, 1986) in that the concentrations were not scaled to scandium, but given the small spread in the present results this will have had minimal effect. The results will be later integrated to make them fully compatible and the tests repeated.

The analytical results show these 21 tiles to be very similar in composition, and suggest that they represent a single clay source. They compare in chemical 'compactness' to the products of the fifteenth-century tile kiln at Lenton, Nottingham (Hughes *et al.*, 1982: 115 and table 1). There is no evidence to suggest that these tiles were imported from elsewhere. The present group is distinct from the previously analysed tiles from Dale, which fell into three chemical groups. Two of these groups suggested two local clay sources ('D' and 'J'), used for two-colour inlaid tiles, one of which (D) was distinctive in thin section and exclusive to Dale (Leese *et al.*, 1986: 366); the third suggested another source of clay, used for stamped tiles (Eames, 1980: cat. nos 1169-1705, design nos 260, 261). The present group has counter-relief, two-colour, inlaid and slip-decorated, tiles, and plain tiles. There is no overlap of designs between the groups.

It appears that tiles 'local' to Dale were made from different clays. Monasteries, no doubt, differed in their access to clays. Some may have had one uniform clay source available to them, which was used throughout their history. Others, like Dale, present a more complex picture — of different clay sources in their immediate vicinity being drawn on at different times, according to the needs of the tiling programme. During periods between tiling episodes the clay pits may have been used up, become inaccessible or forgotten. It should be possible to relate tiles of a single composition group to one tiling period.

Manufacture, fabric and form

The usual methods of manufacture and decoration were followed (Eames, 1980: 16-18). In each case the decoration was applied to a leather-hard flan, which had been shaped in a form — a square frame — on a sanded surface. The tiles are approximately 110 mm square, although dimensions may vary from 102 to 115 mm; their thickness ranges from 22 to 26 mm; two-colour tiles are generally thinner (23 mm) than counter-relief tiles. The edges of the tiles are finished to a slight bevel of 5-10°; counter-relief tiles tend to have a more pronounced bevel, usually 10°. On two-colour and plain tiles the bevel is 5°. There is evidence of knife-trimming: excess material commonly adheres to the lower edge of the sides. There were three triangular tiles, all plain (Type 14). To produce these, a leather-hard flan was cut from the surface to within 10 mm of the base; after firing the joint was broken to produce two more or less equal triangular tiles.

The iron-rich clay of the body of the tile appears brown or yellow-brown, and the white-clay slip yellow, below the clear lead glaze. There is a tendency for the glaze to fire to a greenish-brown tinge over the sanded base and on occasions over the surface. Visual examination suggests that a single fabric is utilised for Types 1-14 (i.e. both for the types submitted for analysis, 1-9 and 14, and 10-13, which were not analysed) comprising a hard orange-pink, well-sanded clay, with frequent thin laminar inclusions of white skerry and particles of red grog and red, iron-rich inclusions, up to 1 mm wide; there are occasional inclusions of marlstone and small quartz pebbles and crushed quartz up to 2 mm wide, with infrequent larger lumps of marlstone up to 25 mm wide and pebbles up to 10 mm wide. The fabric at the centre of the tile, below the glaze, is commonly reduced. Type 15 (not analysed) is a hard, buff-pink, well sanded fabric with infrequent inclusions of crushed quartz up to 2 mm wide.

Plain tiles are glazed and, with the exception of one slipped triangular tile, dark green-brown in colour. There are four designs of counter-relief tiles (Fig. 11:1-4); the design was impressed into the surface of the flan using a wooden stamp, which bore the design in relief. The impressions are 'V'-shaped and generally up to 2 mm deep; some impressions are 3 mm deep. After the design had been impressed a sparse white slip was applied; approximately 28% have no slip. There are nine designs of two-colour tiles (Figs 11, 12:5-13). The probable technique of manufacture employed for Types 5-9 and 11-12 is known as 'slip-over-impression'. The design

was impressed into the surface of the flan using a wooden stamp which bore the pattern in relief; the shallow impression was filled with liquid slip and the surface of the tile was scraped, when dry, to remove excess. The impressions are flat bottomed and extremely shallow (usually 0.3-0.5 mm deep), although some are up to 1mm deep. Types 10 and 12 appear to be inlaid tiles, with a deeply (2 mm) impressed design. The general quality of manufacture is poor; the flans are commonly of uneven thickness, with knife-trimmings adhering. Two-colour and counter-relief tiles are unevenly stamped; the surfaces are often dished. Slip is sparingly applied and the body colour can show through, producing a mottled yellow-brown surface. The designs of the two-colour tiles are indistinct on account of uneven stamping and scraping, and the presence of small imperfections and voids from inclusions; often only the base of the impression is covered with slip. *The tile floor* (Fig. 13; Plates 7-9)

With the exception of approximately five tiles sealed below the collapse of the vaulting [ABG], the remaining 600 tiles were recovered from contexts associated with the destruction of the South Range. A concentrated area of approximately 119 floor-tiles [ABI] overlay the collapse of the vault [ABG]. Although the tiles had been dislocated by their fall, and were in places three layers deep, some directly overlay a mortar bed, which indicated that a more or less intact patch of flooring, comprising some 52 tiles, had survived the collapse of the vaulting. The reconstruction of the tile floor suggests a plan comprising rectangular groups of up to four tiles, including arrangements of four-tile designs, interspersed with lines of plain tiles, lines of vine scroll based on two alternating designs, and lines of single designs. There is no evidence to suggest that the plan of the floor is the result of lifting and re-setting an older pavement, although certain patterns of four tiles (Types 1, 2, 3, 11) could be utilised in larger patterns of sixteen tiles. The arrangement of the floor-tiles is unexceptional and may be compared with, for example, the pavement at Belvoir Priory (Whitcomb, 1956: 20). Of the fifteen types of tile recovered in excavation, twelve are present in the postulated collapsed floor [ABI]; a large proportion (21.6%) of the floor's tiles are, however, unidentifiable because of wear, perhaps indicating a worn area of flooring not considered to be worth removing. Types 10, 12 and 13, of the same size and fabric, and Type 15 were absent; together these represent no more than 0.3% of the site total. It is probable that, with the exception of Type 15, all of the tiles found in the excavation were derived from the tiled floor of the Frater on the first floor of the South Range.

Date and affinities

Stratigraphically the tiles are in contexts associated with the destruction of the South Range, dated to the mid- or late-seventeenth century. The tile-floor from which they derive overlies a vault constructed in the thirteenth century. A kiln was discovered by the Gatehouse in 1845; although it contained floor-tiles, no detailed record was made (Jewitt, 1883: 366; Appleton, 1988: 37). The origin of the excavated tiles has been established from petrological analysis; identification of their date and affinities is based upon stylistic comparison.

Individual designs and their affinities have been described and discussed in the Catalogue. On stylistic evidence the majority of the tiles at Dale have been ascribed to the North Midland industries; the industries are represented by production centres at Dale, Nottingham, Lenton (Nottinghamshire) and Repton (Derbyshire), and by large collections of tiles from Beauvale (Nottinghamshire) and Beauchief (Derbyshire). The development of the industries, the precise relationship of the production centres, and their connection with industries in Leicestershire and Warwickshire, are not yet fully understood; however, the current programme of chemical and petrological analysis is beginning to identify manufacturing centres and the pattern of distribution of their products. It seems probable that the industries began in the early-fourteenth century

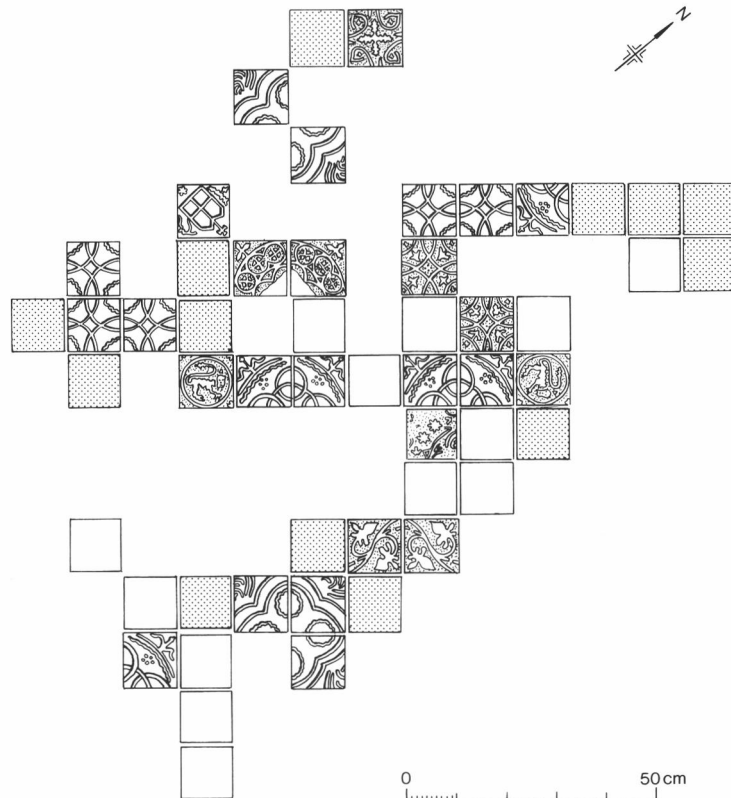


Fig. 13 Dale Abbey. Suggested reconstruction of the arrangement of floor-tiles in the pavement of the first-floor Frater, based on part of ABI. Plain tiles are shaded; unidentified tiles are blank.

and flourished in the second half of that century; production continued into the fifteenth century and possibly into the sixteenth century, but the scale and continuity of the later industries is quite uncertain (Eames, 1980: 230-35).

On petrological and morphological evidence Types 1-9 and 14, and less certainly 10-13, constitute a single group. Types 1 and 3 are also recorded at Lichfield, Staffordshire, but without analysis of the clay it is uncertain whether the tiles or the stamps have travelled. General similarities with Leicestershire and Staffordshire tiles are noted in the case of Types 1-4. The stamp for Type 10 appears to have cracked during the production of tiles for Dale and was used subsequently for tiles in Leicestershire (Whitcomb 59). Types 1-11 and 13 have been previously recorded at Dale (Allen Collection) and, with the exception of Types 1, 3, 10, and 13, only at Dale, where they appear to be part of a larger group of 22 types which utilises the same, relatively small, size of flan (Allen Collection: inlaid tiles [small series] 46-55, slip-decorated tiles 9-16, and counter-relief tiles 4-7). The designs are exclusive to this small size of tile and do not occur on the larger tiles at Dale. Small tiles occur throughout the North Midlands industries but, at present, no precise chronological significance has been attached to their size. Decoration in counter-relief is employed on tiles from the thirteenth century (Eames, 1980: 103), but a distinct series of counter-relief tiles — essentially slip-decorated tile designs without inlay — appears

somewhat later in the Midlands. The series is not securely dated, but may range from the late-fourteenth into the fifteenth century (Whitcomb, 1956: 25; Eames, 1980: 115-7); and a date in the late-fifteenth or early-sixteenth century has been suggested for examples at Burton Lazars, Leicestershire (Eames, 1980: 121). The present, inadequate, knowledge of the North Midland industries would suggest that the two-colour tiles (Figs 11, 12:5-13) were not produced before the early-fourteenth century; on account of their poor manufacture, a late-fourteenth or fifteenth-century date is probable. On petrological, morphological and contextual grounds, the two-colour tiles and the plain tiles are contemporary with the counter-relief tiles (Fig. 11:1-4), for which a late-fourteenth or fifteenth-century date would therefore be acceptable. As the majority of the designs are exclusive to Dale, and also on petrological evidence, it would seem probable that the tiles were manufactured at Dale; furthermore, they utilise a different clay source and represent a phase of production which is distinct from that represented by the previously analysed groups from Dale.

The production of tiles at Dale suggests demand for floor-tiles on a relatively large scale, such as a major rebuilding or refurbishment would require. Types 1-14 may be part of a larger group of tiles, represented by 23 designs, at Dale (Allen Collection: inlaid tiles [small series] 46-55, slip-decorated tiles 9-16, and counter-relief tiles 4-7). Unless the examples of Types 1-13 in the Allen Collection are also from the South Range, or were removed from there and scattered after the Dissolution, the construction of a tile floor in the Frater in the late-fourteenth or fifteenth-century represents only one part of a more extensive programme of work; unfortunately, it is as yet not possible to ascribe the tiles to one particular phase of the three documented periods of rebuilding during the late-fourteenth and fifteenth centuries.

The faunal remains (MH)

There is only a small quantity of bone (292 pieces: 4.5 kgs), the majority (4.25 kgs) from ABZ, immediately below the collapsed vault [ABG]. The collection from ABZ comprises: *Ox*: 26 bones (of which 15 are phalanges); *Sheep/goat*: 14 bones; *Cat*: 12 bones (from a single well-grown, but immature, individual); *Hare/rabbit*: fragment; *Bird*: 24 bones; *Pig*: a variety of bones. The last are mainly from the head, and include: pieces from 7 skulls, all halved; 4 maxillary fragments; 26 pieces of mandible; and a number of loose teeth from 16 individuals. Pig bones also comprised: 5 pieces of atlas and axis, which were probably deposited along with the skulls; 12 fragments of vertebrae and limb bones; 22 rib fragments and 11 foot bones. With the exception of a single limb bone from a small piglet, all pigs had attained a reasonable size. The range of stages of tooth eruption (Silver, 1963: 250-268) suggests that one individual probably died at about one year old, thirteen pigs at between one-and-a-half and two years old, and two at about three years old. The bird bones comprised: 10 bones of domestic fowl, including 6 bones from the lower legs and feet; 12 goose bones, probably domestic, including 9 bones from the wing extremities; 1 duck bone; and 1 unidentified bone.

The presence of a small quantity of waste bones from the main meat-bearing parts of animals — the vertebrae and limb bones of cattle, sheep and pigs — suggests that this deposit contains some domestic kitchen waste. The concentration of cattle toes, pig heads and feet, goose wing-ends and the feet of domestic fowl indicates that animals were being slaughtered and butchered here or close by, the remainder of the waste being disposed of elsewhere. The cat may have been a pet or semi-feral, tolerated in a domestic situation for pest control.

DISCUSSION

The plan of the South Range

The South Range of Dale Abbey comprised two discrete structures: the Kitchen at the south-west corner and the Undercroft supporting a first-floor Frater; there was a further range or ranges of buildings on the southern side.

According to Stukeley's plan, the south-west corner of the Range comprised a rectangular structure, which he designated the "Kitchen", with three external buttresses on the south and east sides and a single external buttress on the west side. A single external buttress [ACC] has been located on the west side of the structure. Unless the Kitchen Range pre-dates the South Range, an external buttress is inappropriate on the east side; Stukeley may have incorrectly interpreted and rationalised the (probably overgrown and collapsed) remains. The location of the Kitchen, at a corner of the Claustral Range, adjacent to the Frater, is common in Premonstratensian Houses and there are examples at Torre Abbey, Devon, Titchfield Abbey, Hampshire, and Shap Abbey, Westmorland; few Premonstratensian kitchens have been fully excavated (Clapham, 1923). Kitchens in monastic and other medieval buildings of high status differ widely in plan, but are usually tall, single-storey structures. Large external buttresses are not uncommon and may be structurally essential, but some contain ovens, fireplaces and chimneys (Weaver, 1987). The plan of the kitchen at Dale is similar to the fourteenth-century kitchen at Kirkham Priory, Yorkshire (HBMCE, 1985).

The Undercroft, 10.5 metres wide, extended east from the Kitchen, through the excavated area, terminating at a passage-way immediately west of the Warming House (Fig. 2:10). The ground floor was divided longitudinally by a row of stone columns supporting two bays of quadripartite vaulting. There was no evidence of a floor surface, but the Undercroft may have been paved with flagstones, removed at the Dissolution. The Undercroft was probably used for storage. The first floor contained the Frater, which in Premonstratensian houses always occupies the opposite side of the Cloister to the Church. The Frater is usually raised upon an Undercroft; and ground-floor Fraters are uncommon (Clapham, 1923: 128). The large pointed opening in the north wall of the South Range, depicted by Buck, is a doorway to the Frater, formerly approached by a staircase from the Cloister (Pl. 1). Floor-tiles and painted window glass, recovered in excavation, are derived from the Frater.

The wall extending to the south of the south wall of the South Range [ABK] and the chimney, fireplace and wall [AFA] to the west are part of a contemporary building or range of structures to the south of the South Range. This appears to have been of a single storey, but its extent and plan are uncertain. The oven and chimney suggest some purpose ancillary to the Kitchen, perhaps a bakehouse. It is possible that the wall [ADB] south of the Kitchen forms part of a further range, but its date is uncertain. If the structures, reported in the nineteenth century, in the fields to the south of Abbey/Manor House are also part of the monastery then an extensive group of outbuildings is indicated, to the south of the South Range (St John Hope, 1880: 113). Their plan must remain uncertain; excavation of monastic sites has usually been limited to the principal claustral buildings.

The date of the South Range

It has been suggested that the Church, the East Range and the eastern part, at least, of the South Range were broadly contemporary and of Early English or thirteenth-century date, with building work commencing soon after 1200 (St John Hope, 1879: 102; Ward, 1890: 65); additions were made to the Chapter House from 1264-9 (St John Hope, 1879: 111), and under Abbot Lawrence (1273-1289) there was extensive reconstruction of the monastic church (Colvin, 1941a: 34). The

present excavation located no contexts associated with the construction of the South Range. The chimney [AFA] appears to be of the same build and therefore contemporary with the south wall of the South Range: the style of masonry is similar and plain chamfers are used on the south wall [ABK], the chimney [AFA], and the buttress [ACC], suggesting that these are contemporary structures; as yet plain chamfer mouldings cannot be closely dated. The smashed capital and the corbel indicate a construction date during the period 1225-1300. The ribs supporting the vault are generally flat-backed, suggesting a date in the early- to mid-thirteenth century. The construction of the South Range, which presumably followed the completion of the Church and East Range, may be dated to the first half, and probably to the second quarter, of the thirteenth century.

Later refurbishment of the Frater is indicated by the recovery of fourteenth-century painted window glass and floor-tiles of late-fourteenth or fifteenth-century date. There are three documented phases of rebuilding and refurbishment during the late-fourteenth and fifteenth century. At present it is not possible to ascribe the refurbishment of the Frater to one particular phase of reconstruction; it should be noted, however, that the adjacent cloister was rebuilt in the period 1478-82 (St John Hope, 1880: 130).

Post-Dissolution occupation and demolition

The destruction of the South Range appears to have been a long process, drawn out over at least a century. The South Range was thoroughly stripped of re-useable material. Lead came was taken out of the windows of the Frater; some glass — complete windows or panels — may have been removed for re-use. Roofing material — tiles, slates and stone, and probably the timber roof structure — was also removed. Floor-tiles were salvaged, leaving worn tiles and broken debris: had the tile-floor in the Frater been intact at the time of the collapse, it is estimated that approximately 1400 tiles would have lain within the area of the excavation, but only some 600 were recovered. Stone was the principal salvaged material, and the only remaining stone of any consequence is that which made up the collapsed vault, the lower courses of walls and the two areas [AAS, AFA] incorporated into later structures. At the Dissolution, in 1538, Francis Pole's acquisitions included the glass, iron and paving-stones in the Frater (Colvin, 1943: 7); he may also have taken the postulated flag-stone floor of the Undercroft. By the early-eighteenth century, when William Stukeley and the Buck brothers visited the site, the South Range, with the exception of the north wall, was demolished. Pottery of the early- or mid-seventeenth century — two sherds of Midland Purple ware, one sherd of earthenware and one sherd of tin-glazed ware — was sealed by the fall of the vaulting, suggesting a date in the mid- or late-seventeenth century for the collapse of the South Range. There is no evidence to indicate the condition or use of the Range during the century or so after the Dissolution. Only a small amount of the layer which accumulated in the Undercroft during this period was removed; the dumping of waste material from slaughtering would suggest that the range was not occupied, but that other parts of the monastic complex, principally the West Range, still roofed and habitable in the early-eighteenth century, were in use. The demolition of the South Range appears to have been a carefully controlled process: the collapse of the vault followed the removal of centres of the vaulting and the supporting columns; the capital was probably smashed to facilitate this process. Following the collapse of the vault, the remaining walls were demolished, with the exception of two fragments [AAS, AFA] which were incorporated into other structures.

CONCLUSION

W. H. St John Hope concluded that his excavations had revealed one of the most remarkable Abbey plans in England, which represented a “valuable addition to our knowledge of monastic arrangements” (St John Hope, 1880: 128); the “full and exhaustive account” of his results (St John Hope, 1879: 115) never came to fruition and it was left to Clapham (1923) to place the plan in its Premonstratensian context. The site was drained, levelled, and provided with a museum of “curiosities” (St John Hope, 1880: 134); thanks to this early exercise in site interpretation, unfortunately not adequately maintained, the remains of the abbey are still exposed.

The present excavations have demonstrated the survival of structures and deep archaeological stratigraphy in areas which were not accessible to St John Hope; the existence of similar deposits in the Cloister, West Range and western part of the Church, areas not extensively excavated by St John Hope, may be inferred. The depth of the deposits and the topography of the site, together with references to exceptional preservation in St John Hope’s excavations, suggest that the strata may be wet. The full extent of St John Hope’s excavations is not known; there is no evidence that the areas cleared in 1878-9 were fully excavated to undisturbed natural.

The recent work has confirmed and extended knowledge of the structures forming the South Range of the Abbey, with particular reference to their plan, date and development. Part of the Abbey Gatehouse and a complex of fishponds remain to be surveyed and remote sensing could reveal the plan of the Infirmary and buildings lying to the south of the South Range; until this is accomplished the plan of the Abbey is incomplete and the claustral buildings are divorced from the remainder of the monastic complex.

The recent excavations have recovered large quantities of architectural stonework. The architectural stonework recovered in 1878-9 remains on site and represents a valuable and unstudied source for the structural development of the Abbey. The walls, excavated in 1878-9 have not been surveyed, stone by stone, with the consequence that current interpretation of the plan and structural development of the Abbey still remains to be refined.

Large quantities of floor-tile were recovered in 1878-9 and the accounts of the excavation indicate that, in several instances, a succession of stratified floor-tile pavements was observed and recorded. Recent work, drawing on analyses of clays and of designs, is elucidating the development of the North Midland industries. The relatively unstudied material from 1878-9 and the unexcavated areas of the Abbey offer immense potential for this research.

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