

Inchaffray Abbey, Perth & Kinross: excavation and research, 1987

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with contributions by B Ford, L Ewan, D Gallagher, P Graves,
J Gater, S Dockrill, A Gibson, R Grove, G Haggarty & M Spearman

ABSTRACT

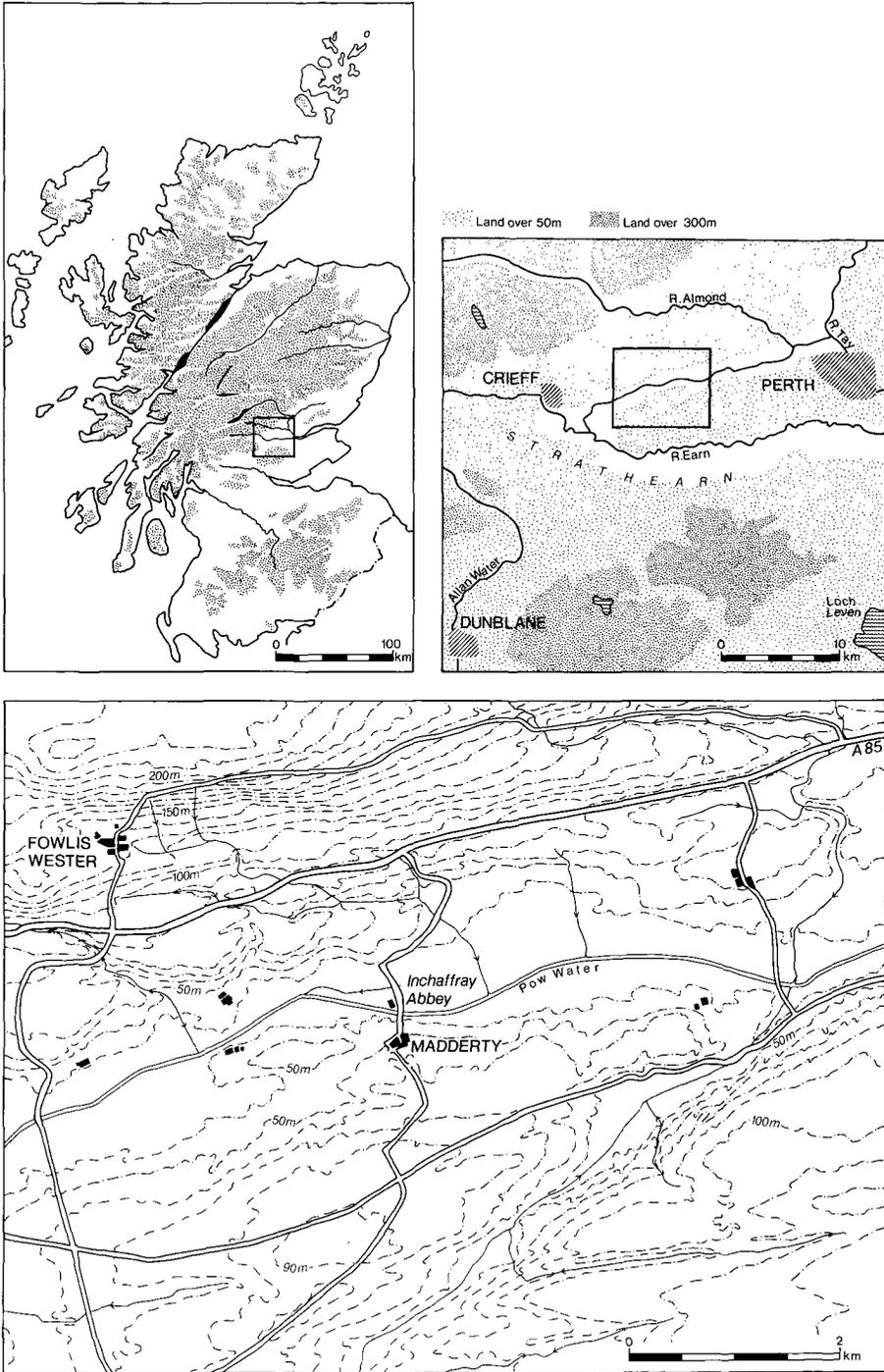
A short programme of rescue excavation was conducted during April 1987 on the site of the 13th-century Augustinian abbey of Inchaffray by the former Central Excavation Unit (Scotland), in advance of a proposed private building development. The results of the excavation when viewed alongside evidence from recent surveys, documentary sources, as well as the great range and volume of artefacts retrieved from the site over many years, form the basis of a new assessment of this important multiphase site. The project was funded by Historic Scotland (formerly SDD-HBM), who also provided a grant towards the publication costs.

INTRODUCTION

LOCATION, TOPOGRAPHY & GEOLOGY (ILLUS 1, 2 & 16)

The site lies to the south of the A85, the main road between Crieff and Perth, and is bisected by the road running from the A85 towards Madderty (NGR: NN 6536 2251). The site of the abbey of Inchaffray occupies the highest point of a low, sandy knowe that rises some 5 m above the valley floor of Strathearn. This area is known as the Inch and the land is drained by the slow-flowing Pow Water which, although canalized, still floods. At such times, the abbey site remains one of the few dry areas in the valley. The Inch is further subdivided on the west side by a field boundary which, where it crosses the brow of the knowe, is built of dry stone. At this point it forms the boundary of an L-shaped area of woodland. Within the trees, the fragmentary remains of the abbey church and part of the reused west claustral range survive as the only upstanding architecture on the Inch. The south-west quarter of the Inch, bounded by the field fence to the north, the road to the east and the Pow on the south, is protected as a Scheduled Ancient Monument. The origins of the mound upon which the abbey was built derive most probably from one of a series of gravel terraces which occur in the Methven Depression and Crieff area and which formed part of the 'Main Perth Shoreline'. Strathearn east of Crieff and the Methven Depression were largely deglaciated before the formation of the 'Main Perth Shoreline' (possibly about 14000 BP; Browne 1980) which is the second in a series of three terraces formed as sea-level fell. The geological context in the immediate vicinity of the site can be summarized as residual glacial features, marine clays and alluvial gravel terraces, with the

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ILLUS 1 Location map. (Based on Ordnance Survey map © Crown Copyright)



ILLUS 2 View of the site from the north

first two groups then sustaining a substantial peat accumulation. It is the Pow Water which constitutes the single most significant natural factor in the monastic occupation of the Inch.

The Pow Water probably defined the east profile of the site, as reflected by the soil marks (illus 16). The westward direction of its flow is due to an accident of gravity, some time after the alluvial terraces were deposited, and is not a consequence of medieval or post medieval drainage. It is true that the efficiency of the Pow affects the water table dramatically and repeated efforts by the occupants of the site to maintain and excavate drainage channels is testament to this. Significantly, despite the 18th-century documentary account of a well serving the site, it would be likely that wells, sunk in clay, would be contaminated. It is also probable that the monastic water source was the Pow itself. It is therefore probable that the 'reredorter' or latrine complex was located towards the south-west of the site, downstream.

THE ORIGINS OF INCHAFFRAY

Alex Gibson & Lorna Ewan

The priory at Inchaffray was founded by Gilbert, Earl of Strathearn, as a house of Augustinian canons regular. Its Great Charter of 1200 is still extant (Inchaffray Charters no 9, Lindsay *et al* 1908), and by it the Priory – dedicated to the Virgin Mary and St John the Evangelist – was endowed by Gilbert with: 'the churches of St Cathan of Abruithven, St Ethernan of Madderty, St Patrick of Strogeith, St Makkessog of Auchterarder, and St Bean of Kinkell. Likewise a tithe of all the earl's

cains and rents, in wheat, meal, malt and cheese, and of all the foods which were yearly used in his court, and a tith of all fish which was brought to his kitchen; a tith of all venison, and a tith of all the profits which came from his courts, and from other obventions (incidental or occasional revenues) of every kind. Also leave to fish wherever they liked in the Pefferin [Pow Water]; and leave to take from his woods, where it was most convenient to them, timber for the construction of their buildings, for their utensils, and for their fires. Likewise the three acres of land nearest Inchaffray towards the north, which he gave at the dedication of the chapel thereof.'

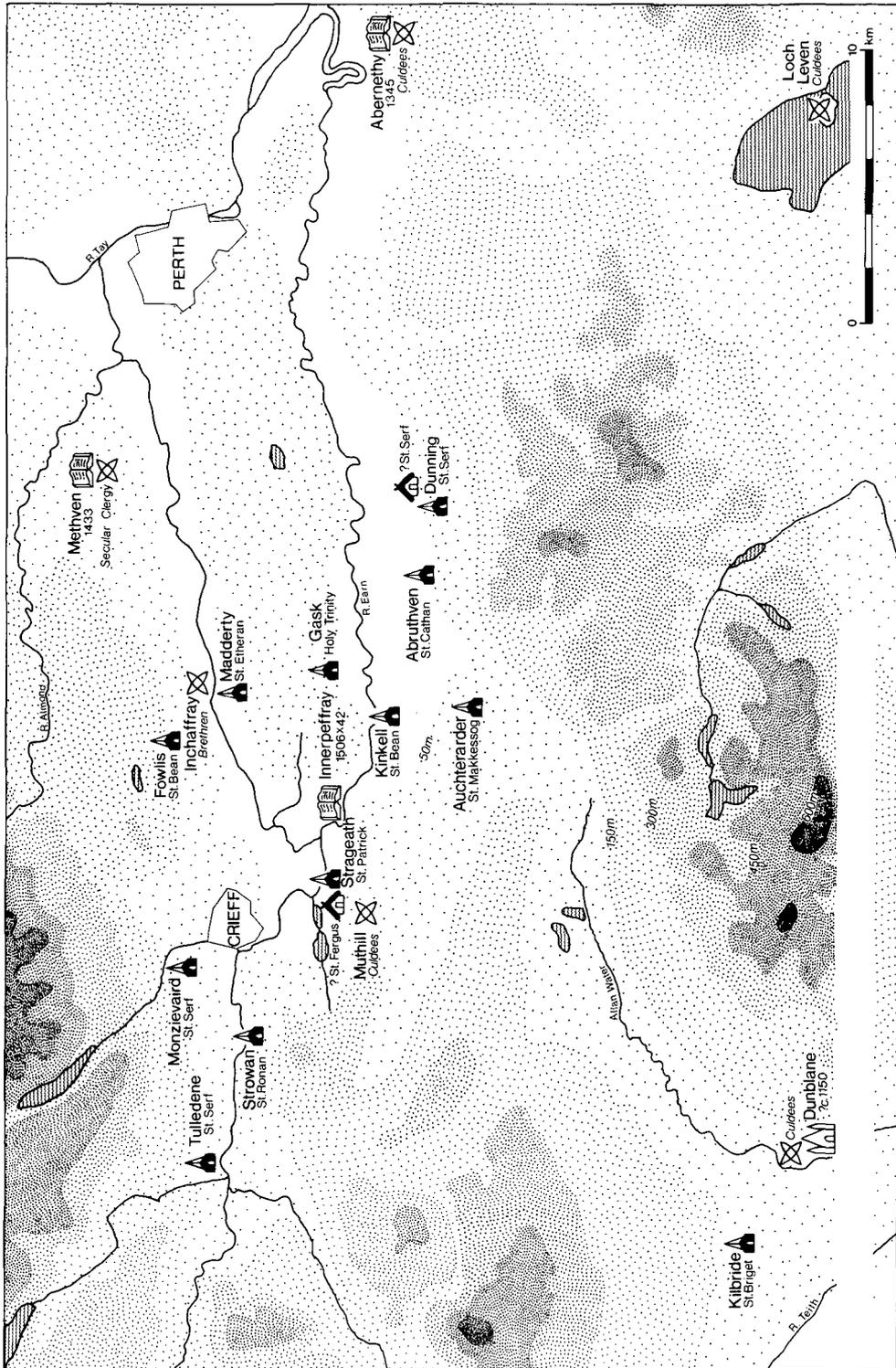
As the last clause indicates, this was neither the earliest ecclesiastical foundation at Inchaffray nor the earliest endowment made by Gilbert, Earl of Strathearn, to further the cause of Christianity at the site. In addition to the three acres of land which the Great Charter states to have been given at the dedication of the chapel of Inchaffray – and which a document of about 1195 records as being granted to 'the brethren serving God at Inchaffray' (Lindsay *et al* 1908, no 2 [c 1195]), Gilbert had also already endowed the 'brethren' with the churches of Abruhtven and Madderty and a tith of his 'cains in wheat, meal, malt and cheese, and in all other things which pertain to provisions, and a tith of all the fish brought to his court'. Gilbert had also encouraged the Bishop of Dunkeld to grant to 'the church of St John of Inchaffray and the brethren there serving' his lands in Madderty called 'Abthen'. The Great Charter was thus largely confirming to the priory possessions which already pertained to the chapel and/(or?) the 'brethren' at Inchaffray. The priory established by Gilbert therefore supplanted an existing ecclesiastical foundation. Being one of the more flexible of the regular orders, the Augustinians were the natural choice when it came to replacing an existing community of brethren. This foundation comprised, in part, the chapel dedicated (and possibly erected) by Gilbert in about 1195; but it also comprised a much older establishment implied by the presence of the 'brethren' at Inchaffray.

The earliest known reference to such an establishment dates from about 1190, when Symon, Bishop of Strathearn, granted and confirmed to 'Issac and all his successors' the church of St John the Evangelist at Inchaffray, with all pertinents acquired or to be acquired (Lindsay *et al* 1908, no I [c 1190]). By this charter he also granted the right of sepulture (ie of burial) at Inchaffray to all who desired it, the dues of their own church having been paid. There is little doubt that the chapel erected at Inchaffray was originally conceived by Gilbert as a family chapel. As the Great Charter narrates, he and his wife Matilda 'hold the place in such affection that we have chosen in it a place of burial for ourselves and our successors, and have already buried there our first-born son'. In this case it seems that they chose a site with existing Christian associations rather than a place within, or adjacent to, their principal residence. Gilbert may have viewed the subsequent foundation of the priory on the site as a natural extension of this family chapel.

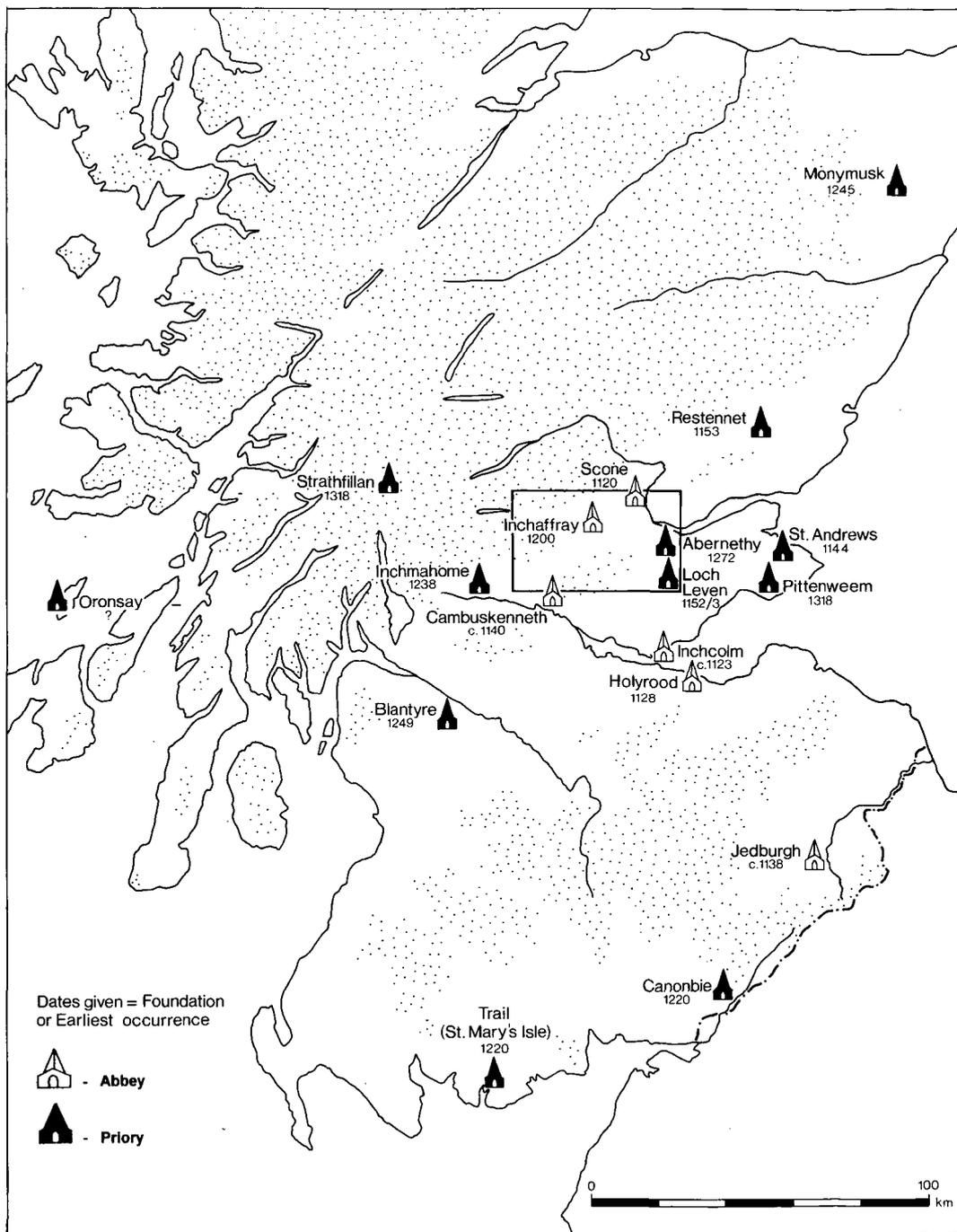
The sequence of events during the last decade of the 12th century appears, therefore, to have been as follows:

- 1 Before 1195 – the presence of a church known as the church of St John the Evangelist at Inchaffray, associated with which were a group of ecclesiastics known in contemporary documents as 'brethren'.
- 2 In or around 1195 – the dedication, and quite possibly the construction of a chapel for the use of the family of the Earl of Strathearn and his successors.
- 3 In 1200 – the foundation of an Augustinian priory on the site. It was dedicated, as was the church before it, to St John the Evangelist (illus 4).

The new priory was colonized by canons from Scone, but depending on the size of the earlier community of 'brethren' and the number of canons brought to teach the rule of St Augustine, this may not have required any new buildings. Notwithstanding the lack of actual evidence, the various endowments made by Gilbert subsequent to the Great Charter (many of which were also of 1200),



ILLUS 3 Ecclesiastical sites in south Perthshire



ILLUS 4 Augustinian foundations

and by various other individuals over the next few decades, would have greatly enhanced the income and worth of the ecclesiastical foundation at Inchaffray. It seems highly likely that the foundation of the priory – accompanied by such new-found wealth – would have been associated with some, possibly quite considerable, development of the site.

The community of ‘brethren’

That the site already had ancient Christian associations by the end of the 12th century is unquestionable. The very name of the island upon which the chapel and priory were to stand – an island surrounded not by water, but by the far more isolating marshes of northern Strathearn – bears witness to this: *Inis Aifreann* or, in Latin, *Insule Missarum*, means ‘isle of the masses’.

Nothing of substance can be said about the origin of these religious associations, though a number of points regarding the history of the early Scottish Church are worthy of note. The earliest known Christian presence in the region was at Abernethy, some 16 miles to the east. Here was one of the Columban monasteries established in the century following the saint’s death in 597. It became an episcopal centre in the early eighth century, following the expulsion of Columban monks from Pictland and the adoption of the organizational structure of the fast-expanding and missionary Roman Church. Such a Columban origin has also been suggested with respect to the later episcopal centre with its Culdee community at Muthill, 6 miles to the south-west of Inchaffray. Clearly, although there is no hint of a Columban presence at Inchaffray, it lay within an area for which a Columban tradition is well attested. Possibly significant, therefore, is the existence, directly to the south of Inchaffray and probably adjacent to the site of the later priory, of a tract of land known as the ‘Abthen’ of Madderty. This place-name testifies to the presence of an abbot’s thane, or ministerial servant responsible for the management of an abbot’s estate, but does not necessarily imply the presence of an abbatial establishment at Inchaffray. In fact, such seems most unlikely as is shown by the charter of c 1199 in which we first meet with these lands (Lindsay *et al* 1908, no 7 (c 1199)). At this time the superiority clearly lay with the Abbot of Dunkeld and it is probable that it was his predecessors’ thanes who were commemorated in the name. Yet the close association between Dunkeld’s ‘Abthen’ and the Inchaffray site is itself intriguing, and seems unlikely to have been coincidental – though what it might signify can only be guessed at.

The documentary evidence for Inchaffray finally opens with the Culdees, although they are not named; the pre-1200 documents refer instead to the ‘brethren’ of Inchaffray. The important question is which of the two parallel traditions of the early Scottish Church were represented at Inchaffray: the eremetical or the monastic. Individual Culdee communities might represent either of these traditions. On the one hand, there were those which had all the hallmarks of actual communities of secular clergy. These were often found at episcopal centres such as St Andrews, Brechin or Dunkeld, or at the older episcopal centres such as Abernethy and Muthill. On the other hand, there were those establishments which by their very location appear to have been of a more eremetical character. This group includes the Culdee establishments at both Loch Leven and Inchaffray (Cowan & Easson 1976). The evidence for Inchaffray is in fact more balanced than Cowan would suppose. Its location is undoubtedly suggestive of an eremetical way of living – an isolated small island (comprising no more than a few acres) in the midst of the Strathearn marshes. Also weighing in favour of this interpretation is the description of Malise (head of the community which by the Great Charter was transformed into a chapter of Augustinian canons) as ‘presbyter and hermit’ (Lindsay *et al* 1908, no 9 [1200]). Similarly, Issac, head of the community in 1190, was also described as ‘hermit’ (*ibid*, no 8 [4 December 1200]). However, given the esteem with which serving God as an anchorite was held,

the term 'hermit' may have been more of a flattering or honorific address than an accurate description of a way of living.

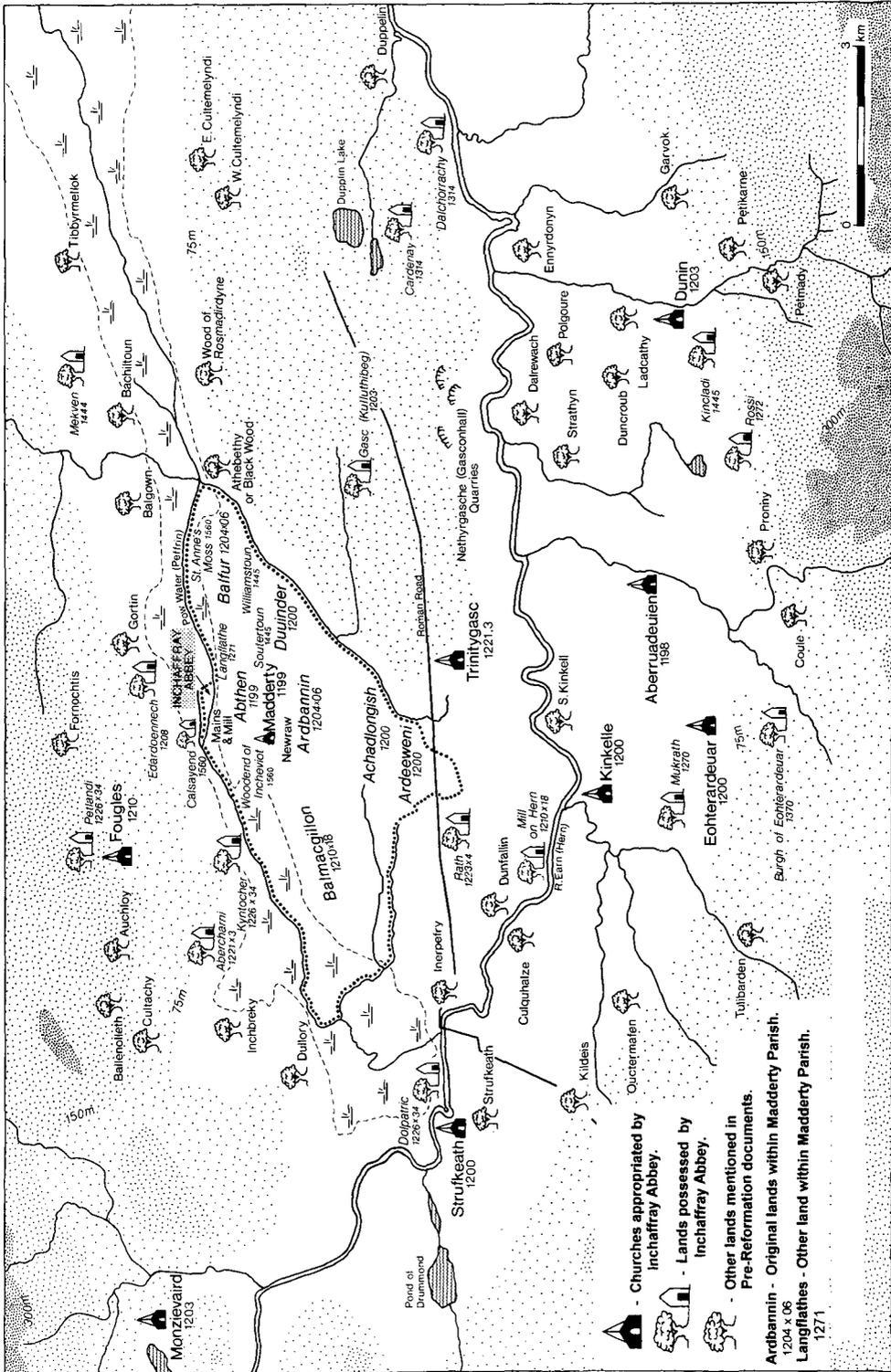
Other evidence points towards a more extensive community of secular clerks. The earliest surviving document to mention Inchaffray – that which includes a grant by Symon, Bishop of Strathearn, of the right of sepulture at Inchaffray to all who desire it – mirrors a type of grant not infrequently given to the church of a monastic institution. Also significant may be the very name of the site. The 'isle of the masses' is not a name which rests easily with any strictly eremitic interpretation of Christian observance at Inchaffray. Finally, the establishment at Inchaffray was transformed into a chapter of Augustinian canons with apparent ease. The Augustinians were found to be especially suitable for taking over and reforming the old *Céli Dé*, or Culdee, communities. Like those of Inchaffray, the Culdees at St Andrews, at Inchcolm in the Firth of Forth, at St Serf's Inch in Loch Leven, at Inchmahone in Menteith, at Restenneth near Forfar, and at Monymusk on Donside, were all supplanted by canons regular by the end of the first half of the 13th century. Unlike the unreformed Benedictines, the Augustinians were specifically priests and did not form an enclosed order. Their mission was to exercise a pastoral and teaching office. Their houses, at least in the early 13th century, can be viewed as 'group ministries' with the canons serving directly (as certainly seems to have been the case at Inchaffray) the parish churches that were bestowed upon them (illus 5). With Malise apparently shifting with ease from his position at the head of the 'brethren' of Inchaffray, to head of the 'canons' of the new priory, there is every impression of continuity. Perhaps the 'brethren' already established at Inchaffray comprised an order very much like the canons regular which superseded them. Thus, by the end of the 12th century, Inchaffray may have been occupied by a community of secular clergy.

THE HISTORY OF THE ABBEY

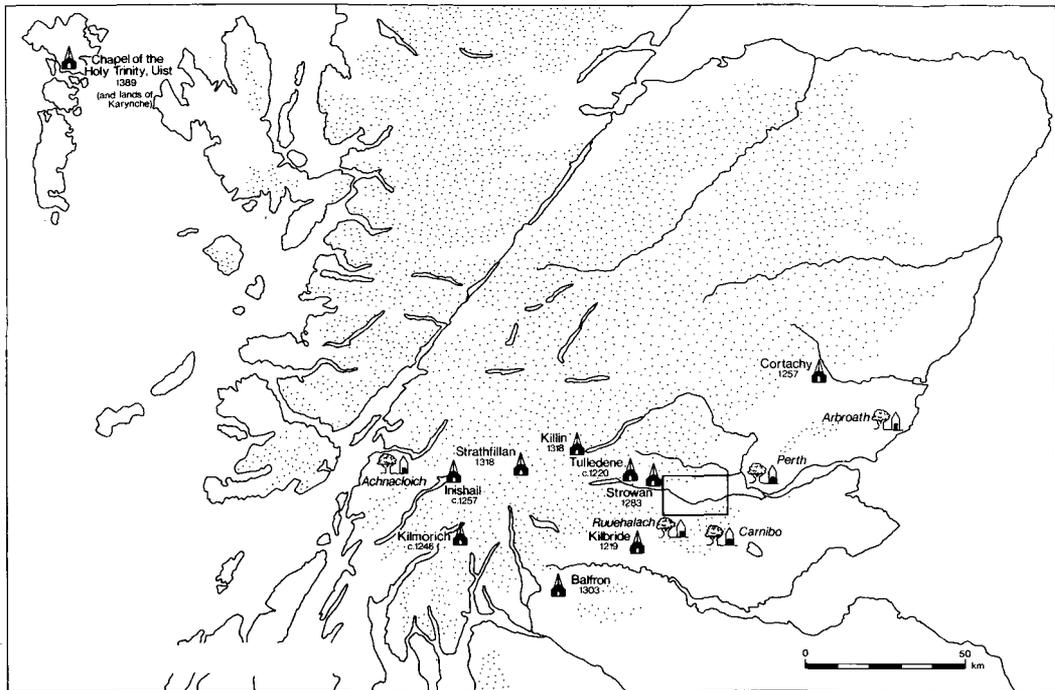
Inchaffray was founded as an Augustinian priory in 1200, and raised to the dignity of an abbey in 1220 or 1221 (Lindsay *et al* 1908, 250). The history of the abbey, as seen through the documentary record, is largely one of the acquisition, confirmation and disposal of lands, rights and other privileges – enlivened by the occasional dispute or contract with neighbouring lords.

The comparative wealth of Inchaffray relative to other Augustinian foundations in Scotland can be gleaned from two widely separated taxations of clerical income. The earliest, in 1274–5, was assessed and recorded by what is generally known as Bagimond's Roll (Dunlop 1939). This was a statement of the tenths of the Kingdom of Scotland, ie an assessment for taxation of a tenth of all the goods and income of the church 'according to their true value'. This tax, which was just part of a vast, pan-European, scheme of papal taxation, was to finance a new Crusade to the Holy Land. According to Bagimond's Roll, Inchaffray was to be taxed at £24 13s 3d, from which it may be extrapolated that Inchaffray's annual income was £246 12s 11d per annum. This compares favourably with the annual incomes of the other Augustinian foundations assessed by Bagimond in 1274–5 (Table 1).

The second taxation dates from the crop of 1561 and amounted to no less than a third of the church's annual income. This was a purely Scottish taxation which diverted to the Crown a substantial proportion of clerical income. It constituted an important element in the disposition of the property of the Scottish church at the time of the Reformation, and was known as the taxation of the 'thirds of benefices' (Donaldson 1949). The records of the collectors of this tax have been used to assess the annual income of Scottish priories, abbeys and other foundations (Cowan & Easson 1976). Inchaffray's income in 1561 amounted to £667 per annum, showing a decline in wealth relative to the other Augustinian houses (Table 1).



ILLUS. 5 Abbeylands in Strathearn



ILLUS 6 Lands and appropriated churches of Inchaffray Abbey

TABLE 1
The annual income of Augustinian Foundations in 1275 and 1561

| House | County | Rank | Date | AD 1275 | AD 1561 |
|---------------|------------|--------|------------|----------------------------|-------------|
| Abermethy | Perth | Priory | 1272 or 73 | £16 13 04 | £240 14 4 |
| Cambuskenneth | Stirling | Abbey | c 1140 | £136 02 01 | £3148 23 1 |
| Holyrood | Midlothian | Abbey | 1128 | £622 17 06 | £5600 9 0 |
| Inchaffray | Perth | Abbey | 1200 | £246 12 11 | £667 2 7 |
| Inchcolm | Fife | Abbey | c 1123 | £123 10 00 | £1240 10 0 |
| Inchmahone | Perth | Priory | 1238 | £66 11 03 | £1680 25 2 |
| Jedburgh | Roxburgh | Abbey | c 1154 | n/a | £2611 |
| Loch Leven | Kinross | Priory | 1152/3 | £23 06 08 | £250 10 7 |
| Monymusk | Aberdeen | Priory | pre-1245 | £66 13 04 | £400 6 0 |
| Oronsay | Argyll | Priory | | ----- no information ----- | |
| Pittenweem | Fife | Priory | pre-1318 | n/a | £1020 |
| St Andrews | Fife | Priory | 1144 | £906 18 04 | £12500 13 8 |
| Scone | Perth | Abbey | c 1120 | £400 00 00 | £5350 13 4 |
| Strathfillan | Perth | Priory | 1317/8 | n/a | £40 |

Table 1 must be treated with caution. At the very least these estimates must be considered as minima; the church was just as likely as anyone to underestimate or hide its full income. Fraud itself cannot be discounted, particularly with respect to the 1275 taxation about which comparatively little is known. However, the results are most illuminating, even if providing only the broadest guide to the relative wealth of these institutions. In 1275 Inchaffray was the fourth richest of the Augustinian foundations assessed by Bagimond (it would have been the fifth richest were it not for the fact that

Jedburgh is unaccountably missing from his returns). By 1561 it had slipped to seventh place (eighth if Jedburgh is included). Moreover, as the final column in Table 1 shows, Inchaffray was unable even to treble its income over the almost three centuries which separated these two taxations. This was by far the worst performance of any of the Augustinian houses taxed in both 1275 and 1561.

The conclusion to be drawn is obvious but nevertheless a little surprising. Inchaffray, although undoubtedly small by the Reformation, was, at one time, a very much more important house. It is possible to gauge that importance by comparing it to the priory at St Andrews – the largest Augustinian foundation in both the 13th and 16th centuries. In 1561 Inchaffray's income amounted to a virtually insignificant 5.3% of St Andrew's income; in 1275, however, its income amounted to 27.2% of St Andrews. Whatever its modern appearance, and whatever it may have become by the Reformation, Inchaffray was once a comparatively wealthy foundation. This was almost entirely due to the generosity of its original founder, Gilbert, Earl of Strathearn.

Most of the abbey lands descended after the Reformation into five families, those of the Murrays of Ochertyre, the Murrays of Woodland, the Oliphants of Gask, the Drummonds of Balmaclone (Bellyclone), and the Drummond Lords of Madderty (more latterly the Viscounts of Strathallan). This latter family was, of course, that which held the superiority of the whole of the abbey's lands. In 1609 James Drummond was created the first Lord Madderty and made his seat at the abbey. Today, only the ruinous remains of the west range are upstanding (illus 7).

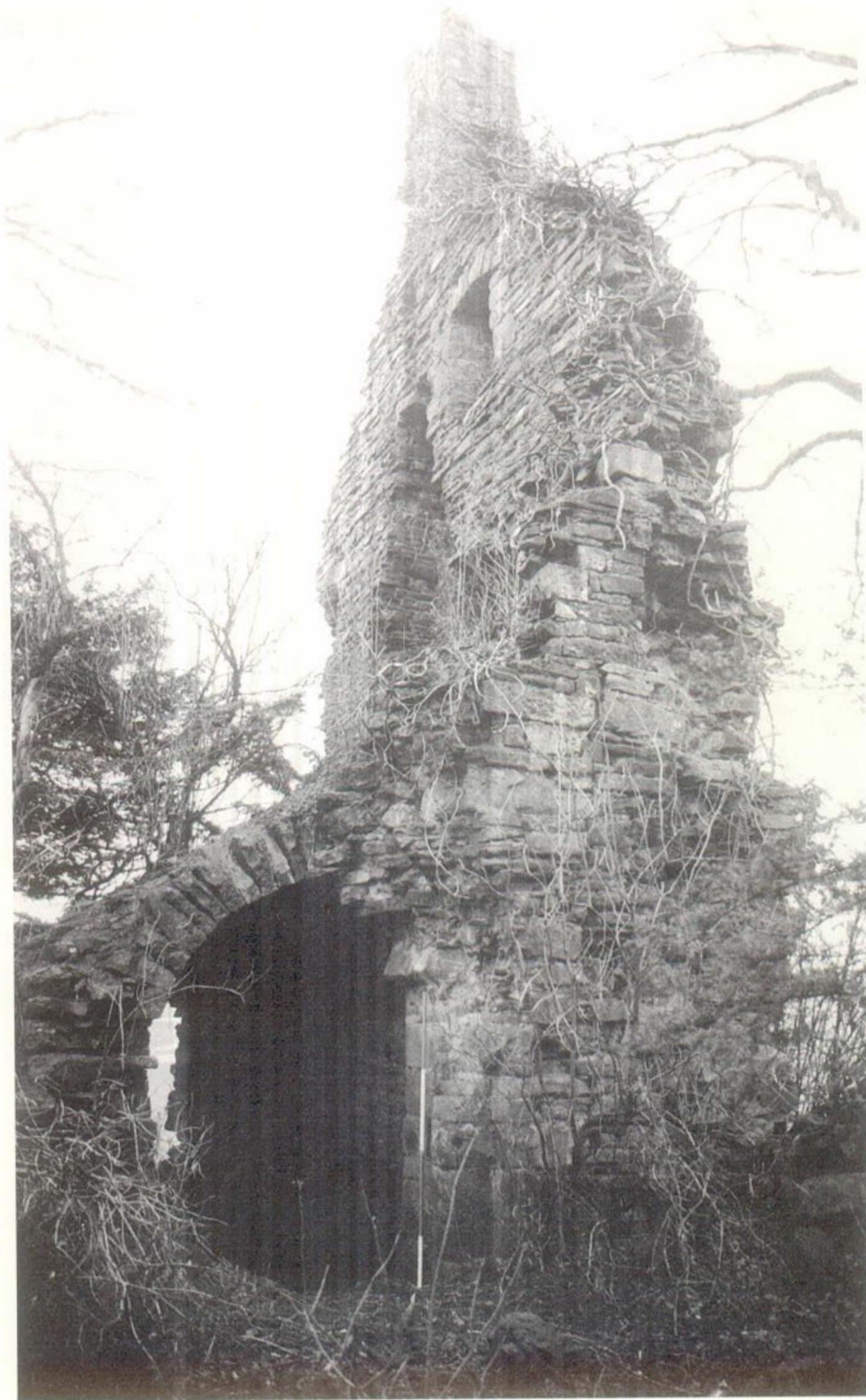
THE DOCUMENTED GEOGRAPHY OF THE SITE AND ITS ENVIRONS

Documented details on the geography of the abbey surroundings are rare; even more so are those pertinent to the abbey itself. The earliest available evidence suggests that a chapel was built at the site in or about 1195 to join the buildings already there pertaining to the 'brethren'. In 1266, a dispute with Tristram of Gortyn arose concerning 'the lands possessed by the abbey and claimed by Tristram and his heirs, more particularly, the lands of the infirmary and chapel of the abbey, and the circumjacent land, as it was trenched about' (Lindsay *et al* 1908, no 91 [14 February 1266]). This seems to describe the actual 'isle' of Inchaffray, with the area trenched by what is now known as Sweep's Stank. This stank was possibly that dug in or before 1218. In that year Gilbert, Earl of Strathearn, gifted to the canons of Inchaffray 'as much of the marsh adjacent to Inchaffray in the shire of Foulis as was surrounded by a trench in the year in which this charter was composed, namely, 1218'. This trench thereafter became the parish boundary between Madderty and Foulis, with the lands about the abbey emerging, by the time the parish boundary was mapped in the 19th century, as part of the parish of Madderty.

From a document of 1271 comes a reference to 'the almshouse'. This was to be provided with 'a chalice and ornamenta', the cost of which was to be borne by an annual rent gifted by Brice of Ardrossan (Lindsay *et al* 1908, no 97 [23 November 1271]). The only other reference to the site comes from a grant of 1370 by which the abbey was gifted certain lands in Auchterarder 'for finding a light before the image of St Mary in the choir of the church of Inchaffray' (*ibid*, no 137 [c 1370]).

Early references to the immediate surroundings of the abbey are restricted to a mention of the 'bridge of the abbey' in 1271 (Lindsay *et al* 1908, no 99 [1271]); a note of 'the construction of bridges and the causeway lying on the west of the said abbey through the marsh towards Foulis' in 1375 (*ibid*, no 138 [8 April 1375]); and a proposal in 1489 to dig a 'stank or canal in the meadow-land from north to south, by which victuals, fuel, and other things can be conveniently brought to the monastery by little ships or boats' (*ibid*, no 151 [22 January 1481]). There is, however, no documentary evidence to show that this canal was actually dug.

In the 17th century, the record for the surrounding area becomes much fuller, and would reward



ILLUS 7 The ruinous remains of the west range

further research. There are references to a whole series of meadow-lands stretching right along the south side of the marsh, and a detailed breakdown of the property immediately to the south of the abbey site. Thus, mention is made in the Register of the Great Seal of Scotland to the Mains of Inchaffray (extending, in 1581, to 7 acres), and to various crofts and tofts such as the New yaird, the Smyddescroft, and the Abbots yaird. There was a Palace Croft, a mill croft and, of course, the Abbey Mill itself. There are also references to various barns and other buildings, but at present it is impossible to establish exactly where these were located.

GEOPHYSICAL SURVEY

J Gater & S Dockrill

Due to the restricted access and limited time available for geophysical work, it was decided to carry out the work using two sets of resistivity equipment (Geoscan RM4), which helped increase the area of ground covered. During two days in the field, in excess of 9000 readings were logged at 1 m intervals. Instant plots of the data helped to decide the strategy adopted: it was felt that detailed work would provide more information of archaeological value than linear 'search' traverses. In addition, the increasingly wet conditions below the slopes of the mound required detailed work in order to interpret the subtle changes in resistivity readings. Two main areas were examined (illus 8): the first, area A, to the south of the building remains and the second, area B, to the north. The field to the east of the main site was not examined due to the lack of time available: ploughed fields are not particularly conducive to rapid prospection work.

Area A

Clear indications of wall lines were visible in the north-east of the survey, where strong high resistance anomalies ran roughly north/south and east/west. These could be interpreted as part of the east range of buildings and paved areas within the cloisters. Less-clear features were to the south of the surviving west range. Unfortunately owing to the track distorting the picture, it was not possible to identify individual wall lines; the high readings suggest rubble concentrations which may be archaeological in origin, but in view of the concrete platforms could be modern.

Area B

The results from the northern area produced some remarkably clear results and identified two main trends, interpreted as two differing alignments of building remains. One group of well-defined anomalies matched the assumed line of the church and cloisters to the south. Farther west, another group suggests a series of buildings on a NW/SE alignment.

THE EXCAVATIONS (ILLUS 8)

A total of eight trenches was opened over the site. Area 1, which lay to the south-east corner of the assumed claustral circuit, was threatened by the proposed construction of a private house. Areas 2–8 were intended to assess the scale and state of survival of the archaeological material in general.

The excavation took place over four weeks during the spring of 1987. The results of the excavation are described in terms of four main building phases:

- Building Phase 1 Late 12th – mid 13th century
- Building Phase 2 Mid 13th – mid 14th century
- Building Phase 3 Mid 14th – mid 16th century
- Building Phase 4 Mid 16th century – present day

BUILDING PHASE 1

The earliest structures and contexts revealed in the 1987 excavation lay to the north and south limits of the excavated area, as defined by the site of the abbey church and cloister.

Area 7 (illus 9)

The clay bank (F7010) In Area 7 (illus 8 & 9) elements of a truncated, buried earthwork or clay bank were found, lying at the break of slope some 3 m north of the nave of the church and sealed, in turn, by a complex midden deposit and subsequently by compacted debris. Given its clean upper surface, apparent homogeneity and proximity to proven wall lines, it was interpreted as part of the major landscaping programme undertaken by the incoming Augustinians, prior to wall building in stone, which was noted elsewhere around the site. The preparation of the site, whether by scarping off or by terrace building using imported levelling material, particularly for the siting of the abbey cloister, is well attested on numerous monastic sites. However, the discovery of a series of midden deposits which had accumulated against the angled faces of the earthwork implied that it had originally been a bank with sloping sides rather than a platform. The early context for the bank was subsequently confirmed by the fact that both bank and midden were truncated by the construction of the north wall of the nave/north wall of the north aisle – likely to have been one of the earliest structures built after the abbey was founded.

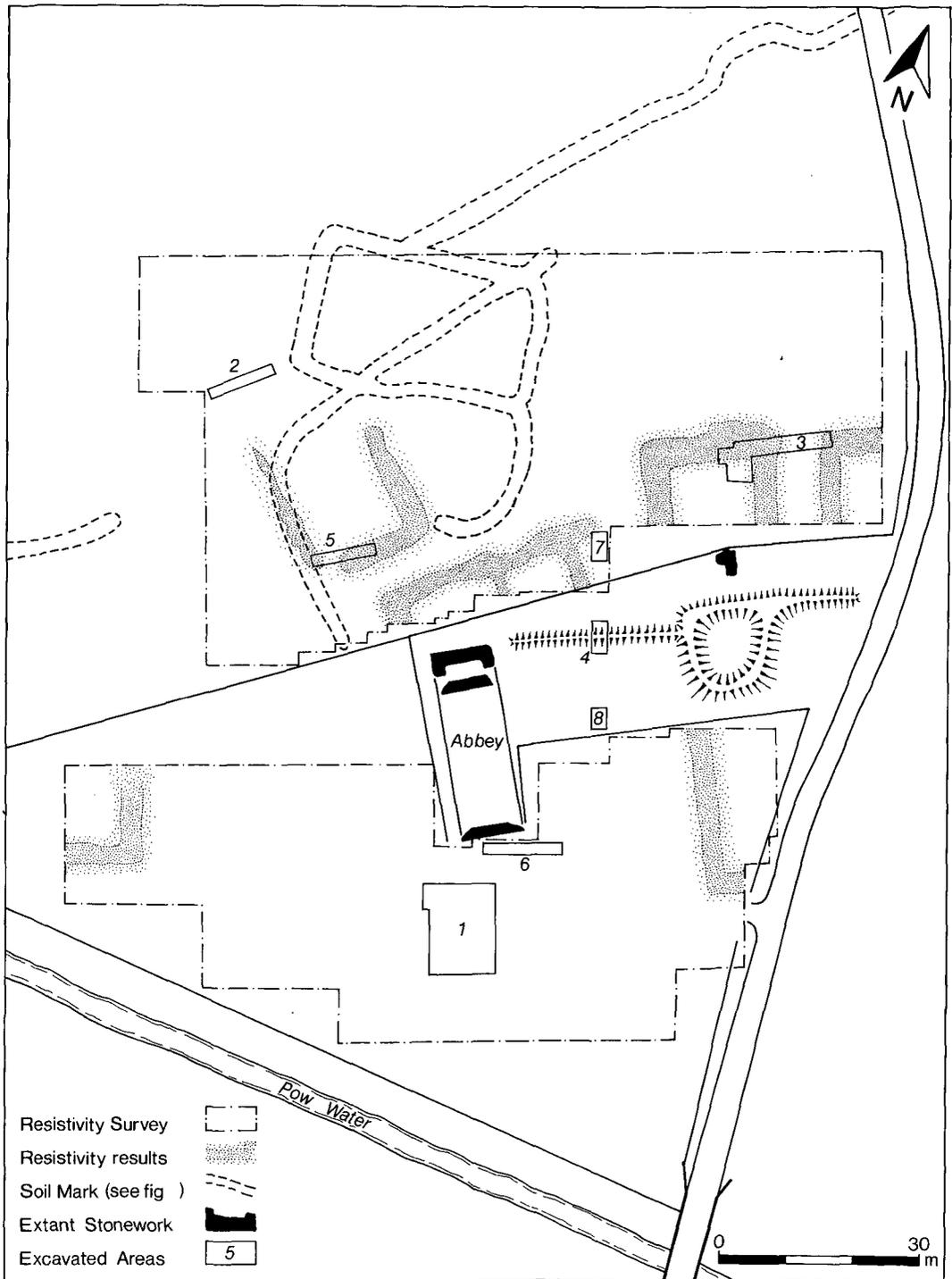
The spreading base of the earthwork (F7010, comprising F7009, F7015 & F7017) was at least 3.5 m wide and survived to a height of 5 m, culminating in a flattened upper surface 1.2 m wide. It comprised successive layers of redeposited fills which were mottled in section and which contained red ware pottery and a gilt buckle (SF no 2, below). Beneath these fills, and overlying natural gravels, was a layer of grey-brown clay (F7020). This deposit survived for a distance of some 3 m, north of the foundation cut for the north nave wall/north aisle north wall, before fading as it approached an area of waterlogging at the north of the trench. This probable buried soil horizon was a maximum of 0.1 m thick and contained flecks of burning.

Middens F7011, F7012, F7013 & F7014 Between the main structural elements as defined by the clay bank and the metallised surface (F7003), there was a composite dump of mixed domestic debris. To the north of Area 7, this midden group composed four main tips or lenses, all characterised by the presence of charcoal and ash – most probably the rake-out from domestic fires. To the south of the trench, a simpler but essentially similar sequence of deposits was found, reflecting a single dump of various charcoal-rich soils over clay bank F7010, which was then truncated by later wall footings (F7007 & F7019). Both midden groups were later sealed by Building Phase 2 metallising (F7005).

The general similarity and stratigraphic context for both groups suggests contemporaneity – both surviving to a maximum depth of c 0.4 m. A folding beam balance (SF 26, below) and gilt belt buckle (SF 29, below)), all retrieved from the midden, suggest a 13th-century date for its deposition.

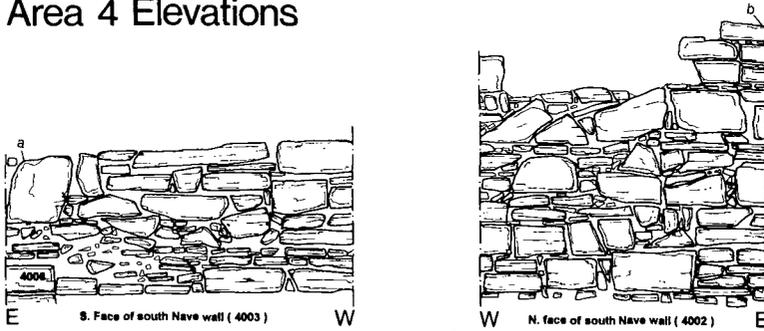
Area 1 (illus 10 & 11)

To the south of the site a more complex series of features was found, apparently dating from the Augustinian colonization of the site (c 1200 – c 1250), although some elements of these primary features were retained during

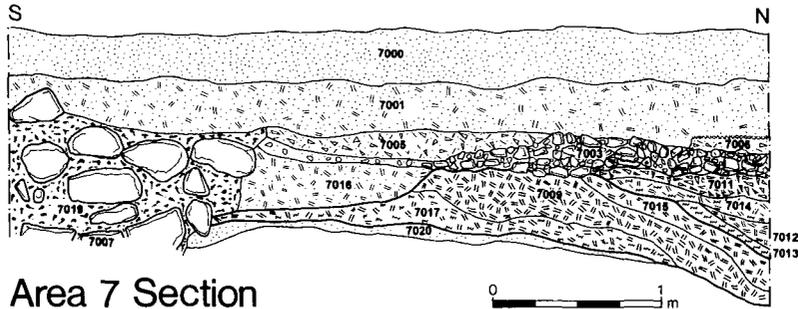
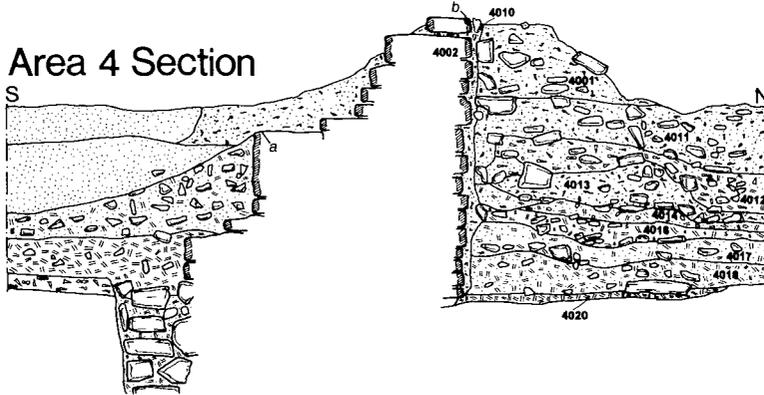


ILLUS 8 Excavated areas and resistivity survey

Area 4 Elevations



Area 4 Section



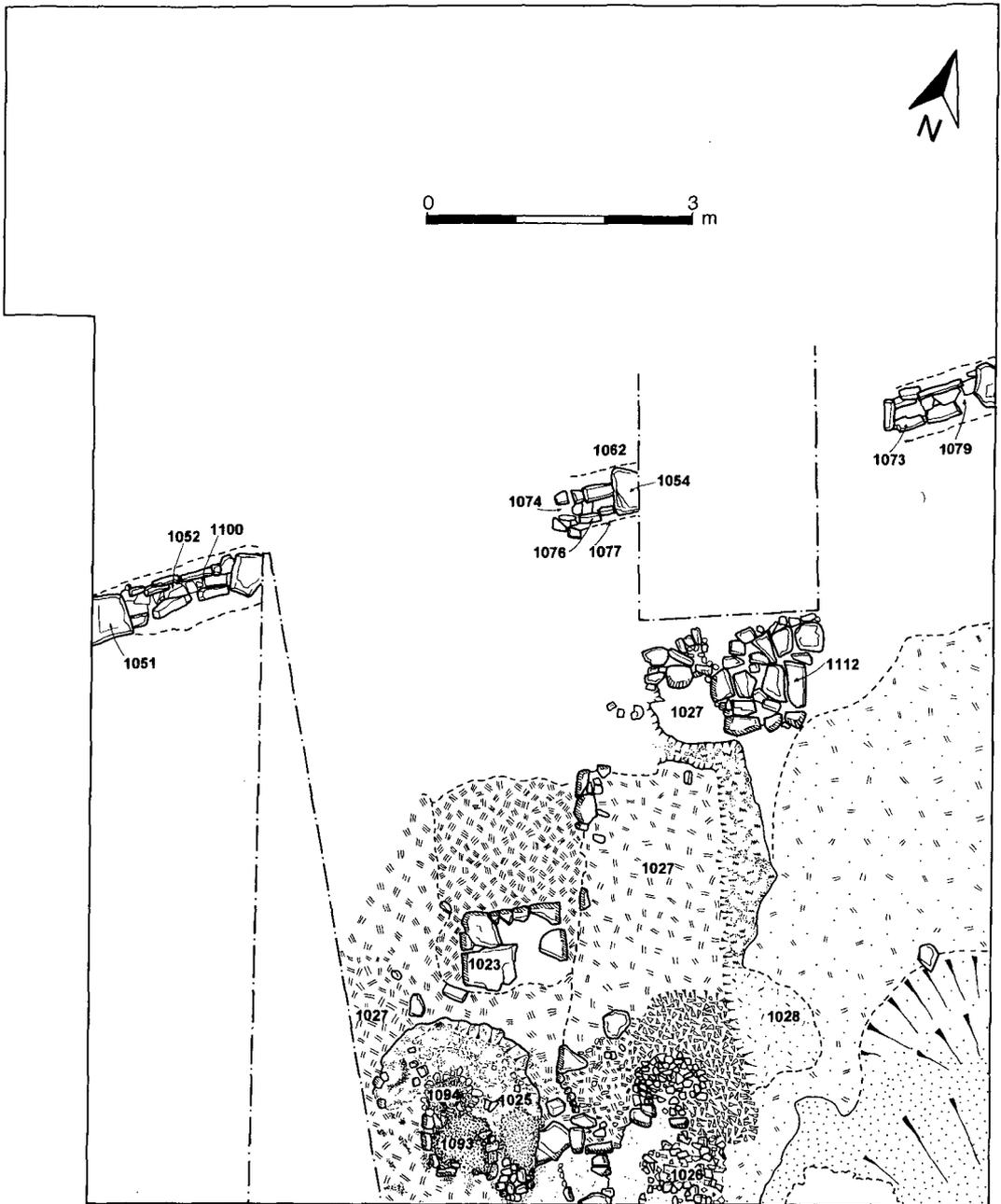
Area 7 Section

ILLUS 9 Area 4 : elevations and section; Area 7 : section

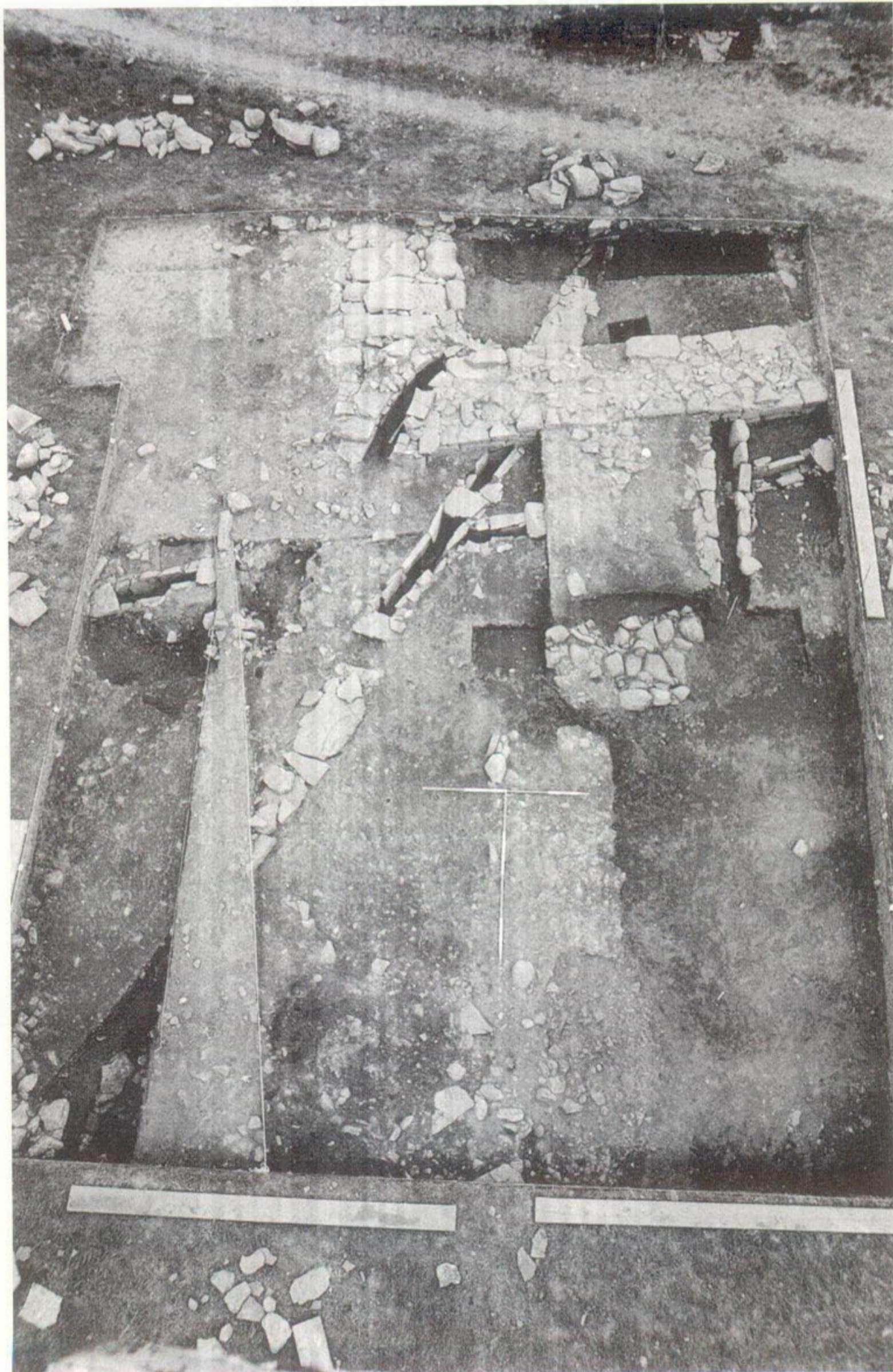
later occupation phases. As a group, these fragmentary structures refer to the preparation and consolidation of the site, and its early temporary accommodation, prior to the establishment of the cloister and conventional ranges.

Drystone Revetting Wall F1112 This crude structure was built almost entirely of erratic and water-washed boulders, compacted in a rough, two-coursed wall aligned east/west. It survived in two sections with a combined length of 3.5 m and width of 1.1 m. Sealed by Layer F1043, which effectively signifies the end of Phase 1 in the south of the site, the wall lay 1.8 m south of contemporary drain F1057, and was dug against natural sandy soil towards the north of Area I, thus defining the limits of cloister building at the south of the site.

Drain F1057 This simple waste water channel ran east/west across the entire width of Area 1 (a distance of



ILLUS 10 Area 1 : Building Phase 1



ILLUS 11 Area 1 during excavation, from south

11.25 m), cutting across the gentle break of slope towards the north of the trench. It consisted of a stone-lined channel, with flat bottom and vertical sides, covered with flat slabs – all sealed by layer F1043. Lying parallel to the line of wall F1112, and having been cut against the southern limits of the potential area for building on the Inch, the drain is likely to have defined the southern limits of the proposed monastic claustral circuit. It is thus probably related to the primary Augustinian occupation, as well as serving to drain the terrace/building platform which would later receive the cloister and south range.

‘Wall’ F1027 This much-robbed feature was defined by a dump of clay – interpreted as the footings of a lightly built wall. It comprised a fairly regular pad of pale yellow to grey local clay, the upper surface of which was clean and piked for most of its length, but which became increasingly disturbed and mixed with broken stonework and generally disturbed towards the south. It lay in a roughly rectangular configuration, aligned north/south, which was 4.4 m long and 1.5 m wide (maximum).

‘Hearth’ F1093, F1094, F1025 & ‘Flue’ F1026 This putative hearth comprised a discrete, rounded area of intensely heat-affected clay(s) some 2 m in diameter. Its upper surface was discoloured variously from bright orange to greenish blue. However, this discoloured area probably represents the focus of the fire, and it is likely that the diameter of the entire hearth would have been nearer 5 m. An area of broken stone at the southern limits of robbed wall F1027, which sealed one side of a gully cutting F1027 (east/west) in the vicinity of the hearth, was interpreted as the remnants of a flue.

Stone setting F1023 A partially robbed, rectangular area of sandstone paving, extending 0.75 m east/west and 1.2 m north/south, lay immediately to the west of robbed wall F 1027 and some 3 m north of the putative hearth. Although the surviving stonework showed no sign of direct heat, the feature was surrounded to the north and west by charcoal and ash, the scattered debris from a fire.

This group, along with the ‘site preparation’ features of the revetting wall and early drain, were entirely or in part sealed by a massive spread of mixed debris (F1043). Pottery, charcoal, metalwork, industrial debris, animal bone, shell and rubble were all found within this demolition and clearance horizon, which provided the terminus for Phase 1 activity in Area I.

Phase 1 (Area I): a possible kitchen (illus 10 & 11)

The exact form and function of the relict building represented by the robbed wall, paved area, ‘hearth’ and flue, is uncertain, especially as all these elements were truncated in one way or another. However, the large size and central relationship of the hearth to the other features indicates an associated structural grouping. Robbed wall F1027 and the fired clay pad had their origins in a similar redeposited white clay, although the latter was much discoloured by heat action. Despite the absence of upper wall fabric, its original presence is implied by the absence of any ashy scatter noted on other exposed surfaces near the fire source. This group could well represent a sophisticated fire place, with at least one flue, a working ‘internal’ area, and a screening wall, into which the ‘fire place’ was partially built. Despite the presence of various metallic slag fragments across the south half of Area I, the quantity recovered was too small to indicate that metal working took place here (Spearman, below). The original large size and circular form of the burnt clay pad is consistent with it having been the firebox of a large, two-chamber oven.

BUILDING PHASE 2

This period of building, part of which may have begun after the 1266 charter, granting quarrying rights to the canons, was the most significant in the history of the abbey. In the absence of documentary evidence to the contrary, the sequence of building would probably have started with the church, as the most important structure on the site, with the ranges developing thereafter. This progression would in turn have given greater emphasis to the east range, with its chapter house as another key element in the daily life of the community. The sub-

sequent plan of the cloister and the disposition of its secondary offices was dictated by the course of the water supply and waste-disposal system, the Pow Water. It is significant however, that a temporary kitchen survived, apparently up to the time that the west boundary wall was built, suggesting that this part of the site was almost the last to be 'upgraded' alongside the new church and cloister.

Some outstanding structural evidence, as well as the findings of the geophysical survey (see above), suggested that the abbey church lay to the north of the claustral range. Elements of the church were revealed in three trenches.

The construction of the church: the nave walls (Areas 4 & 7)

Because of dense tree cover and modern fence and wall lines, the north and south walls of the church nave (including a possible north aisle) were excavated in two separate trenches (Areas 4 & 7, illus 8 & 9). These trenches were only 2 m wide which, together with the wholesale robbing of the church fabric generally, prevented more than the most limited investigation of the nave. Only the south wall survived above foundation level, although there was evidence of contemporary interior and exterior surfaces.

The south wall (F4002), 1.3 m thick, was built of pinkish sandstone and rubble construction. To the south it formed the north wall of the north cloister alley, the base courses of its south face being 'stepped' outwards 0.35 m to form a scarcement 0.1 m below the scarcements' upper surface was the floor of the north alley (illus 14). The wall face stood some four to five courses high (0.58 m maximum) on its south face and 20 courses (1.2 m) on its north, above contemporary internal and external levelling for floors. The masonry was generally crude with numerous straight joints and a variety of stone sizes for the faces. On the south side the scarcement upper surface was formed by flat, thin sandstone slabs laid over two courses of larger ashlar blocks. The lowest course overlay a rubble-filled, deep foundation trench. This trench was cut almost vertically and was excavated to a depth of some 0.7 m before limited space prevented further investigation. The survival of the 'flagged' upper surface of the scarcement only on the south face may indicate that the claustral alleys were surfaced differently, although the floor itself was robbed out, with only its bedding level surviving.

The interior of the nave was filled with post-robbing rubble laid in five main tip lines, indicating the progressive removal of masonry over an extended period. Beneath this material was a lens of pinkish sandstone chippings, overlying redeposited clay-rich soils, which probably formed the terrace/building platform for the church and in turn represents the surface immediately below the robbed-out nave floor surface.

The north wall of the nave was dug in against a slope, from a high point or ridge along the line of the south wall. The foundations of the north wall were discovered only at the extreme south of Area 7. Here, they were dug against the primary clay bank and midden(s) from Building Phase 1.

Despite this, construction trenches for both north and south walls were dug from levels only 0.20 m different in height. The required building platform was thus a combination of scarped residual features and levelling up. From the south the landscaping comprised two dumped layers of stone-free clay-rich soils (F4009 & F4021) to the south of the south nave wall, and a similar single dump (F4020) to the north of the south wall. Tip F4009 was 0.5 m deep on average, and was laid cumulatively in bands, each being individually compacted. Context F4020 was similar but contained a higher fraction of pink sandstone. This evidence suggests that the north cloister alley path surface was the determining level for the surfaces within and north of the nave; in order to achieve this desired platform, a north terrace was built over a cleared horizon; and it is probable that the clay bank (F7010) was an upstanding feature before tip F4020 was laid in; moreover the equivalent surface south of the buried soils reflected by contexts F7017 and F7020 was still sealed by tips.

The proximity of the water table, and the need for dry footings beneath major wall lines, suggests these efforts were fundamental preparations as waterlogging was noted in the vicinity of the north nave wall at a height 2.2 m above the standing water to the north of the Inch.

The levelling to the north of the church comprised compacted pink sandstone and mortar debris set in a dark, loose soil (F7003) – recycled masonry offcuts etc. from the associated building programme.

The sacristy (Area 3) (not illustrated)

As was the case with the nave walls, extensive and repeated stone robbing had reduced the walls of the structure to the east of the nave to a few standing courses, most of which were foundation. This was particularly true of the sacristy masonry, which did not survive above the level of its contemporary external ground surface. Only some 1.4 m of the north face of the north wall of the sacristy was revealed, aligned east/west, and that only in the south section of Area 3. It comprised two courses of well-laid lime-mortared ashlar masonry, standing an average of 0.3 m high, set in a well-defined construction trench cut against greyish natural clay. This construction trench was backfilled with three tipped deposits (F3021, F3022 & F3023) forming the bedding for the north face of the sacristy north wall.

The north transept (Area 3)

The foundations of this considerable body of masonry (illus 12 & 13) were constructed in a broadly similar fashion to the sacristy north wall. A massive stone platform in bonded masonry stood within a wide trench to a height of 0.7 m (externally). The cutting was then backfilled by two substantial dumps of clayish soil (F3008 & F3026; illus 13). Context F3026 (the lower fill) consisted of a dark yellowish-brown clay which overlay the lowest course of masonry footings. The latter was defined as a broad 'step' some 0.7 m wide, projecting from the buried vertical east face of the north transept wall. The upper construction fill (F3008) proved to be a more mixed clay and loamy soil mixture, containing significant amounts of mortar and rubble. The construction trench for the east wall of the north transept was 3.2 m wide and truncated one shallow deposit, which in turn was similar to a second deposit, immediately to the east – F3027 and F3015 respectively. Both contexts contained pottery and animal bone (see below), as well as miscellaneous fragments of ironwork and metallic slag. This wide range of debris suggests close parallels with the Phase 1 midden(s) in Area 7.

A 4.8 m length of the north face of the north wall of the transept was uncovered, running from an external north-east corner to a right-angled return northwards, at which point the wall thickened. The 'narrow' section of masonry was 2.6 m wide and was pierced by a badly robbed embrasure lying 4.9 m west of the external north-east corner. This probable entranceway was approximately 0.94 m wide, and gave access to two robbed-out steps – the first 0.6 m south of the threshold, and the next, 0.55 m farther south. A limited area of worn sandstone slabs south of the inner 'step' and an erratic, voided area running off to the west, may mean that the stairwell turned to the west within the thickness of the north wall of the north transept. Some 2.8 m of the south face of the north wall was traced, from the internal north-east corner to a partially excavated angled pillar base or buttress. The latter stood two courses high above the assumed floor of the north transept (a height of only 0.1 m) and was bonded to the north wall. The stonework was, however, finely worked in comparison with the cruder exterior finish of the north wall. Only a very limited area of the east wall was excavated, amounting to little more than 2.3 m of the inside (west) face and the north end of its east face (a distance of 1.55 m). The width of the wall was 3.2 m, and may be indicative of the general thickness of the north transept walls, suggesting that the western, unexcavated, section of the north wall was of similar size.

The masonry from the north transept walls lay only 0.2–0.3 m below the existing ground surface, and the shallow depth of the remains has resulted in much disturbance and displacement both by stone robbing and attempts to clear the site for cultivation. This damage was particularly marked within the transept, where original floor slabs and grave covers were smashed and displaced. A grave (F3018, illus 13) lay immediately to the north of a series of broken flat sandstone slabs which defined its south edge as well as the probable floor surface and was sealed by a disturbed residual context (F3014). Decorated glass, pottery fragments, a 15th-century Scottish coin (SF 23), and general destruction debris from the site, were found in this context. This deposit represents the infilling of the grave after the removal of the stone cover(s) and much of the flagged floor. What little survived of the skeleton from grave F3018 lay on a line of flat slabs, which abutted the south face of the north wall, and extended over a distance of 2.45 m. The east and west ends of the grave were not revealed, but its maximum width was 0.51 m.



ILLUS 12 Area 3 during excavation of the north transept

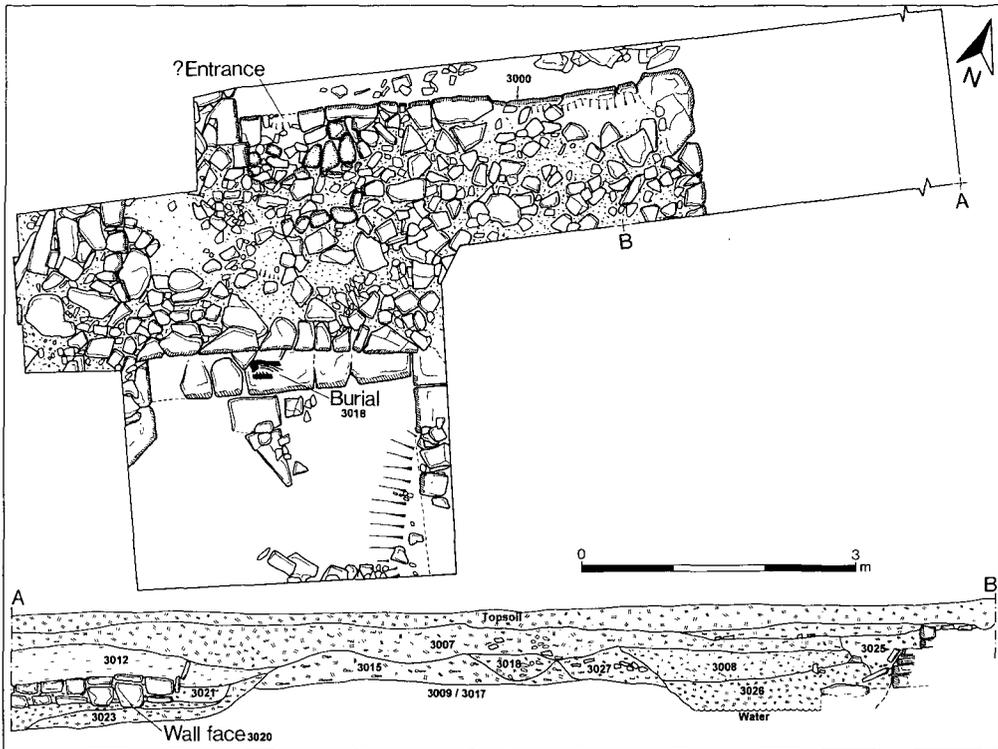
The cloister (Area 6) (not illustrated)

The robbed footings of a wall, probably some 1.4 m wide, were picked up at a point south and slightly east of the south end of the existing west range. It does not appear to have been integral to the claustral alleys, and more likely represents a subdivision of the south range at its west end. This wall (F6006) was dismantled prior to the Phase 3 and Phase 4 building works at the south-west corner of the claustral circuit. Residual masonry from this wall was incorporated into a trodden horizon, forming a floor surface (F6004) which in turn served the extended Phase 5 building noted in Area 1.

Two sub-rectangular intrusions (F6019 & F6007) were dug against surface F6004, although these appeared to have been cut originally from a higher, earlier surface. Both functioned as graves, the contents of which were disturbed in advance of the later refinements and repairs in this part of the conventual ranges. Grave F6019 was aligned east/west and measured 2 m by 0.6 m (maximum), with a fill that was essentially an homogeneous dump of redeposited, clean clay-rich soil with few stones, some 0.1 m deep. Grave F6007 was lozenge-shaped, measuring 2 m by 0.61 m (maximum) with a depth of 0.12 m. There was no trace of skeletal remains in either grave, although a single stone slab survived at the west (head) end of grave F6007.

The boundary wall (Areas 1 & 5)

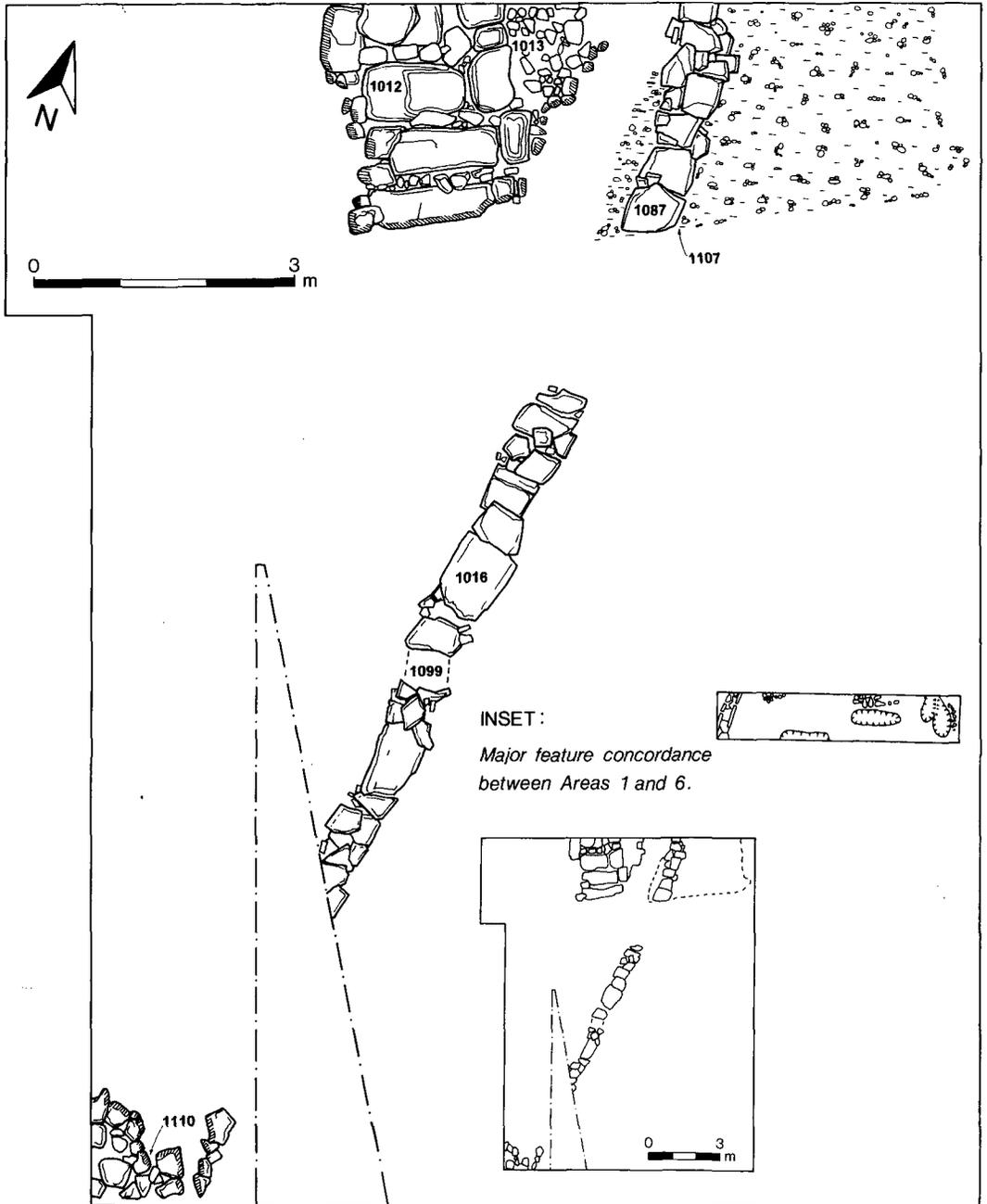
This proved to be a massive construction, arguably more substantial even than the church walls, and is an indication of the need for stout defences against hostile armies towards the end of the 13th century and beginning of the 14th, as well as the need to protect the buildings from floodwater.



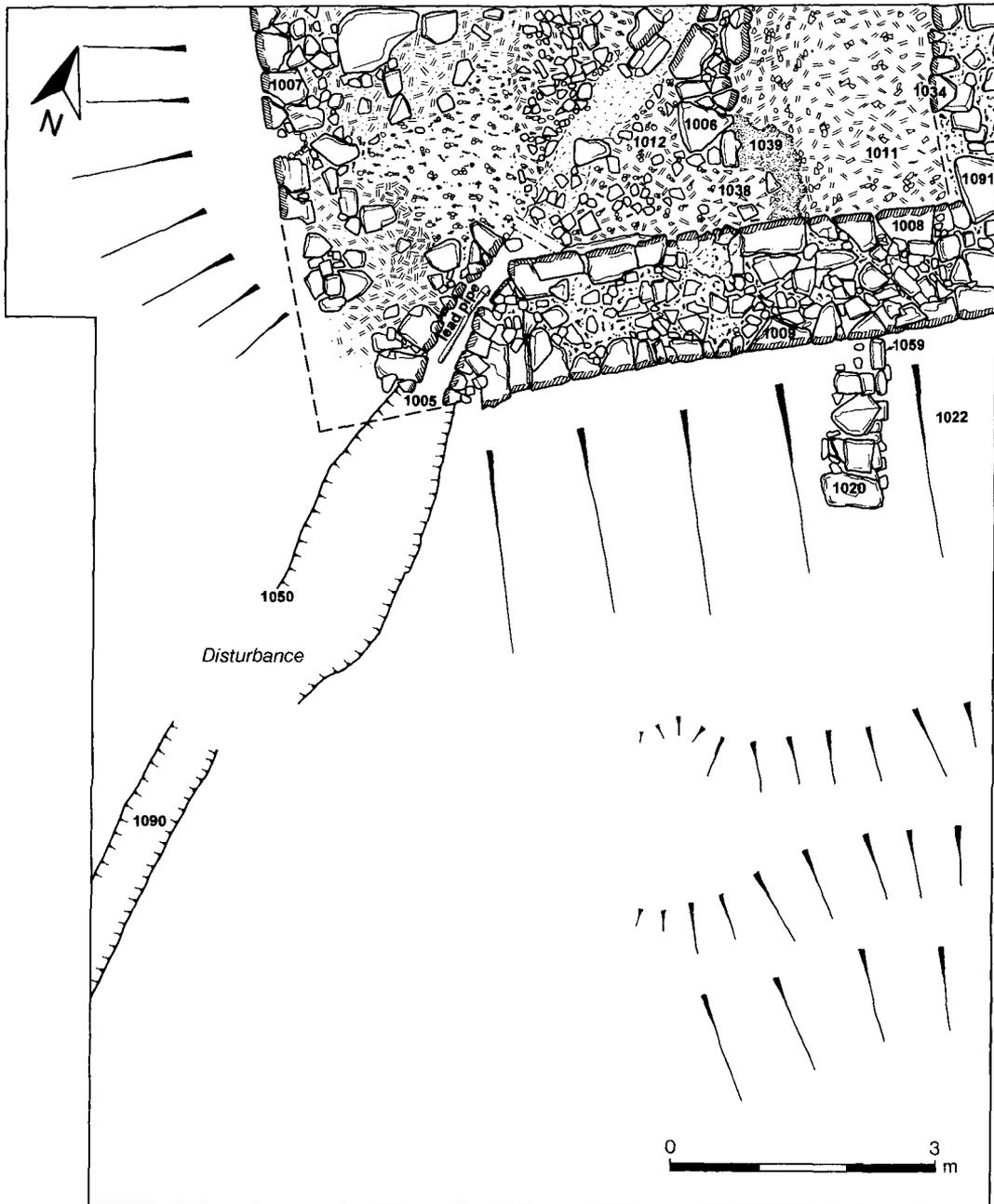
ILLUS 13 Area 3 : plan and section

Area 1 (illus 14) Although absorbed and extended within the the general refinement of the south-west corner of the site, wall F1072 as discovered in Area I (F1012), appears to be the southern limit of the west precinct wall. Its alignment, beyond the confines of Area 1, is indicated by the robbed wall encountered in Area 5 and the evidence of both aerial photography and the 1987 geophysical survey. Within Area 1, and in its primary form, the wall ran approximately north/south and was traced to its junction with Phase 3 wall F1009, a distance of 2.7 m. Later work and robbing obscured the character of its upper masonry, and secondary building obscured its southern end. The primary structural remains, or basal courses, consisted of massive, sub-rectangular boulders (generally 1.9 m by 0.5 m) laid east/west across the width of the wall, with angular pitched stone pinnings, all bonded in clay. The resulting structure was one of great strength, and could have supported a considerable mass of masonry. The facing ashlar blocks from the upper courses were almost entirely robbed out, and all that survived was the wall core, suggesting a wall at least 1 m wide. The primary remains stood only 0.12 m above the earliest 'interior' surface, a patch of crude cobbling F6020. Pottery found beneath the boulder footings of the wall suggests a late 13th-century date for its construction.

Area 5 The massive cut at the west end of Area 5, although not fully excavated (only its east edge was exposed), is probably part of the same west perimeter/precinct wall line as F1072. The trench in Area 5 had undergone two distinct stages of backfill, reflecting its initial robbing and later infilling as part of the modern site clearance for pasture. The upper (later) fill was characterized by loose, voided, dry-stone masonry. The lower fill, however, had considerably more mortar and mortared rubble, consistent with residual debris from stone robbing.



ILLUS 14 Area 1 : Building Phase 2



ILLUS 15 Area 1 : Building Phase 3

Drain F1087 (illus 12)

One stone-lined drain from Building Phase 2 was recorded in Area 1. The drain consisted of a simple stone channel with a flat bottom, an average of 0.3 m wide. The sides and bottom were formed by flat, irregular, mainly sandstone slabs, creating a channel some 0.15 m deep. The capstones were almost all irregular, crudely worked stones with one exception, a reused door jamb fragment in finely worked sandstone, possible evidence of the damage sustained by the abbey at the beginning of the 14th century. The drain was similar to drain F1068, with carefully overlapping thin slabs for its bottom and a mixture of overlapping thin slabs and larger stones for the capping. At the junction with the Phase 1 drain, the earlier lid slabs were absent and the side slabs were smashed in half. Within Area 1 the vertical fall along the length of the drain was 1.11 m.

BUILDING PHASE 3

Area 1 (illus 15)

The individual differences between the nave walls and the north transept walls, in terms of scale and build, may reflect a progression in a building programme over several years, rather than separate episodes of construction. The extent and general quality of the work shows the ability of the house to develop church and cloister. Structural evidence for this period on the site amounted to the construction of a substantial mortared wall (F1009) running 6 m east/west to a junction with the truncated south end of Phase 2 wall F1072; and a further stone-lined drain (F1020).

Wall F1009 stood to a maximum of 2–3 courses, 0.3–0.4 m high, with an average width of 1.5 m. The construction technique involved the laying of a base course, bonded with clay, within a shallow construction trench to the north. The south and north faces of the wall were formed by crudely worked, pale coloured sandstone blocks (markedly lighter in colour than the Phase 2 masonry), with a rubble core of mixed worked and unworked stones.

Drain F1020 This simple feature was of similar form to the other conduits encountered in Area 1, although it was even more crude, utilizing random, poorly set stones for its sides. It was cut against a low bank (F1014) which abutted the south face of wall F1009 and probably removed roof water from the neighbouring south range structures. The drain clearly cut Phase 1 drain F1057, the fill and wall slabs of which were truncated. The side slabs were broken neatly to form an L-shaped notch upon which a side slab from drain F1020 rested.

BUILDING PHASE 4

Area 1 (illus 11)

This, the final phase of building on the site so far identified, saw the abandonment and widening of wall F1072; and the construction of a cross wall (F1034), possibly an internal partition for a building-defined by the adapted wall F1072 and wall F1009; and the construction of a new drain over two phases, a replacement for drain F1087. All these developments were probably associated with the upgrading of the south range structures for the personal usage of important officials, probably the abbots, in accordance with prevailing trends on both sides of the Border, and which apartments were readily reoccupied by the later, secular occupants of the site, after the Reformation.

Phase 2 wall F1072, which may have been partially destroyed by enemy attack or altered because it was inappropriate, was partially dismantled and extended. This amounted to the refacing of its west face by the addition of a section of clay-bonded masonry (F1007) which widened the combined wall by 1.1 m. It was then extended southwards to meet the west end of wall F1009 and a new drain (F1005) was built into the thickness

of the new south-west corner. Very little survived of the stonework within F1007, as it had suffered most acutely from plough damage, but its distinctive bonding agent, a pink clay with crushed red sandstone, revealed its full extent, despite the absence of *in situ* facing blocks.

The floor of the area within walls F1007 and F1009 was composed of a mixture of residual features (notably capstones from the abandoned drain F1087 and primary cobbling F1013) and a new infill, comprising dumped spreads F1011 and F1012. Fewer stones in dump F1011 suggested that an original, finished surface to the east of Area 1 had been robbed out. Across this general horizon, a shallow gully was cut. At the junction of wall F1007 and F1009, the stonework was relaid with small slabs forming a slightly curved culvert, later to receive a lead pipe, which linked up to the gully to the north-east and a further stretch to the south. When the 'internal' length of the gully was emptied, a block of sandstone was found. This had been carved to form a 'Y'-shaped connection point for two narrow channels or pipes, although it was subsequently displaced from its original context.

This fragment and the width of the channel within the F1007/F1009 wall masonry suggests that the drain was originally stone lined, but was later supplied with a lead pipe. Some 1.15 m of the length of this pipe was recovered in the F1007/F1009 culvert. It had been disconnected neatly at its north end at a joint, but its south end had been torn out, the last surviving section owing its survival to the protecting masonry of F1007/F1009.

Finally, the totally robbed-out remains of a partition wall (F1036/1034) were partially excavated at the extreme north-east of Area 1. The wall was defined primarily by a foundation trench, cut against surface F1011 and only the lowest course of masonry survived, showing it to have been crudely cut into the north face of wall F1009.

THE RESISTIVITY AND AERIAL PHOTOGRAPHIC EVIDENCE (ILLUS 8 & 16)

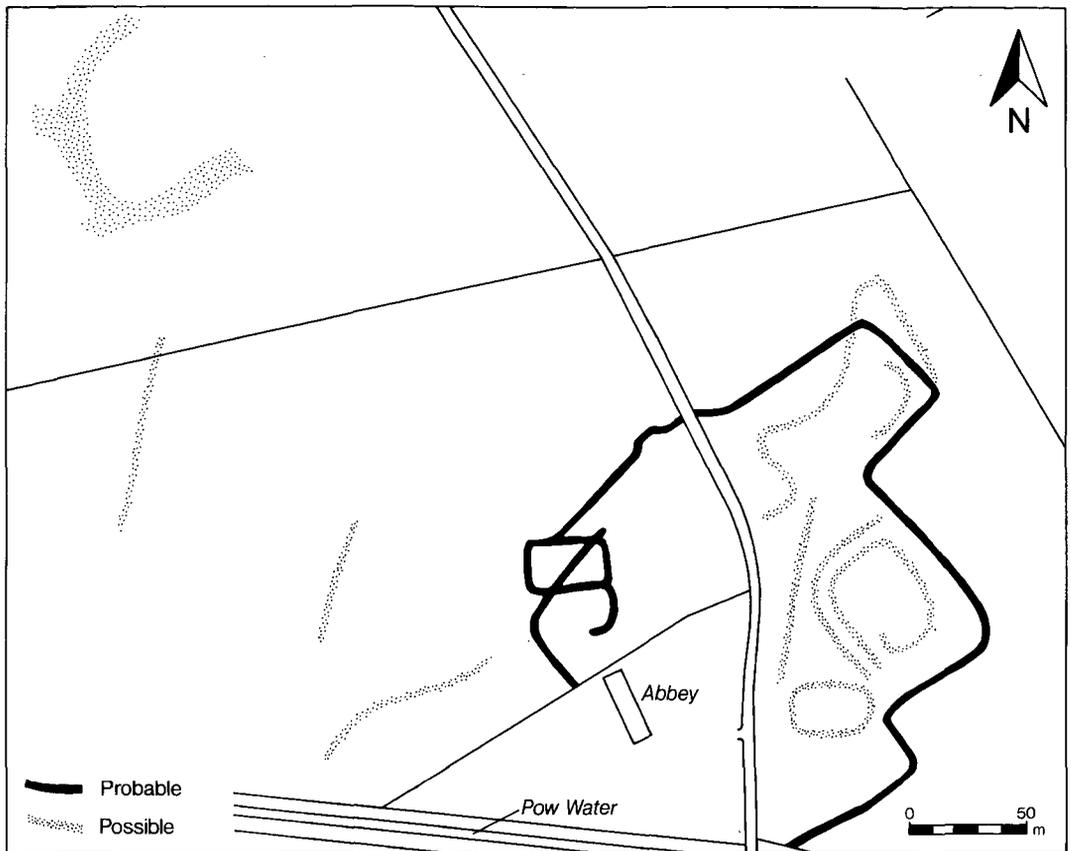
The perimeter wall

The presence of a firm, dark, linear feature on aerial photographs, towards the limits of the Inch on all sides apart from the south-west, is most readily identified as the monastic perimeter wall (illus 16), described by one antiquarian source as follows: 'Around the whole building was a wall of ashlar work, beyond the outer side of the Precinct (cloister) in order to keep off the water' (Reid 1898). The erratic shape of the soil mark is probably a result of the meandering route of the pre-canalsed Pow Water and could reflect the route of one phase of monastic excavation, with the precinct wall forming one side of an artificially deepened and regularised channel to create an almost 'moated' effect.

The causeways

There are, in addition, several references to causeway construction to the north-east and north-west of the site, neither of which is visible on currently available aerial photographs. Despite this, the neighbouring farmer to the north of the site has encountered the north-west causeway regularly during ploughing. Sections of it have been exposed and described as a massive stone construction, impervious to farm machinery. Moreover, the old name 'Cabayend' to the west of the natural island, may well represent the western limits of the north-west causeway. On this basis, it may be argued that the group of features to west and north of the abbey's west range show the 'abbey end' of the north-west causeway, defined by a large sub-rectangular building aligned approximately east/west, overlying a possible two-phased route for the west perimeter wall. Similarly, the distinctive projecting line of the perimeter wall at the extreme north-east of the site may in turn show the presence of the 'abbey end' of the north-east causeway.

The soil marks representing the precinct boundary were not identified by the geophysical survey. However, the survey did identify a large rectilinear anomaly north-west of the abbey, which



ILLUS 16 Soil marks within the abbey environs (plotted from APISDD SHIA 396.40276.7.1948)

appears to have respected the boundary. Partial excavation in Area 5 did not ascertain whether this was a building or an earthwork (potentially related to the early Phase 1 earthwork in Area 7). It is therefore possible that the features to the north-west of the nave of the abbey church represent a pre-1250 presence on the site. Whether these date from the colonization of Inchaffray by Augustinian canons, or are the residual layout of a Celtic monastic complex, must await further excavation.

THE SPECIALIST REPORTS

THE POTTERY

George Haggarty

The ceramic assemblage from the Inchaffray excavations (not illustrated) is disappointing. On examination very few sherds conjoined and no joins at all were found between different contexts. In only one instance were more than three sherds assigned to a single vessel. Most of the sherds are badly abraded with the average piece having a surface area of between 3 and 4 sq cm. Vessel counts have been attempted but are probably not very accurate. Indeed for much of the pottery it is impossible

to say with any certainty whether the sherds are from jugs or cooking pots. Throughout the assemblage red wares outnumber white gritty wares by more than 2:1, in both the vessel and sherd counts.

There is very little in the way of decoration amongst the assemblage. Amongst the few decorated sherds are two small red ware fragments from bearded jugs recovered from the topsoil, two red ware body sherds with applied scale decoration and a few sherds with notched or thumb applied strips. One sherd may be a fragment from the bunghole of a cistern or the collar of a watering can or similar vessel. An attempt has been made to drill holes through this sherd, causing it to break.

From the limited evidence the jugs would appear to be fairly upright with simple everted rims and simple pulled lips. No examples of bridge spouted forms were identified. Fragments from strap handles predominate over rod handles in a ratio of 21:2. All of the handles would seem to be from jugs. There are also four small thin rod fragments. These may be part of the arms of a face-mask-decorated jug.

The assemblage contains very few sherds from imported vessels. Two German stoneware sherds (Frechen/Cologne, 16th-century) one tiny rim sherd from a French jug (Rouen-type ware). This very distinctive highly decorated pottery has been given a probable date range in Scotland of 1250–1300. It is not a common medieval Scottish import and is normally recovered from the larger east coast towns. The excavations in Perth have produced the largest assemblage.

Scottish white gritty ware

The Scottish white gritty ware pottery industry/tradition has been much discussed elsewhere (Brooks 1980, Haggarty 1984, Cox 1984, Crowdey 1986, and others). Work on the large and important assemblage from a site adjacent to St Andrews Castle (Haggarty & Will, in Lewis, this volume) has given the author a forum in which to review and expand on the existing knowledge of this ware's morphological characteristics. With the new evidence, the possibility of differentiating between three production areas for this type of pottery has been mooted. The suggested production areas are Fife, Lothian and Tweeddale. At present no production sites for the Fife white firing clays are known for certain, although a large industry has been postulated just north of St Andrews. Inchaffray lies probably at the northern extreme of this industry and currently it is not possible to give any exact indication of the source of the Scottish white gritty ware found there.

Scottish medieval red ware

Scottish medieval red ware is the term used to describe a range of oxidized fabrics produced from local iron rich-clays. On present archaeological evidence, this industry supplied the general area between the River Tay and the Moray Firth. The greater range of parent rock material north of the Tay should, in time make regional identification easier (*contra* Cheer 1990); the evidence from excavations in Aberdeen (Murray 1982) and Perth (Scott & Blanchard 1983) would seem to support this. Although only one production site has been excavated (at Rattray; Murray & Murray 1993), the inclusions of granites, schists, micas, hornfels, etc have allowed a range of fabric variations to be identified and coded with a great deal of success. All the archaeological evidence would suggest that this industry was well established by the end of the 12th century.

At present, the nearest postulated kiln to Inchaffray for the production of red ware is Perth (Scott & Blanchard 1983). Indeed, some of the assemblage is of a fine to smooth paste with fine sand tempering, slight mica and iron ore, all of which are in keeping with a Perth source.

Catalogue

Catalogued tables of pottery sherds from the excavation, sorted by pottery type and vessel form, are included in the archive of the project records at the National Monuments Record of Scotland.

THE SMALL FINDS (ILLUS 17 & 18)

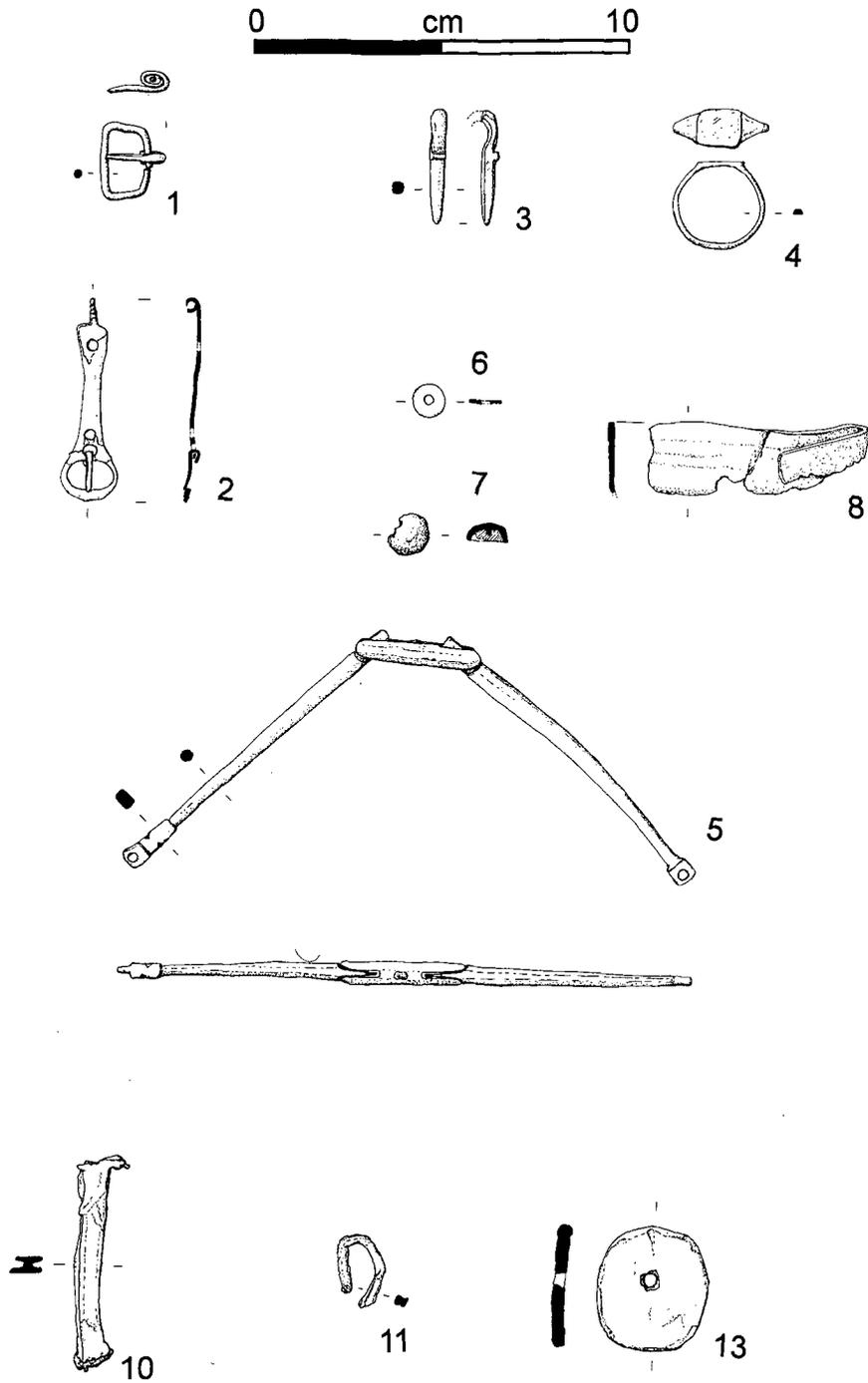
Barbara Ford

Objects of copper alloy

Personal ornaments Numbers 1 and 2 are both small buckles, probably for use with straps or belts for clothing. Number 1 was found in c mid-14th to mid-15th-century drain fill. This is a very crudely made buckle formed by bending a circular cross-sectioned wire to an appropriate shape. Number 2 came from an early to mid-13th-century midden fill of the north ditch in Area 7. It is similar to two medieval narrow strap-end buckles from London. There is also a brooch or buckle pin, no 3, recovered from a disturbed modern context. This is very like one found at Threave Castle (Caldwell 1981, 107, no 18). The finger-ring, no. 4, is also from a disturbed context. It has a rectangular bezel with decoration at the junction of ring and bezel, which is now very worn. There are several similar 12th-century rings in the British Museum in both silver and copper alloy, but these are set either with crystal, amethyst or paste (Dalton 1912, 250, Pl XXIV 1743–6; 1743 also has decoration at the junction with the bezel).

- 1 **Buckle.** Length 20 mm, width 14 mm
Rectangular frame made from a folded sheet rolled and hammered into a rod. The rod has been bent to form the rectangular frame with the ends butting together. The pin is made from a strip of copper alloy wrapped loosely around the frame. The end of the pin has been hammered into facets. IA87; Area 1; Feature 1005; SF no 10; Phase 4.
- 2 **Buckle.** Length 53 mm
Small 'D'-shaped strap-end buckle. The strap has been pierced by three circular holes, one of which houses the buckle pin. There is a small extension from the end of the strap which curls up into a ring, now broken. There are traces of gilding on the upper surface. The lower surface is badly corroded. IA87; Area 7; Feature 7009; SF no 29.
- 3 **Buckle/brooch pin.** Length 31 mm
Faceted pin tapering to a point. The looped end which is broken has a raised decorative band below. File marks on all surfaces IA87; Area 1; Feature 1001.
- 4 **Finger-ring.** Max. diameter 24.5 mm
Rectangular bezel. The shoulders are decorated with a raised motif now very worn. IA87; Area 1; Feature 1001; SF no 1.

Miscellaneous Number 5 is a balance, probably for weighing light objects such as coins or spices. It was found in c 14th-century cobbles to the north off the church, which were probably recycled masonry off-cuts from the associated rebuilding programme. It is very unusual, for although it balances perfectly, the terminals do not match. One of the arms has a rectangular expansion before the hole for suspending the scale pan. A similar expansion is not present on the other arm. A balance from Winchester, found in a mid 13th-century context has cuboid expansions at the end of both terminals. A perforated disc from the overdeepened A-horizon in Area 7 is probably a washer. Number 7 is a small dome-headed stud found in a c mid-14th to mid-15th-century drain fill. Such studs were probably used for some decorative purpose, for instance on furniture or doors. A vessel rim came from the spread of mixed material marking the end of the Phase 1 activity in the southern end of Area 1. It is the rim from a sheet metal vessel. The rim is made by a slight thickening of the vessel wall. There are two grooves below the rim, from hammering and shaping of the vessel. A small fragment of a sheet from a late context is probably a vessel patch. It has a 'paper-clip' rivet *in situ* of a sort which was commonly used in vessel repair.



ILLUS 17 The small finds : objects of lead and copper alloy

- 5 **Balance.** Length 199 mm
Part of a folding balance with arms of equal length. The arm terminals do not match. Both arms are faceted but one arm has a rectangular expansion at the terminal crudely decorated with V-shaped notches. Both arm terminals are flattened at the very end and pierced for suspension of the scale pans. The central pointer, now missing, was of iron. There are traces of iron staining around the central hole. IA87; Area 7; Feature 7003; SF no 36.
- 6 **Perforated disc.** Diameter 8.5 mm, thickness 0.25 mm.
Cut from a sheet. The hole has been pushed through from the upper surface. The underside of the hole is burred. Diameter of hole 2 mm. File marks on the upper surface. IA87; Area 7; Feature 7001; SF no 15.
- 7 **Stud.** Diameter 11 mm
Dome-headed stud. Badly corroded. The shank is missing. IA87; Area 1; Feature 1005; SF no 9.
- 8 **Vessel.** Length 60 mm, thickness at rim 1.25 mm
Fragment of a vessel rim, now bent. Made from a hammered sheet. The rim is slightly thicker than the vessel wall. Below the rim are two decorative grooves. IA87; Area 1; Feature 1043.
- 9 **Vessel patch.** Thickness 0.5 mm
Irregularly shaped sheet fragment with remains of a 'paper-clip' rivet. IA87; Area 1; Feature 1001.

Objects of lead

Of the two fragments of H-sectioned window kames recovered, one came from the interior floor of the church, probably dating to post-1320, and the other from the c 14th-century drain complex within the cloisters. Both were associated with fragments of window glass. A part of a lead pipe, probably a water pipe, came from a drain thought to have been the outflow from domestic structures in the area of the south and west ranges. The pipe is likely to be 17th/18th-century, and dates probably from some late refurbishing of the drain. The pipe is quite well made from a lead sheet which has been rolled tightly to form the pipe. The sections have been joined by encasing them in mortar encircled by a further lead strip.

The pierced piece of lead, no 13, recovered from topsoil, is possibly a weight or sinker for a fishing net.

- 10 **Kames.** Length 56 mm, width 7 mm, thickness 5 mm
H-shaped cross-section. Areas of soldering at both ends. IA87; Area 3; Feature 3019; SF no 36.
- 11 **Kames.** Length 42 mm.
Bent and distorted. IA87; Area 6; Feature 6020; SF no 21.
- 12 **Pipe.** Length 1.11 m, width 43 mm, thickness of wall 3 mm
Made from a sheet folded into a D-shape with overlapping ends. Broken at one end. The other end is broken at a joint. The joint is formed by abutting two lengths of pipe and encasing the ends in mortar encircled with a lead strip. IA87; Area 1; Feature 1088; SF no 38.
- 13 **Weight.** Length 34 mm, width 29 mm, thickness 4 mm.
Pierced off-centre by a hole 3.5 mm in diameter. IA87; Area 6; Feature 6000; SF no 8.

Iron objects (illus 18)

Horse equipment Number 14 is a large buckle with inlaid decoration. Its size suggests it was used probably on a horse harness. Iron buckles with inlaid decoration are unusual. However, there are examples with plating. A buckle similar to no 14, with plating, was recovered from a 13th-century context at Winchester. Only two fragments of horseshoes were found, nos 15 and 16. Both are in a very fragmentary condition. However, 16 horseshoe nails were recovered, which may be grouped into three types: (1) fiddle-headed nail with semicircular head, the width and thickness of the head being no wider than the shank, (lengths 55–57 mm); (2) nail with a flat-topped head with lobes, the

width and thickness of the head being greater than the shank, (lengths 32–45 mm); and (3) head that expands in both front and side views to a flat top (lengths 32–42 mm).

Type 1 nails of the fiddle key type were used, principally with horseshoes with wavy-edged decoration, up to the mid-13th century. Only four examples were found: two from the overdeepened A-horizon in Area 7, the remaining two from a c 1200–50 spread of mixed debris which is a demolition and clearance horizon marking the terminus of Phase 1 activity at the southern end of Area 1.

Type 2 nails are used with horseshoes which have straight edges with rectangular countersunk nail holes for the heads. This is a transitional type, found in the mid-13th to early 14th century (Clark 1986). There are eight examples of this type. Three came from modern disturbed contexts and one from mid-17th-century robbing. One came from the 13th-century bakehouse/kitchen. The three remaining examples came from Area 7. One came from the fill of a mid- to late 13th-century foundation trench, one from Phase 1 context sealing middens and the remaining nail came from 14th-century cobbles to the north of the church, probably recycled masonry off-cuts from the associated building programme.

Type 3 nails became popular from the 14th century onwards and were used with horseshoes which no longer have countersunk nail holes (Clark 1986). There are four examples. Two are unstratified. One came from a mid-15th or 16th-century drain. The fourth is probably intrusive in demolition material marking the end of Phase 1 activity at the southern end of Area 1.

14 Buckle. Length 68 mm, max. width 72 mm

Double-sided D-shaped buckle with iron pin. Decorated with pairs of inlaid silver-coloured wires, wrapped around the frame. Traces of non-ferrous plating on the pin bar. IA87; Area 5; Feature 5004; SF no 24.

15 Horseshoe.

Very corroded fragment from the heel of a horseshoe. Not illustrated IA87; Area 1; Feature 1022.

16 Horseshoe.

Very corroded fragment from the heel of a horseshoe. Not illustrated IA87; Area 5; Feature 5016.

Household equipment There are two chain links of different forms. One is an S-shaped link which was found in a midden truncated by the construction of the east wall of the north transept. The second link of figure-of-eight shape came from the post-1350 backfill of a construction trench associated with the sacristy. Both types are common on medieval sites. Number 19 is a handle, probably from a bucket which came from the interior of the church. Three hooks were found. There are also fragments of two vessels. There is a rim fragment from a vessel made from a sheet, no 23. Like the copper alloy sheet vessel (no 8), the rim is a slight thickening of the vessel wall. There is also a fragment from the wall of a cast vessel. This was found in a drain dated to the mid-15th to mid-16th century.

17 Chain. Length 51 mm

S-shaped link made from a rod, the ends are folded back to form the 'S-shape. IA87; Area 3; Feature 3015; SF no 27.

18 Chain. Length 45 mm

Figure-of-eight-shaped link. Made from a folded rod. IA87; Area 3; Feature 3024.

19 Handle

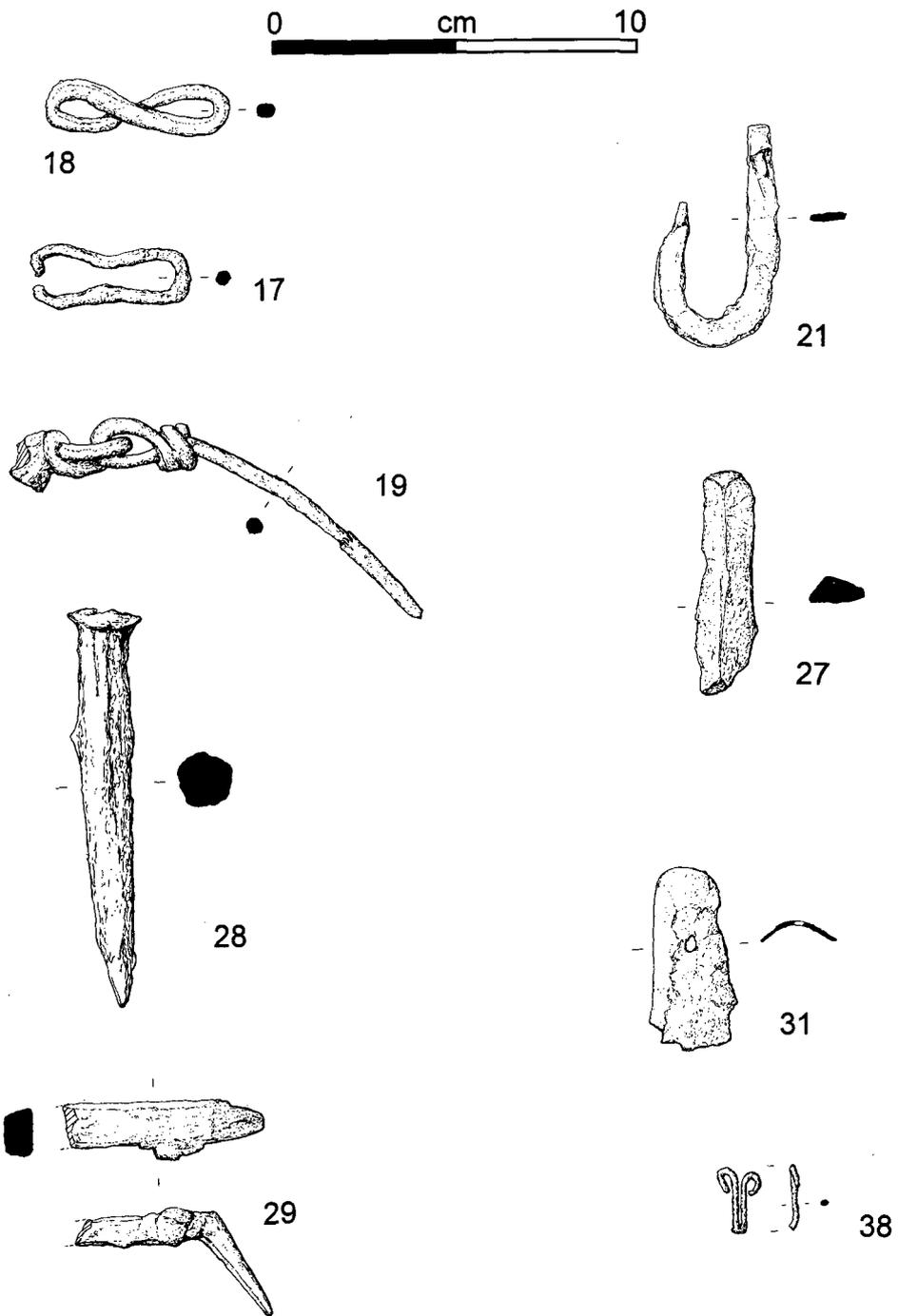
Rod of circular cross-section. One end is twisted into a loop. Connected to another loop also made from a twisted rod. IA87; Area 3; Feature 3018.

20 Hook. Length 97 mm

Very corroded. Stem and hook are both broken. Not illustrated. IA87; Area 1; Feature 1075.

21 Hook. Length 63 mm.

Made from a rod with rectangular cross-section, curved into a hook with a pointed end. IA87; Area 7; Feature 7000.



ILLUS 18 The small finds : iron objects

- 22 **Hook.** Length 65 mm
Bar with rectangular cross-section curved into a hook and pointed at one end. Other end is broken. IA87; Area 7; Feature 7001.
- 23 **Vessel.** Length 60 mm, thickness at rim 3 mm
Fragment from the rim of a sheet vessel. The rim is a slight thickening of the vessel wall. IA87; Area 1; Feature 1001.
- 24 **Vessel.** Thickness 4 mm
Fragment of a cast vessel. Not illustrated. IA87; Area 1; Feature 1005; Phase 4.

Knives Fragments of two very corroded knives came from topsoil and the late 14th-century makeup layers in the area of the nave.

- 25 **Knife.** Length 47 mm, width 16 mm, thickness of blade back 3 mm
Very corroded blade fragment. Not illustrated. IA87; Area 1; Feature 1022.
- 26 **Knife.** Length 55 mm, width 13 mm, thickness of blade back 5 mm.
Very corroded blade fragment. Not illustrated. IA87; Area 5; Feature 5012.

Tools Number 27 is a fragment from the blade of a chisel, and was recovered from a modern context. Number 28 is a punch, used probably in stone working to dress the stone roughly while working it into shape. There is another similar punch from a late 13th-century context at Southampton (Platt & Coleman-Smith 1975, vol 2, 279, fig 251.2019). Number 29 is the small fragment of a tool, possibly a chisel, from a post-demolition layer.

- 27 **Chisel.** Length 63 mm, width 15 mm.
Triangular cross-section tapering to a flat point. Broken at one end. IA87; area 1; Feature 1001.
- 28 **Punch.** Length 112 mm.
Circular cross-section with circular burred head. IA87; Area 2; Feature 2002.
- 29 **Tool.** Length 49 mm.
Small fragment tapering to a flat point at one end. IA87; Area 5; Feature 5001.

Structural ironwork and miscellaneous fittings Number 30 is typical of clenched bolts found in medieval contexts used to secure double thicknesses of timber, such as in boatbuilding. Number 32 is a rove from a clenched bolt found on the floor of the north transept. Number 31, a fitting for wood and no 32, a hollow point, were both recovered from 18th-century robbing. Numbers 33 and 34 are both common types of staple, the latter coming from the fill of a foundation trench of the church of probable late 13th-century date. A number of examples have been found at Northampton and Wharham (Goodall *et al* 1979, 273; Goodall 1979, 118).

- 30 **Clenched bolt.** Length 40 mm
Circular flat head. The shank has a square cross-section. Diamond-shaped rove. IA87; Area 1; Feature 1022.
- 31 **Fitting.** Length 51 mm, width 23 mm, thickness 1 mm.
Curved sheet with rounded end. Pierced towards curved end. Diameter of hole 3 mm. IA87; Area 3; Feature 3012.
- 32 **Point.** Length 43 mm, max. diameter 10 mm
Hollow point made from a rolled sheet. IA87; Area 4; Feature 4005.
- 33 **Rove.** Length 28 mm, width 13 mm, thickness 4 mm
Diamond shaped plate. Pierced in the centre with a square hole. IA87; Area 3; Feature 3014.
- 34 **Staple.** Length 40 mm, width 34 mm
U-shaped staple. One arm has a square cross-section, the other is rhomboid. The tips of both arms are missing. Very corroded. Not illustrated. IA87; Area 1; Feature 1022.
- 35 **Staple.** Length 58 mm
?Rectangular staple. One arm missing. IA87; Area 7; Feature 7002.

Nails A total of 162 nails was recovered. These have been classified according to the typology devised by Ford & Walsh (1987) based on nails from excavations in Perth, with an additional Type K not described by the original typology. Ninety-two nails survived in sufficient completeness to enable classification.

Type A Circular, square or rectangular flat head with shank of square or rectangular cross-section; 55 examples.

Type B Domed head with shank of square or rectangular cross-section; six examples.

Type F T-shaped head with shank of square or rectangular cross-section; 17 examples.

Type G Figure-of-eight shaped head with shank of square or rectangular cross-section; eight examples.

Type H Rectangular or square flat head formed by flaring shank with rectangular or square cross-section; two examples.

Type K Thick square flat head with shank of square or rectangular cross-section; four examples

Nails of Type A are common woodworking nails used in any form of timber construction and ubiquitous on Scottish sites in the medieval period. Nails of Type B with domed heads may be for use where nail heads would be on display, possibly on doors etc. Nails of Types F and G are possibly roofing nails, probably for slating. Nails of Type H could be used where the nail head was to be flush with the timber. Nails of Type K would have had heads that stood well proud of the timber, and again could have served a decorative function, for example on doors.

Tables describing the distribution of all nails, by type and context are deposited with the archive of the project records at the National Monuments Record of Scotland.

Miscellaneous Number 36, a very fragmentary bar, came from the fill of a mid-15th to mid-16th-century drain, and no 37 came from mid-15th to mid-16th-century floors and levelling. Number 38 is probably part of a hook and eye. It came from the interior of the north transept. Hook-and-eyes are commonly found in copper alloy, and were used as dress fittings. There is an example in copper alloy from Exeter, also of possible 14th-century date (Goodall 1984, 339, fig 191.121). There are two mounts, probably fittings for timber. One came from topsoil, the other from the A-horizon. Number 41, a pointed rod, came from mid-15th to mid-16th-century levelling.

36 Bar. Length 17 mm, thickness 5 mm

Two fragments. Not illustrated. IA87; Area 1; Feature 1005; Phase 4.

37 Bar. Width 23 mm, thickness 4 mm

Rectangular bar with rectangular cross-section. Broken at one end. IA87; Area 1; Feature 1075.

38 Hook and eye. Length 18.5 mm

Wire curved into two eyes. The hook has been broken off. IA87; Area 3; Feature 3014; SF no 34.

39 Mount. Length 58 mm, width 9 mm, thickness 3 mm.

Rivet hole with part of a small iron rivet in place. Not illustrated IA87; Area 7; Feature 7001.

40 Mount.

Rectangular mount broken at one end. Pierced with a small hole with a small rivet with circular cross-section *in situ*. IA87; Area 7; Feature 7000.

41 Rod. Length 215 mm, diameter 6 mm

Circular cross-section. Pointed at one end. The other end is broken. IA87; Area 1; Feature 1075.

Several other finds have been made at Inchaffray Abbey. In the 1980s and 1990s, several were recovered from the area immediately around the upstanding ruins, but outwith the scheduled area. The Hunterian Museum, University of Glasgow, acquired several coins, many of medieval date, and the National Museums of Scotland, Edinburgh, were given many other finds, including some important pieces of medieval metalwork. These have still to be fully studied, but include the top part of a copper alloy bell shrine in Ringerike style, two silver dishes and a silver fede ring. The British

Museum, London has long had a double-sided 14th-century brass matrix of the abbey (Stevenson & Wood 1940, vol 1, 184 – the second seal). The National Museums of Scotland have a later brass matrix (NM 166; Stevenson & Wood 1940, vol 1, 185 – the third seal).

THE WINDOW GLASS

Pamela Graves

All the fragments are of window glass, seven of which are decorated (not illustrated). The fragments fall into two groups by thickness. Most are uniformly thick, on average 3 mm. A few fragments, however, are noticeably thinner, between 1–2 mm. Most of the fragments show the forms of corrosion characteristic of potash glass composition: pitting, opacity, lamination and crumbling. Potash glass was used in Western Europe from about the 10th century right through the Middle Ages.

The glass could be made in either of two ways: the spun or ‘crown’ method, or the cylinder or ‘muff’ process. The first produced large round discs of glass, often characterized by a shiny fire-finished surface and concentric lines resultant from the spinning process which opened the disc out. The second method was described by Theophilus, a 12th-century monk, in his treatise *De Diversis Artibus* (Dodwell 1961). This produced fairly flat sheets of glass from a blown cylinder worked flat from manipulation under heat in an oven. At the beginning of the period mentioned, window glass was thick and often uneven, containing many impurities and bubbles. Plain or ‘white’ glass was often tinted green due to the presence of iron impurities in the melt. This is the case in all the Inchaffray examples. None of the examples, however, reveal indisputable evidence of one or other method of manufacture. Number 870327 had elongated bubbles which are usually characteristic of cylinder production.

There is only slight archaeological evidence for window glass production in Scotland during the Middle Ages. What evidence there is may only suggest the wastage from installation of windows (William Lindsay, pers comm). It seems likely that glass, particularly coloured glass, was imported from either England or the Continent.

The application of decoration was a separate process, and may have been undertaken on-site following the construction work of an ecclesiastical building, or as part of a particular fenestration programme. Thus decoration and window construction were closely connected with installation. The glass would be roughly cut to size by scoring with a hot iron and splitting with water. The quarry would then be pared to more exact requirement by clipping with irons, termed grozing. Decoration would be painted onto the pieces prior to final leading, according to a full-scale caroon.

The decoration on the Inchaffray examples is all in the form of red/brown enamel. Following analyses on similar enamel from a number of Scottish sites (Graves 1985) this is a paste made up from iron oxide, urine or similar binder, and lead. It is possible that the lead or ‘geet’ came from ground glass, rosary beads or similar sources. The enamel decoration would be applied with a fine hair brush, usually badger, and fused onto the surface of the glass in an oven. Using very fine brushes, therefore, allowed the craftsman to achieve the narrow lines of cross-hatching on fragment no 870328 (d). Intricate designs might be executed by applying a wash of enamel over a large area of the glass, and picking the design out from the wet paint with a sharp point. This technique is known as stickwork.

The Inchaffray pieces have enamel decoration on plain glass. This is generally known as ‘grisaille’ (from the French *grisailier* – to paint grey). Grisaille glass usually consisted of vegetal or geometric motifs and could be used to form entire windows as at Salisbury and the Five Sisters at York Minster. Alternatively, it could be used as a background to coloured roundels depicting scenes

from the Bible or lives of the saints. In the 14th century, particularly, it was used to form the background to coloured figures of saints beneath tall architectural canopies rendered in glass. Grisaille glass was cheaper to produce than stained glass and formed the most ubiquitous element of any window, practically, from the 13th to the 16th centuries. This being the case, it is impossible on the basis of such a few fragments to make any statement as to the nature of the original windows from which the glass came. The only design motif which is recognizable from these fragments, and which could feasibly give a date is no 870328 (f). This appears to be part of a leaf. Leaves were the most commonly used motif for grisaille and are dated art-historically according to their form. Stiff leaf forms usually indicate an early 13th-century date, with variations with berries on cross-hatched grounds throughout the century. In the latter part of the 13th and into the 14th century more naturalistic foliage was used.

The Inchaffray leaf is of uncertain character. It is not a simple stiff leaf form, nor is it recognizably a 14th-century form. It appears to be a double leaf, which makes comparison slightly easier. It would seem appropriate, firstly, to look at those other Augustinian houses which have produced medieval window glass, particularly those close to Inchaffray. Some leaf fragments from St Andrews approximate with the use of enamel right up to the edge of the quarry to define the leaf rather than simple line definition. The St Andrews examples, however, contain fine veins within the leaf; that of Inchaffray does not. There is one double leaf from the cathedral, however. The St Andrews pieces may date to the early 14th century (Dr Richard Marks, *pers comm*), although examples elsewhere have been allocated to the first half of the 13th century. Both Jedburgh and Cambuskenneth have produced stylised foliage and, in the case of the former, less conventional forms. Double stiff leaf forms have been recovered from Elgin Cathedral (Lindsay forthcoming). An early 13th-century date for the Inchaffray piece would obviously fit in with the founding of the Augustinian Abbey and the initial period of building. A date in the mid- to third quarter of the 13th century would seem to be more appropriate for the decoration, however.

Dating of glass on art-historical grounds relies mainly on English and Continental glass *in situ*. It may not be appropriate to adopt such dating schema for Scottish medieval glass. The political and economic conditions under which Scottish patronage functioned from the 13th century were different from those of England. We cannot simply expect to find in Scottish religious houses a reflection of English forms, for surely access to, and commission of, the same craftsmen will not have been consistently possible. Fawcett (1984) has shown that in Scottish window tracery indigenous styles were developed. From the corpus of Scottish medieval glass now available from excavation, it appears that much grisaille was being used, but not a rigidly stylized or consistent form. It may be that, with the exception of special commissions from France, glass painters were being patronized in Scotland whose products were a stylistic variation on what we now see as standard grisaille forms. To substantiate these claims would require work not only on the glass itself, but on the documentary evidence to be found relating to the patterns of patronage in and between the Scottish religious houses.

Catalogue

- 870327** Fragment of bevelled window glass, 1.00–1.50 mm thick. No grozed edges. Both surfaces slightly pitted, with elongated bubbles in linear groups. The glass is transparent with a green tint and opalescent surface patina. (F 3012).
- 870328 (a&b)** Two fragments of flat window glass, 2.75–3.50 mm thick. Appears to form one grozed edge with a lead stain on the outer surface. This surface is almost opaque except for one area free of patina. This reveals green-tinted metal beneath. The inner surface has painted linear decoration in red/brown enamel.

- 870328 (c)** Fragment of flat window glass, 3.00–3.25 mm thick. One curved edge is grozed with slight lead staining on the outer surface. This surface is almost opaque and pitted. The meal has a green tint. The inner surface is decorated with three lines in red/brown enamel. Disintegrating badly.
- 870328 (d)** Fragment of flat window glass, 3.00 mm thick. No grozed edges. Almost opaque, but metal where still translucent, with a green tint. Outer surface beginning to pit. Linear decoration in red/brown enamel with section of cross-hatching on inner surface.
- 870328 (e)** Fragment of flat window glass, 3.00 mm thick. No grozing. Almost opaque, with a green tint. Inner surface decorated with a wash of red/brown enamel.
- 870328 (f)** Fragment of flat window glass larger than the rest in area and 2.50–3.00 mm thick. Appears to be one complete grozed edge and one curved, broken and crumbling edge with signs of former grozing. Both these edges have lead staining. Corrosion beginning to form pits on the outer surface. Inner surface painted with what appears to be a foliate design in red/brown enamel. Mid- to third quarter 13th century.
- 870328 (g)** Fragment of flat window glass, 2.25–2.50 mm thick. One grozed edge. Opaque but formerly transparent. Smooth outer surface but with linear corrosion beginning.
- 870328 (h)** Fragment of flat window glass, thicker than most at 3.50 mm. One grozed edge with lead stain. Outer surface opaque with concoidal chipping. Inner surface rippled with parallel lines. Linear bubbles near the centre.
- 870328 (i)** Fragment of flat window glass, 2.25 mm thick. Opaque.
- 870328 (j)** One fragment in three pieces; 2.00 mm thick. One grozed edge. Opaque. Deteriorating badly.
- 870328 (k)** Fragment of flat window glass, 1.75–2.00 mm thick. Opaque but possibly decorated on inner surface with red/brown paint.
- 870328 (l)** Fragment of flat window glass, 2.00 mm thick. Opaque with painted decoration on inner surface in red/brown enamel.
- 870328 (m)** Many fragments of flat window glass, c 2.00–3.00 mm thick. All opaque and laminating. Very badly deteriorated. (F 3019).
- 870329** Fragment of fine, bevelled window glass, 1.25 mm thick. One finely grozed edge. Almost opaque, with green tint to metal. Beginning to corrode. (F 6000).
- 870330** Fragment of fine, flat window glass, 1.25–1.50 mm. One possible grozed edge. Opaque patina over glass with green tint. Opalescent patina over the broken edges. Slight pitting visible on the surface of the exposed glass. (F 6007).
- 870331** Fragment of flat window glass, 2.25–2.75 mm thick. One possible grozed edge, but all edges showing lamination. Opalescent patina turning opaque and black in places. (F 1043)

THE CLAY PIPES

Denis Gallagher

Ten fragments of clay pipes were recovered from the excavation. These range in date from the early 17th century to 19th century. The Dutch moulded rose bowl is a type commonly found in Scottish early 17th-century contexts. It is poor-quality pipe of a type produced in many Dutch pipemaking centres (Duco 1981, 377).

Catalogue

- 1 Dutch moulded seven dot rose bowl, bottered but not milled; $\frac{7}{64}$ "; 1640–60 (cf Duco 1981, 244, nos 31–4); IA87.6000.
- 2 Stem and lower bowl fragment of a spurred pipe; $\frac{4}{64}$ "; 19th century; IA87.1001

THE COINS AND COIN-WEIGHT

Nicholas M McQ Holmes

The coins

- SF 19 (no 5013)** Edward I, silver penny of DURHAM, class 10ab5 (definitive) (c 1303–5): 18.5 mm, 1.04 g, die axis 12.0
 obv: cross moline [EDW]ARRAN[GLD]NSHYB (type of S uncertain)
 rev: CIVI/TA[S]/DVR/E[ME]
 reverse slightly off-centre; worn; some surface corrosion; flan crack at 10.0 (obverse)
- SF 23 (no 3014)** James IV, billon plack, type IIc (1488–1513): 26×25 mm, 1.98 g, die axis c 9.0
 obv: cross IACOBVS.D[EL.G]RACIA.REX.SCO[TORV]M. Old English lettering, cross pattée initial mark, lis stops
 rev: cross VIL/LA[]/EDIN/BV[]. Old English lettering, cross pattée initial mark
 moderate wear; slight flattening.
- SF 11 (no 1005)** France : François I, billon double tournois à la croisette (1541–5), type as Lafaurie & Prieur (1956), no 791; 15×16 mm, 0.47 g, die axis c 1.5
 obv: legend illegible; three fleurs-de-lis arranged two and one
 rev: []NEDIC[]; plain cross in quatrefoil; annulets on cusps; mint letter (illegible) below cross
 edge much damaged, worn

The coin-weight (not illustrated)

- Lab no 870323 Coin-weight in copper or brass: c 14 mm square, 1.62 g
 (Unstratified) obv: The Archangel Michael spearing the dragon (set diagonally to the sides of the coin weight)
 rev: blank
 worn

This is a weight for an English gold half-angel. The denomination had a theoretical mass of 40 grains (2.59 g) when introduced by Edward IV after 1465, but this was reduced to 36 grains (2.33 g) under James I in 1605. Square uniface coin weights are generally considered to be fairly early in date. In England, the shape was changed from round to square in the early 16th century, and back to round after 1632, but blank reverses ended in the reign of Henry VIII, when the value of the corresponding coin was stamped on the rear. Square coin weights for half-angels were also made in France, Germany and the Low Countries, but those of the latter two countries are probably later in date. French square coin weights, which are later than hexagonal ones, often have letters on the reverse. This coin weight is therefore most likely to be of English manufacture, and of the first half of the 16th century, but it may possibly be French. It has clearly lost a great deal of its original mass as a result of corrosion and cleaning, weighing only c 25 grains instead of a theoretical 40 grains, but it is too heavy to have been a quarter-angel weight.

THE BURNT INDUSTRIAL DEBRIS

Mike Spearman

Method

A small quantity of burnt materials and slag was recovered from Areas 1, 2, 3, 5 and 7, with the majority coming from the largest area opened, Area 1. The composition of the debris was examined visually at ×10

magnification and checked for magnetic attraction. Debris from iron and non-ferrous metalworking was identified as well as a variety of heat-damaged structural material. X-ray fluorescence analysis of the non-ferrous debris was kindly undertaken by Dr Wilthew of the National Museums of Scotland's Conservation and Analytical Research Department.

Results

The metal-working debris consisted of small quantities of the following: cinder and bloomworking waste; vitreous bloomery tap slags; furnace lining; hammer-scale and waste iron; non-ferrous slag.

Tables describing the various types of debris by weight and context have been deposited with the archive of the project-records at the National Monuments Record of Scotland.

The burnt debris recovered from this site had all been redeposited from activity elsewhere in the monastic complex. That activity would appear to have included the smelting and working of bloomery iron, and the working of non-ferrous metals (as yet unidentified). The limited amount of more fragile vitrified debris and furnace lining is consistent with high temperature processes, such as smithing, having taken place near the site. However, a proportion of the ironworking debris had, presumably deliberately, been mixed with mortar and it is possible that debris had been imported onto the site for use in building work.

THE ANIMAL BONE

Richard Grove

Contexts throughout the period of the Augustinian occupation of the site produced faunal remains. The only other major group of bones comes from the robbing, disturbance and topsoil contexts of possible Early Modern date. There was none from the documented Celtic phase prior to the arrival of the Augustinians. This earlier monastic occupation may, however, be represented by residual deposits.

The Augustinian period

The problem of residuality occurs throughout the Augustinian period since there are unfortunately no apparent primary rubbish deposits in any of the trenches and a number of contexts can certainly be considered secondary. Given the problems of residuality and the relatively small number of bones in individual contexts, the faunal remains are, in the main, considered below in broad chronological phases (1200–1300, 1300–1450 and 1450–1550). The divisions within the period are arbitrary, depending not on any specific building phases but on the convenience of dated deposits. Details of the number of identified bones are given in Table 2.

The Augustinian period produced only 416 bones which could be identified to species and skeletal part; 47% of the remaining 718 bones were longbone fragments or chippings and 26% were rib fragments; 57 bones were vertebral fragments and 139 could not be identified. In all three Augustinian phases cattle bones were the most frequently recovered species followed by sheep and pig. The number of identified bones are too few to allow the calculation of the minimum number of individuals throughout the Augustinian period let alone individual phases. On the number alone, however, it would appear that cattle were the most important source of meat. This might be expected from the site's lowland position in a 'wetland' environment.

There are some indications, however, that the remains have been subject to some selective preservation, which would have influenced both the relative numbers of bones among species and their skeletal distribution. This would tend to favour the larger and more robust bones which is apparent in the case of both cattle and sheep where the early fusing longbone extremities, in particular the distal humerus and tibia and the proximal radius, have survived in greater number than other areas of the skeleton. Other indications are the better survival of teeth when compared with the number of skull fragments. Pig bones tend to be more vulnerable because of the thinner cortex and their occurrence may therefore be underestimated. A number of bones from small birds

TABLE 2
Distribution of bone fragments by species and period

| Species | 1200–1300 | 1300–1450 | 1450–1550 | 1650–1750 |
|-----------------|-----------|-----------|-----------|-----------|
| Cattle | 144 | 39 | 26 | 267 |
| Sheep | 87 | 28 | 20 | 230 |
| Pig | 18 | 5 | 2 | 2 |
| Horse | | 2 | 2 | 11 |
| Dog | 1 | 5 | | 2 |
| Cat | 3 | | | |
| Red Deer | | | | 1 |
| Roe Deer | 1 | | | 2 |
| Fox | 1 | | | 3 |
| Rabbit | | | | 8 |
| Hare | | 1 | 4 | 2 |
| House mouse | 1 | | | 1 |
| Domestic Fowl | 9 | 6 | 2 | 19 |
| Goose | | 2 | | 7 |
| Mallard | | | 1 | |
| Widgeon | | | 1 | |
| Jackdaw | | 3 | | |
| Magpie | | | 1 | |
| Cod | 1 | | | 1 |
| Rib Fragments | 92 | 70 | 24 | 471 |
| Vertebra Frags. | 25 | 28 | 4 | 111 |
| Long bone Frags | 205 | 66 | 65 | 625 |
| Indeterminate | 80 | 44 | 15 | 255 |

More comprehensive catalogues of bone fragments, sorted by species, skeletal part, period and context, are deposited with the archive of the project records at the National Monuments Record of Scotland.

and mammals testifies, nevertheless, to the ability of smaller bones to survive in some contexts at least. The problem remains of distinguishing between natural decay and the influence of human activity on the recovered sample, such as butchery techniques.

Of the bones from the earliest Augustinian phase (1200–1300) 60% (149 fragments) were recovered from a single context (F1043). The possibility that these are residual is supported by the eroded condition of the majority of bones; 50% of the surviving cattle bones come from the skull or distal extremities (from the distal radius and tibia) of the carcass and similar proportions are evident for both sheep and cattle for each Augustinian phase. 53% and 55% respectively for the whole period. The sample obviously contains not only areas of the skeleton producing meat but also a large proportion of butchers waste and it would be safe to assume that the complete carcass or indeed live animals were brought to the site and then butchered. The only features of the skeleton from sheep and cattle noticeable by their absence are horncores which may well have been removed with the horn prior to working elsewhere. A small number of butchery marks are visible on cattle bones particularly for the purpose of jointing the humerus and chopping through the tarsals at the astragalus which would have enabled suspension of the carcass by the hock. A few vertebrae of both sheep and cattle have been split vertically. In general, many of the longbone shafts of sheep are intact whereas this is never the case with the cattle remains; whether this is due to natural fragmentation or human agency is not possible to say. The paucity of pig bones prevents an analysis of butchery practice but most areas of the skeleton are present and the animals were presumably butchered at the site.

In the case of both sheep and cattle the majority of those epiphyses which fuse at an early age have fused (Silver 1969) which suggests, given the reservation imposed by the relatively small numbers, that cattle were usually slaughtered after the third year and sheep after the second. A number of cattle had probably reached their fifth year, although the age at death in the older age group, in sheep as well as cattle is not clear. No cattle mandibles with teeth *in situ* had survived and only two from sheep. These latter, with mandibular wear stages of 31 and 32 (Grant 1982), were probably slaughtered in their third year (Maltby 1979, 43). In general, the

evidence of the loose teeth suggests that both mature and immature animals were slaughtered. A similar range is probable in the case of pigs; three jaw fragments survived, two of which have a tooth wear suggesting an approximate age at death during the second year and the third to the third year.

The remaining identified bones make up only a minority of the total. A number of bird bones were recovered principally domestic fowl and goose, but also one bone each of mallard and widgeon. The presence of these two latter species, both from the final Augustinian period, is the only evidence of exploitation of the local wild marshland fauna. The single identified fishbone, a fragment of the lower jaw, is probably from the cod species. Among the bones of wild animals are the right mandible of one roe deer, five hare bones, and a single fox bone.

Post-Reformation and Modern Period

The immediate post-Reformation occupation of the site was not identified in the excavated remains. Just over 2000 bones were, however, recovered from the later destruction and disturbance levels as well as from the topsoil, 557 of which could be identified to species and skeletal part (a smaller percentage than during the Augustinian period). A number of general observations can be made. There is a slight increase in the number of bones from wild animals – fox, rabbit and one tooth from a red deer (and also an increase in the proportion of horse remains). The vast majority of bones, however, represent the major domestic animals found mainly in the topsoil of Area 1, 5 and 6. Much of this is doubtless due to the disturbance of earlier levels by man or animals. There are, for example a number of human bones in the topsoil of Area 3 (F3001), and some, at least, of the wild animal bones are presumably natural inclusions. There remains the possibility, however, that the Inch may have been the site of further 17th-century and later occupation, particularly since it does not appear that the areas excavated were used to throw away rubbish during the Augustinian period. There are some slight differences between the samples of bone from both periods; for example there is a slight increase in the proportion of sheep in relation to cattle (219 and 258 respectively) and the proportion of cattle extremities to meat areas of the bone is 68% (as compared with 55%). In general, however, the overall characteristics of the assemblages are not dissimilar.

More comprehensive catalogues of bone fragments, sorted by species, skeletal part, period and context, are deposited with the archive of the project records at the National Monuments Record of Scotland.

THE HUMAN BONE

Richard Grove

The human bones from Inchaffray consist both of the articulated remains of a single skeleton, found in the area of the transept (Area 3), and of a number of disarticulated remains from the fill of the grave of the skeleton. Only a few bones of the articulated skeleton have survived, all of which, apart from eight vertebrae (4th–11th thoracic), are from the left side: these are the humerus, scapula, clavicle and ribs. With the exception of the clavicle all the bones are in more than one fragment. The individual is clearly adult; all the surviving epiphyses have fused including that of the clavicle and epiphyseal rings of the vertebral bodies which would place the probable age to at least over 25 years (Bass 1978). In addition the 9th–11th thoracic vertebrae show some degree of osteophytic ‘lipping’, on the right side only, to the extent that the bony developments between the 10th and 11th probably touched. The extent of such degenerative change can give some indication of the age at death within a population (Stewart 1958), but this is less conclusive with an isolated case, particularly as a traumatic incident cannot be excluded as a cause. Nevertheless with this reservation, the individual may have reached beyond the age of approximately 30 years. There is no other evidence of degenerative change on any of the other surviving bones.

On such a small number of bones from a skeleton which excludes both the skull and pelvis the distinction between male and female is not usually clear. It is not possible to measure the diameter of the humeral head or the length of the bone itself. The length of clavicle is 151.2 mm. which is not noticeably large or small.

Within the fill of the same grave were a number of disarticulated bones which may belong to the same

individual. These are one rib fragment, one lumbar vertebra (which shows no sign of osteophytosis) and three footbones: the right talus, 4th metatarsal and a proximal phalanx.

Although not many bones of the articulated skeleton had survived and they have been damaged, the actual fabric of the bone itself, as with all the human bone, is in good condition. This creates the problem regarding the fate of the missing bones. It has been suggested in the report on the animal remains that there had been some disturbance of the grave itself, which presumably resulted in the removal of bone. Any sign of human bone was also absent from two graves uncovered in the cloister area (Area 6: F6007 & F6012) despite the ability of bone to survive as proved by the presence of animal bone. If the two latter graves had simply been disturbed one would have expected some small bones, at least, to have been recovered during the excavation. One is left with the possibility, therefore, that the bones were deliberately removed, obviously with unusual care, rather than having decayed completely.

Finally, 20 other fragments of bones and teeth were recovered from disturbed contexts in Areas 1 and 3. These appeared to represent both adults and infants. The fragments are described in detail in the archive of the project records at the National Monuments Record of Scotland.

DISCUSSION

The primary structures on the site are most readily identified with the efforts of the effects of the incoming Augustinian canons to prepare the ground for church and cloister, and the need for temporary facilities and accommodation while the main building programme was in progress. At this stage, the precise form, functions and date, at least in terms of the excavated evidence, for the truncated clay bank in Area 7 (Phase 1) are unknown, except to say that it was sealed by deposits from the main (Augustinian) stone building phase. With this possible exception, the earliest features picked up so far on this site appear to relate to a lengthy colonization and site preparation phase, begun soon after 1200 and completed during the second half of the 13th century.

Although direct evidence of the damage to the abbey, sustained during the Wars of Independence, was not recovered, the developments at the south-west corner of the complex, while conforming to a general policy of improving the personal living quarters of some highly placed official, particularly during the 15th and 16th century, may well have been prompted in the first place by the need to repair damaged defences, or at least to review their role.

The structures or conversions revealed in Phases 3 and 4 reflect a period which began during the active life of the Augustinian community but which ran on until the site was abandoned towards the end of the 17th century. Clay pipe, bottle glass and post-medieval pottery were found in association with the occupation of this area of the site.

Both the general quality of the building work and the finds do not discriminate archaeologically between a 'monastic' or 'secular' occupation of the site. The only possible exception is the refurbishment of drain F1005 with lead pipe. However, the use of lead conduits for either drainage or freshwater supply is not distinctive in itself in terms of a late abbatial presence or that of the first Lord Maddertie. It may be argued that the presence of lead piping at Inchaffray, on documentary evidence, refers primarily to fresh water supply: a letter from Mr Dow to General Hutton in 1780 (Reid 1898) mentions the use of lead piping for the water supply to the Abbot's or 'Front House'. As yet, however, there is no trace of a domestic building lying to the south-west of Area 1, to which drain F1005 might have run. To compound this the description of the 'Front House' suggests that it lay on the south side of the claustral suite, closer to the east range rather than the west. The most likely interpretation is that drain F1005 was merely part of the same system that served the abbot's lodging and its location implies that it was the outflow from domestic structures in the general area of the south and refurbished west ranges. The disturbed ground at the south-west corner of Area 1, may, in that case, have been the site of a stone trough referred to in the Dow Letter (Reid 1898).

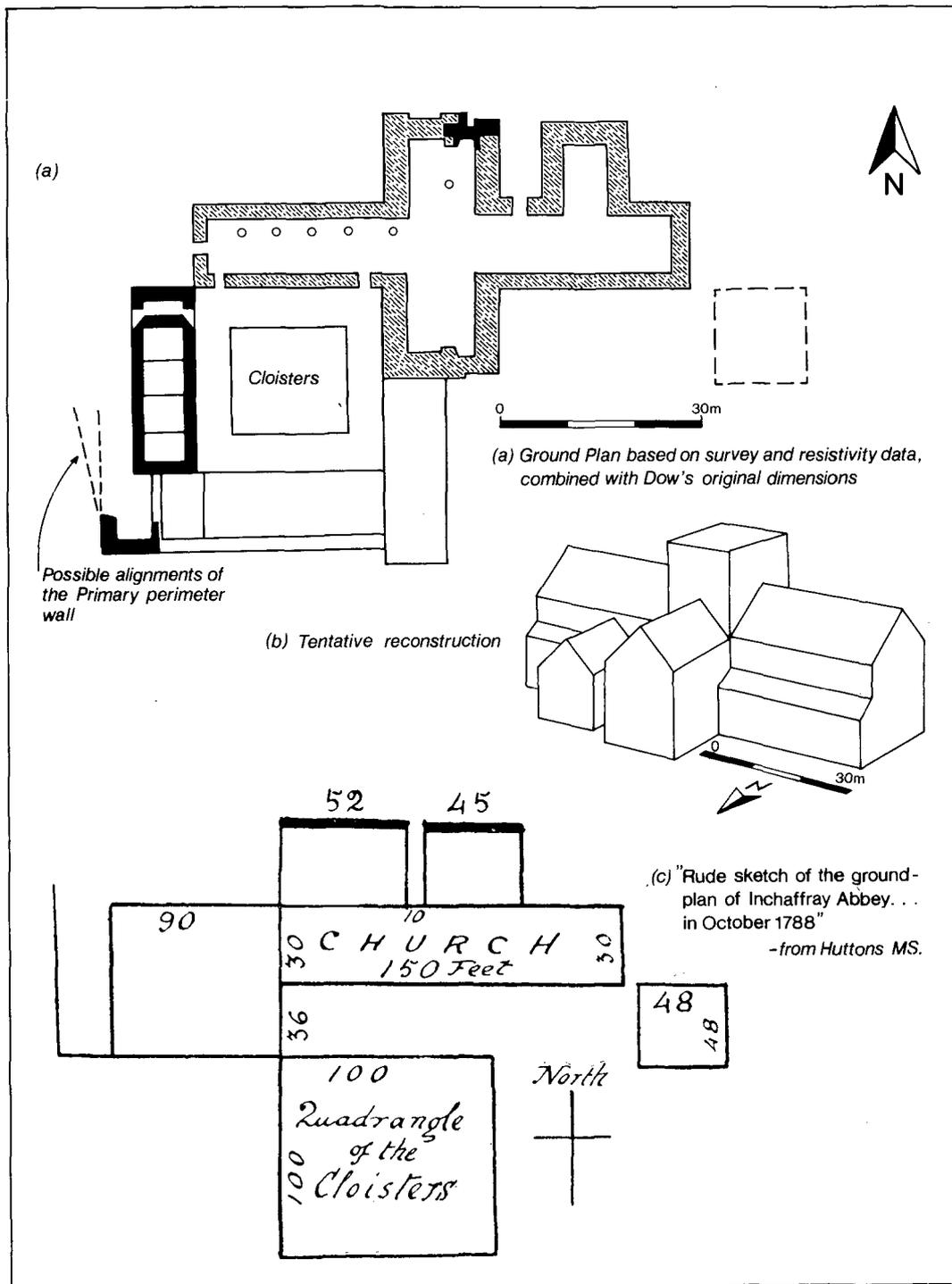
The value of the results of the combined fieldwork and research programme is undoubtedly in its synthesis, rather than in terms of any one line of inquiry. The generally poor state of the abbey buildings does belie its true archaeological potential, a fact which is confirmed by all the analyses which have been carried out. The combination of evidence deriving from a series of programmes of investigation clearly confirms the once high status of the abbey, particularly up to and during the 13th century.

The extent of the abbey structures and the island itself are illustrated most graphically by the results of the two remote sensing surveys: geophysical survey and aerial photography. The stonework and natural landform which define the site, to a large extent, have been much obscured by post-Improvement agriculture, clearance and drainage. There is little doubt that the wholesale clearance of the abbey ruins during the late 17th century caused extensive disturbance to original archaeological levels. As a consequence, the majority of the trenches opened in the short programme of excavation reflected an extensive residual demolition horizon, with few original, secure contexts. However, the relatively comprehensive and consistent stripping of the site for stone also exposed good evidence of the transition from colonization of the site by the Augustinian House to its emergence as a fully developed abbey complex during the 13th century.

The main area of excavation (Area 1) and the investigation of the north transept and sacristy (Area 3) both revealed massively reduced major wall-lines, and consequently enabled the excavation of surviving archaeological material, in the form of negative features (drains and construction trenches), which would otherwise be obscured beneath structures. This enabled the identification of a detailed sequence of construction for the south-east corner of the abbatial ranges, including clear evidence for the rationalization of the site to a regular plan during the progressive building programme which began c 1300 with the abbey church. The evidence of a hearth/oven complex sealed by extensive domestic debris dating to the mid-13th century, prior to the construction of the abbey precinct wall, conforms well to the documented upgrading of the abbey, c 1266. Apparently temporary service structures, as implied by the early date of the oven/hearth, were replaced by the more permanent, formal abbey plan in this part of the site.

While mindful of the limited scale of the excavation on the whole, the correlation between the documented stages of colonization, initial building, the improvements to both structural fabric and the integrity of the island, and archaeological findings, is marked. This is particularly the case in Areas 1, 3, 4 and 7, where relatively small trenches, strategically located – some deriving from remote-sensing evidence – were sufficient to characterize key archaeological sequences, in enough detail to enable cross-referencing between areas, and to generate comprehensive plans. The relative wealth of information from these trenches contrasts, however, with the findings in Area 5. This trench was intended to investigate one of the most prominent and consistent anomalies picked up by both resistivity and aerial photographic survey. In reality the excavated area was too limited to interpret these still enigmatic features, as they do seem to relate to a series of similar linear features extending over much of the north end of the site. The extensive dumping or infill deposits of dry stone in the fairly recent past made any accurate interpretation of the features below difficult. However, at present, the most likely explanation for their presence is that they represent the limits of viable occupation (dry-shod) of the island at an extended period of its existence, and consequently may well reflect attempts to both protect the site from flooding, and to drain any one of the known causeways which ran from the abbey to the north side of the valley.

The general overall success of this integrated appraisal of this important site is indisputable, and clearly shows how a series of independent methodologies can be illuminated by even a short programme of excavation. The incidence of important finds from metal detectors over many years in fields around the site, as well as one of the most complete surviving cartularies from a Scottish



ILLUS 19 Plans and reconstructions on Inchafray Abbey

abbey, have long been seen as evidence of its importance, both historically and archaeologically. The recent work has shown however that the process of land-use, both during the monastic occupation of the site and after its abandonment has created an archaeological regime which is both localized and extensive.

The evidence still remains largely underground, but our understanding of the status, scale and early history of this highly significant site has been greatly enhanced by this programme of work. The findings of this work have provided a tantalizing glimpse of the wealth of this particular community, and confirm its importance in terms of the archaeological investigation of early European Monasticism integrating with the little-understood 'community of brethren' from an earlier period. Whereas little direct information has been uncovered concerning this most intriguing historical process, there is little doubt that Inchaffray may yet yield more crucial evidence.

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