SKELLIG MICHAEL, CO. KERRY: THE MONASTERY AND SOUTH PEAK

Archaeological stratigraphic report: excavations 1986–2010

Edward Bourke, Alan R. Hayden, Ann Lynch

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Edward Bourke, Alan R. Hayden, Ann Lynch

With contributions by:

Ryan Allen, Teresa Bolger, Claire Cotter, Julie Franklin, Sheila Hamilton-Dyer, Michael Kenny, Linda Lynch, Clare McCutcheon, Rosanne Meenan, Emily Murray, Joseph Norton, Michael O'Connell, Lorna O'Donnell, Michael O'Sullivan, Anette Overland, Eileen Reilly, Grellan D. Rourke

Drawings by Patricia Johnson (artefacts) and Conor McHale (site drawings)

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1. INTRODUCTION

1.1 INTRODUCTION

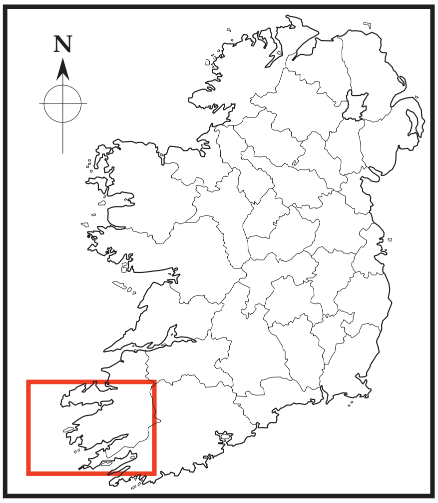
The ongoing conservation works programme at the early medieval monastic site on Skellig Michael commenced in 1978 and has continued each summer season since then. The first season's work was in response to the collapse of a section of retaining wall to the west of St Michael's Church within the monastery, and shortly thereafter work focused on the repair of the south steps, the main access route to the monastery. Survey work began at this time and the first archaeological intervention took place in 1980, with excavations proper commencing in 1986 and continuing almost every season until 2010 (see Section 2 for full details). Over the years the archaeological work ranged from monitoring and supervision to full excavation and, because the scope of the archaeological work was determined by and large by the conservation works programme, investigations were focused on the monastery and associated structures and the South Peak. In 2010 survey and conservation works commenced on the lighthouse road; once this is completed, a programme of conservation works will be carried out at the old (disused) lighthouse.

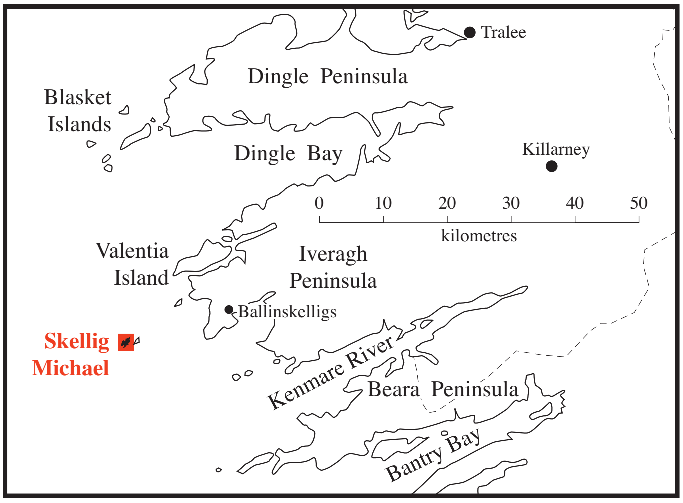
This report (which is to be published in pdf format on the website www.worldheritageireland.ie and which will be lodged in the state archaeological archives) is the full account of all the archaeological works carried out within the monastery and South Peak structures. It contains stratigraphic details with supporting plans, sections and photographs; a finds catalogue with descriptions and interpretations by relevant specialists; the raw data and results of palaeoenvironmental analyses and the osteoarchaeological analyses of human remains; a full account of the faunal remains; and the radiocarbon dates. The report concludes with an interim statement of the site's significance. The purpose of this report is to make available the details of the archaeological works undertaken to date, in advance of the planned multidisciplinary publication programme.

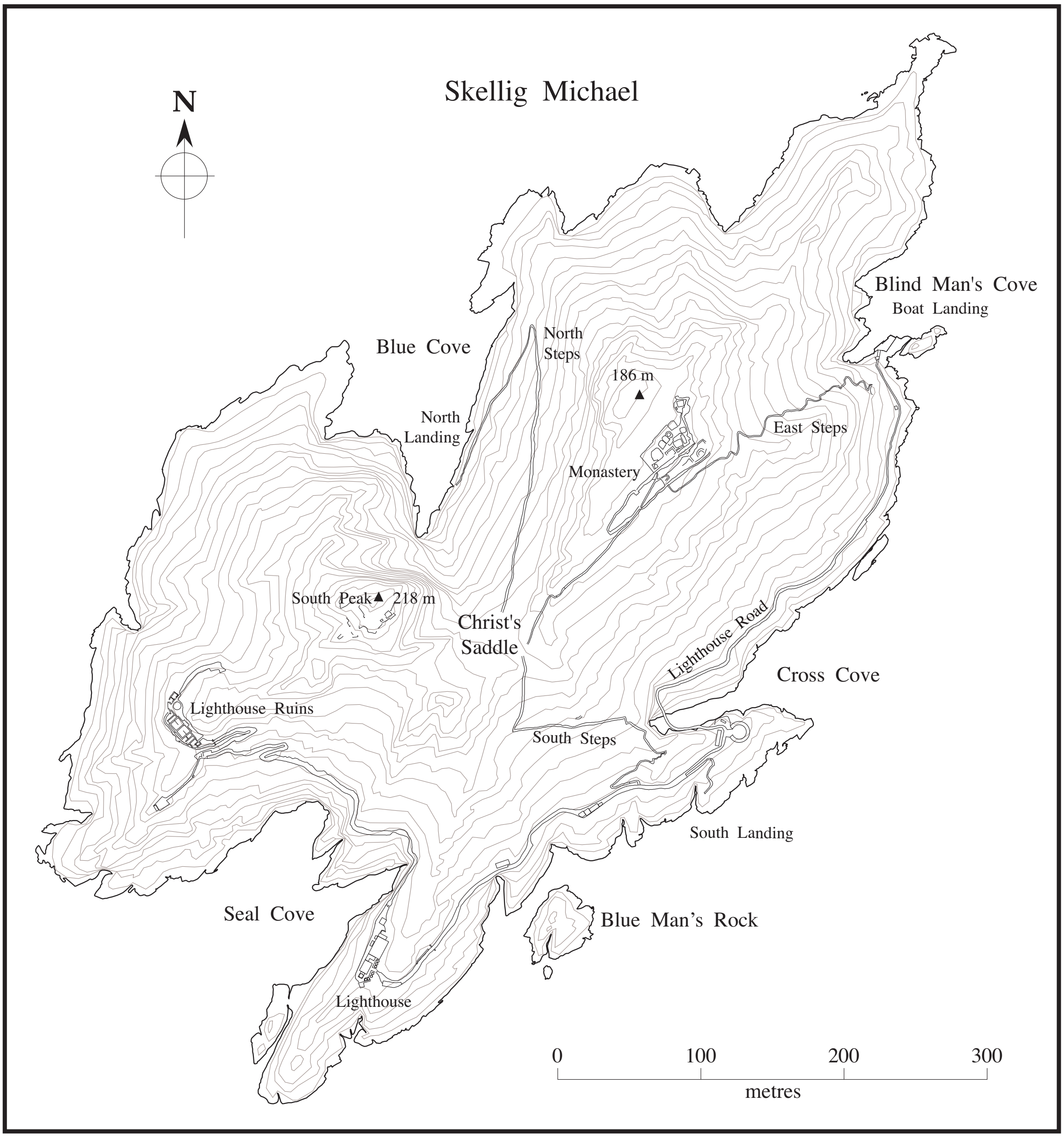
It is intended to produce a series of publications that will integrate the archaeological results with those of the conservation works programmes and related projects. Work has commenced on these publications and it is envisaged that a number of separate volumes will incorporate the following:

- The historical and documentary background of Skellig Michael. This will cover accounts from the early historic period up to the surveys carried out in the 1950s. A research project looking in detail at the lighthouse period of occupation will be published at a later stage in conjunction with the results of the works that have yet to be carried out to these later structures.
- The architecture, archaeology and conservation of the monastery and associated structures. This will include detailed surveys and descriptions of the monastic structures and a full account of the engineering, structural and conservation works undertaken. The results of the archaeological excavations will be incorporated with those of other related projects, e.g. water management.
- The architecture, archaeology and conservation of the South Peak structures. This will incorporate a full record of all structures discovered and their conservation, together with the results of excavations carried out.
- A study of the geology of the island and its influence on the form of the monastic settlement.
- An in-depth discussion of the monastery, its role in early medieval Ireland and its European context.

All excavations described in this report have been carried out by, or on behalf of, the National Monuments Service (NMS). The NMS was part of the Office of Public Works (OPW) until 1996, when







Ill. 1.1—Location of Skellig Michael and contour map of island, showing main features.

an integrated Heritage Service was established in the Department of Arts and Culture. In 2003, however, the different elements of the Heritage Service were reassigned to various government departments; at the time of writing (2011) the architectural component of the NMS (responsible for the conservation and management of all monuments in state care) is in the OPW and the archaeological service is part of the Department of Arts, Heritage and the Gaeltacht (DAHG).

1.2 SUMMARY BACKGROUND INFORMATION

12.1 LOCATION AND LEGAL STATUS

The island of Skellig Michael (townland: *Sceilg Mhichíl*) lies 11.6km off Bolus Head, the westernmost tip of the Iveragh peninsula, Co. Kerry (SMR: KE 104A-001; National Grid Reference 024812 060654) (Ill. 1.1). The island, which is approximately 21.9 hectares in area, is owned by the Minister for Arts, Heritage and the Gaeltacht on behalf of the Irish people, with the exception of the lower (working) lighthouse and its curtilage, the helipad and adjacent store. Skellig Michael is a National Monument in state ownership, the preservation of which is a matter of national importance by reason of its historical, architectural, artistic or archaeological interest.

The entire island was inscribed on the UNESCO World Heritage List in 1996 in recognition of the outstanding universal significance of its cultural landscape and the importance of its protection to the highest international standards.

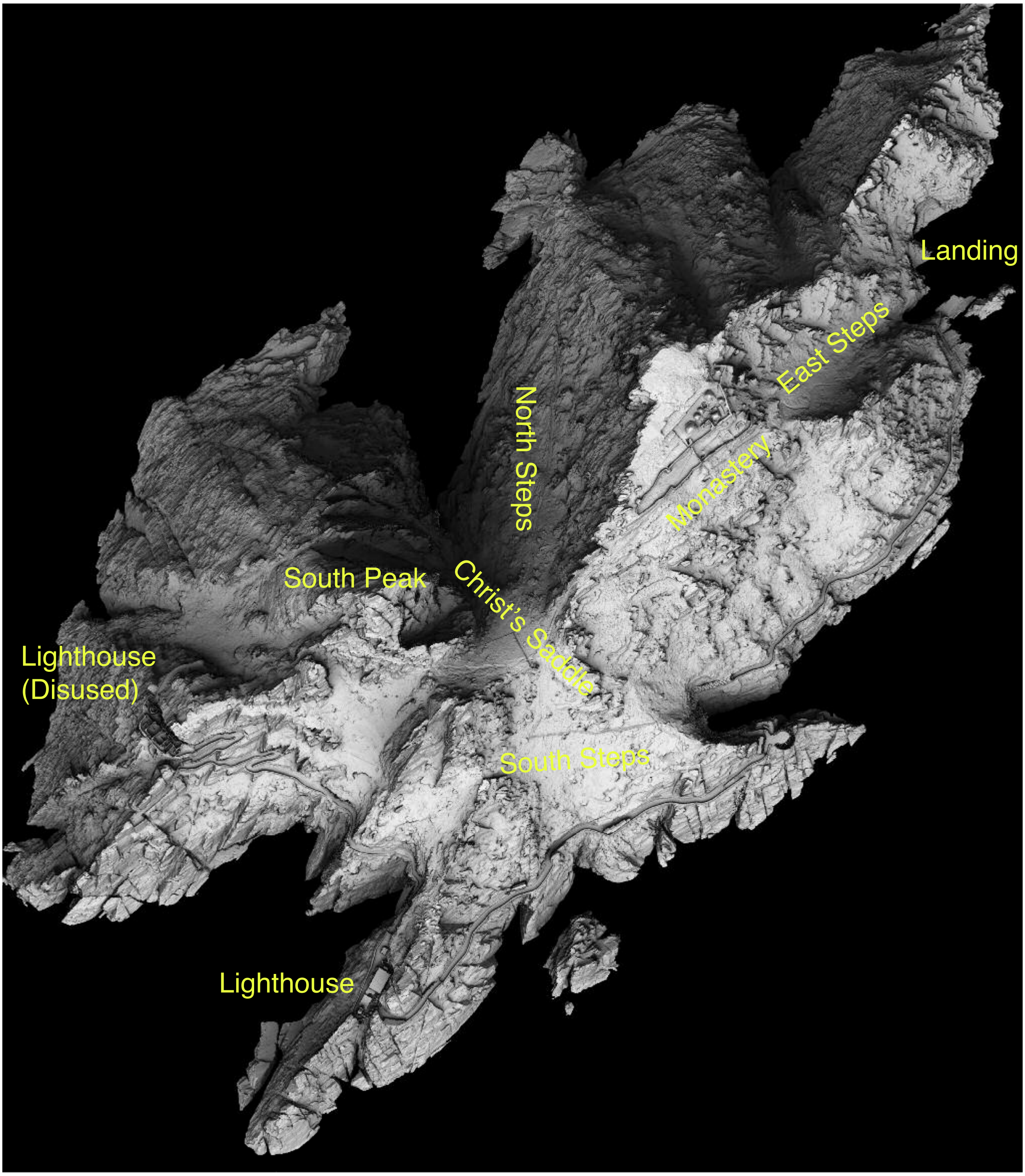
1.2.2 GEOLOGY AND TOPOGRAPHY

Michael O'Sullivan

Skellig Michael represents one of the most westerly exposures of Devonian (Old Red Sandstone) rocks in western Europe. These rocks are sedimentary in origin and were deposited during the upper part of the Devonian period, between 360 and 374 million years ago. During this time Ireland, as part of a larger continental land mass, was situated south of the equator. A crustal depression or trough, known as the Munster Basin, existed in southern Ireland at this time, allowing the accumulation of a great thickness of sediment. The basin was bordered by mountainous or upland areas to the north and south. The 200m of sediments exposed on Skellig Michael were deposited in alluvial and fluvial environments in this basin.

The present outcrop pattern of the Devonian (Old Red Sandstone) is due to subsequent structural deformation. This compression or folding of the rocks occurred during the Hercynian Mountain-building period, approximately 300 million years ago. The structure of Skellig Michael is characterised by a major open trough-shaped fold (syncline) developed about an axis that plunges to the east. Conjugate joint sets (criss-crossing joint sets resulting in a diamond fracture pattern) are generated symmetrically about this axis, while an intensive cleavage fabric parallels the axis orientation. It is this relationship between fine-grained sedimentary rocks and planes of weakness such as bedding, cleavage and jointing that allows for small tool workability in the main.

The topography of Skellig Michael (Ills 1.1, 1.2), its iconic twin peaks and intervening valley (Christ's Saddle) is entirely controlled by bedrock geology. A major north–south-trending fault (running from Blue Cove in the north to Washerwoman Rock in the south) is expressed today as the valley between the peaks. The bedrock adjacent to this fault zone is dislocated, brittle and friable and erodes out more easily than the surrounding bedrock. It is this geological feature that underlies the saddle-like island outline we see today.



Ill. 1.2—LiDAR image of the island of Skellig Michael.

1.2.3 THE MONASTIC SETTLEMENT

Introduction

There are two separate elements to the monastic settlement on Skellig Michael: an extensive and well-preserved monastery constructed just below the top of a high, sloping rock platform on the east side of the island and a range of structures constructed on ledges high on the South Peak.

Three long flights of steps lead up to the monastery from three different landing places. The monastery consists of an inner enclosure containing two oratories, a mortared church, seven beehive cells and the remains of a 'latrine', water cisterns, a cemetery, *leachta*, crosses and cross-slabs. Two large terraces, referred to as the upper and lower monks' gardens, comprise the outer enclosure. High retaining walls support all the terracing upon which everything is constructed (Ills 1.3a, 1.3b).

On the other side of the island, rock-cut steps and ledges lead up to the structures on the South Peak. They comprise a series of platforms, traverses, enclosures and terraces daringly constructed on quarried ledges just below the peak (Ill. 1.4). The oratory terrace still retains its original features: an oratory, altar, *leacht*, bench, water cisterns and a possible shrine. Crosses and a cross-slab were also found on the South Peak.

Access to the monastery

There are three long flights of steps (east, south and north steps) that lead to the monastery and are part of a possible succession of routes, with traces of other, possibly earlier steps being discovered in places as survey work proceeds (Ill. 1.1). The monks used three different landing places, depending on the prevailing weather and sea conditions at the time of voyage. The basal sections of the three stairways were rock-cut, with the steps constructed of drystone masonry once they reached a level where stormy seas could no longer reach them and cause damage.

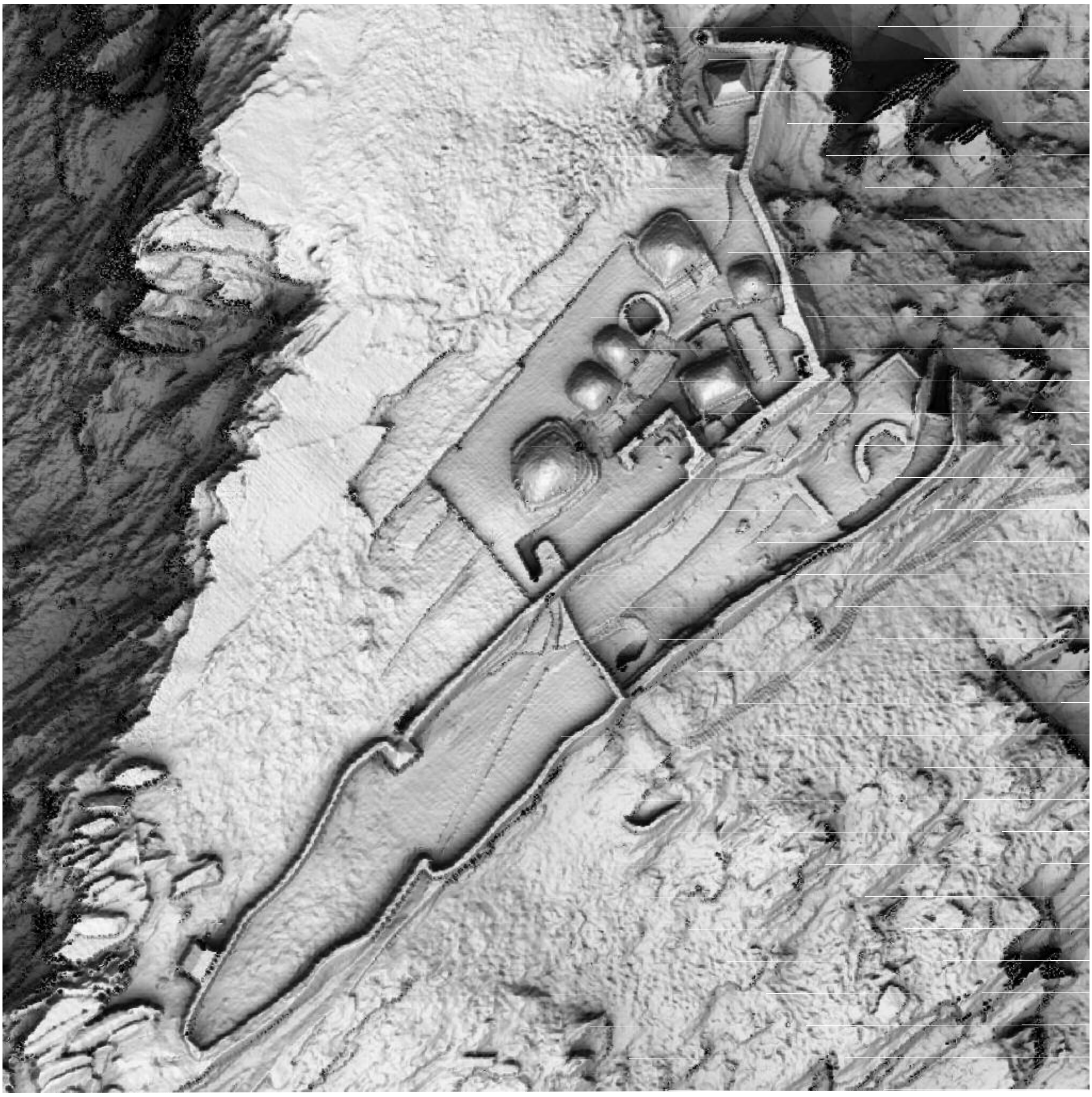
The base of the east steps was blasted away by the lighthouse-builders when they constructed the pier and the lighthouse road in the 1820s. Above this level the steps have been conserved and are in very good condition. The remains of a structure, which may have sheltered a boat or housed provisions, are located adjacent to these steps.

The north steps were used extensively by the lighthouse-builders. The lower rock-cut section has been very eroded by the action of the sea and a parapet was added at the lowest section of the drystone steps, which are in one long, continuous flight. These steps have been repaired, but owing to collapse on the very steep ground it has not been possible to recover all of the steps and some sections have been ramped. Neither the east nor the north steps are accessible to the public.

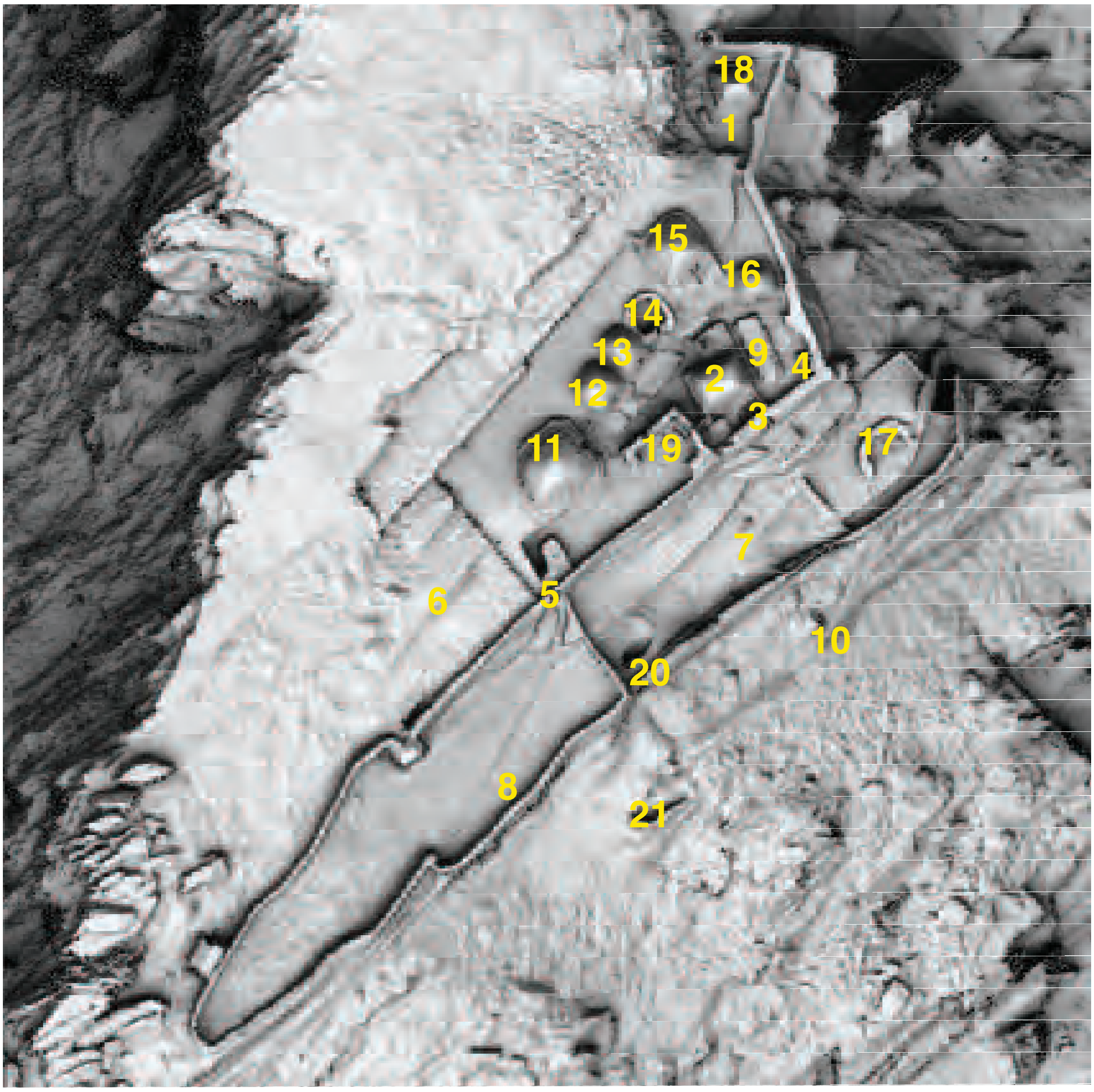
The south steps are used by visitors today and are accessed from the lighthouse road. They join the north steps at Christ's Saddle and continue as one flight up to the monastery. There are traces of other structures associated with these steps, including the remains of walling which may belong to terracing, a substantial prayer or pilgrimage station and lighthouse features.

The outer enclosure

Access to the monastery is via the outer enclosure, which comprises two large terraces known as the upper and lower monks' gardens. The present entrance into the upper monks' garden is not original and was probably constructed in the early nineteenth century. This terrace would have provided a suitable area for cultivation as it is south-facing and well shielded from the elements. Excavation in the lower monks' garden revealed the remains of an early cell (Cell G) surrounded by paving, indicating that at some stage in its history it could not have been used solely for cultivation (see Section 2.2 below). Part of this terrace is very steep but it is possible that small cultivation terraces were located here.



Ill. 1.3a—LiDAR image of the monastery using a sky-view factor processing algorithm.



Ill. 1.3b—Annotated LiDAR image of the monastery.

1. Small oratory terrace
2. Large oratory
3. South entrance 1, inner enclosure and *Leacht* area
4. East entrance, inner enclosure
5. South entrance 2, inner enclosure
6. Cistern 3
7. Lower monks' garden
8. Upper monks' garden
9. Monks' graveyard
10. East steps
11. Cell A
12. Cell B
13. Cell C
14. Cell D
15. Cell E
16. Cell F
17. Cell G
18. Small oratory
19. Saint Michael's Church
20. South entrance, outer enclosure
21. Guesthouse

Ill. 1.4—Aerial photograph of south peak indicating principal features.

The enclosure walls

One of the most imposing elements of the monastery is its retaining walls. The monks used these massive walls to create terraces upon which to build and to provide shelter from the prevailing winds. There is a long history of collapse of these walls, even during the monastic occupation.

The east retaining wall has three phases of construction representing repeated collapse and rebuilding. The retaining wall of the small oratory terrace is largely original in spite of considerable movement over the centuries. The long, south-facing wall of the inner enclosure comprises at least two phases of monastic construction, repair during the lighthouse occupation in the early nineteenth century (including the construction of a dry toilet for the construction workers) and a late nineteenth-century construction. Minor conservation work was carried out on this wall in the 1970s. The long, south-facing outer enclosure wall has also suffered repeated collapse. Most of the retaining wall holding the upper monks' garden had collapsed and was rebuilt during the current conservation works programme. The retaining wall of the lower monks' garden is almost fully original at its western end, but the eastern section had collapsed and was reconstructed during the current programme of conservation.

The entrances

There are two entrances into the outer enclosure. The earlier one (south entrance 1, outer enclosure), at the top of the east steps and leading into the lower monks' garden, has been repaired but is no longer in use. The later one, leading into the upper monks' garden, probably dates from the early nineteenth century and is the one currently used by visitors.

There are three entrances into the inner enclosure. The earliest (east entrance, phase 3), leading through the east retaining wall, is a short distance from the east steps. This was abandoned after serious collapse at an early stage in the history of the monastery. The monks then constructed an entrance on the south side (south entrance 1, inner enclosure) from the lower monks' garden, which is no longer in use and which pre-dates the large oratory. The last entrance to have been built by the monks (and modified in the nineteenth century) is accessed from the upper monks' garden and is the one still in use today (south entrance 2, inner enclosure).

The inner enclosure

The large oratory

This oratory is of the usual inverted-boat shape, with the door in the west wall (Ill. 1.5). It is built of stones of moderate size laid in horizontal courses. Internally it is rectangular (measuring 3.45m by 2.35m) up to a height of 2.3m and then develops into an elongated dome. The internal walls show signs of later limewashing. There is a small rectangular window in the east wall. On either side of the door, which has inclined jambs, the wall is faced inside with two large vertical slabs. The walls of the oratory are about 1.2m thick. Externally, there is a cross of white quartz inserted into the stones of the wall above the doorway, but this is a later addition.

The small oratory

This oratory is built on a small artificial terrace at the eastern end of the inner enclosure (Ill. 1.6). The interior is of superior construction to the large oratory and measures 2.4m by 1.8m by 2.4m in height. There is a small rectangular east window. The door has inclined jambs. The corners are articulated throughout, both inside and out. This structure is of later date than the large oratory.

Nearby are the remains of a beehive cell which has been interpreted as a latrine—possibly a unique structure in the context of Irish monasteries of this date.

Ill. 1.5—The monks' graveyard with the large oratory behind (Con Brogan, DAHG).

Ill. 1.6—The small oratory terrace viewed from south (Con Brogan, DAHG).

The dwelling cells (Ill. 1.7)
Cell A is the largest and clearly had a communal function. It is particularly imposing and has very thick walls, with several offsets to facilitate construction. The walls, 1.8m thick at the base, are built of small flat stones and there are a number of projecting stones on the outside at the upper level, again a construction feature. The door has a double lintel, inside and out, and the floor retains most of its original paving.

The internal space measures 4.6m by 3.8m and the cell is 5m high. It is subrectangular at floor level,

Ill. 1.7—The cells viewed from west (Con Brogan, DAHG).

evolving into an ovoid shape about 1m above ground level. There are two cupboards and projecting stone pegs (probably used for storage purposes). Uniquely, there are window openings, one of which focuses on the South Peak and another on the Little Skellig.

Cell B, to the east of Cell A, is built of very carefully worked large stones but there are no projecting stones inside or outside. The interior is square in plan, measuring 2.75m by 2.75m by 3m high. The corners are well defined and the corbelling leads to a large, square capstone. The cell is paved but much of this dates from the nineteenth century. There are two cupboard niches in the walls.

Cell C lies to the east of Cell B and is very similar to it. It is probably the last cell to have been constructed. It is also built of large stones but not as refined. It is almost square in plan, measuring 2.75m by 2.6m, and again the corners are well defined, with the corbelling leading to a rectangular capstone. There are no cupboards or special features. This cell retains most of its original paving and there is a drain running down the centre of the floor, under the paving.

Cell D, to the east of Cell C, is no longer intact. It is probably the earliest surviving cell within the inner enclosure and was already ruined when Cell C was constructed. It is D-shaped in plan and its shape is defined by orthostats. There is still some original paving visible at the entrance.

Cell E lies to the north-east of Cell D and at a higher level than the other cells. It is built of relatively small stones and has stepped plinths and projecting stones at the upper level. It is quite spacious inside, 3.65m by 3.58m, and is almost 4m high. Though almost square in plan, it becomes circular in shape as it reaches the roof. Most of its paving dates from the nineteenth century. There are some projecting stone pegs on the interior and there are holes in the walls to take wooden beams for a loft.

Cell F, to the south-east of Cell E, is built of moderately sized stones. It measures 2.98m by 2.75m, with the corners defined up to about 60cm above the lintel, after which it becomes circular. A stone with a circular opening completes the dome; it is unclear whether this is an original feature. There are three cupboards in the walls and projecting stone pegs. The floor is irregularly paved and includes some upright slabs that define a raised section on three sides, which may have been where the monks slept.

St Michael's Church

St Michael's Church lies to the west of the large oratory (Ill. 1.8). Part of this mortared church collapsed in the late nineteenth century when the enclosure retaining wall to the south collapsed. The church is rectangular in plan and has straight sides with sharp, rectangular corners. It would have had a timber roof structure. There is an east window and a doorway on the north side. There is evidence of two distinct phases of construction: an earlier, smaller, mortared church, constructed of large blocks of stone, was later expanded to provide a larger church, the masonry of which is primarily oblong stones laid horizontally with definite coursing. Sandstone for the door and window of this later church was sourced on nearby Valentia Island. There is evidence that this later church was rendered externally.

Ill. 1.8—The monastery viewed from south-east, with the remains of St Michael's Church in centre foreground (Con Brogan, DAHG).

The leachta

Leachta (plural; *leacht* singular) are common features of many early medieval monastic sites: they are rectilinear drystone platforms and may have been prayer stations associated with pilgrimage rounds within the monasteries.

There are two *leachta* within the monastery, one on the south side of the large oratory, which was fully excavated, and another close to the entrance of the small oratory.

Burial platform

A stone-built platform (2.3m by 3.6m), sometimes described as a *leacht*, lies on the north side of the large oratory. This was constructed in two phases, with the earlier phase pre-dating the construction of the oratory. Although not excavated, this feature is described as a burial platform because of its similarity in form to the nearby monks' graveyard, which does contain human remains.

The monks' graveyard

This is located to the east of the large oratory: it takes the form of a subrectangular platform (constructed in two phases) measuring 7.3m by 3.2m (Ill. 1.5). Its base is defined by large, long orthostats, against which a row of crosses and cross-slabs are placed vertically on the west side. The graveyard was bigger originally but the east side fell away when part of the adjacent enclosure retaining wall collapsed.

Paving

The area of the inner enclosure where the cells and oratories are located was fully paved throughout. Large white quartz flags are used to define a symbolic area in front of the large oratory. The paving dates from the monastic period and gives the monastery an almost urban quality. The paved area to the east of the monks' graveyard is a nineteenth-century repair.

Crosses/cross-slabs

There are two large, decorated crosses near the large oratory, one on either side, each of which is accompanied by smaller cross-slabs. There are many crosses and cross-slabs behind the large oratory in the monks' graveyard. On the island there are over 90 crosses/cross-slabs, most of them roughly shaped.

Quarrying and water collection

The sloping rock above the monastery provided the major source of building stone for the monks. The area beneath was also quarried. Once the sloping bedrock was exposed, the monks used it to collect rainwater, cutting channels into it to direct the water into the cisterns below.

The cisterns

There are two cisterns within the core area of the monastery. They are constructed on the exposed sloping bedrock and incorporated within the stone-built plinths beneath the cells. Their sides are constructed of orthostats and drystone walling. Together these cisterns can hold about 450 litres of water. An additional cistern (Cistern 3) to the west of Cell A was identified incorrectly as a souterrain prior to its excavation. A fourth cistern is located outside the monastery, below the lower monks' garden by the east steps. This is probably associated with the structure referred to as a 'guesthouse'.

The 'guesthouse'

At the top of the east steps, just before the entrance into the lower monks' garden, is a drystone structure on the left-hand side. It is elongated in shape, with a doorway on the east side, directly opposite the steps. It has one cupboard. This was most probably a guesthouse, where visitors could be accommodated outside the monastery. Associated with this place is a large, undecorated stone cross known as Dunraven's Cross.

The South Peak

The first mention of the possible existence of the structures on the South Peak was made by the Ordnance Survey of 1841, but it was not until a visit to the island by the antiquarian Lord Dunraven in the 1850s that reference was first made to a probable oratory: 'Near the highest point of the island, which is called the Spit, I found the remains of a little building which appears to have been quadrangular, probably an oratory' (Dunraven 1875–7, vol. 1, 34).

Liam de Paor, who studied the monastic remains in the early 1950s, made a vague reference to structures on the South Peak. Subsequently, noted academic Françoise Henry, although unable to ascend the Peak herself, received a plan of the ruins of the structure from one of the lighthouse-keepers, which confirmed Lord Dunraven's observations.

The lack of information about the South Peak structure prompted the Office of Public Works to conduct its own detailed study, which began in the mid-1980s. This investigation discovered what has been described as a hermitage constructed on the steep slopes of the peak. The 'hermitage' consists of three separate terraces, labelled garden/dwelling terrace, oratory terrace and outer terrace. The garden/dwelling and oratory terraces are located near each other, on the two best natural ledges of the peak. Their spatial proximity is reinforced by the construction of the two routes between them, suggesting that they had an important functional relationship. The outer terrace, in contrast, is set very much apart from the other terraces and is also the most difficult to reach. The recent works carried out on the South Peak suggest that the structures constitute an elaborate pilgrimage station and perhaps use of the term 'hermitage' is not wholly accurate in this context.

Access to the South Peak

The climb to the South Peak starts at Christ's Saddle and follows rock-cut steps and handholds to the lower traverse, below the Needle's Eye—a point where the monks cut almost vertical rock-cut steps though a cleft in the rock. Above this is a small enclosure which may have been a contemplation or prayer station (Ill. 1.9). A further steep climb leads up to the first of three terraces. At a point halfway up this climb is a separate, more basic route, which leads right up to the summit. The rock-cut steps near the top of this route run under the upper traverse, evidence that this was part of the original route used by the monks to get to the summit prior to the construction of the 'hermitage'.

The garden terrace

This kidney-shaped terrace is 13m long and varies in width from 2m to 4m. Its long axis runs roughly from north-west to south-east. The retaining wall, 1.5m high at the north-western end of the platform,

Ill 1.9—The small enclosure, possible prayer station, just above the Needle's Eye on the South Peak (Con Brogan, DAHG).

is built on firm bedrock and is in impeccable condition. Much of the remaining terrace has collapsed, the current ground level now being below the original level. It is possible that a small dwelling cell may have existed here.

The oratory terrace

The second and most important of the terraces on the South Peak, the oratory terrace lies at right angles to the garden/dwelling terrace and 4m above it (Ill. 1.10). The main structure is a corbelled oratory with a narrow entry midway along the west wall and its east wall partially built on a stone slab bridging a cleft in the rock. Internally it measures approximately 2.3m by 2m. Against the east wall are the remains of an altar. Two small, interconnected rock-cut basins are located beside the church. These hold water—a vital resource for a monk in this inhospitable place. The monks had cut channels into the near-vertical exposed rock faces above this terrace to channel the rainwater down into the basins below.

At the western end of the terrace, approximately 1m east of the rock face, are the remains of a rectangular *leacht*, 1.1m by 1.6m. This is most likely to have been an external altar. A low drystone bench runs along the rock face, looking towards the oratory. This terrace appears to have been fully paved originally. It is constructed in quite a complex way to allow for circumnavigation of the oratory itself. A similar arrangement can be seen on the small oratory terrace within the monastery, indicating that this must have been an important liturgical requirement. To the east of the oratory terrace is a long, narrow,

Ill. 1.10—The oratory terrace on the South Peak, with Little Skellig and the Kerry coastline in the background (Con Brogan, DAHG).

tapering terrace upon which are the possible remains of a shrine.

The upper traverse
This is located above the oratory terrace and leads across to the final rock-cut climb to the summit and the outer terrace. It was originally paved and had a parapet wall.

The outer terrace
The outer terrace is the most isolated of the three terraces on the South Peak. It is structurally dissimilar to the others as the masonry remains consist of a 17m-long perimeter wall enclosing a series of stepped ledges. The function of this terrace is unclear, as the location of a dwelling cell here would have been impossible. It may have been used as a shelter or as a place of contemplation. Indeed, it may never have been completed.

Quarrying on the South Peak
There is clear evidence of quarrying below the South Peak and on the peak itself. The area between the Needle's Eye and the garden/dwelling terrace displays evidence of major quarrying. Below the southern retaining wall of the oratory terrace there is also evidence of quarrying, with platforms constructed to store the stone prior to bringing it up. At the base of this retaining wall is a small raised platform that would appear to have been the place from which the monks winched up the quarried stone from below. Quarrying on the South Peak is currently the subject of further investigation and research.

1.2.4 The natural heritage

Birds
Skellig Michael, together with nearby Little Skellig (townland: *Sceilg Bheag*) are two of Ireland's most important sites for breeding seabirds. Both the size of the seabird colonies and the diversity of species present make these islands highly significant on a national and international scale. Skellig Michael, together with the Blasket Island Group and Puffin Island, supports some of the biggest breeding populations of Manx shearwater and storm petrel in the world. Other seabird species breeding on Skellig Michael include fulmar, kittiwake, guillemot and puffin (OPW 2008, 14).

Skellig Michael is known as a traditional eyrie for peregrine falcon, although the birds do not breed on the island every year. Other birds that have been recorded as breeding in small numbers are chough, raven, rock pipit and wheatear.

Owing to its ornithological importance, Skellig Michael is designated as a Statutory Nature Reserve and a Special Protection Area, and is a proposed Natural Heritage Area.

Mammals
A small number of mammals have been recorded on Skellig Michael over the years. Grey seal haul out on rocky ledges around the island and, while the numbers are not significant on a national scale, they add to the diversity of the island's fauna. This species is listed under Annex II of the EU Habitats Directive and the Irish population is monitored on a regular basis. Other mammals recorded are rabbit and house mouse. Rabbit is a relatively recent introduction and was probably brought to the island by the lighthouse personnel in the early nineteenth century (*ibid*., 15).

Vegetation
Much of Skellig Michael is composed of poorly vegetated habitats such as rocky sea cliffs and exposed

rock. The vegetation that does occur is typical of highly exposed maritime conditions limited by thin soil, steep ground, salt spray and high winds. Common plant species include thrift, sea campion and rock sea-spurrey, with patches of red fescue, dock and sea mayweed occurring frequently (*ibid.*, 15). Lavelle (1977) records 38 species of higher plant.

1.3 THE EARLY HISTORY OF SKELLIG MICHAEL

Teresa Bolger

1.3.1 INTRODUCTION

Most published studies of the site have focused on the archaeology and architecture of the monastic settlement (e.g. de Paor 1955; Henry 1957; Horn *et al*. 1990). Examination of the historical references and material in relation to the site has largely consisted of recitation of the key references with minimal analysis.

The source material

This study of the early history of the site has focused on references to the site dating from before AD 1300. A variety of historical sources, both primary and secondary, have been consulted; details of the published editions of these sources are included in the bibliography. References to the site occur in the annals, martyrologies and a series of prose texts dating from between the eighth and thirteenth centuries. These references are generally sparse and largely incidental.

References to the island (as opposed to the monastic foundation) occur in a number of prose texts:

- Conall Corc and the Corcu Loigde
- *Lebar Gabála Érenn*
- *Cath Finntrága*

References to the monastic foundation occur in three of the surviving sets of annals:

- Annals of Ulster (AU)
- Annals of Inisfallen (AI)
- Annals of the Four Masters (AFM)

in two martyrologies:

- *Feilire Úa Ghormáin*
- Martyrology of Tallaght

and in a number of narrative prose texts:

- *Cogadh Gaedhil re Gallaibh*
- *Caithréim Cellacháin Chaisil*
- Giraldus Cambrensis's *Topographia Hibernica*
- *Libellus de fundacione ecciesie Consecrati Petri*

The Augustinian abbey at Ballinskelligs is listed in the ecclesiastical taxation of 1302–4, which was the latest record included within the scope of this study.

1.3.2 *Sceillec* and associated placename evidence

The term *sceillec* in Old Irish is generally translated as meaning a small piece of rock or a steep rock or crag (Quin 1953; Toner *et al.* 2007). It is not a common element in Irish placenames and can only be confirmed in use at three locations—at the western end of the Iveragh peninsula, Co. Kerry (in the area around the Skelligs themselves), at Bunskellig, Co. Cork, and at Templenaskellig in Glendalough, Co. Wicklow (Irish Placenames Commission 2010). It has been suggested that a number of other placenames, such as Skelgagh, Co. Tyrone, and Spellickanee, Co. Louth, also derive from *sceillec* or include it as an element (Joyce 1875, 421–2).

Debate over the etymology of *sceillec* had suggested a possible Old Norse origin for the term. This argument was first put forward by Oftedal (1976, 128–9), who questioned the reliability of the earliest annalistic reference to the site (AU, AD 824) and suggested that *sceillec* might be a Hibernicisation of the Old Norse *skellingar* ('the resounding ones'), which also occurs as a placename element in Norway. Initially this argument was accepted (e.g. Fellows-Jenson 1992, 31), but doubts about its validity have more recently been raised (Ó Corráin 1999).

Ó Corráin notes that Oftedal's original argument does not adequately account for the well-attested occurrences of *sceillec* in a variety of different texts (such as *Aislinge Meic Congline*, *Bretha Coemgen* or *Sanas Cormaic*) in its ordinary substantive meaning (Quin 1953; Ó Corráin 1999, 311; Toner *et al.* 2007). Further, while the annalistic references and that in the Martyrology of Tallaght may be the earliest definite references to the monastic foundation, the placename *sceillec* (referring to the Skelligs themselves) occurs in the text 'Conall Corc and the Corco Luigde' (Meyer 1910, 60), which can be dated to *c.* 700, thus pre-dating any influence from Old Norse (Ó Corráin 1999, 311).

While *sceillec* does appear to be the original or early name, there are occasional hints of an alternative name for the island—'Glascarraig' (lit. 'the green rock'). *Cath Finntrágha* relates how a fleet of ships belonging to the high king of the world made harbour at 'the green rock that is called Sgellig Michil today' (Meyer 1885, 4; O'Rahilly 1962, 3). O'Rahilly (1962, 78n.) notes that 'Glascarraig' occurs as an alternative name for Skellig Michael in late manuscripts, and an article on the Skelligs in the *Kerry Archaeological Magazine* notes that the island is sometimes known as 'Green Skellig' (S.M. 1913, 164).

1.3.3 Íarmumu—west Munster politics in the early medieval period

For a large part of the early medieval period Mumu or Munster was divided into two principal territories—Aurmumu (east Munster, centred on and controlled from Cashel) and Íarmumu (west Munster)—although the king of Cashel was nominally recognised as the king of all Munster. Until the emergence of the Dál Cais in the tenth century, the dominant political force within Munster were the Eóganachta. With a small number of exceptions, the kings of Cashel down to the mid-tenth century were drawn from branches of the Eóganachta, primarily the Eóganachta Chaisil and the Eóganachta Glendamnach.

Íarmumu was controlled by the Eóganachta Locha Léin, who were based in and around Killarney, Co. Kerry. This region was also commonly referred to as Íarluachair, referring to Sliabh Luachra, which formed the eastern boundary of the territory. There are indications, however, that, perhaps at an early period, the influence of the rulers of Íarmumu extended into south Clare and as far east as a line between the modern cities of Limerick and Cork (Ó Buachalla 1952, 80–1). Very few of the Eóganachta Locha Léin succeeded in obtaining control of Munster as a whole; the last to be acknowledged as king of Cashel was Ólchobur m. Cináed († 851), who succeeded Feidlimid m. Crimthainn and was previously abbot of Emly.

West Munster contained a number of significant subkingdoms; the kingdom of Corcu Duibne occupied all of the Iveragh peninsula, the southern and western portions of the Dingle peninsula and the linking lands at the head of Dingle Bay (MacCotter 2008). Corcu Duibne itself was further divided into three main territories, Irrus Tuaiscirt, Áed Conchinn and Áes Irruis Deisceirt; analysis of the Corcu Duibne genealogies suggests that these latter three divisions existed as political entities by at least 900 (*ibid.*). Áes Irruis Deisceirt occupied most of the Iveragh peninsula and the reference to Skellig Michael in the *Lebor Gabála* expressedly states that it was located within Áes Irruis Deisceirt (Best *et al.* 1954, 48).

It would appear that by the eighth/ninth centuries AD the control of the Eóganachta Locha Léin over the subkingdoms of Íarluachair was waning. The title accorded to the rulers of the dynasty is increasingly given as 'ríg Locha Léin' rather than 'rí Íarluachair' in the annals (Byrne 2001, 218). Further evidence of dissent comes from the so-called 'West Munster Synod' (Meyer 1912, 315–16); the present form of the text appears to date from the ninth century (Ó Buachalla 1952, 80; Ó Cróinín 2005, 224) and is an account of an alleged mid-sixth-century gathering of west Munster clerics and saints at the behest of the king of Ciarraige Luachra. It is unlikely that this is an account of a real event—many of the alleged attendees were not contemporaries (Ó Buachalla 1952, 78); it is more likely a propagandist text developed to support the claims of subkingdoms of west Munster (in particular the Ciarraige Luachra) for greater independence from the Eóganachta Locha Léin. A number of 'prophecies' within the text clearly correspond to late eighth-century personages and events (*ibid.*, 80), indicating that the political landscape described within the text is likely to be an accurate representation of the status quo in the late eighth and early ninth centuries.

1.3.4 Early medieval foundation

Foundation

It is not clear when a monastic settlement was established on Skellig Michael. The earliest definite reference to an ecclesiastical foundation at the site is the annal entry of AD 824 which records a Norse raid on the island.

The next reference to the site, only slightly post-dating the first, is in the martyrologies deriving from the monastery at Tallaght, Co. Dublin. The earliest in the sequence of martyrologies is the Martyrology of Tallaght (MT) itself, which includes an entry under 28 April referring to 'Suibni in Scelig' (Best and Lawlor 1931, 37). Suibne of Skellig is also included in the *Féilire Uí Ghormáin*, which was compiled between 1166 and 1174 at Knock, Co. Louth (Stokes 1993[1895], 86–7); this later martyrology refers to the original Martyrology of Tallaght by name and would appear to have derived its list of saints from a copy of MT that no longer survives. The earliest surviving copy of MT is the incomplete example included in the Book of Leinster, which dates from the mid-twelfth century, but Ó Riain's (1990, 37–8) analysis of the surviving corpus of the Tallaght martyrologies points to the original composition of MT no earlier than 828. Interestingly, the *Féilire Óengusso*, also composed in the ninth century and deriving from a redaction of MT (Ó Riain 1990), does not include Suibne.

What is certain is that the site was well established by the time these earliest surviving references occur, and most studies of the site would place its foundation sometime before 700 (e.g. de Paor 1955; Henry 1957; Horn *et al.* 1990). If we accept the association of the site with St Fionán (see below), it could well be a sixth-century foundation.

As previously mentioned, there is a reference to the Skelligs in the *c.* 700 text 'Conall Corc and the

Corco Luigde' (Meyer 1910); this is a reference to the island itself—the existence of a monastic settlement is not indicated. The relevant section of the text describes a dispute between the king of Cashel and the king of Íarmumu, which results in the king of Íarmumu fleeing to 'Scellec' and 'Gaur mac Maugo' (*ibid.*, 60). Neither is expressly described in this text as an ecclesiastical site, but both are islands off the Kerry coast. Gaur mac Maugo (*recte* Gair Mic Moga) is recorded as the site of an ecclesiastical foundation and is commonly identified with the modern island of Garinis (e.g. Hogan 1910, 435), though more recent studies suggest Scarriff Island (Ó Carragáin and Sheehan 2008). The text states that both islands are the property of the Eóganachta Locha Léin.

The events recorded in 'Conall Corc and the Corco Luigde' are set in the mid-fifth century. This does not mean, however, that it is an accurate record of the period; the events and political relationships that it describes are far more relevant to its period of writing (*c.* 700). While the Eóganachta Locha Léin would have been overlords of Corcu Duibne (and thus by extension its offshore islands, such as the Skelligs or Scarriff Island) *c.* 700, the reference in this text seems to imply a more direct relationship. The Eóganachta Locha Léin may have directly held these island territories or, perhaps more likely, they may have been the main patrons of the ecclesiastical foundations that came to be established on both islands.

This association of the Skelligs with the Eóganachta Locha Léin contrasts strongly to the later reference to Skellig Michael in the twelfth-century text *Caithréim Cellacháin Chaisil* (Brugge 1905, 38). Like the *Cogadh Gaedhil re Gallaibh*, the *Caithréim* is a propagandist text (in this instance in favour of the MacCarthaig dynasty, the ruling dynasty of the Eóganachta); far from detracting from the reference to Skellig Michael, however, this fact enhances it. In the relevant section of the text various subject kings of Munster explain their rationale for fighting against the Norse. The three kings of Corcu Duibne justify their involvement as a reaction to an attack on Skellig Michael, placing the site on an equal footing with such regionally important sites as Scattery Island (Inis Cathaig) and suggesting a link between the site and the ruling dynasties of Corcu Duibne. This lends weight to recent arguments regarding the potential regional importance of the site (Ó Carragáin 2008), while also suggesting that patronage and support for the site by the eleventh or twelfth century derived more from the local dynasties of the Corcu Duibne than from the Eóganachta Locha Léin, as may once have been the case.

Dedication

There are many questions surrounding the dedication of the site. As the name of the site indicates, the foundation came to be dedicated to St Michael, but the association of this saint with the site is commonly believed to have occurred quite late in its history. The first reference to the dedication is the latest in the sequence of annal entries relating to the site (AD 1044) and occurs only in AFM. The corresponding entry in AI simply refers to 'Sceilic'. AFM was compiled during the seventeenth century using a variety of surviving annalistic texts as its sources, including redactions of many surviving sets of annals (such as AU and AI) in addition to material that has not survived to the present. It is presumed that the reference to the site as 'Sgellic-Mhicil' derives from an earlier set of annals used by the compilers and is not an interpolation by them (certainly the earlier reference to the site in AFM at AD 950 refers just to 'Sgeillic'), but the divergence with AI is worth considering. The entry in AI is quite long and by this period the surviving manuscript of AI is likely to be a contemporary record of events. It could even be argued that the 'newness' of the dedication is reflected in its omission from AI.

Aside from St Michael, the other saint commonly associated with the site is Fionán, an important local saint who was a member of the Corcu Duibne and founded Inisfallen; though much of his ecclesiastical career was spent in the midlands, the surviving Latin Life emphasises his connections to south Kerry (Ó Riain 2009). No evidence for this association with Fionán has thus far been identified in early medieval texts, however. Skellig Michael is not recorded as one of the sites founded by Fionán, which is a curious omission, given the likely proposed regional significance of the site (Ó Carragáin

2008). The earliest identified instance of the association is the assertion by Smith (1756, 61) in his account of the site that it was originally founded by Fionán. Subsequent scholarly work on the site derives the association with Fionán from Smith's account. There are three holy wells in the townland of Kinard West (Tobar Muire, Tobar Fionain and Tobar Michil) on the south side of the Dingle peninsula; there is a folk tale that the wells were created by Saints Fionán and Michael when they landed there from Skellig Michael (Ó Danachair 1960, 75). On that basis it is likely that Smith's association of Fionán with the site derives from local folk tradition. The antiquity of this tradition is difficult to determine.

As already noted, one saint is mentioned in connection with the site in the early medieval documents. The Martyrology of Tallaght and the *Feilire Uí Ghormáin* both record a Suibne of Skellig with a feast-day of 28 April. It is tempting to suggest that Suibne could be the name of the original founder of Skellig Michael. Ó Riain's (1990, 26–35) schema for dating the original compilation of the martyrologies relies heavily, however, on the annalistic obits of late eighth- and ninth-century clerics who were accorded sainthood in the martyrologies. In such a context, Suibne may well have been a prominent cleric at Skellig Michael during this period; given the paucity of recorded information about the site it is difficult to be more definitive.

Clerical succession

Only four clerics are recorded in the annals (Table 1) and only one of the four is expressly titled abbot (Flann m. Cellach, †882); it is possible that the others were also abbots, though Aed (†1044) is described as a priest. Though the site is sometimes considered a hermetical foundation, none of the clerics is noted as being an anchorite. Possibly we could add Suibne to this list also, bringing the total of recorded clerics to five; while there is a potential that Suibne could be the name of the original founder of the site, many of the saints listed in the Tallaght martyrologies can be identified with clerical office-holders whose obits occur in the annals (for examples see Ó Riain 1990, 26–35).

Table 1—Clerics of Skellig Michael recorded in the annals.

Year	*Name*	*Annal*	*Entry*
824	Étgal	AU	Étgal of Scelec was carried off by the heathens, and died shortly afterwards of hunger and thirst.
		AI	Scelec was plundered by the heathens and Étgal was carried off into captivity, and he died of hunger in their hands.
882	Flann	AI	Repose of Flann son of Cellach, abbot of Scelec.
950	Blathmac	AFM	Blathmhac of Sgeillic died.
1044	Aed	AI	Aed Sceilic, the noble priest, the celibate, and the chief of the Gaedil in piety, rested in Christ.
		AFM	Aedh of Sgelic-Mhichil.

A single Norse raid is recorded in annals, in 824, resulting in the death of Étgal, possibly the abbot but certainly an important cleric. A record of a further raid is preserved in the *Cogad Gáedel re Gallaib* (*CGG*). *CGG* is a problematical text, as it is primarily a work of political propaganda (though early scholars mistakenly viewed it as a historical treatise), but it does draw directly on the contemporary annalistic records (Ní Mhaonaigh 1996), many of which do not survive to the present. So it is likely that the reference to the additional raid on Skellig Michael is authentic. There is an identifiable stratum of unique material within *CGG* relating to the territories of the Ciarraige and the Eóganachta Locha Léin, which suggests that the compiler of *CGG* may have had access to a west Munster source, though equally the material may reflect strong ties between the Ciarriage and Lismore, the possible source of the unique material for south-east Munster and the Deisí (*ibid.*, 120–1). This second raid is listed amongst a series of undatable entries within *CGG* which cannot be correlated with the surviving sets of annals (Todd 1867, 16–17). The position of the entry within the text of *CGG* suggests a general ninth-century date; in the redaction of *CGG* preserved in the Book of Leinster the raid on Skellig Michael is described as originating 'from Limerick' (*ibid.*, 228), which might suggest a mid-ninth-century date, after the establishment of the longphort but before its destruction in 887 (Valente 2008, 50).

1.3.5 A time of transition: twelfth-century reform

While the tenth and eleventh centuries were significant periods in the political history of Munster as a result of changes wrought by the emergence and expansion of the Dál Cais, the twelfth century was an important watershed in the history of the Irish church. By the end of the eleventh century religious and ecclesiastical life in Ireland had diverged sharply from the contemporary norms of mainland European Christianity. As a result, the twelfth century witnessed a growing movement within the Irish church in favour of ecclesiastical reform. The reform movement was characterised by a series of major church synods that set out and developed a new diocesan system and began the process of bringing the Irish church closer to European norms.

The impact of this reform movement can be seen in the history of many prominent ecclesiastical sites within Ireland, sometimes through the loss of episcopal standing, sometimes through the introduction of the new religious orders or the adoption of their rule.

The exact standing of the ecclesiastical foundation at Skellig Michael prior to the reform movement is difficult to ascertain. There are no indications that it was ever an episcopal foundation; nevertheless, the reference in *Caithréim Cellacháin Chaisil* does suggest that it was a significant site within Corcu Duibne and that, while it may originally have drawn support from the Eóganachta Locha Léin, its main patrons by the twelfth century are likely to have been the local Corcu Duibne dynasties.

This period broadly coincides with the time-frame during which year-round settlement at Skellig Michael may have been abandoned and a new foundation established on the mainland at Ballinskelligs. In light of the existence of a vibrant medieval tradition of pilgrimage to the monastery (see below), it is likely that the site continued to be occupied at least seasonally.

As with the foundation of the original monastic settlement at Skellig Michael, the exact date at which the Augustinian priory was established at Ballinskelligs remains elusive. The priory is listed in the ecclesiastical taxation of Ireland of 1302–4 (Sweetman and Handcock 1886, 298); the prior is described as the 'collector' for the deanery of Agadoe (*ibid.*, 295), so it was clearly well established by the late thirteenth century.

It is possible that the establishment of the priory at Ballinskelligs pre-dates the arrival of the Anglo-Normans. One of the characteristics of the twelfth-century reform movement was the introduction of new religious orders, such as the Cistercians and the Augustinians (notably the Arroasian rule). Though this led to the establishment of new religious foundations, the new monastic rules, in particular the Augustinian rule, came to be adopted at existing foundations also. The initial introduction of the new religious orders is generally credited to Malachy Ó Moirgair—new foundations such as the Cistercian abbey at Mellifont and the Arroasian abbey at Louth can be attributed to his direct patronage. During his term as papal legate (1140–8) Malachy was known to have been active in Munster, and the adoption of the Augustinian rule (commonly the Arroasian form of the rule) at existing ecclesiastical foundations within Munster, such as Roscrea, has been attributed to that period and to his influence (Dunning 1945, 303–4). O'Sullivan and Sheehan (1996, 347) have stated that the priory was founded in or shortly after

1210, following the date suggested by Gwynn and Hadcock (1970, 192).

The Life of Malachy written by St Bernard of Clairvaux records that Malachy established a new foundation at 'Ibracanese' in Munster; this placename has been described as deriving from *Íbh Rathach* (Iveragh), suggesting a location on the Iveragh peninsula, leading to the suggestion that this foundation was the abbey at Ballinskelligs (Fenton, *The Kerryman*, 13/11/1948). There are a number of difficulties with this (Gwynn 1992, 207–8), not least of which is the assertion in the text of the Life that Cormac MacCarthaig, the king of Cashel, who had endowed the foundation, could have had daily access to the new priory.

1.3.6 Twelfth- and Thirteenth-century records

References to both the island monastery of Skellig Michael and the Augustinian priory at Ballinskelligs are sparse during the twelfth and thirteenth centuries, the best-known references being the account of Giraldus Cambrensis and the ecclesiastical taxation of 1302–4, previously mentioned.

Giraldus Cambrensis's account of the site is not particularly informative. He does not name Skellig Michael, but describes how a hollow stone situated outside a church miraculously produces wine for the celebration of the Eucharist each day. This miracle occurs 'in the south of Munster near Cork' on a 'certain island which has within it a church of Saint Michael, revered for its true holiness since ancient times' (O'Meara 1982, 80). Despite the dubious geography of the reference it is unlikely that any location other than Skellig Michael would fit the broader description; in addition, the miraculous tale recounted occurs in a later document, which definitely confirms Skellig Michael as the location (see below).

A more interesting reference to the site occurs in the *Libellus de fundacione ecclesie Consecrati Petri*, commonly referred to as the *Regensburger Schottenlegende*. This is a mid-thirteenth-century Latin text giving an account of the foundation of the Irish Benedictine monasteries in Germany, at Weih Sankt Peter and St James in Regensburg, St James in Würzburg and St Nicholas in Memmingen. The text appears to have been composed at Ratisbon by an Irish monk, potentially originally from Kerry (Breatnach 1977–8, 58).

The initial section of the text offers an account of the career of St Patrick which includes a version of Patrick's expulsion of the demons from Ireland, featuring an intervention by St Michael that occurs on a rock off the coast of Ireland. This rock (according to the text) is known as 'Silex Sancti Michaelis' as a result. The text then includes a detailed description of the rock, its setting and various miraculous tales concerning the site (*ibid*., 59). One of these miracles is identical to that described by Giraldus Cambrensis.

Breatnach (1977–8) has argued that this section of the *Libellus* functions much like *dindsenchas* (and may have been intended as such), providing a rationale and origin-tale for Skellig Michael and possibly for another prominent local landmark, the Saint's Road, which leads to the summit of Mount Brandon on the Dingle peninsula. The text also points to a well-established tradition of pilgrimage to the site by the thirteenth century; the abbey at Ballinskelligs is likely to have provided a useful base for pilgrimage to the island. It may well be that the development of Skellig Michael as a place of pilgrimage provided impetus for the establishment of the Augustinian abbey on the mainland, to provide a controlled 'gateway' to the island.

1.3.7 Conclusions

The surviving evidence for the early history of Skellig Michael is very sparse; references to the site in texts prior to the thirteenth century tend to be brief and incidental. Some of these references are to the ecclesiastical foundation while others are to the island itself, as a prominent landmark off the south-west coast.

The earliest surviving reference to the island is contained in the *c.* 700 narrative text 'Conall Corc and the Corcu Loigde', while the earliest surviving references to the monastic foundation occur in AU, AI and the Martyrology of Tallaght, all dating from the ninth century .

By the eleventh century the site was clearly dedicated to St Michael and it is likely that a tradition of pilgrimage to the site had begun to evolve. There is a slight possibility that the site was originally dedicated to St Michael, though at present the balance of evidence suggests a rededication either from an unnamed local saint or from St Fionán (though the association of Fionán with the site has not been sourced in any medieval documentation).

There is no strong historical information that would establish a foundation date for the site, though a foundation before 700 seems indicated.

Historical sources do suggest that the original patrons of the site could have been the Eóganachta Locha Léin, with patronage shifting to local Corcu Duibne dynasties by the twelfth century. This would tally with the diminution in power of Eóganachta Locha Léin from the late eighth/early ninth century.

Again, uncertainty surrounds the date of the establishment of the Augustinian abbey at Ballinskelligs, though its background context would probably have been the influence of the twelfth-century reform movement in combination with a growing tradition of pilgrimage.

1.4 A SUMMARY OF THE LATER HISTORY

In the early thirteenth century a general climatic deterioration resulted in colder weather and increased storms on the seas around the south-west coast. This, along with a shift in the Irish church from a monastic to a diocesan structure, signalled the end of Irish eremitic island settlements, with the result that the community of Skellig Michael eventually moved to the mainland at Ballinskelligs. This is likely to have happened over a period of time in the later thirteenth century and possibly the early fourteenth century (see Section 8 below).

The island probably continued to be used as a dependency of the Augustinian abbey at Ballinskelligs, being occupied by some monks in the summer months. The prior of Ballinskelligs was still addressed in papal letters as 'Augustinian prior of St Michael's, Roche (de Rupe)'. The Augustinians must also have been actively involved in promoting and managing pilgrimages to the island and maintaining the structures there.

Skellig Michael remained in the hands of the Augustinian monks until 1578, when, as a result of the Desmond Rebellion, Queen Elizabeth I dissolved certain monasteries that were under the protection of the earl of Desmond. The Skellig islands thus passed into secular hands, to the Butler family. Although the monastery ceased to exist, the island continued to be used as a place of pilgrimage.

In the early 1820s the Corporation for Preserving and Improving the Port of Dublin (the predecessor of the Commissioners of Irish Lights) purchased Skellig Michael from John Butler of Waterville under a compulsory purchase order for the purpose of erecting two lighthouses on the Atlantic side. These were made accessible by an improved landing on the east side and a road that was blasted out on the precipitous southern and western sides of the island. During the period of construction, the lighthouse-builders occupied many of the beehive cells within the monastery, and the structural modifications carried out at this time have had a significant impact on areas of the monastic settlement. Both lighthouses and their associated domestic quarters were completed by 1826.

In 1880 the OPW took the monastic remains into guardianship and commenced a project for the repair of collapsed structures. Since that time, the OPW has continued in its efforts to maintain and preserve the monastic remains.

1.5 BACKGROUND TO THE CONSERVATION WORKS

Grellan D. Rourke

1.5.1 INTRODUCTION

Skellig Michael had been abandoned for a long time, during which much deterioration had taken place. Given the topography, the pressures of retained material and the lack of any maintenance over centuries, considerable loss must have taken place. During the lighthouse occupation in the 1820s considerable works were undertaken to render the place safe for use. This necessitated the creation of level platforms, improved paving and, most notably, works to the retaining walls. Before the builders departed, additional works were undertaken to clean up the site and to conceal the large amount of building debris created over a period of six years. Later on in the century the OPW took over the care of the monument and repair works were undertaken to walls, most notably to St Michael's Church, which had partially collapsed in the intervening period.

The condition of the site in the late 1970s was such that there were considerable structural problems requiring attention. Some were very serious in scale with potentially grave consequences, while others were more localised. With the consultant engineer Joss Lynam, a strategy was developed. The structural problems were rated and the most serious were tackled first. The works detailed in this report were driven by the need to resolve structural issues of all kinds in order to preserve the unique remains. Great care was taken to retain as much of any original material as possible, and this was the primary guiding principle. In addition to the preservation of the site, it was necessary to undertake the works to ensure the safety of visitors now and into the future.

The following is a summary of the rationale behind decisions taken regarding conservation works and the resultant archaeological excavations. The information is presented under the same headings as the archaeological excavations for ease of reference. Additional information is supplied for the north and south steps, where archaeological monitoring took place.

1.5.2 THE SMALL ORATORY TERRACE AND LEDGE

The terrace retaining wall

This was the first major work to have been undertaken on Skellig Michael. This retaining wall is an original monastic structure and retains a terrace upon which the small oratory is constructed (Ill. 2.26). Over time it had moved considerably owing to the pressure of the retained material above. The terrace itself had filled with a peaty soil and much water is channelled onto it from the rock above. The wet, peaty fill added to the weight this wall was required to support. Structural drystone construction is very flexible and the wall simply adjusted to accommodate the pressure of the retained material. The most vulnerable walling is the centre section of the south wall, which is not constructed on rock. This section began to move outwards at the base and, as it did so, the wall migrated both downwards and inwards above. This movement was slow and considerable; as the wall dropped, additional stonework had to be added to the top to maintain an enclosing wall. In the end a retaining wall had also to be constructed on the inside of part of the terrace to stop the upper parapet wall from falling in onto the terrace.

The deformation was considerable, with the base of the wall 2.6m out from the top, although there would have been some slight batter to the wall originally. The large base stones in the centre had fallen away, exposing a large hole (Ill. 2.3). Failure was not far off and it was remarkable that this wall had not collapsed, given the intense pressure it was under. It was not possible to correct the deformation in any way but it was essential to halt any further movement by providing a counterbalance secured from the rock well below. This was effectively a reinforced concrete arch put in at an angle to the wall and secured into the rock at either end. From the crown of the arch a buttress, faced in drystone, was built under the centre of the retaining wall, impeding any further slippage. Once the engineering works were completed, the wall was given additional strength *in situ* by tightening the existing drystone work.

The small oratory terrace

The material that had accumulated on top of the paving level on the terrace had added to the structural problems, and when this material was excavated the weight on the terrace was reduced to a more acceptable level. Some of the original paving was still intact. There are three major structures associated with this terrace: the small oratory, the monks' 'latrine' and a *leacht*.

The excavation exposed the original level of the paving on top of which the oratory was constructed. This building had suffered over time as the built-up ground consolidated under the weight. The north-west corner was partially built on exposed rock but the other walls were mostly constructed on paving which lay on fill. The settlement of the building varied and was most evident at the south-east corner, where most subsidence had taken place. Here the damage to the stonework was worst. The outer stone skin had suffered in the usual way with loss of stone at the upper level. As a consequence, water was coming into the building from the roof and was causing erosion of material from the interior, which is not paved. The south-east corner and the upper section of the outer stone layer were repaired to preserve the structure.

The monks' 'latrine' may pre-date the construction of the terrace and could have been accessed from a rock-cut ledge on the upper side. The *leacht* was partially constructed on this sloping bedrock. The base of the 'latrine' and substantial walling on the west side were fully exposed in excavation. The walling on the interior was corbelled, demonstrating that this had been a small beehive structure. All its features were intact and were repaired.

1.5.3 The large oratory

This structure has had a long history of movement, some happening very slowly over time, so that the building was able to deform considerably without collapse, notably in the north-west corner. There is one area (the north-east corner) that had collapsed and had been repaired during the monastic occupation. The north-east corner collapsed and was repaired when the annexe to the burial platform was built on its east side.

The main issue with the oratory was water ingress. This building had been used again from the nineteenth century, first as an office during the lighthouse construction in the 1820s and later as a church by the lighthouse families stationed on the island. There is still evidence of limewash on the interior. The outer skin of the dome had been repaired very roughly, with the stones placed in a very haphazard way. In time this facilitated the ingress of water into the building and the erosion of the internal floor. It was necessary to halt this cause of the deterioration of the structure. The rough work to repair the dome had been undertaken during the lighthouse occupation and a pipe bowl dating from this period was found when this repair was taken down. The upper part of the external skin on the dome was reconstructed in such a way as to throw the water away from the roof and walls. The interior masonry was in such good order that no work was deemed necessary.

1.5.4 South entrance 1 (inner enclosure) and *leacht* area

This entrance is located in an area not now easily accessible and in a wall of curious construction. A length of the original walling remains on the west side, while that on the east side had collapsed down onto the 'garden' below. It was this collapse that probably damaged the circular cell and the lower retaining wall in this location. The west jamb was reasonably intact, although it had started to deform under the weight and pressure of the wall above and to the side.

This is the second entrance into the inner enclosure. The seriousness of the collapse of this important feature needed to be addressed. Left unattended, the west jamb would have collapsed with additional loss of the surrounding upper retaining wall. This wall is quite unique on Skellig Michael. While it gives the appearance of a collapsed structure, it was constructed intentionally this way with a very rough face, the large, long stones built into the wall with the short ends protruding out in a haphazard and irregular fashion. There is a parallel on the mainland in the enclosure wall of the early medieval monastic site of Killrelig. This form of construction is very solid but has the disadvantage that it can be scaled very easily in the event of an attack, which might explain why it went out of fashion.

The main thrust of the work here was engineering, and it was possible to jack back the very large collapsing stones in the west jamb. The walling on top was taken down and the area was excavated. This revealed the original innermost lintel. It was possible from the collapse to reinstate the east jamb, and the wall to the east was built in a similar style to retain the structures above. A facing wall was constructed within the entrance opening at the back to support the retained material behind. On the exterior the base of a platform was revealed; this gave access to the entrance, which is at a higher level.

The large oratory was constructed after this entrance had been abandoned. It was not possible to excavate the area inside the wall fully, as the foundations for the oratory are constructed on the fill. It was possible to reach a sufficiently low level to show the very interesting stepped foundation of the oratory. The ground to the west was excavated in order to undertake repairs to the inside face of the upper retaining wall, and in the course of this excavation a number of skeletons were uncovered. Also excavated was a *leacht* with a large vertical stone at the west end. This stone proved to be the base of one of the two major decorative crosses in the inner enclosure. Where soil had built up against St Michael's Church a patch of original external render was uncovered. This was conserved *in situ*. The second phase of St Michael's Church had been rendered externally and probably limewashed, creating quite a stark contrast to all the earlier structures on the site.

1.5.5 South entrance 2 (inner enclosure)

While repairs had taken place on either side of this entrance, repair to the actual entrance had only taken place above the lintel level. There were two structural problems that manifested themselves by the early 1980s and both required immediate attention, as this is the only way for visitors to access the inner enclosure.

The nineteenth-century wall running from the entrance on the interior was giving cause for concern. It was effectively a retaining wall, holding back material to a height of a little under 2m. The forces at play were causing the wall to bow inwards, and it would have had a catastrophic effect had this collapsed when visitors were accessing the monastery. In addition, one of the lintels on the inside of the entrance had cracked and greater support was required, as most visitors also pass overhead.

During excavation the nineteenth-century wall was taken down; some of the rubble behind the wall was taken back and a better-quality wall constructed in its place. In exposing the inner corner of the west jamb of the entrance it became clear why this intervention had occurred in the first place: the inner face of the upper retaining wall had collapsed inwards and there was very little of the inner face left. This original corner was consolidated and the new retaining wall constructed back from the face of the previous wall so as to expose the inner corner of the entrance, showing the great thickness of the original upper retaining wall.

The area above the lintel on the inside was excavated and support was put in place to take the stress off the original cracked lintel, which was left *in situ*. In examination of this entrance it became clear that the stepped paving within the entrance was not original. There is a set of paving beneath, on top of which the entrance was built. The state of this paving was much dilapidated by the time the secondary paving was built. Interestingly, it does not turn west towards the current entrance into the upper monks' garden but east to make its way down to the entrance in the outer enclosure.

1.5.6 East entrance, phase 3 (inner enclosure)

The existing east wall of the inner enclosure had collapsed numerous times and was repaired on three different occasions. Each repair had been set back from the previous one, at a higher level. The last repair was undertaken in the early nineteenth century, when considerable enabling works were undertaken by the lighthouse-builders. This length of repair coincided with the long dimension of the monks' graveyard. It had become dangerous, and this is an area where visitors congregate. The initial project had been to take down this later section of walling and reconstruct it, but the walling beneath was also quite unstable and it was necessary to reduce the wall further. In the process another wall with an intact entrance came to light on the interior, and its condition required additional investigation to consolidate sufficiently to facilitate the upper wall repair.

This was one of the most significant structural finds and brings the history of the monastery back considerably in time. It was possible in the excavation to reveal the full extent of this early entrance and then investigate the interior in a limited way. It was soon evident why this entrance had been abandoned. There was significant evidence of a collapsed structure within, collapsing in front of the entrance on the inside. The fallen stones were long and flat with smooth faces and were aligned east–west. These remains are most likely those of an earlier well-built structure. It was possible to consolidate this entrance and to repair the later wall in such a way that visitors can now view the feature from above.

1.5.7 Cistern 3

This structure had been considered a souterrain. It was possible to crawl into the entrance and see that the interior chamber was located on the west side, but most of the low, long chamber was filled with debris from the collapsed roof structure. Visitors could walk on the ground above and this was exacerbating the structural failure. Excavation established the scale of the structure and that it was in fact another cistern rather than a souterrain. The side walls, which had collapsed, were repaired and the lintels put back into position again.

1.5.8 The lower monks' garden and its structures

This was the most challenging part of the work undertaken on the monastery. There had been at least two considerable collapses of the upper retaining wall into this area, with rebuilding by the lighthouse-builders and repairs by the OPW in the nineteenth century. The rebuilding was focused on the east end of the terrace; walls were built to enclose the steep and vulnerable terrain and to stop further erosion. A cross-wall had been built across the terrace, cordoning off the east end, which was very dangerous. In this area an additional wall had been constructed, set back from the line of the lower retaining wall. In time this latter wall had been undermined from underneath and had begun to fail. The overall structural stability of the east end of this terrace was considerably compromised, and any collapse would have cascaded down the steep south slope onto the lighthouse road below.

Owing to the topography it was necessary to have a different strategy for this terrace. Because of the seriousness of the situation at the east end, remedial works and excavation began here. Considerable safety precautions were required before the failing nineteenth-century interventions could be removed. Once the area was made safe, excavation began in earnest. This revealed the base of the original lower retaining wall, which must have collapsed most spectacularly. Set back from this wall were the remains of an early circular cell, with one door jamb still intact. The area surrounding this cell on the north and west was paved, so it clearly could not have been part of a garden. The condition of the drystone walling of the cell was good and this was tightened. Originally this cell must have been built against and partially into the lower retaining wall.

Near the entrance to the cell and at a lower level, and against the lower retaining wall, the remains of an indeterminate structure were revealed, possibly a storage chamber. The retaining wall, which had fallen away at this end of the terrace, was reinstated to retain all the features above. In doing so it was possible to present the full remains of this small chamber.

Only when this end of the terrace had been consolidated was it possible to work on the central section. Owing to the fall across the terrace it was not possible to fully excavate in this area; indeed, to reveal enough for structural consolidation it was necessary to construct a retaining wall midway along the garden to provide support to the upper retaining wall. This facilitated the exposure of more of the original south retaining wall. It showed that a series of large rocks, most likely from the base of the upper retaining wall, had come crashing down, hitting the lower retaining wall with such force as to cause it to deform. The major force of the collapse hit the base, causing a reaction which saw the upper section fall inwards. This dramatic deformation had to be addressed, and very slowly this long length of walling was carefully jacked up on the inside to increase its stability.

At the upper west end no works were undertaken other than those recorded when the outer entrance was excavated and repaired.

South entrance 1 (outer enclosure)

This is the only entrance into the lower monks' garden, and the north, south and east steps lead to this point. The entrance had been used by the lighthouse-builders, who before they left built a drystone facing wall on the exterior of the entrance, where most of the collapse had occurred. The structural problems relating to this entrance are inextricably bound up with the upper monks' garden. The west jamb is one of the 'pillars' underpinning the south-east corner of this garden. In addition, stonework at the top of the blocked-up ope was beginning to unravel.

Excavation exposed a very complete doorway with pillar jambs that had fallen outwards considerably. Much of the west jamb on the exterior had fallen away. The inner lintel had survived thanks to its protected location; it was still in its original position. A certain amount of jacking back was required for the pillar stones. The entrance had been designed to take a strong door and there were holes in the wall on the interior to accommodate a large draw-bar. The outer west jamb had to be repaired and new lintels found for the outer section of the entrance.

On the interior of this entrance a curved wall on the west side follows the curved steps that lead up into the terrace above. This wall had begun to fail and had fallen in and partially collapsed at the top and the end where it abutted the entrance. It was necessary to take down the upper section of this wall. The wall that was partly dismantled would appear to date from the nineteenth century.

1.5.9 Upper monks' garden

This area has suffered a series of collapses. To the left of the inner enclosure entrance the upper wall had collapsed and been repaired considerably, in a stepped fashion, by the lighthouse-builders, when they inhabited the monastery and constructed their latrine. The outer retaining wall had dramatically collapsed, most likely after the abandonment of the monastery. Most of it had fallen over onto the steep southern slope of the island and been lost. The lighthouse-builders needed to enclose this garden area and make it safe, so they built a new retaining wall. This was constructed in quite a different style to the original. One of the problems facing them was the dearth of building stone and it was only possible to build a narrow wall. In order to increase its strength they curved the wall in and out, which significantly changed the appearance of this feature. The third intervention had been to build a narrow wall on the diagonal at the south-east corner, where a section of the original walling had fallen away as the south-east corner of the garden had collapsed.

There were two structural issues, both relating to nineteenth-century interventions which were beginning to fail. The outer retaining wall had been pressured by some of the retaining material, and in two places the wall had failed where it abutted the remains of the original monastic walling. This failure manifested itself in partial collapse, creating holes that deteriorated each year. The ground on which the diagonal wall had been built had considerably eroded under the exposed exterior face, undermining the base of the wall. Had either of these structures failed there would have been fatalities, as visitors to the monastery congregate in this area before entering the inner enclosure.

In reconstructing the outer retaining wall it was possible to straighten out the footprint somewhat so that it better resembled the original line of the wall. Excavation revealed portions of the straight line of the inner face upon which the repair was constructed. Excavation at the south-east corner revealed why this part of the garden had failed, the perimeter walls here being built on a layer of large boulders sloping steeply to the south-east. In the end, the pressure became so great that this section collapsed, taking with it the west jamb of the outer entrance below. It was possible to provide sufficient support to this part of the repair so that the original line of the corner could be reinstated.

1.5.10 Structure at the base of the east steps

For the most part the east steps were reasonably intact, although many had slipped, which can represent the first phase of failure. In a number of locations this slippage had begun to accelerate and, given the steep topography on this side of the island, this would have resulted in loss of individual steps and a further unravelling of the staircase. Given the sensitive location of this staircase right above the landing pier, there was also a serious safety risk to those landing on the island. In all cases these steps, with attendant masonry, were secured back into their original positions. All slipped material was retrieved.

An elevated stretch near the end of the long flight leading down from the south entrance 1 (outer enclosure) had collapsed; both steps and masonry had fallen down the very steep ground to the south, some of it lost. If this length of structure had been left untouched further collapse would have occurred. This could have had serious impact far below, where the access road from the pier is located. In addition, given the height of the staircase above the ground at this location (this length of staircase has the highest supporting exposed masonry on the island), it would have been very difficult to access the remainder of the east steps to undertake works and effect ongoing maintenance. As much as possible was retrieved from the steep slope beneath and this section of the staircase was repaired using this material; some additional material was also required to complete the work.

At the base of the east steps lie the remains of a drystone structure. Below this location the steps had been dynamited away when the lighthouse-builders constructed the pier and road. This action unfortunately destroyed half of the long, rectangular structure, and what remained was very vulnerable to erosion as the ground falls away very steeply at this point. It is probable that more of this structure had survived the blasting and that it had fallen away in the intervening years. It was essential to consolidate and conserve what was left of this unique structure, possibly a boat-house. It is situated at a level at which the housing of a boat would have ensured its protection from winter storms. It was only necessary to tighten the existing masonry and to support the end wall where the ground fell away. One jamb of the entrance was revealed during excavation and this was secured.

This area was cleaned of vegetation to reveal a whole series of rock-cut steps. As these became worn, new steps were cut out alongside. This is the only location on the island where this has been noticed. Further up the east steps there is evidence of rock-cut steps running parallel with the later masonry steps. This can be seen elsewhere, and it is clear that the monks created their routes to the monastery in a simple straightforward way at first. Once they had established the preferred routes and had more time at their disposal, they created the major drystone staircases.

1.5.11 The north steps

The north steps are made up of two long flights leading down to the water from Christ's Saddle. These steps had been repaired and much used by the lighthouse-builders in the nineteenth century. The lower flight is made up entirely of rock-cut steps, many of which had been widened by the lighthouse men and since that time have become considerable eroded by the harsh seas on the north side. The upper, longer flight is of drystone construction. Given how they were constructed into the steeply sloping ground along their length, they were particularly vulnerable to erosion and collapse. In addition, on this side of the island there are continual falls of stone from the cliffs above and these would have exacerbated the situation. This stone fall continues and each year there is damage done to these steps, often quite considerable.

Unlike the east steps, when the side support gave way the individual steps fell away quite dramatically. The topography meant that they travelled easily down the steep slope, gaining considerable momentum; some were halted by large rocks below but many fell to the bottom, either falling into the sea or crashing onto the bedrock below and breaking up. The rate of loss to this staircase was accelerating as the steps unravelled, and the intervention required was quite different. The goal was to retain as much of the original as possible.

Where the steps had fallen away, a residue of masonry had remained. From examination of the slope and of the construction that remained it was clear that this was a long, straight flight of steps with the occasional flat landing. It was possible to set up ropes from the rock above to scour the steep ground below and retrieve what had been caught in the fall. This was a very slow process and the retrieved steps had to be pulled back up to the locations whence they fell. All that was possible to retrieve was taken back up but gaps remained; in these areas the side retaining walls were reinstated and the ground above consolidated and left sloping. It is now possible to reach the north landing safely again.

1.5.12 The south steps

The south steps have been in continual use and were no doubt repaired by the lighthouse-builders. Only one section of steps, that situated on the lower section of the flight above Christ's Saddle, posed a structural problem. It had begun to fall away although it had not yet failed. It was a relatively easy task to put the steps back into their original positions, thus consolidating the staircase again. The south steps regularly become loose from visitors travelling over them, and there is an ongoing daily maintenance programme in place to secure them and to avoid the development of more serious problems.

2. THE EXCAVATIONS

2.1 INTRODUCTION

Conservation works at the early medieval monastic settlement on Skellig Michael commenced in 1978. The initial focus was on the reinstatement of a section of the inner enclosure retaining wall, which had collapsed, and on repair of the south steps. In the early 1980s two early nineteenth-century revetments that were in a state of collapse were removed, as was the waterlogged peat that covered much of the inner enclosure.

The first archaeological intervention took place in August 1980, when Conleth Manning supervised the removal of peat on the north side of Cell A and the removal of the sod layer that partly overlay the plinth of the small oratory. Excavations proper commenced in 1986/7, when the small oratory terrace, south entrance 2 (inner enclosure) and the large oratory were investigated (Table 2). Works, including archaeological excavations, continued throughout the 1990s and early 2000s, focused mainly on the retaining walls, entrances and the upper and lower monks' gardens. Repair and consolidation of the east and north steps and associated structures also took place. In 2004 conservation and excavation works commenced at the South Peak, where survey work in the mid-1980s had identified a range of structures. These works, including detailed post-conservation recording, were completed in 2010 (Ill. 2.1).

The scope of the archaeological work on Skellig Michael was determined by and large by the conservation needs. This strategy was deemed the most appropriate, given the limited area actually available for excavation on this precipitous island and the intact nature of the structures, in the monastery in particular, which were left undisturbed. Within these parameters, then, the role of the archaeologist on Skellig Michael was to exploit fully the opportunities provided by the interventions required to conserve elements of the site, in order to provide new insights into this unique monastic settlement.

2.1.1 Survey and recording

Detailed pre-works surveys commenced in the late 1970s and have continued throughout the duration of the works programme. Both measured surveys and photographic surveys are carried out, and since 1994 the works have been recorded professionally on film. Plans, sectional profiles and elevations are recorded at various scales during excavation; following conservation, all structures are again recorded in detail.

Surveying on Skellig Michael presents many challenges, not least of which is the vertiginous nature of the terrain, with its attendant health and safety requirements. Plane table surveys were used extensively and in 1982 a photogrammetric survey (1:1000) of the island was commissioned which provided detailed contours and allowed the individual monastic structures to be correctly located on the island. This survey was subsequently tied into the National Grid. As survey and recording of the South Peak structures progressed, however, it became clear that the level of locational detail on the contour map was insufficient for accurate recording in this precipitous terrain. Consequently a three-dimensional geometric survey of the island was carried out in 2007, using aerial LiDAR.

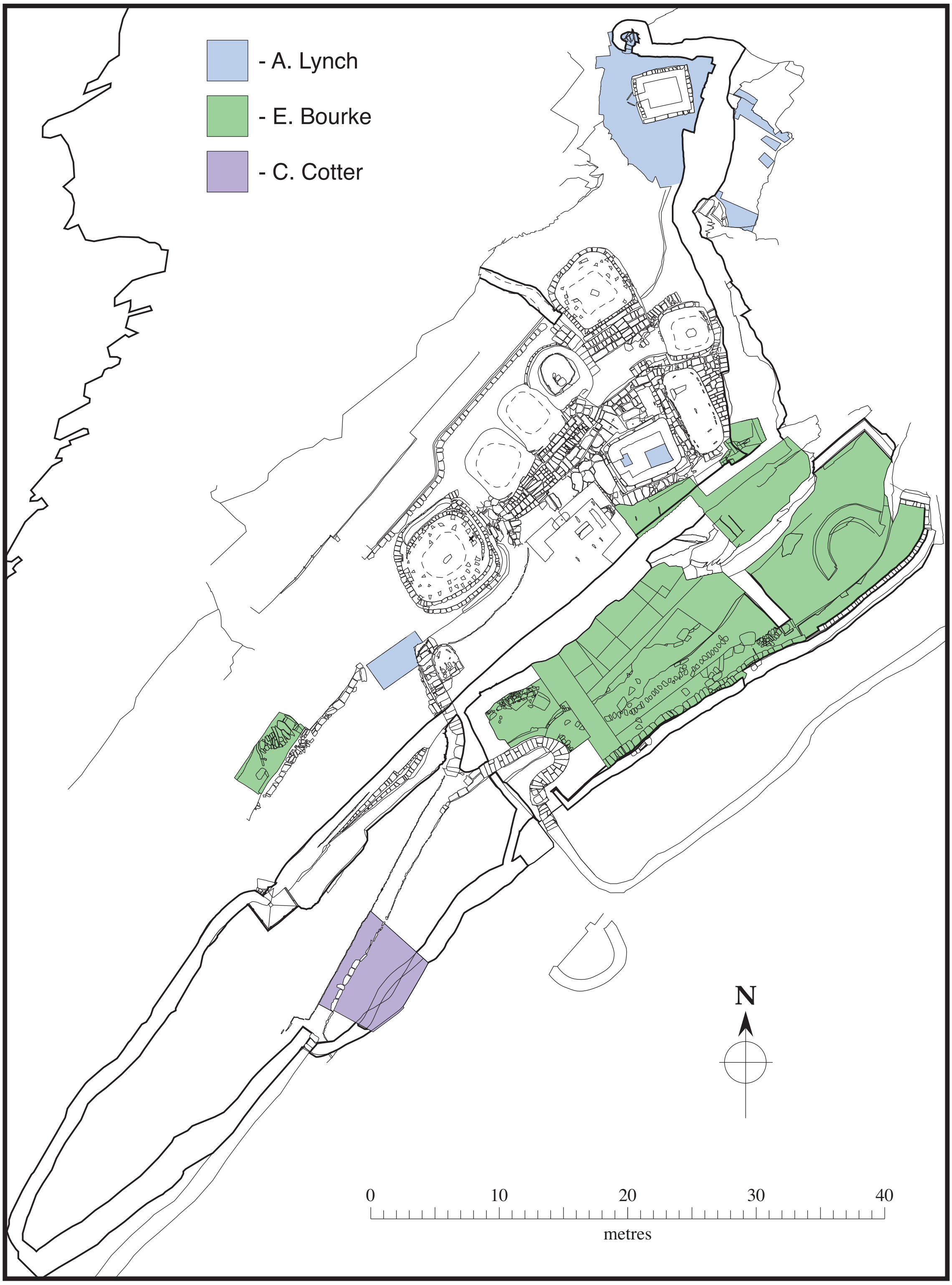
LiDAR (Light Detection And Ranging) is a method for determining the three-dimensional position of a point using a laser pulse. Traditionally, fixed-wing aircraft are utilised in the collection of these data, but the accuracy and resolution required in the effective recording of Skellig Michael (ground point density of 60pts/m^2) necessitated a different approach. To achieve such a high resolution the FLI-MAP

Table 2—Excavations carried out on Skellig Michael.

Year	Licence No.	Director	Details
1986–7	E338	Ann Lynch	Excavation of the small oratory terrace and south entrance 2, inner enclosure.
1986–7	E338	Ann Lynch	Excavation of the large oratory, inner enclosure.
1988		Paddy O'Leary	Supervision of works to south entrance to the lower monks' garden.
1990	90E0034	Claire Cotter	Excavation of western end of upper monks' garden.
1993–6	93E0195	Edward Bourke	Excavation of lower monks' garden.
1996–7	93E0195	Edward Bourke	Excavation of Cistern 3, west end of inner enclosure.
1998–2000	93E0195	Edward Bourke	Excavation of south entrance 1, inner enclosure and the burials and *leacht*, next to the large oratory.
2000	93E0195	Edward Bourke	Excavation of east entrance, phase 3, inner enclosure and supervision of conservation works to monks' graveyard.
2001–2	93E0195	Edward Bourke	Supervision of conservation works to east and north Steps.
2003	93E0195	Edward Bourke	Excavation of early structure found at base of east steps.
2004	93E0195	Edward Bourke	Excavation of features on the South Peak, including the lower traverse, upper and lower platforms, the small enclosure above the Needle's Eye (the 'prayer station') and a test-trench on the 'garden' terrace.
2005	93E0195	Alan Hayden	Excavation of the 'garden' terrace and part of the oratory terrace.
2006	93E0195	Alan Hayden	Completion of the oratory terrace, excavation of the upper traverse and ledges beneath the oratory terrace and a *sondage* in the outer terrace.
2007	93E0195	Alan Hayden	Excavation of the outer terrace, ledges below the outer terrace, southern traverse of the northwest passage and a platform and steps at the base of the Needle's Eye.
2008	93E0195	Alan Hayden	Excavation of the northern traverse and stairs of the northwest passage, northern cliff ledges, the lower gully, and from the blind corner to the cliffs below the Needle's Eye.
2009	93E0195	Alan Hayden	Surveys on the South Peak.
2010	93E0195	Alan Hayden	Excavation of the ledge with fallen stones and the broad ledge, both on the South Peak.

400 system was used. This aerial LiDAR survey system, which utilises a helicopter sensing platform, was initially designed to survey infrastructural assets such as roads, railways and electricity supply networks. The sensor system mounted beneath the main helicopter fuselage consists of:

- three 150kHz LiDAR sensors (forward, nadir and aft);
- two RTK GPS receivers, which provide accurate location when used in conjunction with RTK base stations;
- an Inertial Navigation System (INS) to continuously track the position, orientation and velocity of the helicopter;
- digital imaging (11 megapixel) and digital video capture.



Ill. 2.1—Plan of the monastery, showing areas excavated.

This technology has several advantages, the first being that it is helicopter-mounted, allowing for relatively slow air speeds and low-altitude flight paths which result in the collection of extremely high-resolution height data. The second is that instead of the conventional single laser this system has three 150kHz laser scanners (forward–nadir–aft) with a range accuracy of 1cm (1 sigma). The result is extremely accurate point data, with an absolute accuracy of ±8cm in horizontal and ±5cm in vertical position. Several imaging devices, including a high-resolution mapping camera and three video cameras, accompany each laser scanner.

Initial processing by Fugro-BKS included:

- the merging of the three laser scanner data sets into a seamless point cloud;
- geo-referencing of all point cloud data;
- removal of outlying information caused by objects such as birds;
- interpolation of areas where there was a distinct lack of survey points.

The final data set, provided in four tiled data sets, included approximately 2.75 million x,y,z height points stored within an ASCII file structure.

Additional processing was carried out by the Discovery Programme to improve the final visualisation of the DSM, including:

- merging of tiles into single DSM;
- removal of holes within the data specifically at the interface between the terrain and the shoreline;
- generation of gridded data model DSM (12.5cm resolution);
- visualisation of the DSM using several algorithms:
  —directional hill-shade,
  —composite hill-shade,
  —slope modelling,
  —principal component analysis,
  —sky-view factor.

These visualisation data sets are now being used to create scaled plans and sections for the whole island and areas of archaeological significance.

Traditional instrument surveys are also used to fix spatially the various features/structures as they are exposed and recorded. As the window of opportunity for work on Skellig Michael is so limited (mid-May to end of September), however, and with the deterioration in climatic conditions over the past number of years, a backlog has developed in this area of survey work. As a result, a number of the recently discovered features on the island, e.g. parts of the primary access route to the summit of the South Peak, although recorded, have not been surveyed in detail. This work will continue, as conditions allow, over the coming seasons. It is also envisaged that terrestrial LiDAR will be used for the detailed recording of structures in the future.

2.1.2 Fire damage

In August 1996 a gas explosion followed by a fire took place in the accommodation huts on the lighthouse road, which completely destroyed the archaeologists' accommodation. Unfortunately many of the excavation site plans from the 1993–5 seasons of excavation were in the hut at the time, as well as the site notebooks from 1993–4 and part of 1995. Some of the nineteenth-century finds were also in the hut, together with at least five sherds of medieval pottery and fragments of a number of stone crosses. Luckily the section drawings from the 1993 season and part of the 1994 season were in Dublin at the time, being drawn up, and all of the finds had been numbered and described so that their contexts are known. No site photographs were lost in the fire.

Following the fire, the wreckage was thoroughly searched; much of the pottery and glass was retrieved, and all the stone was recovered and subsequently conserved. Wherever possible, plans were redrawn—all of those for the 1995 season were redone and a full report on that year's work has been compiled. The area for which most information has been lost is Cell G and its immediate surrounds in the lower monks' garden: no plans, sections or notebooks survive for this area. Cell G was in use during the lighthouse period and nineteenth-century pottery and clay pipe fragments had been recovered from its floor surface.

In this report, all features described as F1000 or greater refer to features for which the site notebooks, plans and/or sections were destroyed in the fire.

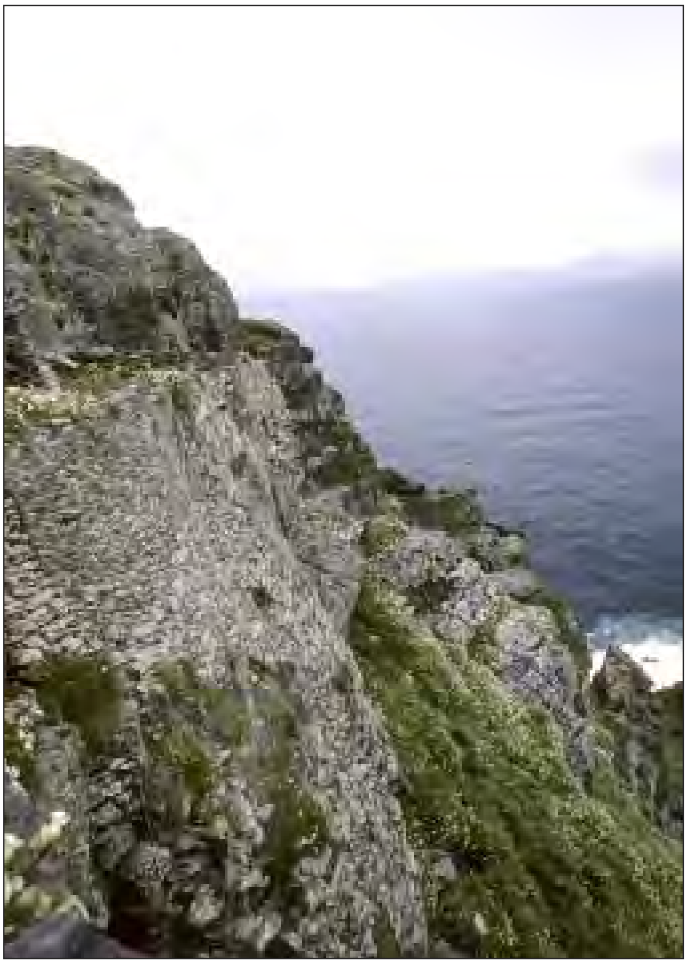
2.2 THE MONASTERY

2.2.1 THE SMALL ORATORY TERRACE AND LEDGE (E338)

Ann Lynch

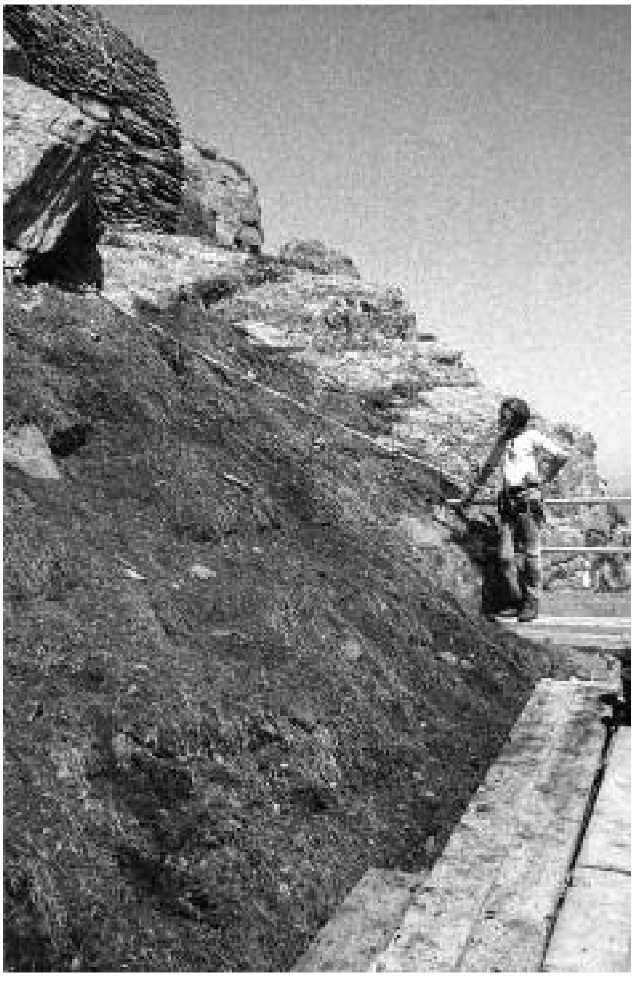
The small oratory terrace is located *c.* 10m to the north-east of the core monastic area and is supported by a high retaining wall that forms the north-eastern limit of the inner monastic enclosure (Ill. 2.26). This artificially created terrace, although within the inner enclosure, has a feeling of isolation and remoteness by virtue of its location at a lower level, out of sight of the other monastic structures and hemmed in by the steeply rising rock face to the west. Its massive drystone retaining wall (5m high externally), which appears to be substantially original, had developed serious structural problems, with the top section falling inwards and a significant bulge at its base where the stonework had also begun to unravel (Ills2.2, 2.3). The collapse of this wall not only would have had serious consequences for the monastic structures on the terrace behind but also, owing to its location *c.* 160m directly above the main landing stage for the island, would have posed serious safety concerns for visitors.

The work to preserve the small oratory terrace retaining wall was the first major structural intervention to be undertaken during the current works programme. The engineering solution proposed for the consolidation of the base of this wall involved the construction of supporting structures on the cliff ledge on which the wall was founded. This in turn necessitated archaeological excavation to be undertaken on the ledge to test the archaeological potential of the soil cover which had to be removed. This work was undertaken in June 1986.



Ill. 2.2—The small oratory terrace retaining wall, looking north, before works (A. Lynch).

Ill. 2.3—Unravelling at base of small oratory terrace retaining wall, before works (A. Lynch).

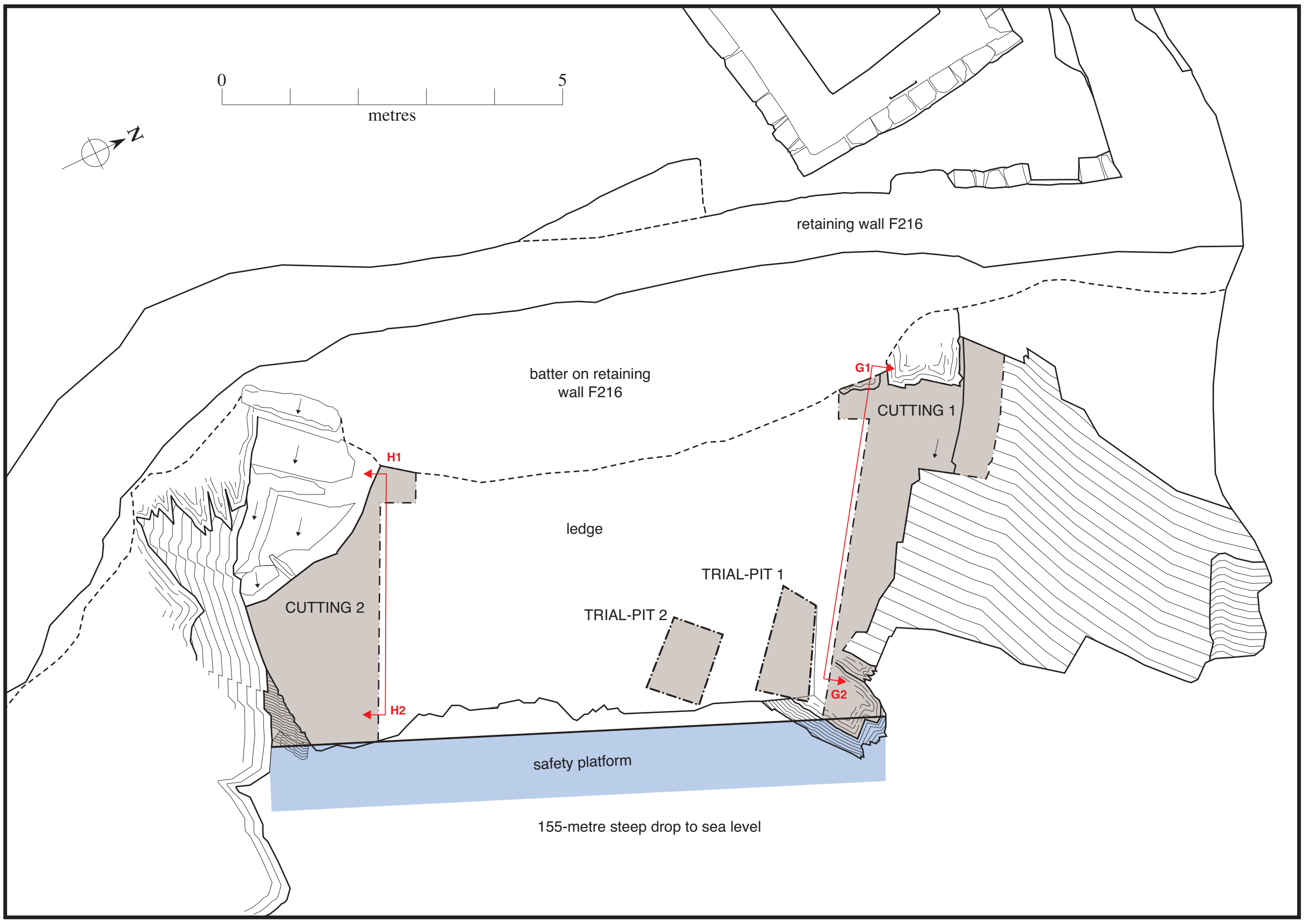


Ill. 2.4—The small oratory ledge, looking north, before excavation (A. Lynch).

The small oratory ledge

The ledge in question is irregular in outline but measures *c.* 6m wide (max.) and slopes at an angle of *c.* 40° before a sheer drop of *c.* 160m to the sea below (Ill. 2.4). The logistics of carrying out excavations and complex conservation works in such an exposed, dangerous location were formidable. Before any works commenced, a safety platform was erected on the cliff face to provide a relatively secure work space, and workers on the ledge were harnessed to safety ropes at all times. The safety aspects of this particular excavation were devised and overseen by the Kerry Mountain Rescue Team.

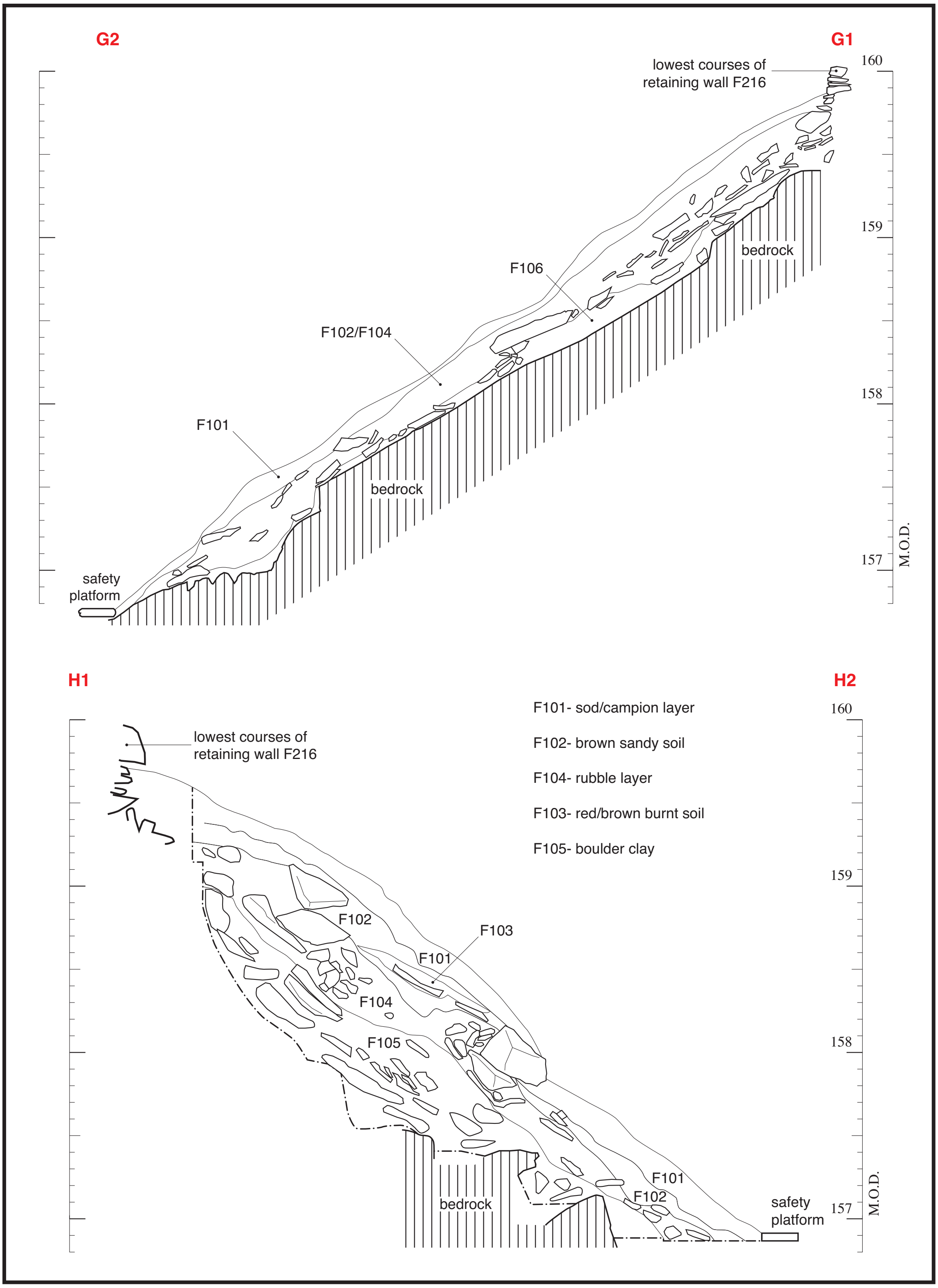
Initially, two cuttings were opened which extended from close to the base of the retaining wall across the width of the ledge (Ill. 2.5). For safety reasons these were located on either side of the unstable bulging section of the wall. Once excavation of these cuttings was completed, a small extension was opened at the western end of each to examine the foundations of the wall. Two small trial-pits were also excavated to record the depth of bedrock for engineering purposes.



Ill. 2.5—Plan of the small oratory ledge, showing areas excavated.

The northern cutting (Cutting 1) measured 5.4m by *c.* 2.7m (max.), with rising bedrock forming its irregular northern edge. The southern cutting (Cutting 2) measured 4.5m by *c.* 2.1m (max.), with bedrock forming its irregular southern edge.

The stratigraphy exposed was generally consistent across the ledge, and as bedrock shelved steeply from north to south the deposits were considerably deeper in Cutting 2. Bedrock was exposed at a maximum depth of *c.* 0.5m below the sod throughout Cutting 1 (Ill. 2.6). A moist, black humic clay with high gravel content (F106) filled the crevices in the bedrock and was present up to a maximum depth of 0.12m at the interface between the bedrock and the overlying sandy soil and rubble (F102/104). Bedrock was not reached within Cutting 2, where a compact, grey sandy boulder clay (F105) formed the limit of excavation (Ill. 2.6). The rockface that formed the southern edge of the cutting was shown to drop vertically and the undisturbed boulder clay lay against it. Overlying the bedrock in Cutting 1 and the boulder clay in Cutting 2 was a layer of rubble (F104) intermixed with and overlain by a brown sandy soil (F102), which also contained lenses of burnt clay (F103). The burnt clay was more extensive in Cutting 2, where it was up to 0.03m thick in places. The rubble (F104) in Cutting 1 consisted of stones ranging from 0.15m by 0.08m to 0.7m by 0.35m, whereas in Cutting 2 the average stone size was 0.6m by 0.25m, with many measuring over 1m in length. The artefacts recovered from F102 include nineteenth-century ceramics and a T-shaped piece of iron (E338:19) which may be part of a strap hinge. A rectangular whetstone (E338:20) was found in the bottom of the rubble (F104) in Trial-pit 1. Fragments of brick, coal and cinders were also recovered from the upper levels of F102, close to the base of the retaining wall. The entire ledge was covered with a sod layer which supported a dense growth of sea campion. This averaged 0.1m in thickness and produced modern finds, including plastics and drinks cans (Ill. 2.7).



Ill. 2.6—The small oratory ledge, sectional profiles.

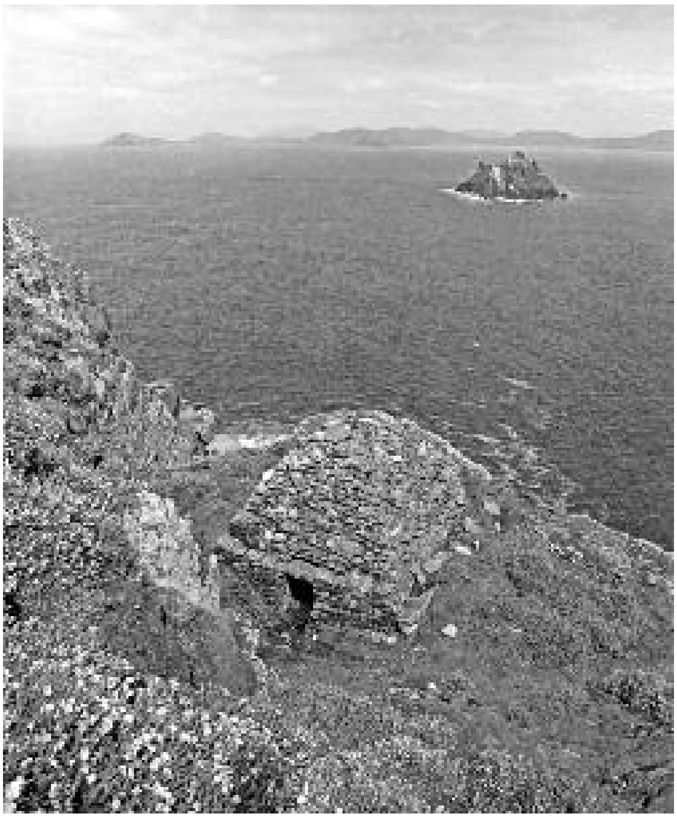
The extensions to the cuttings, which allowed examination of the foundations of the retaining wall, revealed that the wall was sitting directly on at least 0.5m of loose rubble (F104), with brown sandy soil (F102) filling the interstices (the lower levels of the rubble were not exposed for safety reasons). The rubble stones averaged 0.2m in length and the coursing of the drystone wall proper only commenced at present ground level on the ledge (Ill. 2.8).

Ill. 2.7—The small oratory ledge during excavation, cutting 1 in foreground (A. Lynch).

Interpretation
It is difficult to say how much, if any, of the clay and rubble was brought onto the ledge for the construction of the terrace retaining wall, but since the wall sits on this deposit some of it may have been *in situ*. The area from which the construction stone was quarried has not been identified, and while much of the rubble remaining on the ledge could be the result of stones falling from the upper levels of the wall over the centuries, some of it could also be the residue left following the construction. The lenses of burnt clay as well as the small number of artefacts and debris recovered from the ledge must be the result of casual dumping over the terrace wall in modern times, while the whetstone, found in the lower levels of the rubble, may have been lost or discarded during the construction of the terrace wall, when there must have been considerable activity on the ledge.

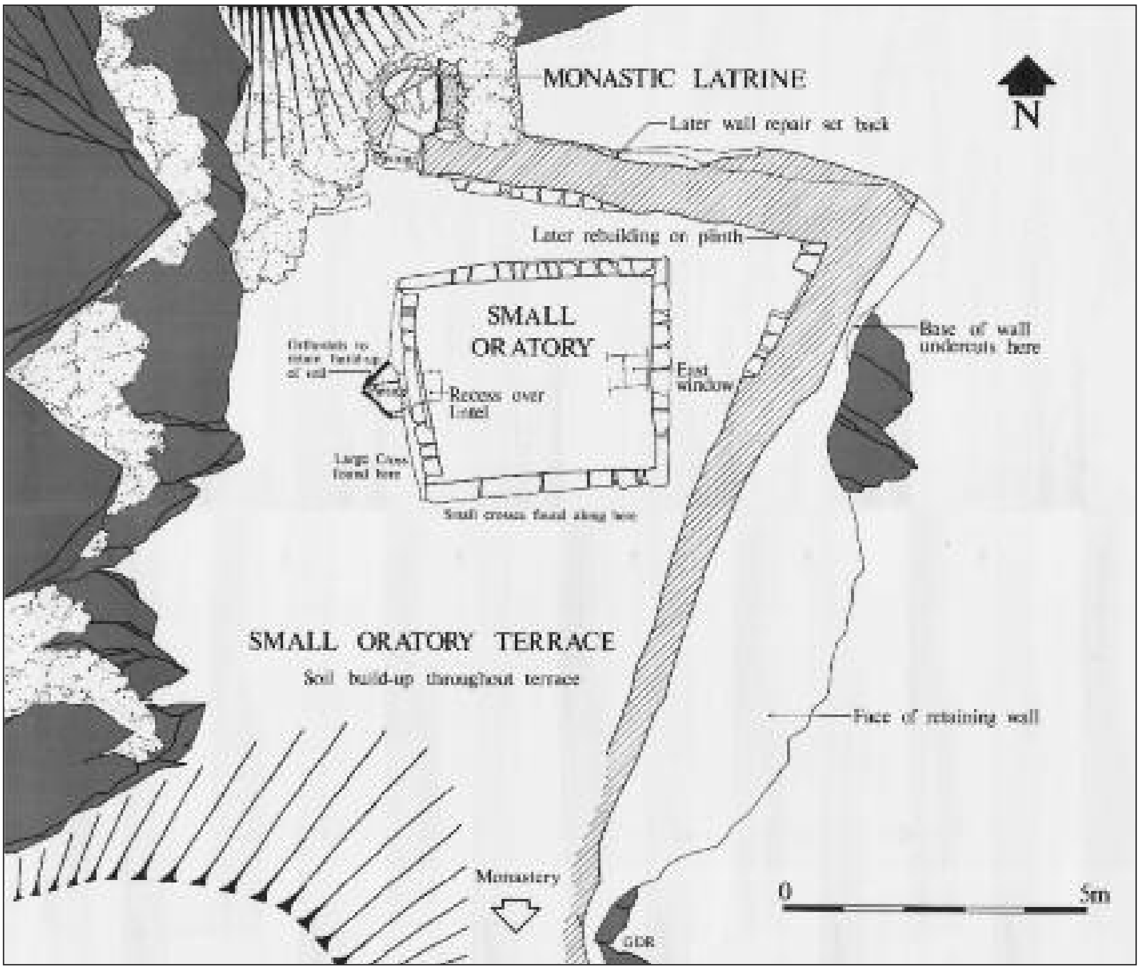
Ill. 2.8—Rubble foundations of the small oratory terrace retaining wall (A. Lynch).

The small oratory terrace
Before excavation the small oratory terrace was densely overgrown with sea campion supported by a covering of moist peat. This peat masked



Ill. 2.9—The small oratory terrace, viewed from west, in the 1950s (DAHG archive).

all structural features with the exception of the oratory (from the level of the plinth up), the remains of a small beehive cell interpreted as a latrine, fragments of drystone walling close to the rock face, the retaining wall of the terrace and a stockpile of stone and brick at the southern end of the terrace (Ills 2.9, 2.10). A substantial stone cross found lying close to the oratory had been erected close to the rock face almost directly opposite the doorway of the oratory. The enclosed nature of the terrace, accentuated by the steep rock face bordering it on the west side, combined with poor drainage had resulted in the development of waterlogged conditions. This was responsible not only for the growth of peat but also for ongoing seepage of water into the small oratory and the build-up of pressure on the retaining wall to the east of the oratory, where serious structural



Ill. 2.10—Plan of the small oratory terrace before works (survey and drawing: G.D. Rourke).

problems had developed (see above). It was decided that, in tandem with the conservation of the retaining wall and prior to any consolidation of the oratory, the peat cover would have to be removed from the entire terrace, thereby removing the source of much of the moisture and allowing improved drainage to be put in place. This work was carried out by the author in June/July 1986 and July 1987, while Claire Cotter supervised additional work in August 1986.

The removal of peat exposed features including paving, steps, terracing and a *leacht*, all part of a highly ordered space centred on the small oratory. Once these features were uncovered, they were fully recorded, consolidated and left *in situ*. Further excavation was carried out to investigate and interpret features on the north and east sides of the oratory, and a narrow cutting was opened on the south side, where the terrace stratigraphy was fully investigated (Ill. 2.11).

The peat

In 1980 Conleth Manning removed the sod layer from around the perimeter of the small oratory in order to expose fully the plinth, which had become partly buried, and to allow easier access to the doorway at the west end of the structure. This slight reduction in ground level also helped to reduce the amount of water seeping into the oratory. The plinth, which varies from 0.2m to 0.32m in width, is at the level of the doorway lintel on the west wall but drops by *c.* 0.4m below this on the south wall and by *c.* 0.3m on the north wall, and continues at this level around the east wall. During this removal of sod, four stone crosses or fragments thereof were found.

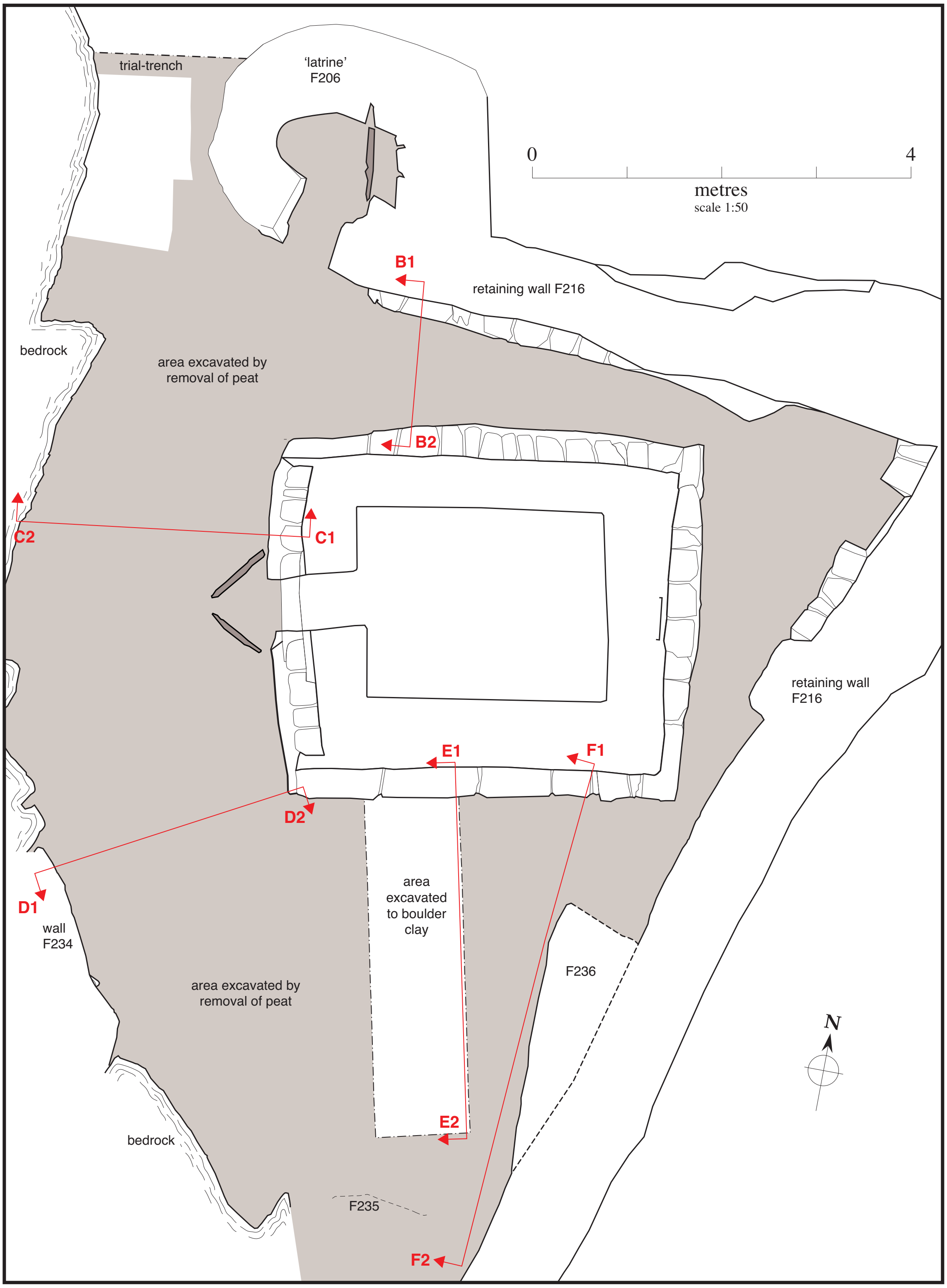
In 1986–7 the peat cover on the terrace was fully removed. The upper levels (F201), which supported the dense growth of sea campion, were moist, mid-light brown in colour and of moderate humification, with extensive root penetration. The depth of this peat varied from 0.18m on the uphill, west side of the 'latrine' to 0.3m against the rock face opposite the oratory entrance, while it was shallower (averaging 0.12m) on the floor of the terrace to the south of the oratory (Ill. 2.17, section C1–C2). An underlying deposit of peat (F202) was present in the area of the 'latrine' and extended downhill, flanking the rock face, to the area immediately west of the oratory. This highly humified peat, dark brown/black in colour and containing small leached spalls of sandstone, became progressively wetter as one moved downhill and had accumulated to a maximum depth of *c.* 0.3m on the uphill side of the slab set on edge (F210), close to the 'latrine'. Three sherds of transfer-printed pearlware, dating from about 1820, were found at the interface of the two peat deposits adjacent to the 'latrine' wall, indicating peat growth of *c.* 0.2m in this area since the mid-nineteenth century.

The western area

A narrow trial-trench was opened, extending from the rock face to the 'latrine' wall (*c.* 2m long by *c.* 0.5m wide), to assess the depth of deposits on the uphill side of the terrace (Ill. 2.11). Here it was revealed that overlying the bedrock was 0.06–0.08m of moist black sandy clay (F205), which in turn was overlain by a loose stony layer (F206) comprising 80% flat spalls of sandstone intermixed with grey/brown sandy soil and with campion root penetration to the bottom of the layer. At the base of the rock face there was an accumulation of small fragments of broken sandstone and fine moist brown clay (F203). These latter deposits represent weathering from the adjacent rock face and clays and humic material washed down from further uphill and from the overlying peat deposits (F201 and F202). A concentration of loose stone within F204 at the eastern end of the trench must represent collapse from the adjacent 'latrine' structure. No finds were recovered from these deposits.

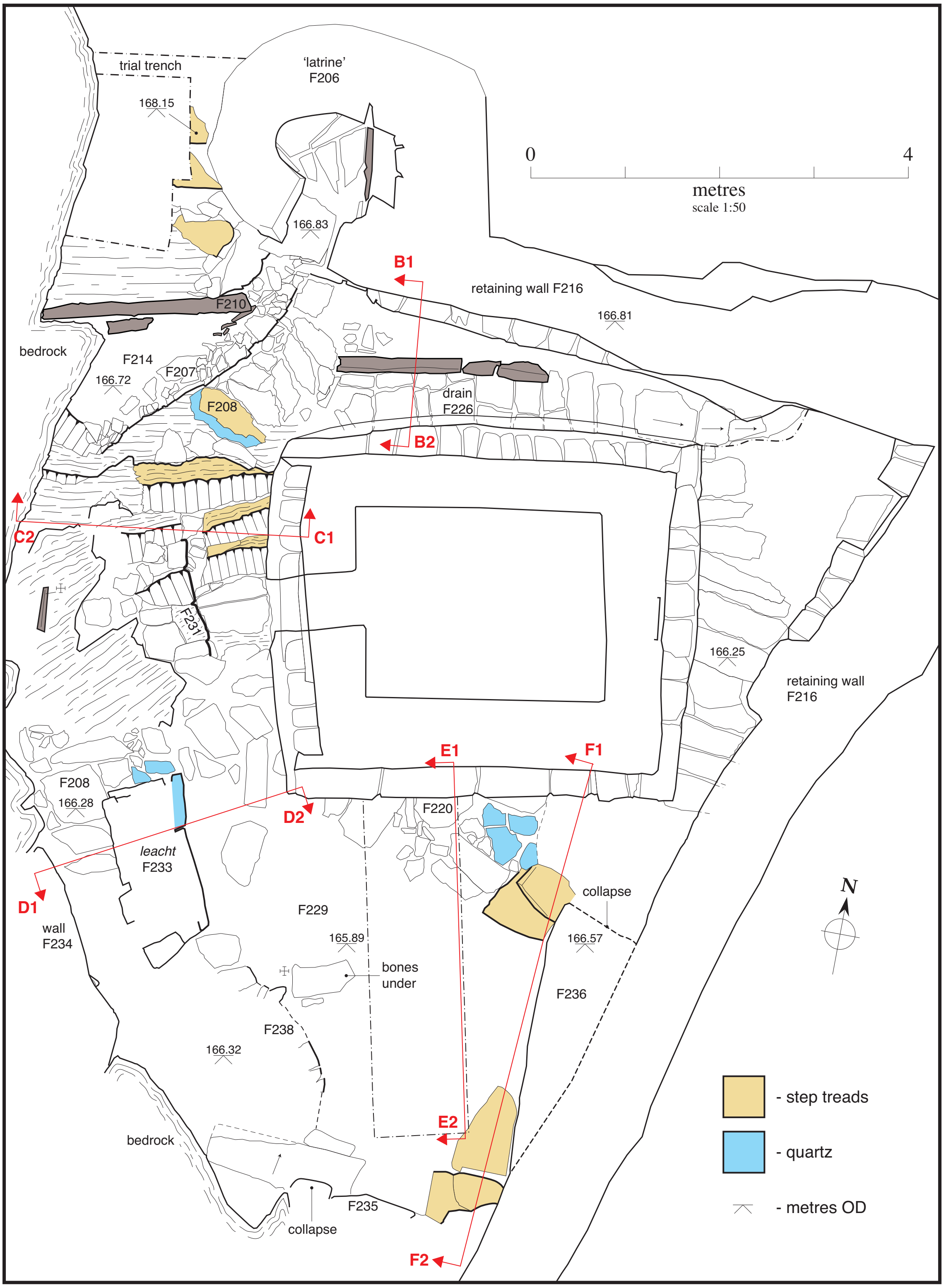
Terracing

The remains of a series of small terraces, built against and partially incorporating projecting sections of the rock face, were revealed along the western side of the small oratory terrace (Ill. 2.12).



Ill. 2.11—Plan of the small oratory terrace, showing areas excavated.

A drystone retaining wall (F207) curves north-eastwards from the rock face to the retaining wall (F216) at the entrance to the 'latrine' (Ill. 2.13). This wall, constructed of sandstone, survives to an average height of 0.2m and averages 0.35m in width. At its northern end, stones on edge define its inner face, but elsewhere a stone and clay fill (F214) lies directly behind its rubble core. This retaining wall defines one side of a triangular terrace, the other two sides of which were formed by the rock face on the west



Ill. 2.12—Plan of the small oratory terrace, showing features exposed during excavation.

and by a large slab on edge (F210) on the north. This slab (2.16m long by 0.17m thick by 0.65m high), which had been prised from the bedrock and placed on edge, also served as a type of dam, preventing the seepage of water into the entrance area of the oratory below. The build-up of wet peat deposits (F202) behind the slab bears testament to this. The make-up of the terrace (F214) consists of a dark brown moist clay with 70% stone content. The stones range from pebbles to the more common sandstone

Ill. 2.13—The low retaining wall (F207) and paving stones (F208) during excavation (A. Lynch).

spall averaging *c.* 0.1m in length. Pockets of light brown clay are also present, and fragments of charcoal and a tiny sliver of wood were recorded on the surface.

The northern end of the retaining wall (F207) is roughly bonded with the lower (primary) courses of the small oratory terrace retaining wall (F216), suggesting contemporaneity. The relationship with the adjacent 'latrine' is less clear, however, as the junction of both retaining walls corresponds with the entrance to the 'latrine', which is *c.* 0.2m above. Access to the 'latrine' must have been via a step up from the paving to the top of the retaining wall (*c.* 0.2m) and, from here, another step of 0.2m to the threshold of the 'latrine', although no flagstone survived on top of the retaining wall. Such an arrangement of steps would be in line with the three steps uncovered in the lower peat deposit (F202) and underlying stony clay (F204) which lead uphill, skirting the west wall of the 'latrine' (Ill. 2.11). While these three steps probably belong to a period later than the construction of the 'latrine', they do indicate an access route uphill to the crest of the rock above the monastery at this point.

The space between the rock face and the west end of the small oratory averages just 2.5m in width. It is, however, a space that was highly organised and that constituted the only route to and from the oratory (Ill. 2.12).

Traces of a drystone revetment wall (F231) were uncovered running north/south opposite the entrance to the oratory and 0.75m distant from it. Just a single course high, it takes the form of large stones filling the gaps and crevices in the bedrock, with smaller packing stones filling the interstices. In places, the bedrock forms the eastern face of the revetment. A single paving slab (now split in two) covers the area between the wall and the entrance to the oratory, and eleven paving slabs still survive between this and the north-west corner of the oratory. The exposed bedrock rises to the north, and the natural changes in level were exploited by careful positioning of flagstones to provide four steps up to the higher level on the north side of the oratory (Ills 2.16, 2.18). The difference in level between the oratory entrance and the paving at the north-west corner is *c.* 0.74m (Ill. 2.12).

Just to the west of the *leacht* and 0.6m distant from it, a drystone wall (F234) was uncovered linking two projecting outcrops of the rock face, which resulted in the creation of a small terrace behind. The

Ill. 2.14—The small oratory terrace during excavation, showing retaining wall (F234) in background, the *leacht* and the remains of a possible retaining wall (F238) in foreground. (A. Lynch)

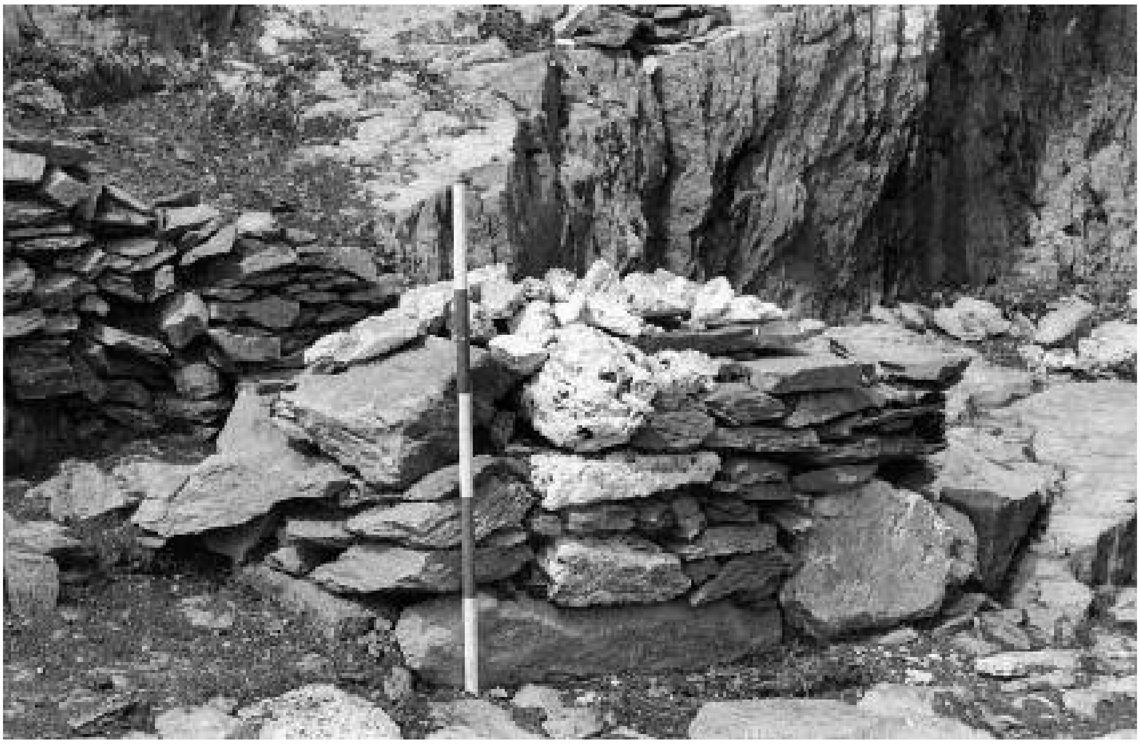
wall, which was loosely constructed of small/medium-sized stones, is *c.* 2.5m long and, when exposed, ranged in height from 0.95m in the south to 0.45m in the north, where some unravelling and collapse had taken place. The base of the wall was not exposed as it lies below the level of the paving, but it is probably founded, at least in part, on bedrock. The make-up of the terrace behind is a dark brown silty/peaty soil with a high stone content, some of which appear to be spalls of sandstone weathered from the rock face behind (Ill. 2.14).

Further south, another stretch of drystone walling (F235) was uncovered running east–west, linking the exposed rock face with the main terrace retaining wall (F236). Only the inner (north) face of this wall was exposed but it must also have been a retaining wall, given the difference in ground level between the paved surface of the small oratory terrace and the higher ground of the monastery to the south. This wall (maximum height 0.95m) was in a poor state of preservation and considerable collapse had taken place, particularly at its eastern end close to its junction with the terrace retaining wall. Here the remains of two, possibly three, steps were revealed, leading down from the core area of the monastery to the small oratory terrace. A large slab (1.6m long) that had been laid on edge at the western end of the wall had slipped forward and the wall had partially collapsed over it.

The removal of peat also revealed a discontinuous line of stones (F238) running from the south-east corner of the *leacht* towards the retaining wall F235 (Ill. 2.14). The deposit of stony soil behind these stones was not excavated, but this rather ephemeral feature may be the remains of a secondary, low terrace.

The leacht

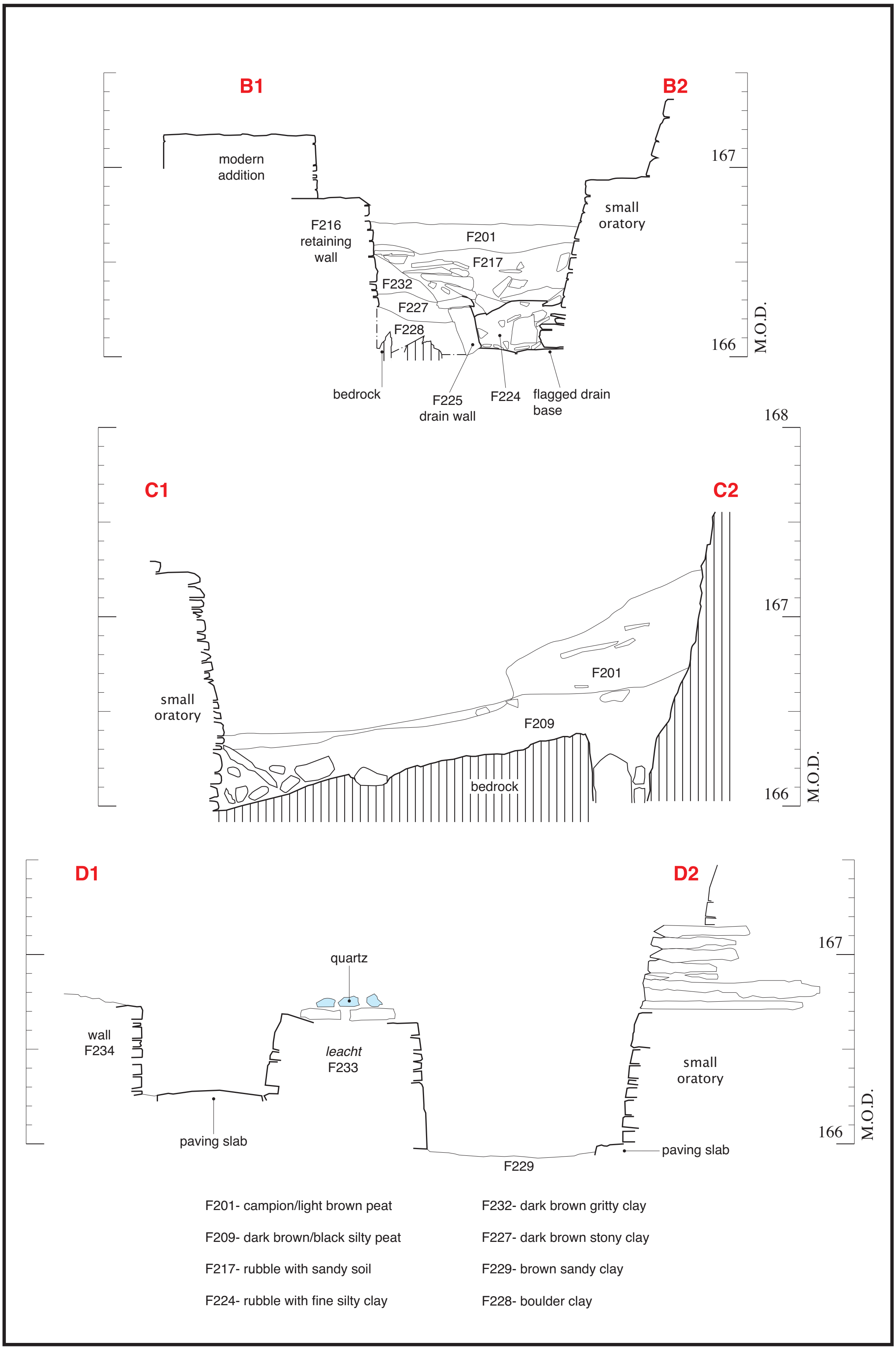
Just over 1m from the south-west corner of the oratory, a rectangular drystone-built *leacht* (F233) was revealed under a shallow (0.17m) layer of peat (Ills 2.15. 2.16). The *leacht,* which measures 1.65m by 0.85m by 0.75m (max.) high, was loosely constructed of sandstone and quartzite blocks, with a number of quartz 'nodules' lying on top. It was constructed on sloping bedrock, which meant that it is just two to three courses high on the western side and up to seven courses high on the downhill, eastern side (Ill. 2.17, section D1–D2). Just south of the entrance to the oratory, a step (0.28m) in the bedrock led up to



Ill. 2.15—The *leacht* after excavation (A. Lynch).

Ill. 2.16—The small oratory terrace, viewed from north, during excavation (A. Lynch).

a paved surface (F208) that flanked the northern and western sides of the *leacht*, with some of the paving stones running under the *leacht* itself. The southern face of the *leacht*, and in particular its south-west corner, had unravelled, with some of the stones slumping outwards. Following excavation, these stones were set back in position and the masonry of the entire structure was tightened. Otherwise the *leacht* was left undisturbed.



Ill. 2.17—The small oratory terrace, sectional profiles.

Paving

In addition to the paving stones adjacent to the *leacht* (described above), eleven large paving slabs (F208) survive *in situ* between the retaining wall F207 and the north-west corner of the oratory; while they appear to lead towards the 'latrine', they do not line up with its entrance (Ills 2.12, 2.18). All the paving slabs are sandstone, with the exception of a large quartz block at the southern end, and all are closely set, with smaller stones filling the gaps, particularly adjacent to the revetment wall. From the quartz block there is a step down of 0.12m to three paving stones and a band of bedrock, from which there is a further step of 0.33m to a ledge of bedrock. The next step, of 0.2m, is onto a wedge-shaped stone that has been set on a ledge of bedrock, and the final step of 0.18m leads down to the paving stone at the entrance to the oratory.

Ill. 2.18—The small oratory terrace, viewed from west, during excavation (A. Lynch).

The 'latrine'

The beehive cell (1.3m by 1m internally) built on the northern edge of the terrace and projecting from the end of the terrace retaining wall is interpreted as a latrine (Ills 2.19, 2.20). A slab set on edge *c.* 0.2m from its eastern wall forms the edge of an opening to a narrow gully leading down the cliff face below. The heavy growth of sea campion which had encroached on the structure was removed during the excavation. The western half of the cell is best preserved and here the drystone wall is founded on the bedrock, which rises steeply to the north. The cell wall averages 0.64m in width and survives to a maximum height (internally) of 0.82m on its western side, where traces of corbelling still survived.

The northern area

The oratory is sited close to the northern edge of the terrace, leaving a narrow passage between its north

Ill. 2.19—The 'latrine' after removal of campion growth (A. Lynch).

Ill. 2.20—The east wall of the 'latrine' and opening to gully below, after removal of campion growth (A. Lynch).

Ill. 2.21—The stone-lined drain (F226), viewed from west, after excavation (A. Lynch).

wall and the retaining wall (Ill. 2.12). This passage narrows from 1.6m at its western end to just 0.5m at its eastern end. Peat cover reached a maximum depth of 0.3m in this confined space and underlying the peat there was a layer of loose stone (F217), which extended under the paving (F208) at the north-west corner of the oratory. This deposit of loose stone averaged just one stone deep close to the terrace retaining wall but deepened to over 0.5m where it abutted the plinth of the oratory wall. Removal of this stone deposit revealed a stone-lined drain (F226) skirting and partly underlying the north wall of the oratory (Ills 2.21, 2.17, section B1–B2).

The floor of the drain was paved with flagstones, some of which extended under the north wall of the oratory. At its western end, the outer edge of the drain was delimited by three stones set on edge on the flagged floor. Further east there was no well-defined outer edge, but here the narrowing of the passage meant that the terrace retaining wall could serve as the side of the drain. The inner (southern) edge of the drain was defined by the plinth of the oratory wall for a distance of *c.* 1m from its western end, but further east the edge of the drain comprised two to three courses of drystone walling set back on average 0.15m under the edge of the plinth. The depth of the drain averaged 0.25m under the plinth and 0.4m outside the oratory. The drain appeared to swing slightly northwards just beyond the north-east corner of the oratory, but this area could not be fully excavated owing to the unstable condition of the adjacent retaining wall. It seems likely, however, that the drain would have debouched through the terrace wall in this area and, while no outlet could be identified, the masonry of the wall was significantly looser and more 'porous' in this area. The floor of the drain is relatively level throughout most of its length, but over the final 1.6m it slopes downwards west to east, dropping 0.28m over that distance.

The fill of the drain (F224) varied throughout its length. The westernmost 0.9m consisted of loose rubble with fine silt, while further east, for a distance of *c.* 2.3m (to the break in slope), the fill consisted of a dark brown loose sandy soil with stones in the upper levels and a very fine silty clay of sticky consistency in the lower levels. The final section of the drain, where it sloped downwards, was filled with a rubble deposit containing stones up to 0.4m in length. This rubble extends beyond the limits of the drain under the east wall of the oratory. The only artefact recovered from the drain fill was a slate with the remains of a perforation at one end (E338:36), found in the upper levels of the sandy soil, under the plinth of the oratory (Ill. 3.10). This slate, which is ovoid in shape (1.78m by 0.89m max.), was initially thought to be a roofing slate, with the notch representing a broken peg hole. This presented problems of interpretation since it was clearly placed in the fill of the drain at the time of construction, which was coeval with the construction of the oratory. As St Michael's Church is the only building within the monastery which may have had a slated roof, this would imply that the small oratory post-dates the construction of St Michael's Church, which is generally considered to be a late tenth/early eleventh-century foundation. The suggested late seventh/early ninth-century date for the construction of the small oratory (see further discussion below) would negate such an interpretation.

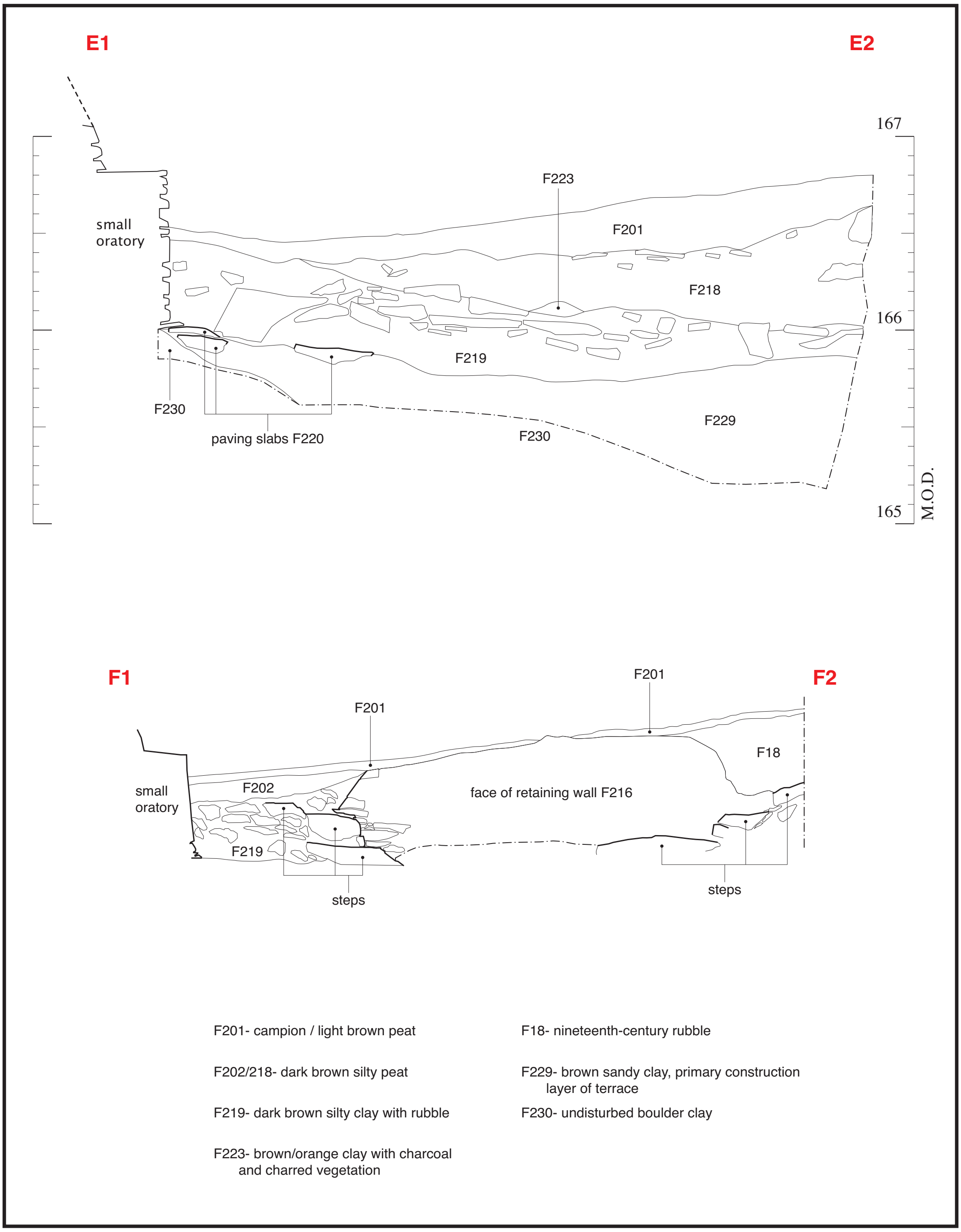
The drain was clearly constructed at the same time as the oratory and was planned as an integral part of the terrace structure. The flow of surface water from the steep rock faces on the western edge of the terrace was seen as a potential problem at the time of construction (as it still is today), and the inclusion of this drain in the planning of the terrace was an effort to divert these waters away from the oratory. The drain must have functioned much like a modern-day French drain, with loose stones and soil used to fill the structure. The finer silty clay deposits are the result of water percolating through the drain. The layer of loose stone (F217) that covered the drain seems to have been used to level up the ground surface, and although it is likely that the paving which is evident elsewhere on the terrace also extended along the north side of the oratory there are no flagstones surviving.

The eastern area

The removal of peat (0.1–0.15m deep) on the east side of the oratory revealed a series of eleven large flagstones projecting from beneath the wall of the oratory (Ills 2.12, 2.22). These served the dual purpose of providing a footing for the oratory wall and a paved surface for this corner of the terrace. The two flagstones closest to the south-east corner of the oratory also extended under the adjacent terrace retaining wall. Limited investigation underneath these flagstones revealed that they were sitting on a layer of loose rubble and clay (F240) and in several areas the clay had washed through the retaining wall to the east, leaving large voids under the stones. Several of the flagstones sloped down to the east owing to movement and subsidence of the adjacent retaining wall.

The gap between the oratory and the retaining wall (F216) narrows to *c.* 0.3m at the south-east corner of the oratory (Ill. 2.12). The

Ill. 2.22—The flagstones projecting from beneath the east wall of the small oratory (A. Lynch).



Ill. 2.23—The small oratory terrace, sectional profiles.

movement of the retaining wall is responsible for the narrowing of this passageway, however, because the upper section of wall had slumped inwards as the lower section bulged outwards.

The southern area

The main body of the terrace lies to the south of the oratory, and the full depth of stratigraphy was investigated in a 1m-wide cutting that extended for 7m from the south wall of the oratory (Ill. 2.11). The top layer of peat (F201) was quite shallow on this part of the terrace (average depth was 0.12m), and towards the southern end of the terrace it contained a dump of stone, brick, modern glass bottles, a piece of cast iron and fragments of mortar (F211). The lower, more humified, moist peat (F218/202), which had a high silt content and was extremely plastic in consistency, averaged 0.2–0.3m in depth. This earlier peat petered out *c.* 0.7m from the oratory wall, where the underlying deposit of dark brown silty clay (F219) was exposed (Ill. 2.23, section E1–E2). At the interface between the peat and F219, at a distance of *c.* 2.1m from the oratory, a deposit of silty brown/orange clay together with charred vegetation and charcoal (F223) was revealed. This deposit measured *c.* 0.2m by 0.3m in extent and represents the remains of a fire built during the early stages of peat formation.

The clay deposit (F219) contained a large number of sandstone blocks with occasional quartzite blocks and gravel-type inclusions. A few lenses of light brown fibrous vegetation, resembling decayed roots, were also noted. Finds included part of a rhyolite cross (E338:27), a tiny flint flake (E338:26) and two pieces of burnt coal or cinder, the latter indicating a nineteenth-century date for the layer.

Underlying the clay and rubble deposit (F219), the remains of paving (F220) were uncovered (Ill. 2.24). With the exception of three quartzite blocks, all surviving paving stones were sandstone, four of which extended under the south wall of the oratory. The paving stones to the east of the cutting all sloped down to the east as a result of movement and subsidence of the terrace retaining wall.

Ill. 2.24—Paving stones (F220) on south side of the small oratory (A. Lynch).

The paving stones rested on a mid-brown sandy clay, fine in texture and with flecks of charcoal and lenses of darker humic material throughout (F229). This is the primary construction layer of the terrace and was *c.* 0.08m deep under the paving at the oratory wall but deepened considerably to the south (as the underlying boulder clay dipped down), where it reached a maximum depth of 0.35m at the edge of the cutting, thereby providing a relatively level surface for the paving. Three fragments of moist, soft bone (not identifiable) were recovered from the upper levels of this deposit, and a small collection of animal bone (three sheep/goat mandibles, one cattle horn), bird bones (Manx shearwater and puffin), a vertebra from a cod and one scallop shell were found in the bottom of the layer, just above boulder clay. A date of cal. AD 672–869 was obtained from the cattle horn (see Section 4 below).

At a distance of *c.* 2m south of the south-west corner of the oratory, a rectangular-shaped stone (0.74m east–west by 0.36m north–south and 0.04m thick, maximum dimensions) was uncovered on the

Ill. 2.25—Stone under which human remains were found and cross fragment (E338:27), which is *ex situ* (A. Lynch).

surface of F229 just under the clay and rubble layer (F219) and at the same level as the paving stones (Ill. 2.25). This stone was lifted and a small collection of human bone was found to lie directly underneath, in the top of the mid-brown sandy clay F229. The human remains consist of five fragments of long bone, a portion of the right side of a mandible, some loose teeth, small slivers of long bone and other unidentifiable fragments. The remains are very poorly preserved and much decalcification and post-mortem decomposition has taken place. Most of the teeth are represented only by shells of enamel. Analysis suggests that the remains belong to one individual, a juvenile who was probably aged about 9–12 years at the time of death (see Section 5 below). The bones were not found in any anatomical order, suggesting that they had either been disturbed and regrouped or, more likely, had been redeposited from elsewhere. A crudely shaped stone cross (E338:41) with a broken shaft was found lying on edge in the bottom of the clay/rubble layer F219, immediately west of the stone that covered the human bones (Ill. 3.12). Its locational association with the human remains may be coincidental, but it is also possible that the cross once stood at the west end of the stone covering the remains of the burial.

As far as could be ascertained, the south-west corner of the oratory is sitting on undisturbed boulder clay (F230), but the remainder of the wall is founded on the paving slabs.

The terrace retaining wall

Viewed from the seaward side, the drystone retaining wall (F216) for the small oratory terrace is the most impressive section of the monastic enclosure (Ill. 2.26). It is also one of the few surviving stretches of original walling that has not been significantly altered or modified since construction. The wall was well constructed using flat sandstone slabs laid horizontally and capped with large, lintel-type slabs.

On the north side of the oratory, adjacent to the 'latrine', the retaining wall is built against the rising bedrock. Further east, as the bedrock dips, the inner face of the wall is founded on boulder clay. The wall here averages 1.1m in width and, where exposed, the inner face survives to a maximum height of *c.* 1.1m. The original height of the wall above the walking surface of this part of the terrace may have been as low as 0.5m; at some later stage, presumably for safety reasons as the wall slumped eastwards, it was

Ill. 2.26—Aerial view of the small oratory terrace, from east, after works. (Con Brogan, DAHG).

heightened by the addition of an extra 0.7m. This later wall was just 0.8m wide and was easily discernible from the original, as it was loosely constructed with suggestions of clay bonding and lacked the capping used on the earlier wall.

As the retaining wall swings south, just to the east of the oratory, only one or two courses of the upper (later) wall survive. The height of the original wall above the foundation/paving stones averaged 0.3–0.4m, although some distortion of levels has occurred here owing to the considerable subsidence in this area. At a distance of 0.5m south of the (internal) corner, a recess (0.77m north–south and averaging 0.3m in depth) has been incorporated into the original retaining wall (Ills 2.12, 2.27). A large, lintel-type stone that covers the back wall of the recess is at the same level as the large slabs forming the top of the primary retaining wall, reinforcing the suggestion that this is in fact the original height of the retaining wall. A large block of sandstone was exposed sitting loosely in the recess at the level of the rubble and clay layer (F240) that underlies the paving stones; as excavation did not extend below this level, the full depth of the recess is not known. The function of this recess is also not clear. Originally it was thought that perhaps it contained the outlet for the drain, but there is no sign of such an outlet in the exposed back wall of the recess or in the outer face of the retaining wall. In addition, the drain does not quite line up with the recess and what little evidence has survived suggests that the flow of the drain was diverted northwards (see above).

The width of this north–south stretch of retaining wall varies from 0.6m to 1.1m, but at a point *c.* 1.6m south of the oratory it widens significantly to a maximum of 1.6m (Ill. 2.12). This is the result of the addition of a revetment on the internal face to provide extra stability when the original wall began to show signs of collapse. Both the northern and southern limits of this wide stretch of wall were badly collapsed when exposed, but at its northern end, close to the oratory, two stones seemed to form rudimentary steps that would have given access from the area to the south of the oratory to the narrow passage between the east end of the oratory and the retaining wall, which was *c.* 0.3m higher. These 'steps' lay on the nineteenth-century stony clay deposit F219, which in turn overlay the paving associated with the oratory (Ills 2.23, section F1–F2, and 2.28). At its southern end, rubble (F18) containing lighthouse-

Ill. 2.27—Recess in the retaining wall (A. Lynch).

Ill. 2.28—Rudimentary steps and revetment to retaining wall visible on right (A. Lynch).

period debris (clay pipes and coal) had been dumped on the retaining wall. The maximum exposed height of this wider wall was 0.95m and its foundations were not uncovered. The rather tenuous relationship between the wall and the steps would suggest that the widening of the wall took place some time in the nineteenth century, presumably by the lighthouse personnel who occupied the monastery at that time. The additional height added to the north wall of the terrace, and to a lesser extent to the east wall, probably also dates from this time.

Interpretation

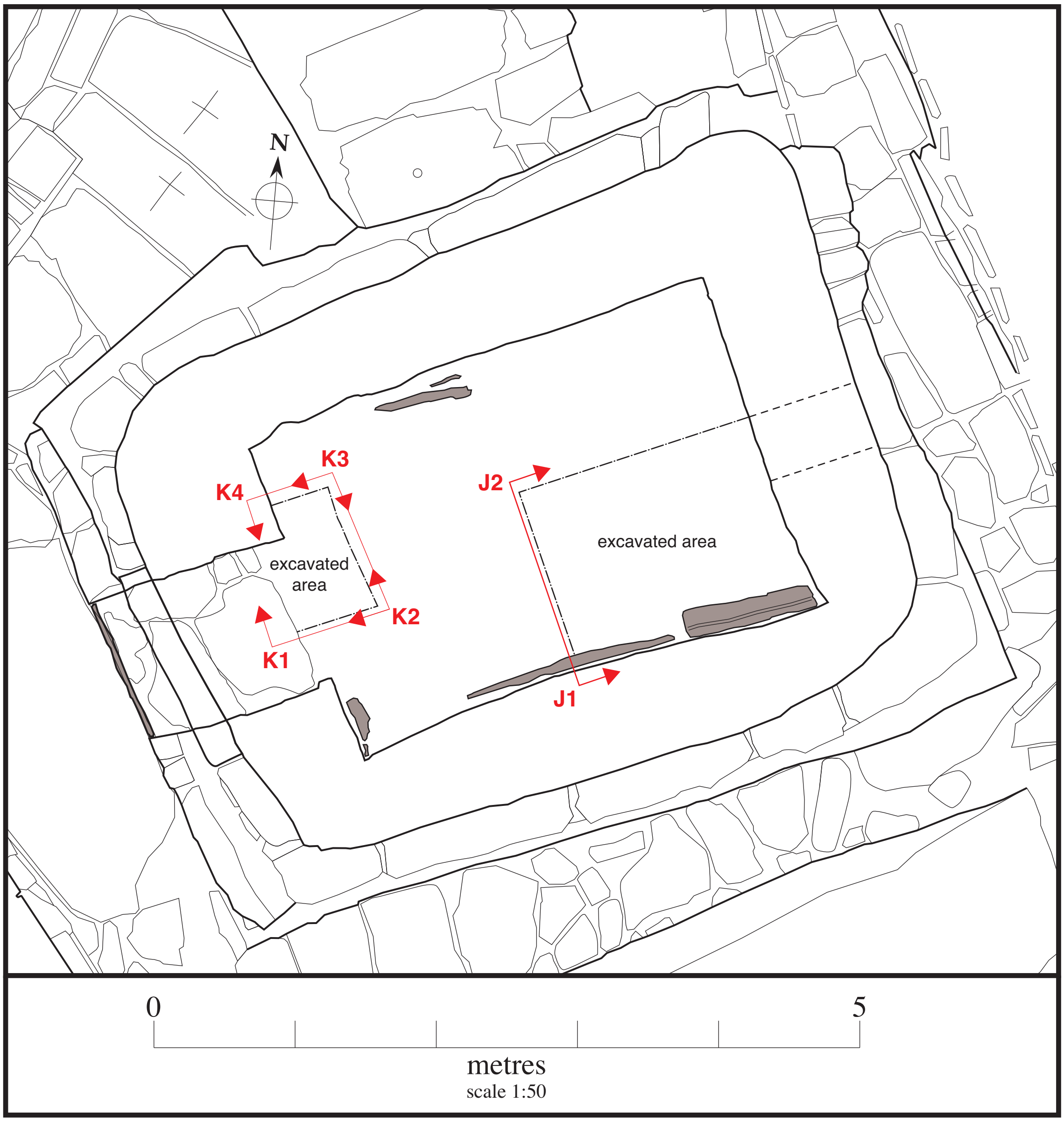
The small oratory terrace is a highly ordered enclosed space within the inner monastic enclosure. Although located close to the core area of the monastery, it is somewhat out on a limb at the northern edge of the enclosure and consequently retains a feeling of shelter, separation and isolation. When one stands on the terrace, the other monastic structures are hidden from view and the eye is drawn eastwards to the Little Skellig and the mountains of Kerry on the horizon. The terrace, which is roughly triangular in shape (max. *c.* 9m east–west by *c.* 9m north–south), has as its focal point a small drystone oratory. A small beehive cell, interpreted as a latrine, was built into the terminus of the terrace retaining wall where it meets the rising bedrock, just north of the oratory. Removal of peat from the terrace has revealed a carefully laid-out range of structures, including terracing, steps, paving, a *leacht* and a drain.

The full depth of stratigraphy on the terrace was only revealed in a very narrow cutting but it suggests that the primary construction layer was deposited on undisturbed boulder clay some time in the eighth/early ninth century AD. The date of cal. AD 685–869 obtained from the cattle horn in this construction layer may relate to the actual construction period, but the possibility that the bone assemblage was redeposited with the clay used to build up the terrace should also be considered. This would mean that the eighth/early ninth century would be the *terminus post quem* for the construction of the terrace.

The massive drystone retaining wall, measuring up to 5m high externally, may only have been *c.* 0.5m in height above the early medieval walking surface on the terrace. The indications are that the entire terrace surface was paved with sandstone (and some quartz) flagstones, some of which also served as foundation stones for the oratory. The rising bedrock on the western side of the terrace was skilfully incorporated in the arrangement of steps and paving leading to the oratory entrance. The sense of order and enclosure was accentuated by the construction of short stretches of drystone walling linking projecting sections of rock face and bedrock along the western edge of the terrace. Before excavation, a substantial stone cross that had been found lying on the terrace was erected close to the rock face opposite the oratory entrance, but owing to its suffering ongoing damage during the tourist season it was later moved to a less vulnerable position on the terrace, just to the north-west of the oratory. It is likely that these small, artificially created terraces were used as prayer stations during the lifetime of the monastery, and they may originally have held some of the small stone crosses that were found just under the sod close to the oratory and elsewhere throughout the monastery. The *leacht*, which is also sitting on paving stones, was constructed on sloping bedrock and is an integral element of the suite of features on the western side of the terrace. Its probable function as a pilgrimage station would fit in with the interpretation of the adjacent terraces as prayer stations.

The layout of the small oratory terrace as a whole is strongly suggestive of a predetermined 'round' or perambulation, whereby the monk entered the terrace by stepping down from the core monastic area and made his way to the entrance of the oratory via the first low terrace or prayer station and the *leacht*. On exiting the oratory, he would have continued his round via the largest prayer station in the north-west corner, along the narrow passage on the north side of the oratory, returning along the eastern side of the oratory and stepping down again to the main body of the terrace before returning to the monastery. It is tempting to suggest that the niche in the terrace retaining wall could have held a large stone cross. Close to the sharply angled corner of the terrace, this is the most remote point within the monastery, where solitude would be conducive to contemplation and prayer whilst gazing eastwards to sea.

The sheer rock face that borders the terrace to the west, and the steeply sloping ground between it and the 'latrine', results in rainwater flowing directly down onto the terrace. In an effort to direct this surface water away from the oratory, a substantial stone-built drain was incorporated in the construction



Ill. 2.29—Plan of the large oratory, showing areas excavated.

of the north wall of the oratory.

The only evidence of human remains recovered was the small assemblage of bone found underneath the slab on the south side of the terrace and the three fragments found in a similar stratigraphic context nearby. As most of the monastic deposits on the terrace remain unexcavated, however, it is not possible to say whether further human remains have been interred in this area.

During the nineteenth century a substantial layer of clay and rubble was deposited on the south side of the terrace. This must be attributed to the period when the lighthouse-builders inhabited the monastery and clay and stone were cleared from adjacent areas and spread onto the terrace. The subsequent growth of up to 0.75m of peat indicates extremely waterlogged conditions on this lower section of the terrace. Peat growth had commenced prior to the nineteenth century to the north-west of the oratory, close to the rock face, but the recovery of early nineteenth-century ceramics at a depth of *c.* 0.18m in this area also indicates rapid growth in the past two centuries.

2.2.2 The large oratory (E338)

Ann Lynch

Prior to excavation, most of the floor of the oratory was roughly and unevenly paved with flagstones. A stone-built altar, incorporating some brick, had been constructed at the east end of the oratory, presumably by the occupants of the lighthouse, some time in the nineteenth/twentieth century. This altar had been dismantled before the excavation commenced in order to fully expose the small east window and to provide room for the excavation to proceed. Fragments of an almost complete wooden crucifix were retrieved from the rubble fill of the altar (Ill. 3.3) and pennies from the 1920s onwards were found inserted between the stones.

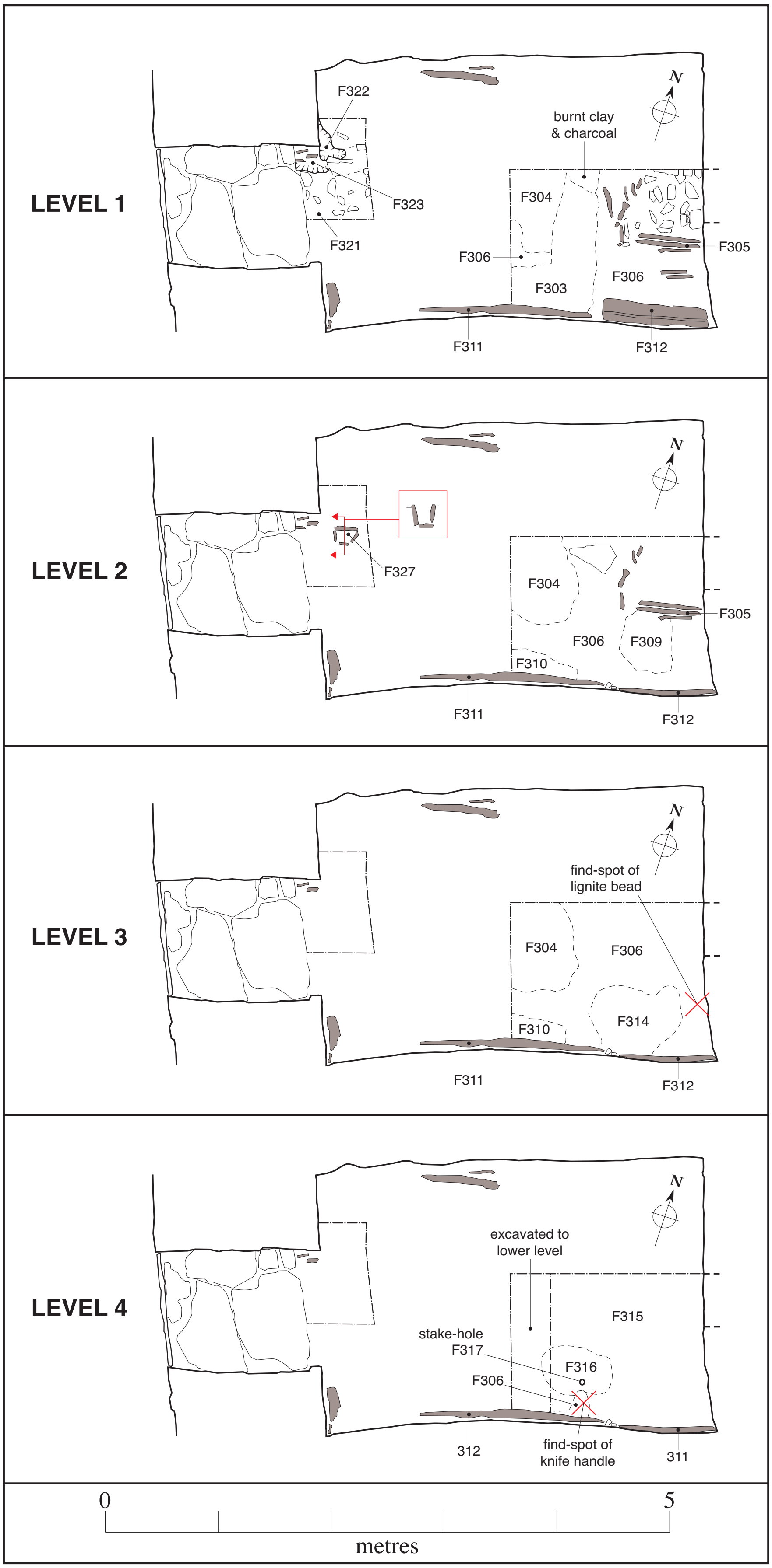
The northern drystone jamb of the doorway in the west wall was in urgent need of repair and consolidation, and it was also decided that the rough and uneven paving on the floor should be renewed in view of the increasing number of visitors entering the oratory. Consequently, two cuttings were opened within the oratory: a small cutting (0.6m by 0.9m) immediately inside the doorway, abutting the northern jamb, and a larger cutting (1.31m by 1.71m) encompassing the south-east quadrant of the structure (Ill. 2.29). The latter was opened to examine the subfloor levels under the paving and to allow examination of the two large slabs set on edge against the south wall of the oratory and the two smaller stones set on edge close to the east wall, which were exposed when the altar structure was removed.

The south-east quadrant

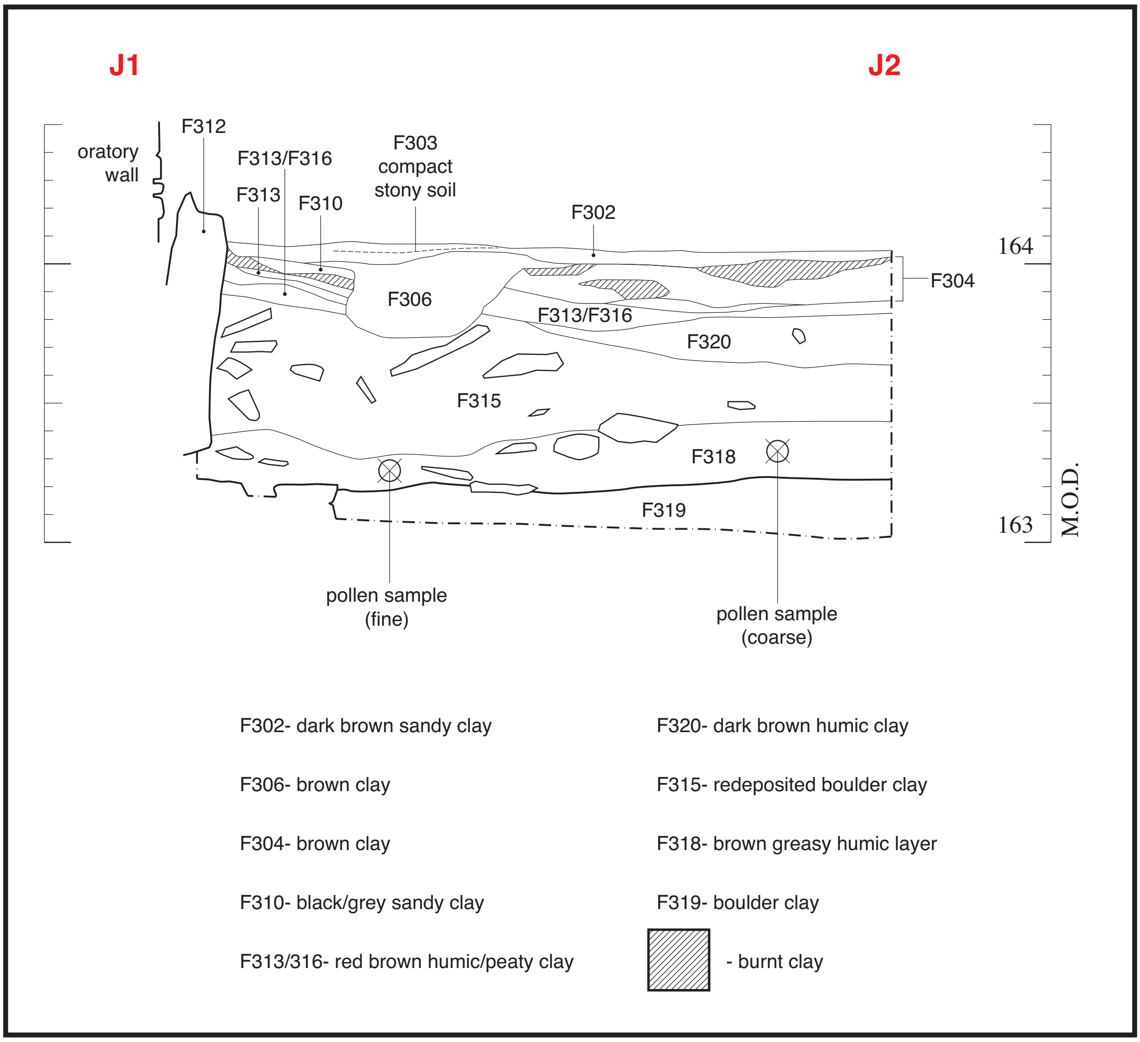
The sandstone slab (F311) set on edge against the south wall of the oratory was exposed to its full depth in a narrow (0.35m-wide) cutting at the western edge of the quadrant (Ills 2.30, 2.31). Elsewhere, the quadrant was excavated to the level of the top of the redeposited boulder clay (F315). The slab on edge (F311) measured 1.7m in length, averaged 0.16m in thickness and, where fully exposed, was *c.* 0.9m in height. It had been set on edge in the top of a rich brown, greasy, humic layer (F318), which averaged 0.09–0.1m in thickness and must represent the sod layer of an old ground surface (Ill. 2.31, section J1–J2). Pollen analysis carried out on samples from this layer has provided insights into the contemporary local vegetation (see Section 6 below). The underlying undisturbed boulder clay (F319) was a moist, hard-packed stony clay. Once the slab had been placed in position, boulder clay was deposited behind it to a maximum depth of *c.* 0.5m, to hold it in position while the drystone masonry of the south wall of the oratory was constructed against its south face. Immediately east of F311, a second slab on edge (F312), 0.9m long, was partially exposed and presumably served the same function as F311 (see interpretation below).

In the centre of the cutting, a thin lens of reddish-brown peaty soil (F316) lay on top of the redeposited boulder clay (F315). This peaty soil contained what appeared to be decayed vegetation that still retained its rich golden-brown colour. On analysis, this was identified as matted organic material, possibly grasses and rushes, with very small stones and tiny pieces of charcoal embedded in it. This material had been criss-crossed, possibly to form a type of matting or floor covering laid down when the oratory was first constructed (grateful thanks to Ellen O'Carroll for identifying this organic material). A stake-hole (F317) was recorded cut into the redeposited boulder clay under the peaty soil (Ill. 2.30, level 4). It measured 40mm in diameter, 80mm in depth and appeared as a void with no evidence of decayed wood *in situ,* suggesting that the stake was removed shortly before the peaty deposit was laid down, which then sealed the top of the void and prevented soil from overlying deposits from filtering through.

The deposits that accumulated during the early medieval and later periods of usage of the oratory average 0.25m in depth. They comprise the main deposit of crumbly brown clay with small gravel-size stones, charcoal flecks and smears of burnt clay (F306) and three distinct areas of burning (F304, F310 and F314) (Ill. 2.30). A lens of sticky beige clay (F309) and lenses of greasy humic brown clay (F313)



Ill. 2.30—Plan, at different levels, of features exposed during excavation of the large oratory. Level 4 is the lowest level.



Ill. 2.31—East-facing section of south-east quadrant of the large oratory.

were also recorded. The burnt deposits, which averaged 0.1m in depth, were remarkably similar in composition—yellow/orange burnt clay and black charred material in distinct layers, indicating that the burning took place *in situ*. Traces of burnt shell were noted in the burnt clays of F304. The date and purpose of this burning are difficult to determine—with the exception of a flint waste flake (E338:31) found in F304, no artefacts were recovered from the deposits. The edges of the burnt areas were not well defined and they did not have the appearance of formal hearths. The lowest level of F304 also incorporated some matted organic material similar to that found on the surface of the underlying redeposited boulder clay.

The two parallel stones set on edge at right angles to the east wall of the oratory (F305), which were visible once the modern altar was removed, were set in the brown clay (F306). Each of the two stones was 0.61m long, 0.03–0.05m thick and 0.31–0.33m in height, and they were set 0.03–0.06m apart (Ill. 2.30). While no sockets as such could be identified, smaller flat stones had been set on edge and used as support/packing stones on the south side, while similar but looser stones on the north side may have served a similar function. About eight smaller stones were loosely set on edge in the top of the brown clay (F306) and these seemed to form a rough arc enclosing the larger slabs and a concentration of loose stones. Without further excavation in the north-east quadrant of the oratory it is difficult to interpret this arrangement of stones, but its location, centred on the east window, could suggest association with an earlier altar structure.

The main clay deposit (F306) was quite homogeneous throughout the cutting: brown, sandy texture with gravel-sized inclusions, charcoal flecking and lenses of greasy clay (F313)—in general a fairly mixed appearance. An irregular-shaped pocket of F306 was uncovered in the top of the underlying boulder clay (F315), adjacent to the wall slab (F311) on the south side of the oratory (Ill. 2.30, level 4). The remains of an iron knife with part of a wooden handle attached (Ill. 3.6, E338:30), which must have been lost or discarded during the construction of the oratory, was recovered from this pocket of clay. The only other artefacts recovered from F306 were a lignite disc bead (Ills 3.10, 3.15, E338:28) found close to the east wall and a small waste flint flake (E338:32).

A band of compacted stony soil with small water-rolled pebbles (F303) was uncovered running across the centre of the cutting on top of the clay deposit (F306) and directly underneath the modern clay floor surface. This sterile layer may have been deposited to improve the floor surface at some late stage in the use of the oratory.

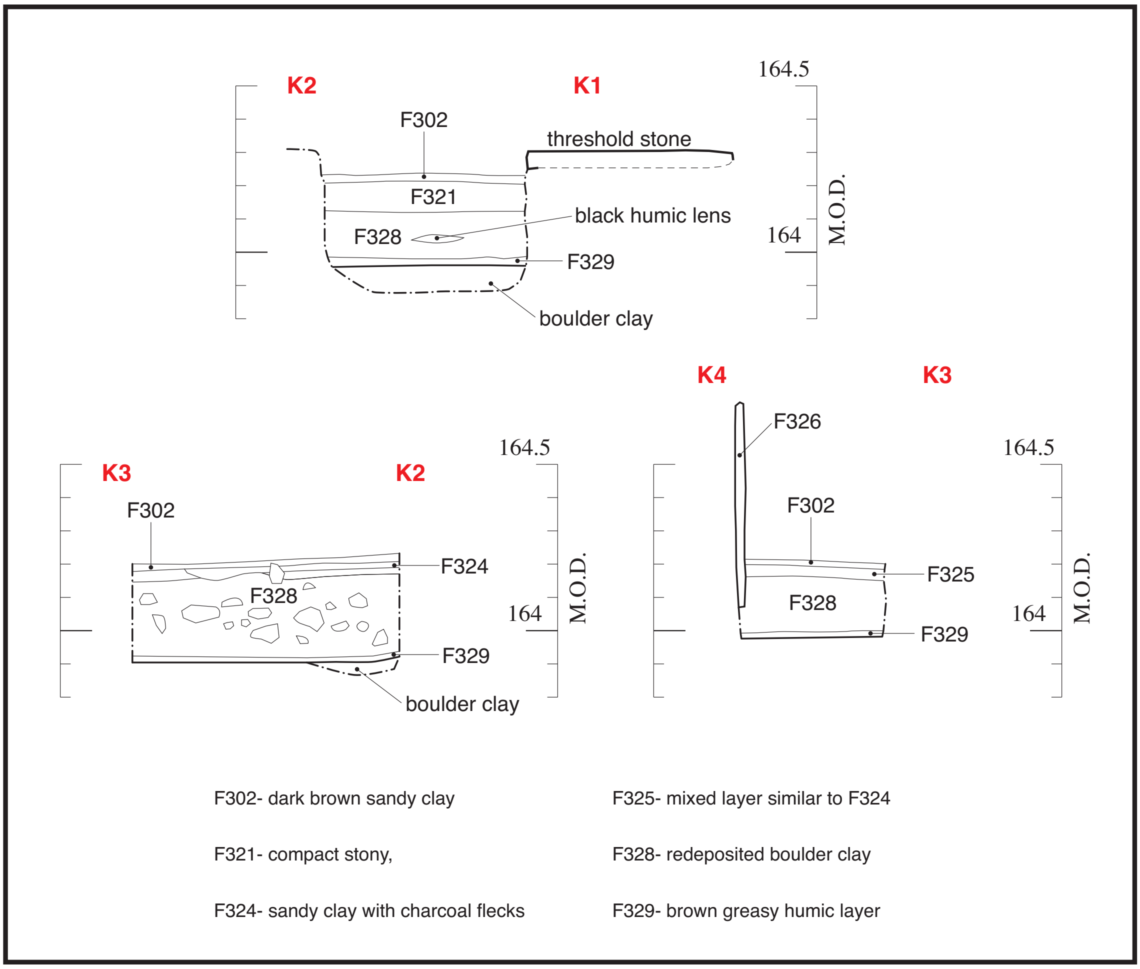
The clay deposit (F302) that underlay the paving slabs and that formed the floor surface where exposed between the slabs consisted of a brown sandy soil, dry and powdery in texture except along the southern side of the cutting, against the wall of the oratory, where it was moist and sticky owing to ingress of rainwater. This layer was very shallow (only 20mm deep in places) at the western end of the cutting but deepened considerably towards the east. The range of artefacts recovered indicates a very mixed and disturbed layer, which is to be expected for what was a floor surface over several centuries. The material recovered from this layer includes small coal and cinder pieces, fragments of decayed wood, mortar fragments, an iron stud, twentieth-century pennies, sherds of early nineteenth-century ceramics and modern bottle glass. Three artefacts belonging to the medieval period were found in this layer—a silver long-cross penny of mid-thirteenth-century date (E338:23), part of a lignite ring (Ills 3.10, 3.14, E338:24) and a flint flake with retouch (E338:25).

Ill. 2.32—South-east quadrant of the large oratory after excavation (Con Brogan, DAHG).

The entrance cutting

A small cutting (0.9m north–south by 0.6m max. east–west) was opened immediately inside the oratory entrance to facilitate repair of the northern jamb of the doorway (Ill. 2.29).

The stratigraphy revealed was broadly similar to that in the south-east quadrant, although shallower (Ill. 2.33). The old



Ill. 2.33—The large oratory, sectional profiles.

ground surface (F329–F318) was no more than 0.01–0.02m thick, covered by 0.21–0.23m of redeposited boulder clay (F328–F315). The vertical slate slab (F326) that forms the face of the west wall of the oratory, just north of the doorway, was set into the redeposited boulder clay, indicating that at least some of this clay was in position before the oratory wall was constructed.

The 'activity levels' relating to the use of the oratory comprise a single mixed deposit (F321–F306), 0.2m in maximum depth. This is a compact, stony, brown sandy soil with a lens of mottled black and orange clay with traces of charcoal and burnt shell. A roughly circular post-hole (F327), *c.* 0.13m in diameter and 0.17m deep, had been cut through this deposit (Ill. 2.30, level 2). This was a well-constructed feature, with four stones on end lining its sides and two stones forming its base. It appears to have been deliberately backfilled with a stony brown sandy soil (F327A), similar to F321, once it went out of use. Its location inside the doorway and almost 0.2m from the nearest door jamb would suggest that it did not function as part of the door furniture. Even if, as was the case with many drystone churches, the wooden door was secured through the use of a perforated slab that projected from above the lintel on the interior of the doorway (Ó Carragáin 2010, 52), this post-hole is sufficiently out of line with the northern door jamb that it could not have held one of the stationary posts for the door frame. Further excavation on the south side of the entrance could reveal associated features that would help in its interpretation.

An irregular-shaped cut (F322) was revealed centred on the northern door jamb (Ill. 2.30, level 1). This feature had a maximum depth of 0.15m and was filled with loose, moist, dark brown clay (F323). The bottom of the cut coincided with the base of the drystone door jamb and this feature must represent an earlier effort at accessing the jamb for repair.

Interpretation
Even though just a small area of the oratory was excavated, details have come to light about how the structure was constructed and about its subsequent usage.

A number of large sandstone slabs were set on edge on the line of the inner face of the oratory walls and boulder clay was deposited behind them, in the space which would form the interior of the oratory. The drystone walls were constructed against the outer faces of the slabs. The stake-hole recorded in the boulder clay probably belongs to the construction phase of the oratory.

Excavation in the area south of the oratory revealed a stepped plinth on the south wall of the oratory (see Section 2.2.3 below). The line of the lower step of the plinth deviates from that of the oratory wall, suggesting that it may perhaps relate to an earlier structure. Excavation within the oratory did not reveal any evidence to support this hypothesis, however, and what is interpreted as undisturbed boulder clay (F319) was exposed at a level considerably higher than the putative earlier structure.

Over the centuries, clay deposits accumulated to depths of up to 0.3m within the oratory—presumably these clays were brought in to cover the floor at different times, although the level of mixing and disturbance of deposits did not allow for any clear stratification to be discerned. In the area excavated, there were no traces of structures or features that could be related to ecclesiastical activities, with the possible exception of the ephemeral features exposed below the east window, which relate to an early altar structure. Extensive fires were lit within the oratory at some unknown date—these could, in fact, have been as late as the nineteenth century. The large altar structure that had been built against the east wall, partially obstructing the east window, may have been constructed for use by pilgrims during the post-medieval period but it more likely belongs to the nineteenth century, when the lighthouse personnel made use of the oratory for religious practice.

2.2.3 South entrance 1 (inner enclosure) and *leacht* area (93E0195)
Edward Bourke

Introduction
In 1993 a test-trench was excavated in the area south of the monks' garden to establish stratigraphic relationships that would allow the south-east corner of the inner enclosure to be presented in a coherent way (Ill. 2.34). The test-trench measured 5m by 1.5m and ran in an north–south direction (Ill. 2.35) from the wall of the inner enclosure (F513) to a low retaining wall based on bedrock above the east end of the lower monks' garden (F1006). It was excavated to determine the state of conservation of the eastern end of the inner enclosure wall, which was not visible on the surface, and there was a slope of campion running down over it from the inner enclosure to the south.

It became clear that the early portion of the inner enclosure wall (F513) (Ill. 2.36), which ran eastwards from the south wall of St Michael's Church, terminated at its eastern end in a jamb with the inner lintel of an entrance surviving. This lintel was visible on the surface to the west of the test-trench. This feature appeared to be an early entrance (south entrance 1). The exterior face of this wall did not survive east of this jamb and the jamb itself was in urgent need of conservation(Ill. 2.37).

West of the area excavated lay part of the inner enclosure wall, characterised by being built of stones laid at right angles to the line of the wall. This presents an extremely jagged front elevation facing out onto the lower monks' garden. This is the only part of the monastery with such a wall still in position and it was felt that it probably represented an enclosing element from an early phase of the monastery. It was hoped that the excavation would reveal whether the front footings of this wall could be found continuing eastwards across this area.

It was decided at this point that the conservation of this portion of the inner enclosure wall and of

Ill. 2.34—The eastern end of the lower monks' garden and the inner enclosure from the south-east in the 1970s (DAHG Archive).

the entrance was going to be a major operation, and that this work could not be undertaken until excavation and conservation of the lower monks' garden was completed.

Work recommenced briefly in 1994, when an attempt was made to find the front face of the base of this wall. The front face did not in fact survive east of the entrance, and it was decided that further work involving the excavation of the entrance would be necessary. This work did not take place until 1998, when the area of the entrance was excavated and the completion of a new wall, east of the entrance, allowed the jacking back into position of the exposed jamb stones.

The 1993 excavation

The test-trench ran from the edge of the paved area of the inner enclosure down to a ledge revetted by a single-faced drystone wall (F1006) that stands on bedrock overlooking the lower monks' garden (Ill. 2.38). This wall ran east–west along the edge of the ledge for *c.* 4.8m.

A layer of sea campion roots and dark brown organic material (F1001)[1] sloped downwards from the paving of the monastery to the ledge above the lower monks' garden at an angle of *c.* 40°. This layer varied in thickness between 0.3m and 0.7m and represented a recent build-up of soil over this area (Ill. 2.39). It overlay a small east–west retaining wall (F1007) and a layer of dark, loose organic soil with small stones (F1002). South of these features, F1001 overlay a thin layer of decayed sea pink roots (F1003), up to 0.1m thick, which represented an old sod level in this area. This in turn overlay a layer of dark brown to black organic soil with small stones (F1004), which was very similar to F1002. This overlay the revetment wall (F1006), which retained this material from falling into the lower monks' garden, and the sloping bedrock behind it. This wall was constructed of relatively small stones and was only faced on the

[1] All features numbered F1000 or higher are from contexts for which the notebooks, finds registers, plans and some of the sections were destroyed in a fire in the archaeologists' accommodation in 1995 (see Introduction for details).

Ill. 2.35—South entrance 1 from the south, showing area of entrance and area east of entrance in 1994 (Con Brogan, DAHG).

outward or southern side. The ground was levelled up behind it by backfilling with rough, loose, large stones and brown earth, between it and the bedrock. All this material appeared to date from the period of lighthouse occupation, as creamware, coal and brick were found in the wall (F1006) and the backfilling behind it (F1005). String, cigarette packets and nylon twine were also incorporated into the layer (F1005), probably by burrowing sea birds.

The small upper retaining wall (F1007) was on the line of the original enclosing wall (F513) but was clearly built to retain the collapse of that wall at a later date. It was built as a low revetment wall with no rear face and none of the stones were larger than 0.45m by 0.3m by 0.25m.

Excavation of the entrance

The excavation of the early entrance took place in 1998. The lintel, F1008, which measured 1.24m long by 0.28m deep by 0.18m high, lay in position and was keyed into the inner face of the western jamb of the entrance. It did not appear to be attached to an eastern jamb, which appeared to be missing. It was decided to excavate the entrance and record how much of it survived, and to determine its position in relation to the large oratory. It was hoped that some trace of the original exterior of the wall to the east of the entrance would survive, as five large building stones were exposed, slumped out of position, in the 1993 season (F1010). These stones, which measured up to 1.8m by 0.3m by 0.4m, were similar in size

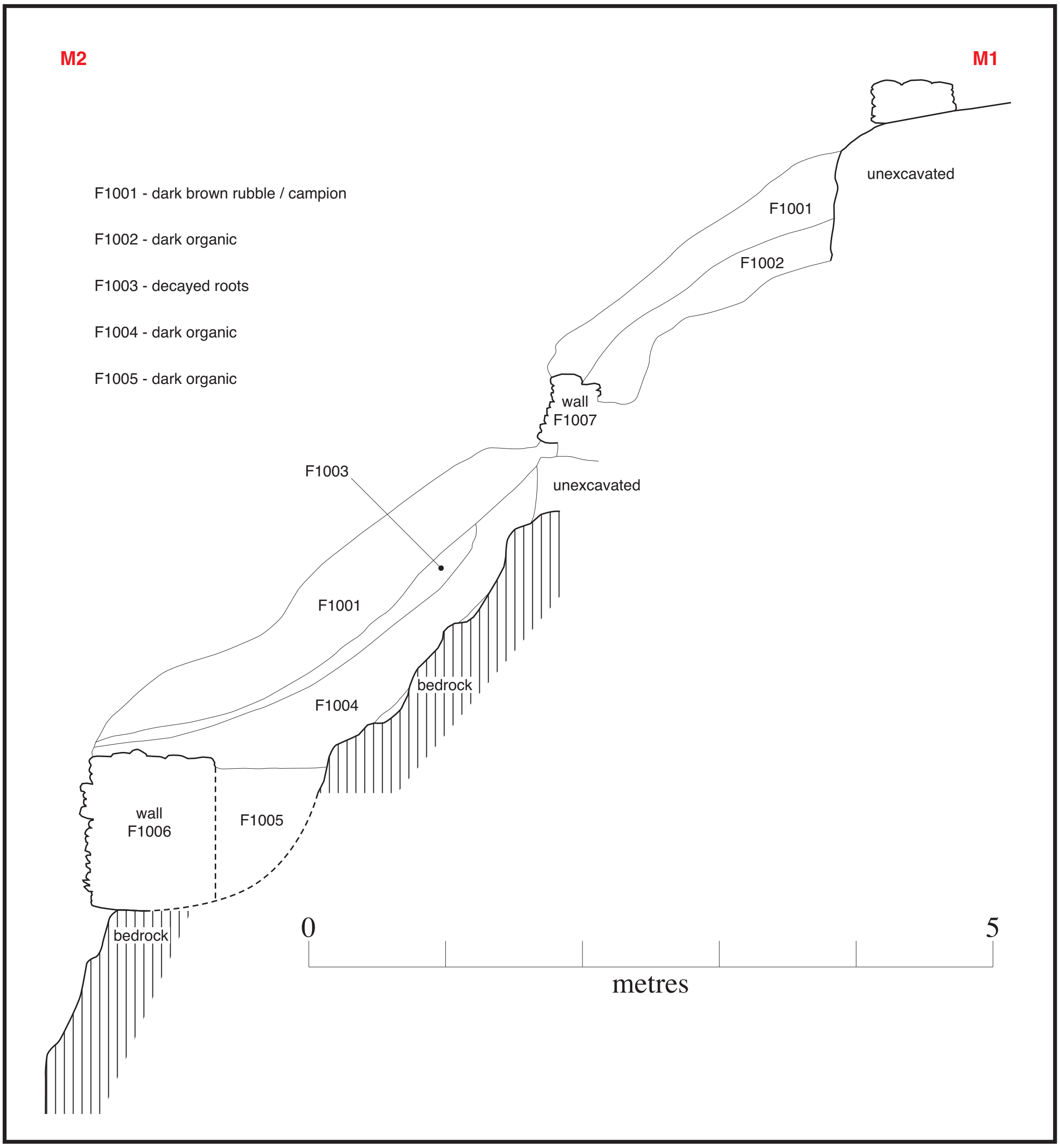
Ill. 2.36—Western jamb and lintel of south entrance 1 visible on surface, 1994 (E. Bourke).

Ill. 2.37—Inner and outer enclosure walls prior to excavation (Con Brogan, DAHG).

to the larger building stones of the wall west of the entrance. Excavation in this area showed that these appeared to be the last of the eastern jamb stones, thrown out of position in the collapse of the wall. Further work indicated that the front face of the wall did not survive east of the entrance.

Description of entrance

The western jamb of this entrance survived to a height of 3.05m above the bedrock that formed the base of the entrance. The wall was *c.* 1.82m thick at its top and *c.* 2.27m wide at its base. The interior face



Ill. 2.38—Section of 1993 cutting.

was almost vertical and the exterior face displayed a slight batter. The jamb stones were aligned north–south, parallel with the entrance, and this caused a weakness in the structure. A large stone (up to 2.4m long by 0.61m wide and 0.4m thick) at the base had been forced out of the wall and lay at an angle of *c.* 30° across the entrance. Above this were a series of large stones, also aligned north–south, the largest of which was 1.72m long by 0.49m wide by 0.27m deep. All of the lower stones had moved in antiquity and the side stones presented a bowed shape, being most severely displaced halfway up the jamb. The inner face of the wall had stones that lay parallel to the wall. Thus the alignment of the inner face was at right angles to the stones of the outer face and entrance jamb. This inner face survived west of the jamb but could not be discerned east of the entrance at this time. It was encountered intact in the area of the east entrance (see Section 2.2.6 for details).

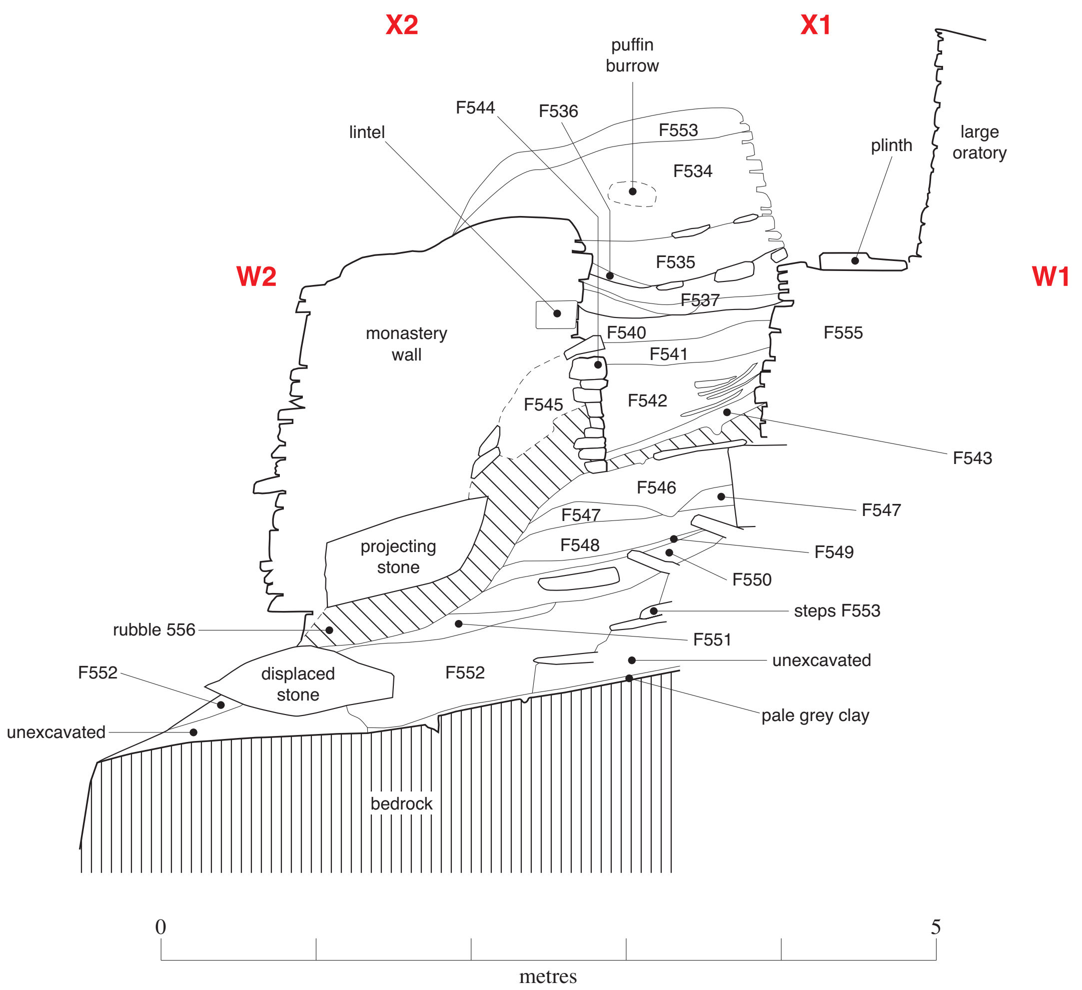
The eastern jamb had entirely disappeared in the collapse and no trace of it could be discerned, nor of the outer face of the wall to the east of the entrance. The inner lintel (F1008) survived in position and measured 1.24m wide, 0.28m deep and 0.18m high, which would indicate an entrance width of *c.* 1m at its top.

Ill. 2.39—General view showing trench locations in 1994 (Con Brogan, DAHG).

The excavation
A cutting, 4.3m by 2.5m, was opened through the entrance in order to examine the stratigraphy and the relationship between the entrance and the plinth of the large oratory (Ill. **2.40**).

Monastic steps (phase 1)
Above the bedrock within the entrance area lay a very thin (0.02–0.05m) layer of pale grey clay (F554). This ran under the inner enclosure wall (F513) and underlay a set of low steps (F553) that ran up through the entrance from midway through the wall. This series of three steps ran under the plinth of the large oratory and represent a time when the layout of the monastery must have been quite different. Two further steps also run under the plinth (F559A), but it is not clear whether these represent part of this phase of the entrance or the later phase (see below). These steps protrude through later layers, but it is unclear whether they had already been displaced when the phase 2 steps were inserted or whether they form part of that second phase.

Monastic steps (phase 2)
Above the earlier steps and bedrock lay a layer of dark reddish-brown compacted material with large stones (F552). This layer was up to 0.46m thick and contained the large displaced stone from the base of the west jamb described above. This layer and the stone appear to represent a failure in the structural integrity of the wall, and a second level of steps was then added to the entrance above the level of the large displaced stone. Above this lay a layer of grey shattered grit with medium-sized stones (F551) that ranged in thickness from 0.02m to 0.16m. Above this was a layer of medium-sized stones and spalls



F553 - campion / topsoil
F535 - black stony soil
F536 / F540 / F542- yellow / brown ash
F537 - dark grey stony clay / yellow ash
F547 - dark brown / grey silty soil
F541 - dark brown clay
F543 - dark grey / brown sandy clay
F546 - sandy soil, ash & small stones
F548 - dark brown loose soil
F549 - bluish-brown silty soil
F550 / F549 with medium stones
F551 - grey shattered grit
F552 - compact dark red / brown

Ill. 2.40—Section through south entrance 1.

(F550), up to 0.2m thick, which overlay both F551 and F552. Within this layer (F550) were two steps (Ill. **2.41**) that had been displaced by pressure from the weight of the plinth of the large oratory. It is not clear whether these two steps were *in situ* when F550 was deposited, and therefore would have belonged to phase 1, or whether they form part of the phase 2 steps. The drystone risers had fallen away when the steps were displaced and it is therefore not clear whether they were steps of phase 1 or new steps inserted as part of the less formal stairway of phase 2.

Above this was a layer of almost bluish-brown clay (F549), between 0.01m and 0.09m thick. This was overlain by a layer (up to 0.22m thick) of dark brown loose soil with stones (F548). This in turn underlay a layer of dark grey/brown clayey silt (F547), up to 0.13m thick, which was quite waterlogged

Ill. 2.41—Upper level of steps, south entrance 1, from east (E. Bourke).

and had been cut in half by the overlying layer, F546, a beige mixture of sandy soil, ash and small stones between 0.14m and 0.38m thick. This underlay a flat slab angled at 45° to the line of the earlier steps and appears to be where the phase 2 steps turned westwards, respecting the line of the plinth of the large oratory.

West of this slab there was a line of flat slabs, only three of which could be called steps, which roughly filled the area between the earlier plinth and the south wall of the inner enclosure (F513). Three slabs lay on the surface and there were two slabs under which the remnants of drystone risers remained.

Features post-dating phase 2 steps

Overlying the flat slab that lay on the surface of F546 (Ill. 2.42) was a layer of loose rubble (F544), up to 0.22m thick, which had some of the overlying layer (F543), a dark brown silty clay up to 0.08m thick, washed down into it.

Above this was a layer, up to 0.36m thick, of yellow ash with lenses of brown clay and some charcoal (F542). It in turn underlay a layer of dark brown clay and small stones (F541) up to 0.2m thick. All these layers (F542–F544) had been deposited into the entrance behind the blocking wall (F557, F544 and F545), which closed off the entrance (see below). Further west in the cutting the layers associated with the backfilling of the phase 2 steps continued, but in the area of the entrance itself later (nineteenth-century) work overlay F542, where the lighthouse-builders dug out some of these layers while laying a foundation for widening the plinth (see below).

The area west of the blocking (F541) was overlain by a layer of yellow ash with some small stones (F540), up to 0.2m thick, which in turn was overlain by a layer of dark earth and small stones (F539). This layer only survived up against the northern edge of the cutting. South of F539 was a layer of brownish-yellow ash (F538), 0.02–0.07m thick, which overlay F539, F540 and F537. A small patch of dark grey clay with stones (F537), 0.11–0.28m thick, lay at the south end of the cutting below F536, a layer of yellow ash up to 0.06m deep.

These layers represent the backfilling of the phase 2 steps after the entrance was blocked up. The

Ill. 2.42—Upper level of steps, south entrance 1, from north (E. Bourke).

layers associated with the phase 2 steps had eroded out into the entrance, which was then blocked with a rubble-filled wall. This wall had an inner face (F557) consisting of ten courses of well-built drystone walling and a rubble core filled with loose rubble and black organic material (F545). Above F545 was a layer of cleaner rubble without organic material (F532), which also formed the filling layer behind the inner face of the wall (F557). The outer side of this blocking wall had eroded away and slumped out into the entrance. This feature stood on top of F546, upon which one of the stones of the phase 2 steps lay. All of the backfill layers (F544–F536) had been dumped inside this blocking wall. Above the topmost slab of this stairway (F559) lay F583 (see 'The *leacht* area', below).

Nineteenth-century deposits

At the east end of the cutting there was a nineteenth-century intervention where the flagstones forming the top of the plinth of the large oratory were added to in order to provide a wider paved surface. A layer of rubble underpinning (F531), up to 0.55m deep, was inserted in order to provide a foundation for the newly widened paved area. This rubble underpinning had cut through a layer of black loose soil with stones and campion roots (F530), which was retained by the blocking wall (F577) and overlay the ash layer (F542). This latter deposit contained brick, some fragments of corroded iron and a stone (green conglomerate) from St Michael's Church.

West of this disturbance and overlying the backfilled layers was a layer of black, very stony soil with few roots (F535). This layer, which was 0.2–0.3m thick, ran over the backfilled deposits, over F583 and the eastern ends of the layers associated with the burials in the *leacht* area. Above this was a layer of loose black clay with stones and campion roots (F334), 0.3–0.58m deep. This directly underlay the campion layer that covered the whole area up to the *leacht* and measured between 0.08m and 0.12m in depth to the east of the *leacht*. The northern edge of the layers described above (F535–F533) was revetted with a single-faced drystone wall abutting the paving surrounding the large oratory, and on its southern edge layers F533 and F534 tapered out over the centre of the enclosing wall (F513).

Ill. 2.43—Lower plinth beneath large oratory, from east (E. Bourke).

Interpretation
It is not clear what the layout of the inner enclosure was when south entrance 1 was in use, as it predates the building of the large oratory by some considerable time. The steps of phase 1 run north–south and continue under the plinth of the large oratory (Ill. 2.43), so the layout of the interior of the inner enclosure must have been different at that time. The second phase of activity occurred when the entrance had been partially blocked up with soil and the large oratory and its possible predecessor had been built. At this stage, steps were built between the edge of the oratory plinth and the enclosure wall, leading down to the partly blocked entrance. It appears that the phase 2 entrance had gone out of use either at the time of or before the arrival of the builders of the lighthouse on the island in the 1820s. It is hoped to obtain a radiocarbon date from material from F545, which may resolve whether the blocking of the entrance belongs to the medieval period or the nineteenth century. What is definite is that the lighthouse-builders widened the southern edge of the plinth of the large oratory by paving alongside it. At some later stage there was a catastrophic failure of the wall between the entrance and the south-east corner of the inner enclosure, and the outer face of the wall collapsed into the lower monks' garden, burying Cell G (see below, Section 2.2.7).

Excavation to the east of the entrance showed that while the outer face of the wall had fallen away much of the core remained, with the inner face intact up to the level of the ground inside the inner enclosure. The rubble core of this wall to the east of the entrance was left *in situ* and no further excavation was carried out here. A retaining wall was built on the outside to hold back the surviving features of the wall to the east and to allow the entrance to be blocked (Ills 2.44 and 2.54).

The *leacht* area

Introduction
Excavation commenced in the interior of the enclosure between St Michael's Church and west of entrance 1 in 1999. There was a *leacht* (F560) visible in the north-west corner of this area, and a puffin

Ill. 2.44—South entrance 1 after conservation (C. Brogan, DAHG).

had been observed 'excavating' human remains from within the area to the north-east of the *leacht*.

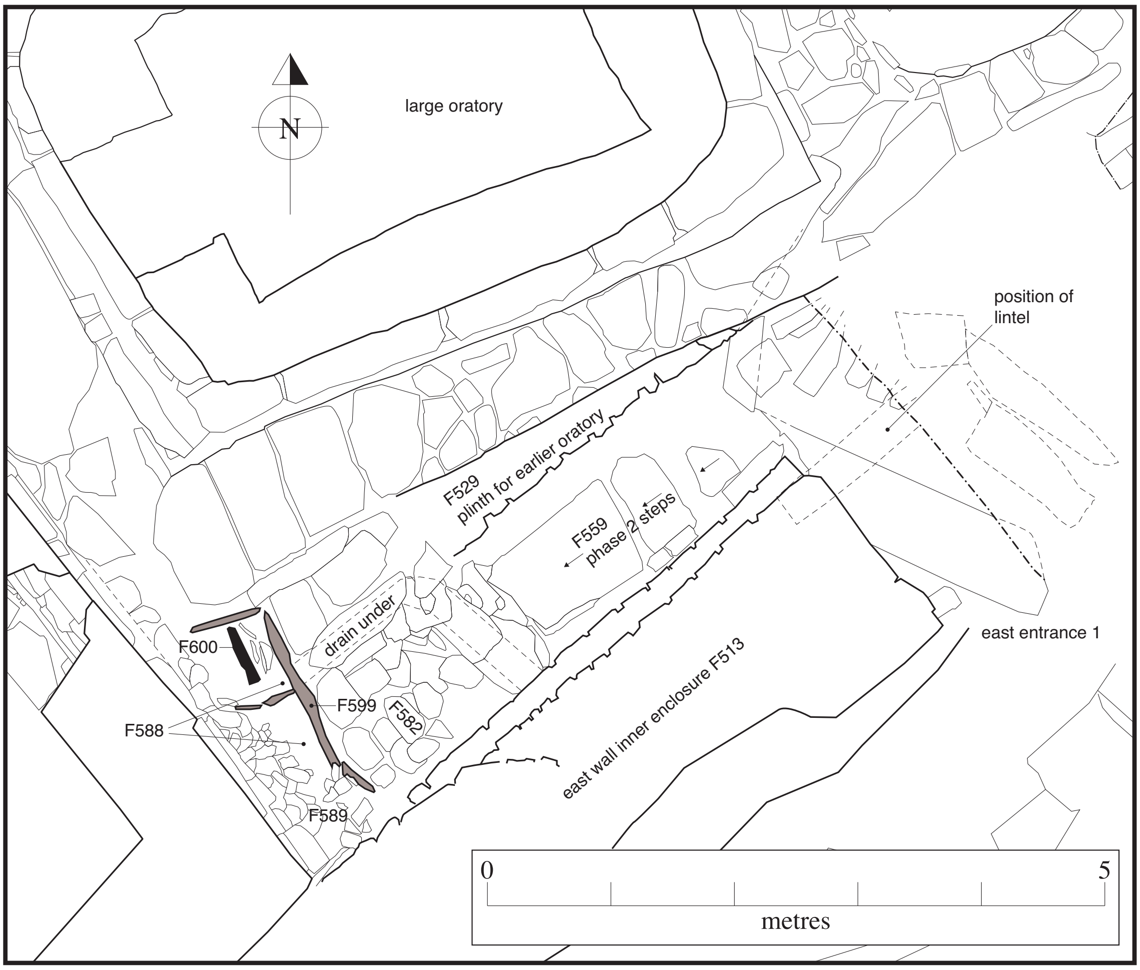
*Pre-*leacht *features*

Below the pavement associated with the *leacht* the remains of a cist (F599) were revealed (Ill. 2.45). This structure consisted of a long stone (1.32m by 0.12m) set on edge, which formed the eastern side of the feature, but its western and southern sides had been truncated by the building of St Michael's Church. The structure had been divided into two compartments by the insertion of two stones set on edge midway within it. These were aligned east–west and measured 0.22m by 0.03m and 0.35m by 0.04m. The northern compartment appeared to survive to almost its full width, but the southern compartment was severely truncated by the foundations of the later church.

Within the cist, a 0.38m-deep layer of mid-brown silt with some charcoal (F588) was revealed. It contained a fragment of a human skull and seven water-rolled pebbles. A ^{14}C sample from this layer yielded a date of between AD 779 and 970. This layer formed the fill of both compartments of the cist, while outside to the south was a layer of gritty mid-brown clay with very little charcoal (F589). Within the fill (F588) there was a vertical stone (F600), 0.12m by 0.48m and aligned north–south, with propping stones driven in around it. This stone was in fact the *in situ* base of a large cross (Ill. 2.46). The cross, which had been broken from its base, was recorded in the mid-nineteenth century standing in the structure known as the 'guesthouse' (Dunraven 1875–7). Subsequently it had been moved and placed upside down within the area of excavation. Originally it had been set up within the cist, and later the *leacht* was added up against its eastern face. When originally set up this cross would have matched a similar cross mounted in the burial platform on the northern side of the large oratory (Ill. 2.47).

The paving

An area of paving extended south of the *leacht* and directly underlay it (F582). This arrangement of large flat slabs, which varied from 0.08m to 0.19m in thickness, was laid out west of the top of the secondary steps (F559) coming up from east entrance 1 and was roughly contemporary with them. At its western edge the paving continued beyond the *leacht* but the stones here sloped downwards towards the west (F582A). It became clear that this was because they rested at their eastern end on the upright slabs of the



Ill. 2.45—Plan of F599 and earliest levels around cist/shrine.

Ill. 2.46—F599 with base of cross and dividing stones of cist/shrine (E. Bourke).

Ill. 2.47—*Leacht* and cross after conservation (E. Bourke).

cist (F599). It was also clear that the digging of the foundations for St Michael's Church and the subsequent burial of Skeleton 3 (see below) had caused their subsidence to the west. A line of only three slabs of F582A survived, and these averaged 0.6m by 0.4m by 0.1m. The northernmost of these slabs had been rebated to fit around the base of the large cross (F600).

The drain

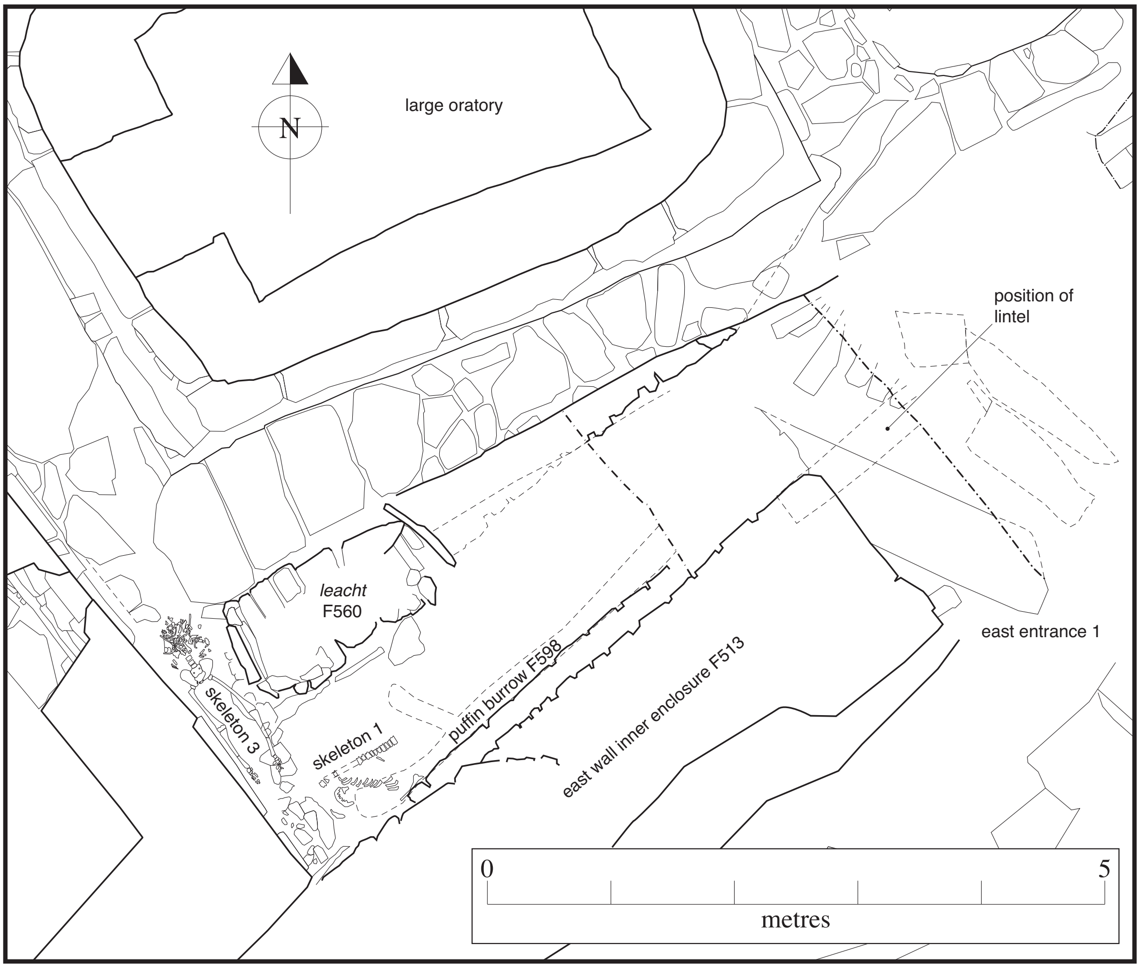
Prior to the laying of the paving, an L-shaped drain was constructed to carry water away from the area (Ill. 2.48). This ran east–west for *c.* 1m and then turned to run north–south, continuing on to meet the wall of the inner enclosure (F513). The drain was 0.35–0.5m wide and up to 0.2m deep. The lintels that covered it formed part of the pavement (F582).

The base of the drain at its southern end consisted of a layer of extremely gritty mid/dark brown sandy silt (F597), which underlay the side stones of the drain. Above this was a layer of compact dark brown sandy silt (F596), which ran almost the full length of the drain and was up to 0.15m thick in places. A small pocket of material (F595), only 0.05m thick, lay between the flagstones that formed the base of the drain at its western end. Above this there was a layer of compact dark brown clayey silt (F594), which became progressively stonier towards its base; this layer was confined to the western half of the drain. Above this was a layer of compact dark brown clayey silt with a high content of grit (F593), which ran the entire length of the drain and averaged 0.06m in depth. Samples were taken from F593 and F594 for analysis, but they had been contaminated by nesting storm petrels (see insect remains report). Above this lay F592, a thin layer of brown-black silt that was only 0.01m deep. This was overlain by F591, an almost identical layer containing slightly more stones. The uppermost layer in the drain was a fairly compact brown sandy silt, 0.03m deep (F590), which contained a piece of flint.

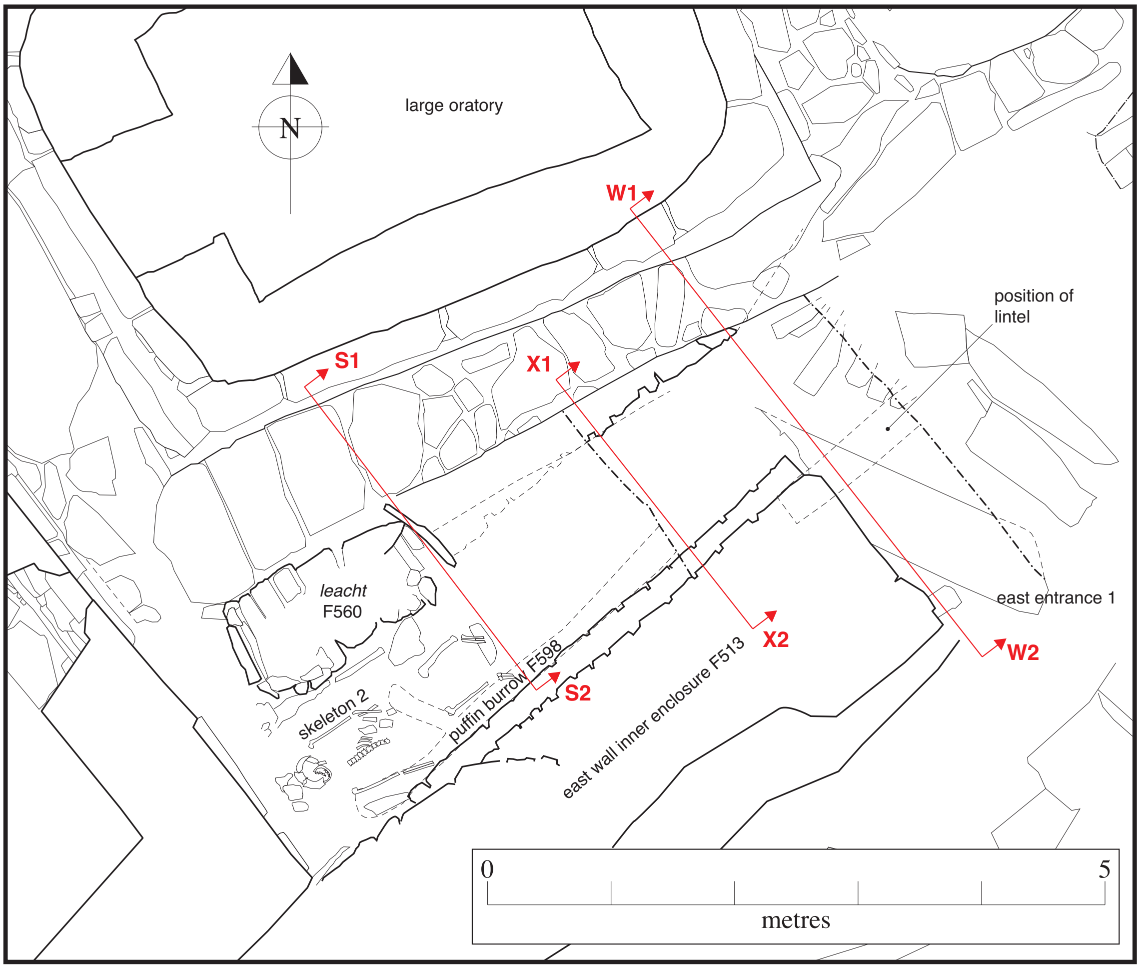
The leacht

The *leacht* consisted of a rectangular drystone construction, 2.95m by 0.99m by 0.65m high, wedged between the base of the large cross at its western end and an upright slab at its eastern end. It was taken down, stone by stone, and planned, photographed and numbered at each stage down to the paving. No

Ill. 2.48—Drain and paving (E. Bourke).



Ill. 2.49—Plan of burials, phase 1a.



Ill. 2.50—Plan of burials, phase 1b.

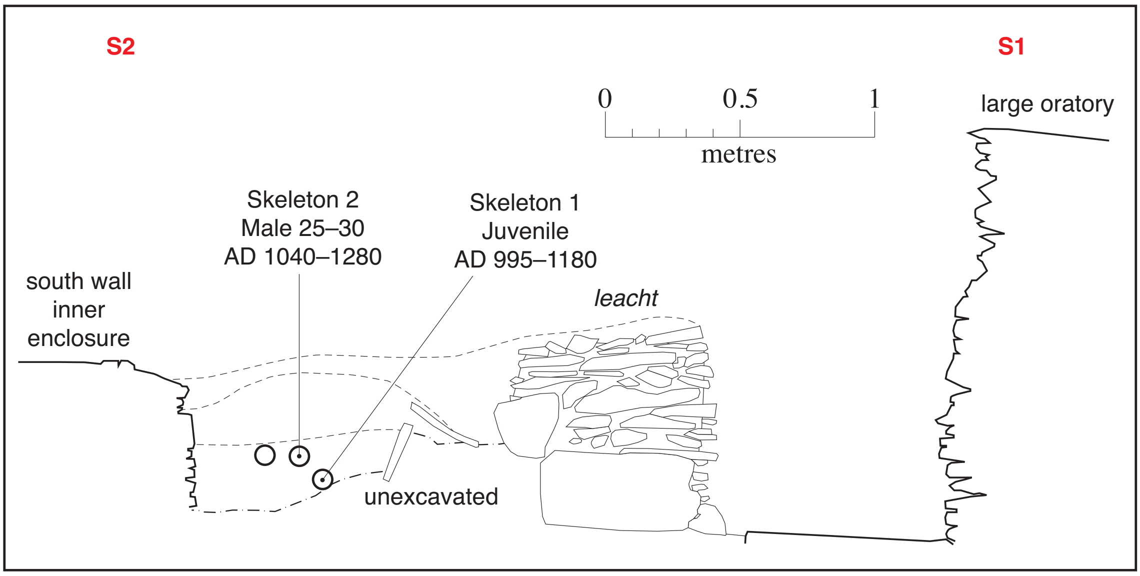
soil or other features were noted within the *leacht*. Above the drystone construction was a layer of silty sand with some quartz pebbles and some mortar (F573). This layer extended slightly beyond the *leacht* to the south, where it overlay F576 and therefore post-dates the burials to the south. Overlying this was a similar layer of silty sand with some quartz pebbles and angular stones (F572) and which also contained some bird and fish bone. This layer averaged 0.3m in depth. The topmost layer on the surface of the *leacht* was a layer of sea pink roots (F571), which averaged 0.2m in depth.

Monastic features post-dating the leacht

Directly above the pavement (F582) lay a brown silty deposit with some grit and charcoal (F581), which produced a radiocarbon date of between AD 775 and 941. North of F582 and against the *leacht* was a mottled redeposited thick layer of sand (F583), which had been dug through to position a stone associated with the later burials. This post-dates the *leacht* itself and appears to be roughly contemporary with F581, as indicated by the ^{14}C date of between AD 778 and 942, which is almost identical.

Above F581 was a patchy deposit of sand and clay to the south and east of the *leacht* (F580), which contained some metal fragments and a water-rolled pebble. This deposit is all that remains undisturbed by puffins at this level. The rest of the area at this level is occupied by F579, a 0.1m-thick layer almost completely disturbed by puffins. Above F579 and F580 was a layer of loose, dark brown sandy silt (F577). This contained a large quantity of bird bones and disarticulated human remains, together with an iron nail, a piece of milky quartz, 32 roof slates, an incised slate cross, a stone disc and six water-rolled pebbles. This layer in turn underlay a compact mottled yellow/red/pale brown clay with some minor ashy deposits (F576), measuring 1.12m north–south by 0.8m east–west, which contained a water-rolled pebble and a

Ill. 2.51—Skeleton 1, showing puffin disturbance (E. Bourke).



Ill. 2.53—North–south section at *leacht*.

piece of rock crystal. It in turn underlay a layer of brown earth with few stones (F564), the burial matrix containing Skeletons 1 and 2 (Ills 2.49–50). This layer extended from a near-vertical stone beside the *leacht* to the south wall of the enclosure (F513), but no grave-cut was observed at either its eastern or western end.

Skeleton 1 was a juvenile (9–11 years) who was laid out in a supine position in a roughly south-west/north-east direction (Ill. 2.51). This burial had been disturbed from below by a puffin burrow (F598). Skeleton 2 overlay Skeleton 1 and partly disturbed it. Skeleton 2 was a young adult male laid out in a supine extended position, also aligned in a roughly south-west/north-east direction (Ill. 2.52). Skeleton 1 was dated to AD 995–1180 and Skeleton 2 to AD 1045–1280. Both skeletons had been disturbed by a puffin burrow (F598) that contained animal and bird bone, brick, modern glass, mortar, nineteenth-century pottery and a water-rolled pebble. Seventy-four fragments of human bone were found within the burrow.

Above the burial matrix (F564) was a layer of medium-sized stones and organic material which appears to have been laid down to protect the burials. It extended from the *leacht* to the enclosure wall and was up to 0.25m deep, covering Skeleton 2. This layer was truncated at its south-western edge by nineteenth-century disturbance and at its western edge by the burial of Skeleton 3.

West of F564 (the layer containing Skeletons 1 and 2), disturbance had been caused by the digging of foundations for St Michael's Church, and later to insert another burial (Skeleton 3). These disturbances had removed the western side of the cist (see above) and appear to have removed the edge of the grave-cuts for Skeletons 1 and 2.

Some time after the construction of St Michael's Church, a burial (Skeleton 3) was interred against the exterior of its east wall (Ill. 2.53). This burial had been inserted into the church's foundation trench, with the lower body overlying some of the foundation stones and the upper body overlying a compact gritty silt (F575). The fill of the grave consisted of a layer of angular stones and brown organic material (F568) and no grave-cut could be discerned.

Ill. 2.53—Skeleton 3, from north (E. Bourke).

Ill. 2.54—South entrance 1 after conservation (Con Brogan, DAHG).

Skeleton 3 was an adult, 50–60 years old, and was laid out in a supine extended position aligned south-east/north-west. Only the leg bones, pelvis and vertebrae were uncovered *in situ*. The rest of the bones were redeposited in a pile next to the skeleton, as they had been disturbed when a wall footing was put in, possibly to protect the *leacht*. This redeposited material (F578) consisted of a dark brown, fairly loose, rich humic soil which also contained bird bone.

The grave was not very formally laid out, as the feet and tibiae were at a higher position than the rest of the body. The burial was dated to AD 990–1165. During the washing of the skeleton a tiny water-rolled pebble was found.

It was noted during this phase of the excavation that a small area of the original render (F569) covering St Michael's Church had survived on the eastern exterior wall. This was conserved *in situ*.

Nineteenth-century features

In the south-west corner of the area excavated there was a layer of nineteenth-century material (F562), 1.25m by 2.5m in extent. This feature contained some wine bottle sherds and some pottery, all of nineteenth-century date, together with eight water-rolled pebbles, an iron strip and an oyster shell. Disturbance associated with this deposit had uncovered the skull of Skeleton 2, which had been backfilled immediately. The skull was replaced facing the wrong way, with a doormat placed over it. This disturbance had removed all of the burial matrix layers, F563 and F564, in this small area of the site.

Above this was a layer of campion, between 0.12m and 0.3m thick (F561), which covered the whole area south of the plinth for the large oratory. This layer contained nineteenth-century pottery, a slate, a stone cross fragment, eight water-rolled pebbles and a fragment of a writing lead.

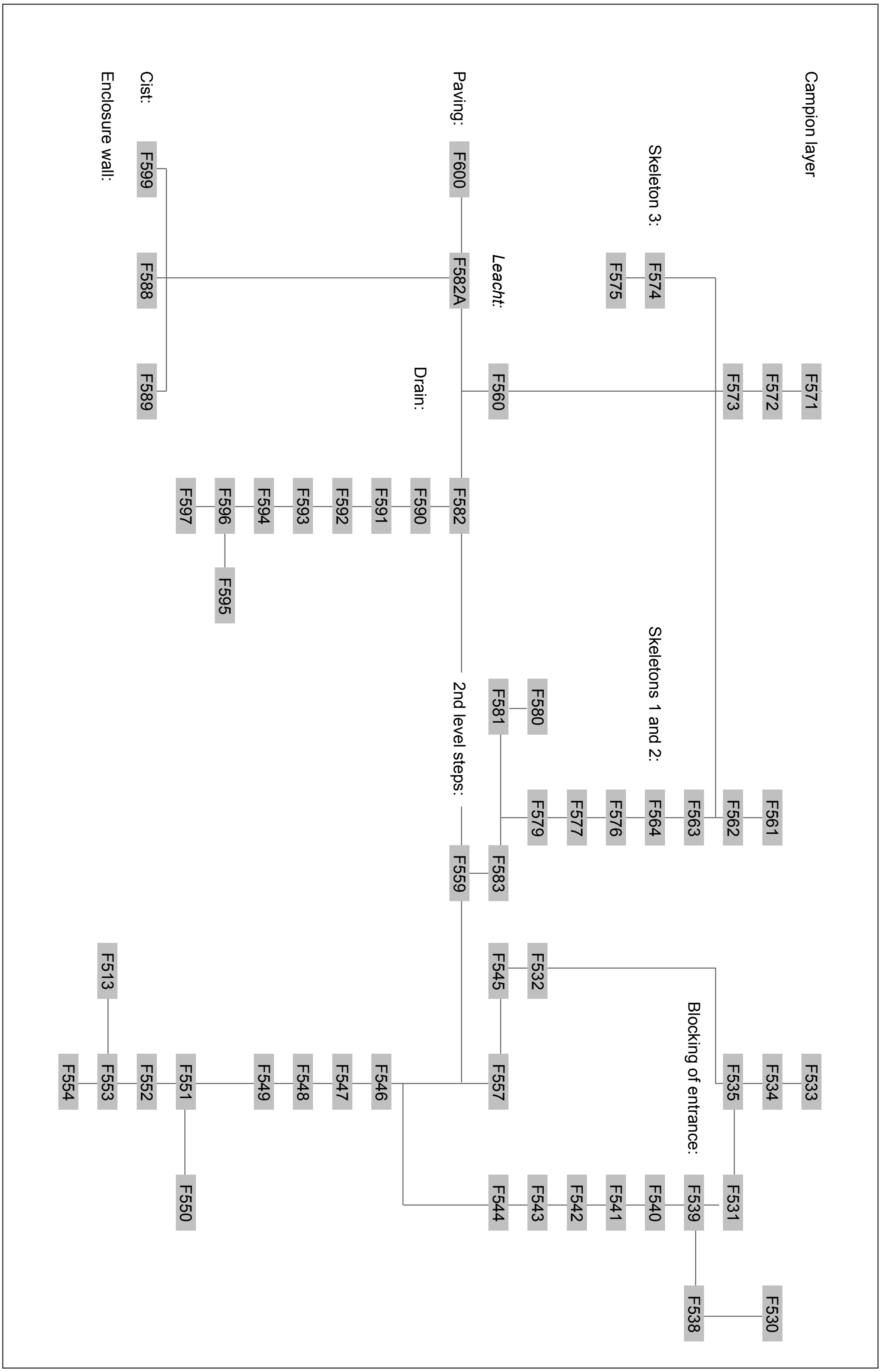
Interpretation

The earliest feature in this area of the inner enclosure is the stone structure, which may be the remnants of a cist similar to those recorded on nearby Illaunloughan and Church Island, which have been interpreted as belonging to the tradition of the 'translation' of human remains dating from the late seventh/eighth century.

The paving around the *leacht* appears to be roughly contemporary with the second phase of steps in the south entranceway (Ill. 2.55). Those steps respect F529, the lower step of the large oratory plinth, which may belong to an earlier oratory aligned parallel with the south wall of the enclosure. This paving overlies the cist (F599), which had a cross inserted in its northern compartment, possibly at the time that the *leacht* was erected. The *leacht* was erected on the paving, which follows the line of the earlier plinth and may date from the same time as the suggested earlier oratory. Subsequently the large oratory was built. Also subsequent to this, three burials were interred, two between the *leacht* and the south wall of the enclosure and one parallel to the foundations of St Michael's Church. There was some evidence for small-scale nineteenth-century disturbance of these features.

Unlike elsewhere on the site, the radiocarbon dates relating to this area are consistent with each other and can be tied directly together in terms of stratigraphy.

Ill. 2.55—*Leacht* after conservation, from east (Con Brogan, DAHG).



Ill. 2.56—Matrix for south entrance I and *leacht* area.

The dates for soils pre-dating and post-dating the *leacht* seem to centre on about AD 850, while the dates for the burials are also consistent and seem to centre on about AD 1100. As we know the precise stratigraphic relationship between all six dates, it is hoped to carry out Bayesian analysis on these six dates in order to narrow down, if possible, the date ranges.

The layers and their stratigraphic relationships are shown in Ill. 2.56, with the earliest on the right and the latest on the left, illustrating the consistency of the two phases of activity.

The finds are also consistent. The nineteenth-century finds, though not closely datable, indicate two phases of disturbance. The first area of disturbance was in the south-west corner, disturbing Skeleton 2; a second area of damage, where a wall was put in against the *leacht,* disturbed Skeleton 3. The monastic-period finds include the writing lead, scallop shells, a nail, roof slates, crosses, discs and many water-rolled pebbles. Water-rolled pebbles also occurred on the prayer station on the South Peak. It is not yet clear whether water-rolled pebbles can occur naturally on Skellig. If not, these items may well have been brought by pilgrims to the site. The deposition of water-rolled pebbles also occurs at the site of Templeteenaun, Co. Wicklow, where water-rolled stones, rather than pebbles, seem to have been brought onto the site from a river far below the site (A. O'Sullivan, pers. comm.).

2.2.4 South entrance 2, inner enclosure (E338)

Ann Lynch

At least three long flights of steps, built by the monks, provided access to the monastery. The most significant of these are the south steps and the north steps, which merge at Christ's Saddle and enter the outer enclosure from the west, and the east steps, which enter the outer enclosure from the south (Ills1.1, 1.3a). All three routes meet at what in modern times is the only entrance in the inner enclosure wall (Ill. 2.57).

A series of seven drystone steps lead upwards to this entrance from the lower, outer enclosure. These steps are flanked to the east by a drystone wall (F14), which abuts the inner enclosure wall and runs southwards from it for a distance of 4.5m before swinging south-south-east for a further 2m, where it flanks the steps leading down to the lower monks' garden. The wall survives to a maximum height of 1.9m and is 0.5m wide at the top but widens considerably towards its base, where a distinct batter on its eastern face gives it an overall thickness of *c.* 2m. The style of construction (small stones randomly

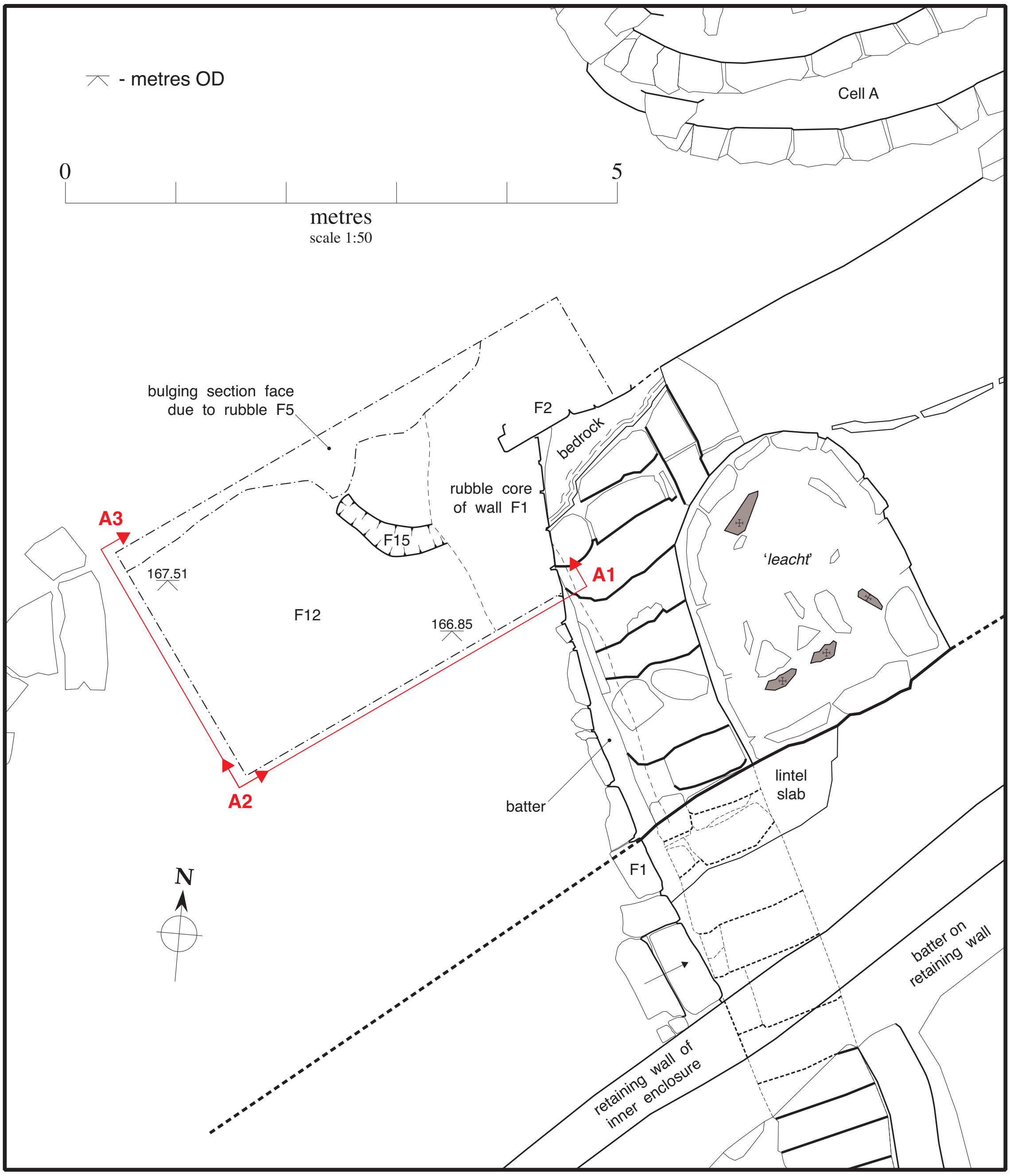
Ill. 2.57—South entrance 2 (inner enclosure), steps leading from outer enclosure (Con Brogan, DAHG).

Ill. 2.58—South entrance 2 (inner enclosure) viewed from inside enclosure and D-shaped '*leacht*' (A. Lynch).

placed) would suggest that this wall was built possibly as late as the 1820s, when considerable modifications were carried out to the monastic structures by the builders of the lighthouses. Several of the adjacent steps may also be late in date. Remains of wall footings can be traced flanking the west side of these steps and running westwards towards the entrance in the outer enclosure, suggesting a possible early terrace on the north side of the pathway that leads from the outer to the inner enclosure entrance.

The entrance itself is a lintelled passage, *c.* 3m long, *c.* 1m wide and averaging 1.9m in height, running through the thickness of the inner enclosure wall. The masonry of the passage walls is comprised of large stones horizontally laid in distinct courses. A crudely built section of the east elevation indicated an area of repair, possibly necessitated by shifts in the masonry caused by the cracking of the overhead lintel. A series of eight steps ascend through the passage, and during repair/conservation works these were seen to be replacements for earlier steps, the remains of which survive underneath. An earlier threshold also survives under the step at the south face of the entrance (G.D. Rourke, pers. comm.).

Emerging from the entrance passage, three steps (incorporating exposed bedrock) continue upwards for a distance of 5.65m before turning east, where the final two steps lead to fairly level ground in front of Cell A. These steps are bounded on the west by a drystone retaining wall (F1) that abuts both the inner enclosure wall and a similar retaining wall (F2), which forms the northern boundary of the passage as it swings east (Ills 2.58, 2.59). Both walls are founded on exposed bedrock in the area where they intersect. The tops of these retaining walls are flush with the ground surface behind, and the height of F1 ranges from 2.55m at the entrance passage to 1.7m at its junction with F2. The steps are bounded on the east by a D-shaped '*leacht*'-type structure (2.47m north/south by 2.1m max. east/west). This is constructed of drystone walling enclosing a fill of clay. Four crudely shaped stone crosses are set upright in the clay and a fifth lies on the surface. The height of the drystone walling ranges from 2.05m at its junction with the entrance passage to 0.8m at its curved end and 0.15m where it abuts the enclosure wall. These measurements illustrate clearly the terracing, which results in a 2m drop from the inner monastic enclosure to the outer enclosure. The D-shaped structure is likely to be nineteenth-century in



Ill. 2.59—Plan of south entrance 2 (inner enclosure), showing area excavated.

date and must have been constructed when the adjacent entrance passage and steps were modified.

Before excavation, the drystone walling of the repaired section of the eastern elevation of the entrance passage was badly ravelled and bulging inwards. Just inside the entrance, the western retaining wall (F1) was also bowed and in danger of collapse. Timber shoring and props had been put in place to ensure safe access for visitors in the short term, but it was clear that major repair and consolidation works would be necessary to secure this focal point of the monastery. As these works would involve the dismantling and rebuilding of wall F1, an area was excavated immediately behind it. The objectives of this small excavation were twofold:

- to examine the nature of the deposits behind the wall as it was being dismantled and to gain some information about the sequence of building activities in this area;
- to determine the relationship between walls F1 and F2.

While the outer face of F1 abutted F2 at the curve of the passage, there was some suggestion that F2 may have extended westward behind F1, thereby pre-dating it.

The excavation

A single cutting excavated in June 1986 encompassed the northern end of the passage and its curved corner (Ill. 2.59). The dimensions of the cutting were irregular but it measured a maximum of 4.62m east/west and 2.4m north/south. Ground level sloped steeply to the south, with a drop of 1.08m over a distance of *c.* 6m from the northern end of the cutting to the inner enclosure wall to the south.

The western retaining wall (F1)

This wall was recorded and dismantled as the excavation proceeded. It was founded on bedrock and was poorly built, with a facing of roughly coursed sandstone of varying sizes and a rubble core behind. The rubble core averaged 0.8–1m in thickness and in places was difficult to distinguish from the rubble fill (F5) behind (the stones within the wall core tended to dip down slightly to the west, while those within the fill F5 lay horizontally). Pockets of dark brown sandy clay containing lumps of coal and brick fragments were noted within the core of the wall. Following excavation, the upper levels of the wall to the south of the cutting were dismantled under archaeological supervision, and a leather man's shoe of late nineteenth/early twentieth-century date (E338:29) was recovered from the core of the wall.

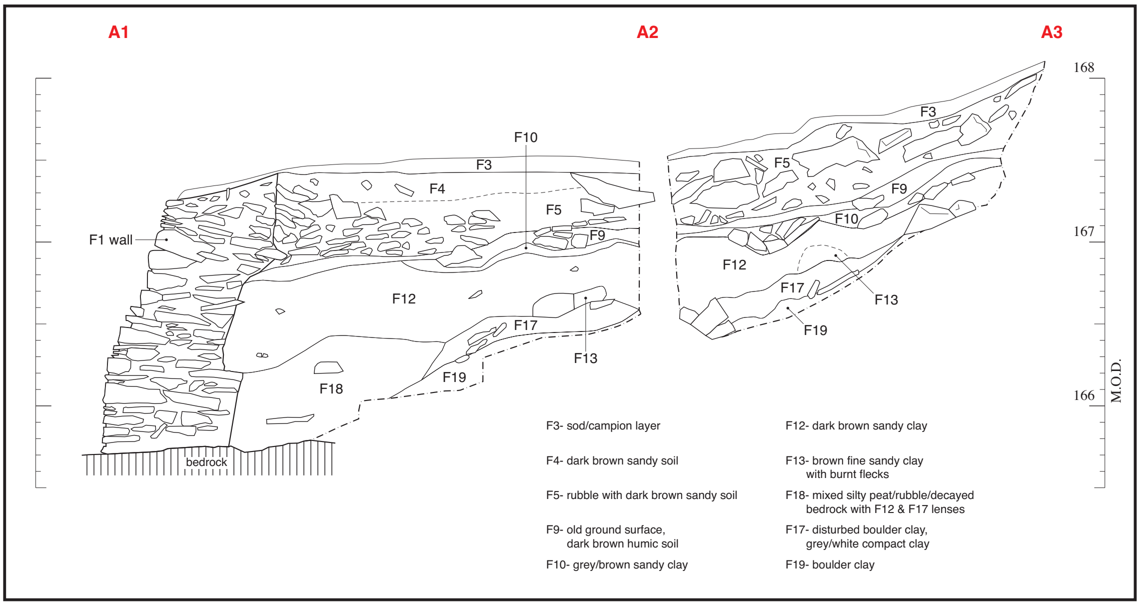
The junction of the upper levels of walls F1 and F2 was exposed at the northern end of the cutting and it was revealed that the walls are contemporary. The facing of wall F2 did extend for *c.* 0.35m behind wall F1, possibly to strengthen the walls at the point where the passage changed direction, but the rubble core of one was indistinguishable from the other.

Deposits behind retaining walls

While both retaining walls were built on bedrock, undisturbed boulder clay (F19) was exposed rising gradually westward, at a point *c.* 1m to the west of F1 (Ill. 2.60). This took the form of compact dark brown/grey clay with decayed/shattered bedrock in places. Overlying both the bedrock and this undisturbed boulder clay were deposits F18 and F17, which comprised compact dark brown clay with large stones, charcoal flecking and three small fragments of bone (not identifiable). Lying immediately behind wall F1, F18 also contained pockets of sandy clay and lenses of yellow clay. Both these layers are interpreted as mixed and disturbed boulder clay associated with the building of wall F1.

A layer of loose, dark brown sandy soil (F12) containing a small number of stones, charcoal flecks and coal had been deposited on top of the mixed/disturbed boulder clay. This layer averaged 0.2m in thickness at the northern side of the cutting but was up to 0.5m thick on the southern, downhill side. Also contained within F12 were lenses of yellow/brown clay (F13) with traces of reddened burnt clay, charcoal, burnt stone, a pig incisor and small fragments of scallop shell. A flint flake (E338:10) showing signs of retouch was recovered from this layer. This dump layer must have been put in place as the retaining wall F1 was being constructed. A shallow gully (F15) had been cut into the surface of F12 and extended from midway along the north baulk in a south-easterly direction for a distance of 1.1m to the loose stones in the core of the retaining wall F1 (Ill. 2.59). The gully, which was U-shaped in section, averaged 0.1m in depth and 0.2–0.25m in width and was filled with black, moist, sandy clay (F16). Its function was unclear but it could have been a drainage channel dug to direct surface water towards the retaining wall, through which it could seep freely.

The upper surface of F12 was covered in places by a thin layer of loose sandy soil (F10) with a high proportion (*c.* 80%) of small, friable sandstone fragments. This in turn was covered by a well-defined old ground surface (F9), which comprised a layer of dark brown/black humic soil with patches of orange/brown, less-humified material with roots and vegetative material clearly visible. It ranged from



Ill. 2.60—South entrance 2 (inner enclosure), sectional profiles.

0.05m to 0.15m in thickness and produced several pieces of coal, cinders and a single clay pipe stem (E338:11) of early nineteenth-century date. The presence of such a well-defined old ground surface indicates that the retaining wall was *c.* 0.6m lower than its present height for a period during the nineteenth century.

Later in the nineteenth century, or possibly the early twentieth century, further material was deposited on top of the old ground surface and the retaining wall was increased in height. A distinctive deposit of fine light brown soil with several lenses of orange/red burnt sandy clay (F11) was uncovered lying on top of the old ground surface. Concentrated in the northern half of the cutting and up to 0.08m thick, this must be the residue of burning that took place further uphill to the north. A substantial deposit of rubble (F5) was deposited on top of the old ground surface and F11, ranging in thickness from 0.4m at the western end of the cutting to a maximum of 0.9m where it abuts the core of the retaining wall (F1) to the east. The stones in this deposit averaged 0.1–0.2m in length but could be up to 1m. A small quantity of quartz and shattered 'Portland Stone', used extensively by the lighthouse-builders, was included amongst the sandstone rubble. Within and partly overlying the rubble was a deposit of dark brown sandy soil (F4), which was in turn covered by a layer of moist peaty soil (F3) that supported a dense growth of sea campion (*Silene uniflora*). The sandy soil (F4) contained pieces of coal, brick, metal slag, a clay pipe stem, golf tee and a range of ceramics of early/mid-nineteenth-century date (see Section 3 below).

Interpretation

The retaining walls (F1 and F2) that form the eastern and northern boundaries of the current entrance passage in the inner enclosure wall are contemporary and post-medieval in date. The presence of coal and brick fragments in the core of the lower portion of the western retaining wall (F1) indicates that it was built by the lighthouse personnel in the early nineteenth century. It is likely that this area, at the only entrance to the inner enclosure, was significantly modified during the nineteenth-century occupation of the monastery. A further *c.* 0.6m was added to the height of the retaining wall in the late nineteenth/early twentieth century, possibly by the Office of Public Works, shortly after the site came into state care in 1880. The rubble and clay deposits exposed during the excavation (with the exception of the lower boulder clay deposits) are the result of dumping or accumulation during the nineteenth century.

No deposits or structures belonging to the monastic period were recorded, and consequently we do not know how this area, just inside the entrance to the inner enclosure, was organised in the early medieval period. The construction in post-medieval times of the lower levels of retaining wall F1 resulted in the disturbance of deposits behind the wall, and it is possible that the remains of a pre-existing wall were removed at that time. There was no evidence within the area excavated to suggest that a monastic structure had existed to the west of wall F1, which would indicate that the original passage wall (if such existed) was either on the line of the later wall or very close to it.

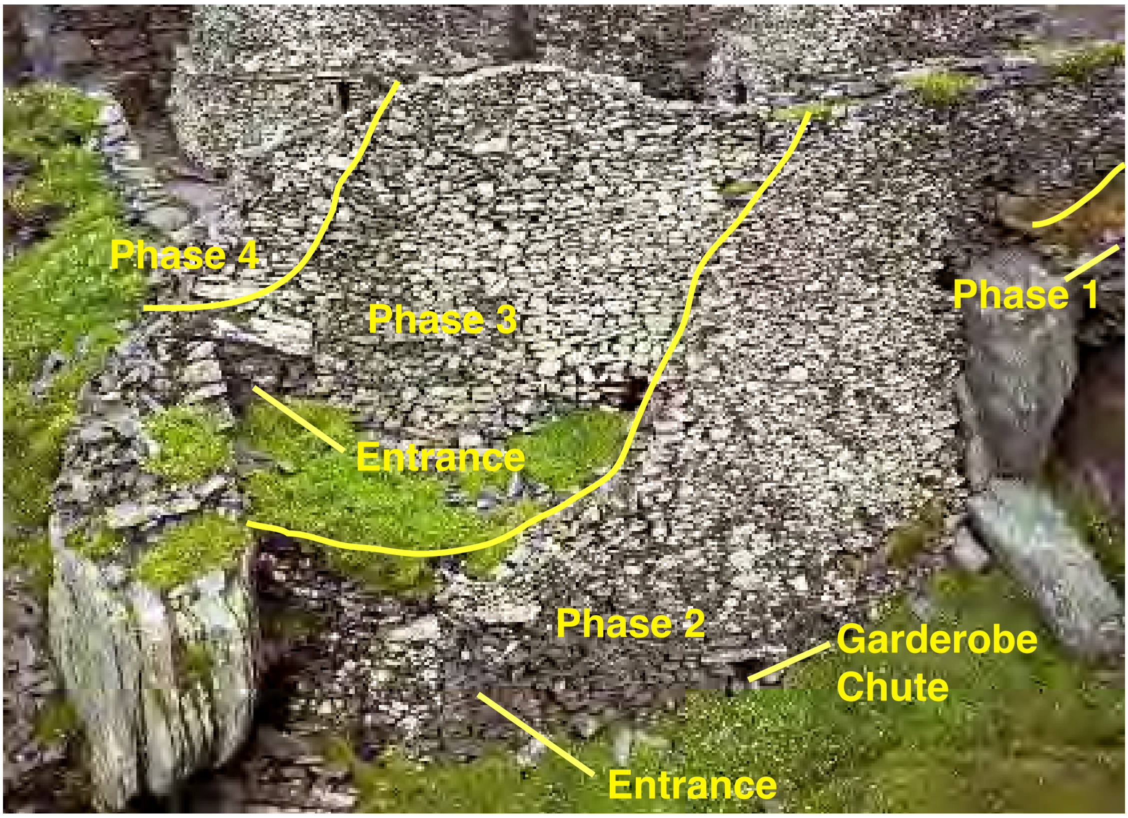
2.2.5 East entrance, phase 3 (inner enclosure) (93E195)

Edward Bourke

Introduction

Inspection of the south-eastern corner of the inner enclosure revealed that it was in urgent need of conservation. It was apparent that the two walls (southern and eastern) were not bonded at the base. The east wall had collapsed and been rebuilt twice in antiquity at this point (Ills 2.61–62). A third repair, which was high in the wall, might have been either of monastic or lighthouse period construction.

Ill. 2.61—Phases of development in east wall, inner enclosure, from south (Con Brogan, DAHG).



Ill. 2.62—Phases of development in east wall, inner enclosure, from east (Con Brogan, DAHG).

All traces of the earliest phase of the eastern wall had disappeared in the south-east corner, though a small section survived just east of Cell F. The second phase was stepped back from the first by between 0.6m and 1.5m. This phase 2 wall also partly collapsed in the south-east corner and only its base survives. A second rebuilding occurred (phase 3/F501), which was in turn stepped back from the phase 2 wall by up to 2m. This third phase abuts the south wall forming the south-east corner of the inner enclosure.

A large sloping stone, possibly a lintel, was observed in the outer face of this wall (Ill. 2.63), and it was important, for both archaeological and structural reasons, to establish whether this marked an early entrance to the site. It was established that the phase 2 wall was in need of urgent conservation and that the phase 3 wall would have to be reduced in height to relieve the pressure on the earlier wall during conservation work and to stop the base of the phase 3 wall moving to the east. It was

Ill. 2.63—Exterior of lintel, showing wall pushing outwards (E. Bourke).

decided to excavate behind the wall to establish the state of the phase 3 wall and possible entrance and the nature of the fill behind the wall. A section of the wall above the lintel had been rebuilt on the same line as the phase 3 wall. This phase 4 wall (F500) was quite high at its southern end and was putting a lot of pressure on the phase 3 walling.

Pre-excavation works

Prior to excavation and after full recording, the entire phase 4 wall (F500) was removed, as was the upper part of the phase 3 wall down to the level of the paving within the enclosure. This work was carried out in 1999 in advance of the excavation of the interior of the wall, in consultation with the project engineer, who also supervised the safety aspects of the work.

The upper part of the wall (F500) had been substantially rebuilt in the nineteenth century, and fragments of glass, creamware, brick, coal, non-local stone and iron were found in the upper 0.6m.

Excavation

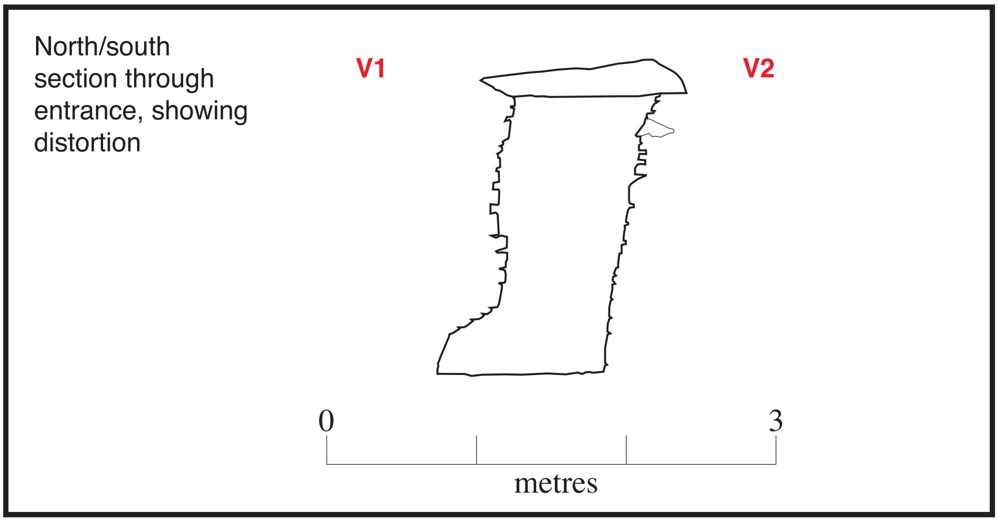
A single cutting was opened, measuring 0.9m by 2m at the top. It extended from the monks' graveyard in the north to the south wall of the inner enclosure (F513), the area excavated being limited by a desire to cause as little disturbance as possible to the standing monuments within the enclosure. The exterior of the south wall had been largely rebuilt as part of the conservation work associated with the excavation of entrance 2, but on the interior the stonework survived to a height of 2.8m in the entrance itself. Excavation established that the lower part of the inner face of the wall survived across the full width of the cutting.

A short length (*c.* 1.5m) of the drystone wall at the south end of the monks' graveyard had to be removed for safety purposes, to ensure that none of the wall could collapse into the cutting during excavation. The stratigraphy revealed that, behind the drystone outer kerb (F520), the fill (F521) consisted of 0.45m of loose unsorted rubble with some coal and brick fragments in the matrix, as well as many white quartz stones. This indicates that the south end of the monk's graveyard was rebuilt post-1820, which tallies with the information from the small excavation of the north end of the graveyard (see below).

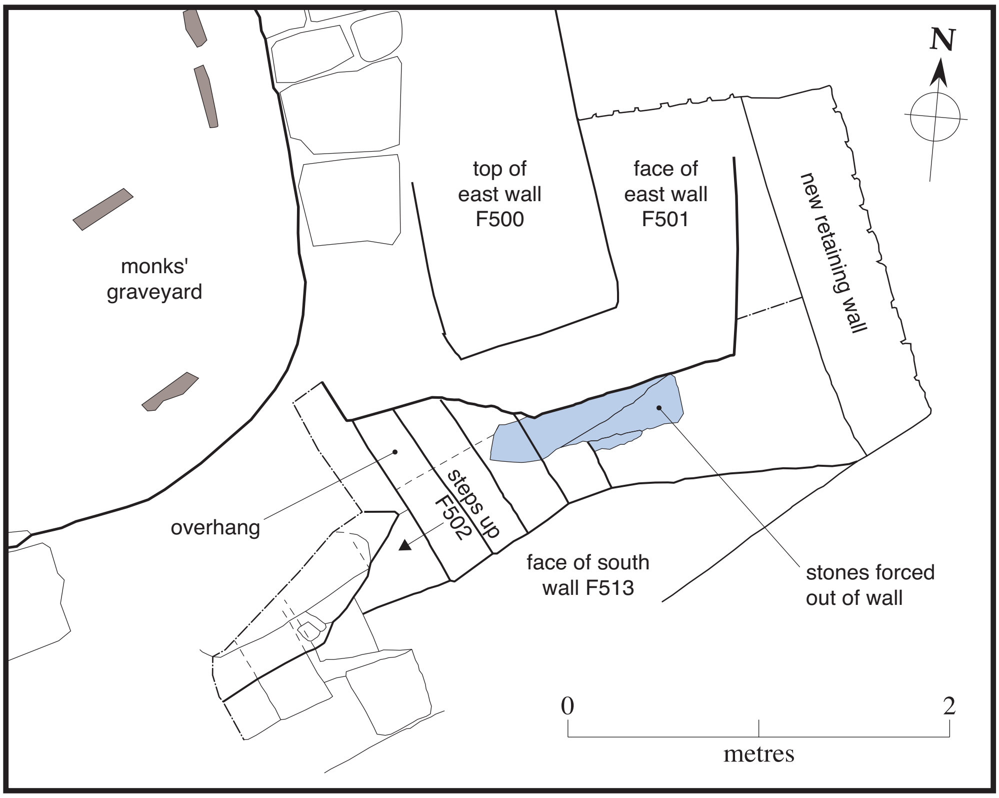
Description of entrance 3

The entrance (phase 3) consisted of a lintelled, drystone passage in the east wall at its junction with the south wall. The entrance was only bonded into both walls at lintel level and it is clear that the east wall post-dates the south wall. As described above, phase 3 of the east wall is the second rebuilding of this wall, and the south wall continues eastward to meet the point where phase 1 of the east wall would have joined it. The entrance jambs are of drystone construction. The north jamb forms the terminal of the east wall and the south jamb is also of dry stone, poorly bonded into the south wall. The outer lintel is bonded into the south wall, but a crudely built drystone pillar supported the inner lintels. The entrance is 2.3m high at its outer end and 2.15m at the innermost lintel. It is 1.2m wide at the base on the inside and 0.95m wide at the lintel on the inside, but the wall on the north side of the entrance is severely distorted and has moved laterally by up to 0.48m (Ill. 2.64).

A series of at least nine drystone steps (F502) led up through the entrance and into the inner enclosure. It was not possible to excavate down to the outermost steps for safety reasons, as this would have entailed digging into the phase 2 wall and undermining the concrete beam described above. It is possible to estimate that three or four more steps could have existed towards the outside of the entrance. A second possibility is that there could have been a flat area at the outer side of the entrance, given that the entrance is *c.* 3m above ground level at this point. The steps are regular on the inside of the entrance, averaging between 0.2m and 0.35m for the tread and between 0.18m and 0.26m for the riser, but within



Ill. 2.64—Section showing distortion.



Ill. 2.65—Plan of entrance, lower level.

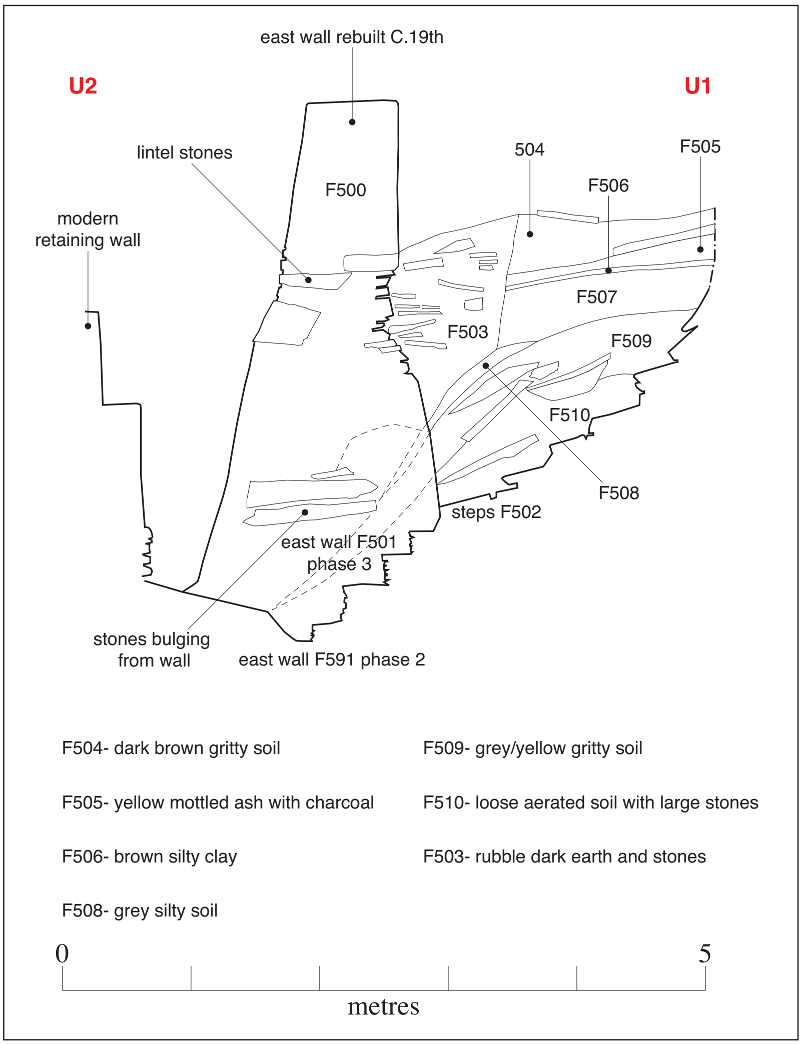
the entrance itself the steps appear to have slumped when the walls moved (Ills 2.65–6).

The south wall appears to have moved outwards, leaving the south jamb sloping gently, while the east wall appears to have slipped eastwards violently at its base, leaving the wall bulging at the front and dropping the height of the outer lintel by 0.7m. At the same time the top of the wall, together with the lintel, moved southwards, while the base of the north side of the entrance remained in place (Ills 2.67–8). It is likely that the severe movement of the enclosing walls also caused the collapse of the stone structure (F514) associated with F509 (see below).

Monastic period blocking of the entrance

Directly on top of the steps (F502) was a layer of broken stones and some large stones (F510), which varied in thickness from 0.28m to 0.55m. This was overlain by a layer, up to 0.48m thick, of greyish-yellow gritty soil with small stones (F509), which contained the remains of a collapsed stone structure

Ill. 2.66—Inside entrance, from east, showing steps (E. Bourke).



Ill. 2.67—Section through east entrance, inner enclosure (phase 3) (C. McHale).

Ill. 2.68—Inner face of entrance during excavation (E. Bourke).

(F514) at its base. These consisted of about twenty large slabs that had slumped into the entranceway. They ranged in size between 0.1m by 0.24m by 0.37m and 0.43m by 0.3m by 1.02m, and appear to represent collapsed building stones from a structure that would have underlain the monks' graveyard (Ill. 2.69). This layer of stones sloped downwards towards both the south and east. The stones were all aligned east–west as they collapsed, which adds to the impression that they may have come from some form of drystone structure to the north of the steps (Ill. 2.72). It is also likely that the soil of F509 may have been the fill behind the wall of that structure, becoming partly incorporated among the stones but mainly overlying the stone collapse. These layers sloped south and east, whereas the layers above only sloped downwards towards the east, the implication being that these two layers are part of the original collapse, while the layers above represent the backfilling of the entrance. A radiocarbon date of AD 778–948 was obtained for F509.

Ill. 2.69—Entrance from the east, showing stones displaced from north jamb and steps (E. Bourke).

Ill. 2.70—Nineteenth-century blocking stones inserted into inner face of entrance under lintels (E. Bourke).

The blocking of the entrance commenced with the construction of a drystone wall (F516) across its front face. This was a single-faced wall, its inner side being unfaced. The implication of such a construction method is that the wall would have been built in stages, with the backfill behind it being gradually added. This wall varied in thickness between 0.35m and 0.7m but is not shown on the section drawing, as for safety reasons supports had to be placed in the entrance as the excavation progressed so that it was impossible to record in section (Ill. 2.63).

Behind the drystone wall (F516) and overlying the original collapse (F509) was a layer of greyish silt with limpet shells and one cattle bone (F508), which was up to 0.12m deep and survived only in the middle of the cutting. Two radiocarbon dates were obtained from this layer; the sheep vertebra produced a date of AD 691–876, while the limpet shells (after allowing for the marine reservoir effect) produced a date of AD 675–871. This layer had been partially removed by nineteenth-century disturbance (see below). Above F508 was a layer of mottled yellow ash (F507) with some charcoal, up to 0.46m deep. This in turn underlay a thin layer of brown silty clay (F506), only 0.04m thick. Overlying this was a layer of yellow mottled ash (F505) containing charcoal and small stones; it was 0.17m deep at its western end and only 0.08m at its eastern end. This layer was more mottled than F507.

Nineteenth-century repairs and modifications to the entrance blocking

At some time early in the nineteenth century there seems to have been a movement of the phase 3 wall that alarmed the lighthouse-builders enough to cause them to attempt remedial work on the blocked-up entrance. The reason for this seems to have been to stop the movement of the south wall and the slipping forward of phase 3 of the east wall of the inner enclosure. This movement post-dates the early nineteenth-century paving of the area around the monks' graveyard. Above the original blocking layers was a layer of dark brown gritty soil with small stones and broken stone fragments (F504), 0.17m deep at its western end and 0.44m at its eastern end. This feature contained some brick, a sherd of white earthenware and some modern glass. It seems to have been laid down as a foundation for the paving in this corner of the site.

A pit (F503) was dug into layer F504 in order to inspect and to repair the inner lintel of the phase 3 wall by inserting a set of blocking stones (F512) under the inner lintel of the entranceway. These consisted of well-chosen flat slabs, aligned east–west, wedged into the entrance to stabilise the area between the jambs and to support the lintel (Ill. 2.70). Associated with this inner propping, the upper part of the phase 3 wall (F501) was taken down to lintel level, the middle lintel was removed and the area between the inner blocking (F512) and the original outer blocking (F516) was filled with clean loose stones (F517); this implies that the original backfilling of the entranceway may have subsided somewhat in the intervening period. The inner lintel measured 1.36m by 0.4m, and the outer lintel measured 1.75m by 0.61m. The middle lintel was removed and then replaced after the cavity had been filled with F517 (Ill. 2.71).

Ill. 2.71—Original lintels *in situ* after nineteenth-century blocking was removed (E. Bourke).

As the work proceeded, this pit (F503) was backfilled with a layer of rubble and large stones. F503 also cut the eastern edges of F506, F507 and F508.

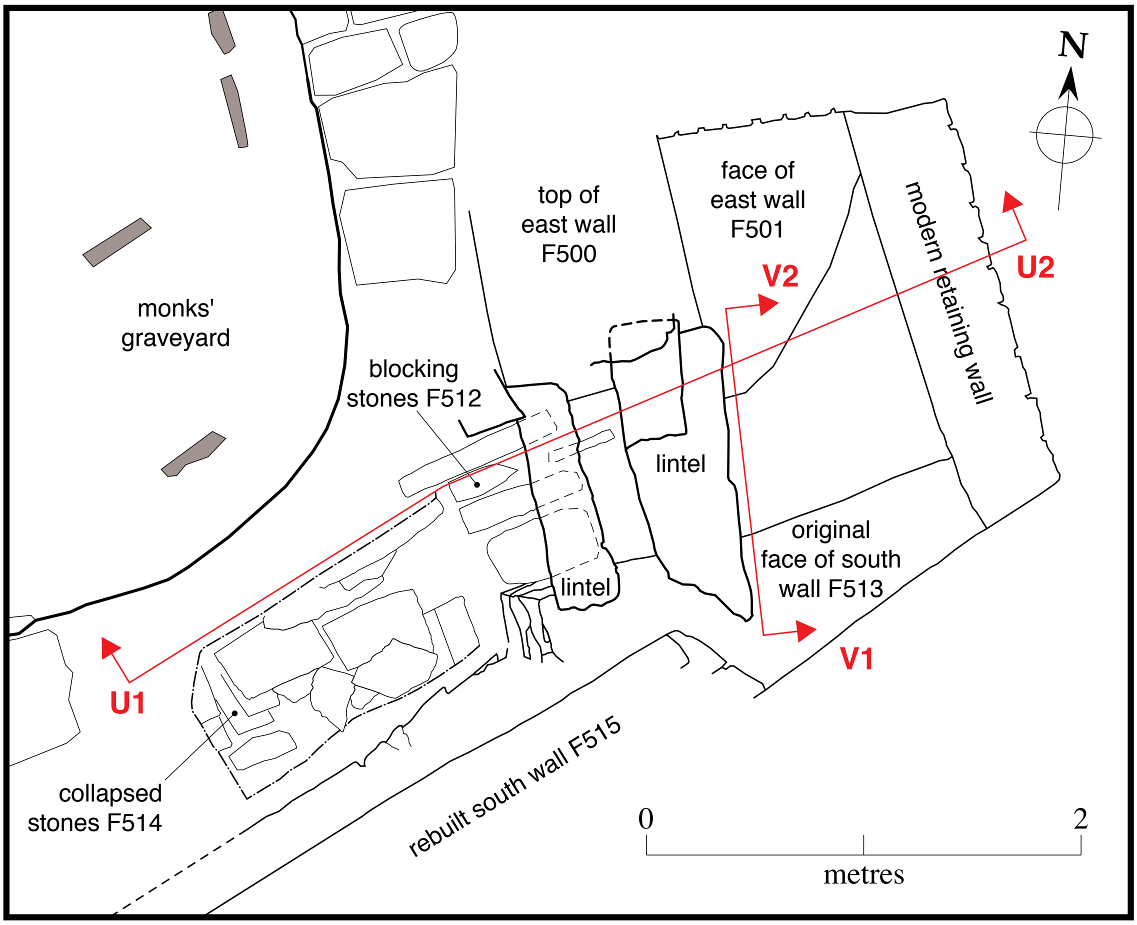
Dating

Three radiocarbon dates were obtained from this entrance. Two samples from F508 were dated, one from a sheep vertebra and one from a deposit of limpet shells within the same layer. The animal bone was dated to AD 691–876, while the limpet shells produced a date of AD 675–871. A third sample came from a cattle tibia from F509 and was dated to between AD 778–948. These dates show, unfortunately, that the material dumped into the entrance must come from soil redeposited from elsewhere on the site and is not of any real use in dating the backfilling of the entrance. It is intended to try Bayesian analysis on the three dates, as their stratigraphical relationship is known and all three dates overlap.

It is clear from this that the deposits dumped into the entrance came from midden deposits elsewhere on the site. All that can be said for certain at the moment is that the material was backfilled at some time after a period ranging from the late seventh century to the first half of the tenth century.

The east entrance is of crude construction compared to south entrance 1 of the outer enclosure, with its orthostatic jambs and high-quality stonework. It betrays the fact that it was built as part of the repair work associated with the building of phase 3 of the east wall. While this entrance forms part of the phase 3 rebuild, there was also an entrance in phase 2 of the same wall. A lintel and two vertical breaks in the masonry indicate that this entrance was at ground level on the exterior and *c.* 3m north of the phase 3 entrance. No trace of a phase 1 entrance survives, but the relevant portion of wall did not survive in this area (Ill. 2.73).

What is clear is that the phase 3 entrance pre-dates the paving of the interior of the south-east corner



Ill. 2.72—Plan of entrance, upper level.

Ill. 2.73—Entrance area from east, showing wall collapse (Con Brogan, DAHG).

of the monastery and pre-dates the monks' graveyard. The steps associated with the entrance could have led up as far as the level of the large oratory plinth. The precise relationship between these structures cannot, unfortunately, be established, as this would entail further disturbing the monks' graveyard and possibly undermining the large oratory.

The evidence of collapse from a structure (F514) that clearly pre-dates the monks' graveyard provides an intriguing indication that the layout of this corner of the inner enclosure must have been very different in the earlier years of the monastery. Although nothing can be inferred about the function of this structure, the use of very high-quality building stone suggests the possibility that it was important. Its stratigraphic position indicates also that it pre-dates the building of the large oratory plinth, and the possibility that it represents an earlier oratory cannot be discounted.

An interesting issue raised by the excavation of this entrance is that the entrance leads out onto the top of the phase 2 wall and that there are no steps visible below it. The phase 2 wall is *c.* 3m high at this point, and either a wooden ladder or a rope hoist would have had to be used for access to the entrance from below, although no structural evidence for this survives. This method of accessing is well known from Greek and Egyptian monasteries (Nicol 1963). It should also be noted that no trace of steps, rock-cut or drystone-built, has been observed beneath the wall at this point. It is possible that an access route into the area of the outer enclosure around the end of the south wall could have provided an alternative method of entry and exit. Recent discoveries of steps leading to the north from this area indicate that the east steps may not have been the only ones accessed from this point.

In relation to the collapses of the south wall of the inner enclosure, it is interesting to note that the slope of collapse of the phase 4 wall (F500) above the east entrance is steep and falls off towards the south. This slope is reflected in the slope of the campion above the collapsed south wall (Ill. 2.73). It is possible that this nineteenth-century repair (phase 4) pre-dates the collapse of the south wall which demolished Cell G and continued on to destroy the south wall of the outer enclosure below it. This would tie in with the fact that there is a lighthouse phase of occupation within Cell G and may show that the rebuilding of the east wall and the collapse of the south wall both happened in the 1820s, with the east wall rebuild happening first.

The monks' graveyard

A small collapse at the north end of the monks' graveyard was repaired in the late 1970s, revealing an earlier faced edge to the graveyard (G.D. Rourke, pers. comm.). This was similar to the situation that was encountered when part of the revetment wall was removed during excavation of the east entrance. It was decided to monitor the removal of this revetment wall along its north and east sides in order to establish whether there was an earlier footing which could be conserved (Ills 2.74–5).

The rebuilt stone revetment on the north side of the graveyard consisted of a drystone facing (F520). The gap between this and the original edge of the graveyard (0.4–0.6m wide) was filled with loose unsorted rubble and brick fragments (F521)—the same construction technique encountered during excavation of the east entrance. As this was removed, the lowest stones of an earlier retaining wall were revealed under the nineteenth-century backfill. This process of gradual removal of the wall continued down the east side of the graveyard. It became clear that, behind the nineteenth-century drystone wall, the monks' graveyard had been constructed in two phases, with the northernmost phase added to a larger southern burial platform. It is interesting to note that the nineteenth-century rebuilding of the revetment walls was done before the area was paved, as the paving stones in this area respect the repair, not the original burial platforms (Ills 2.76–7).

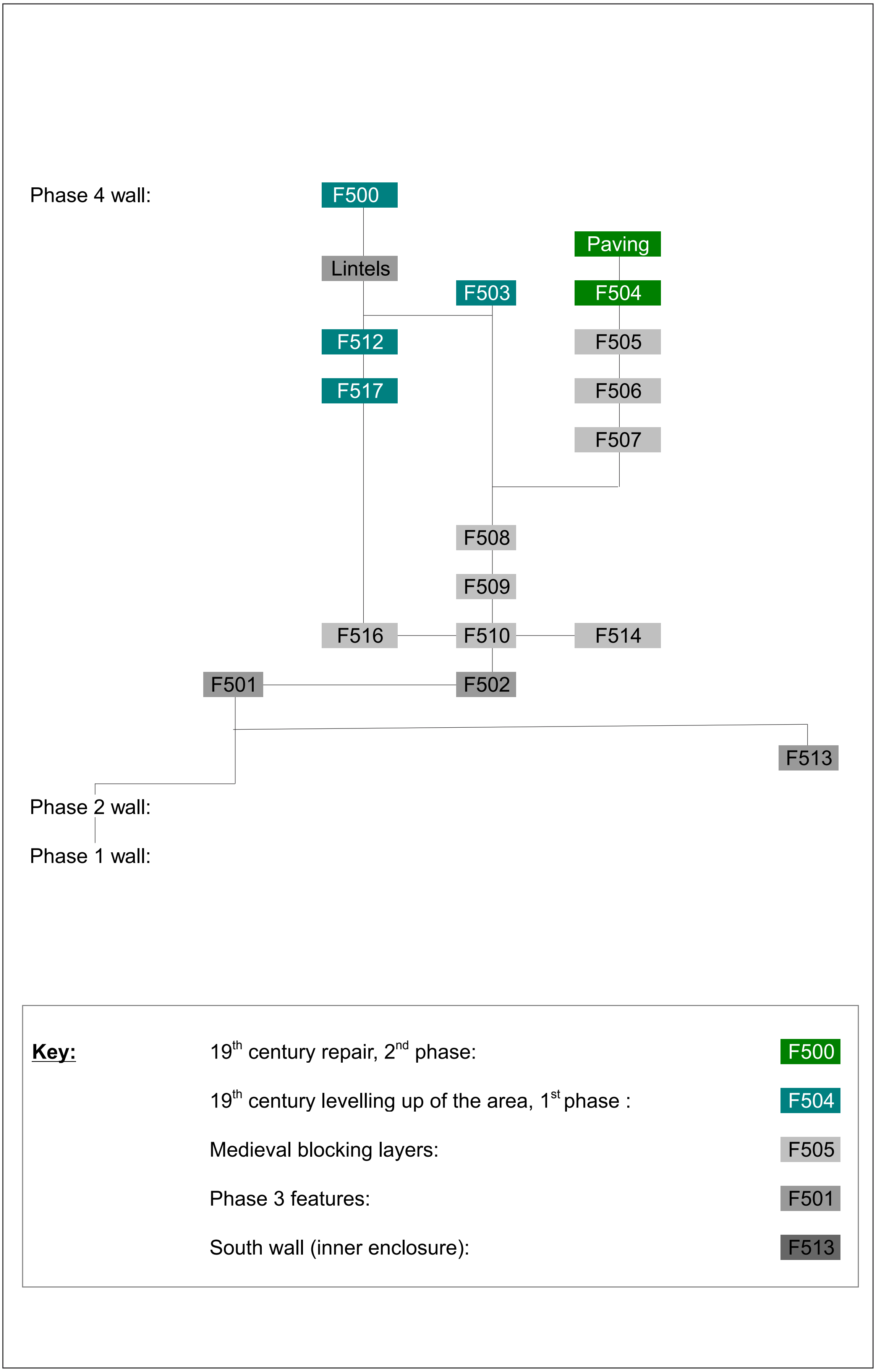
The backfill layer (F521) fell away from the material directly behind it, so there was no need to interfere with the (possibly original) deposits behind it. A drystone wall was built upon the footings of the original burial platforms, but this had to be estimated for the east face of the northern or later

Ill. 2.74—Monks' graveyard from the east during excavation (Con Brogan, DAHG).

Ill. 2.75—Monks' graveyard during excavation, from north (Con Brogan, DAHG).

Ill. 2.76—Monks' graveyard after conservation, from north (Con Brogan, DAHG).

Ill. 2.77—Monks' graveyard after conservation, from east (Con Brogan, DAHG).



Ill. 2.78—Matrix for layers associated with East Entrance. Phase 3

platform, as the footings did not survive. All rebuilding was done using the stones from the nineteenth-century repair. All human bone found in F521 was sent for analysis, although obviously from a context disturbed in the nineteenth century. Very few bones were found in F521 and these were all in poor condition, which may argue for the bones within the platforms being in similar condition.

There may well have been a remodelling of the graveyard, even in the early medieval period, as the west wall at the back of the burial platforms is composed of orthostats, which include crosses. These were left undisturbed during the conservation work and the question of their relationship with the southern and western drystone kerb remains unresolved.

2.2.6 CISTERN 3 (93E195)

Edward Bourke

Introduction

Cistern 3 is one of four cisterns associated with the monastery that were constructed to gather and store rainwater. Located *c.* 18m west of Cell A in the inner enclosure (Ill. 2.79), it had been described by O'Sullivan and Sheehan (1996, 279, 286) as a souterrain-type structure. Cistern 3 differs from the other two cisterns within the inner enclosure in that it is built above ground as opposed to being incorporated within the base of drystone walling.

Ill. 2.79—General view of the area west of Cell A in the 1950s (DAHG Archive).

The cistern had been surveyed in the 1980s and was recorded as having a lintelled opening, 0.6m high and 0.38m wide; the interior was a roughly rectangular chamber (3.1m by 0.9m) running north-east–south-west. The rear (north) wall and floor of the structure were formed by the bedrock and it was bounded on the south by a low, apparently drystone wall. The eastern terminus was a large upright stone and the west end appeared to be blocked by rubble. The maximum height was 0.51m against the bedrock. There were twelve visible lintels, which sloped downwards to the south.

There was also a low wall, *c.* 0.5m high, running along the south-eastern side of the structure, with a small area of paving in front of it. Both of these features appeared to be of nineteenth-century date and continued outside the area excavated.

The stratigraphy above the lintels was excavated in 1995. The lintels were then numbered, surveyed and removed, with the exception of lintel 2, which was too heavy to be moved by hand. The site was then covered for the winter and the excavation of the interior took place in 1996.

The excavation

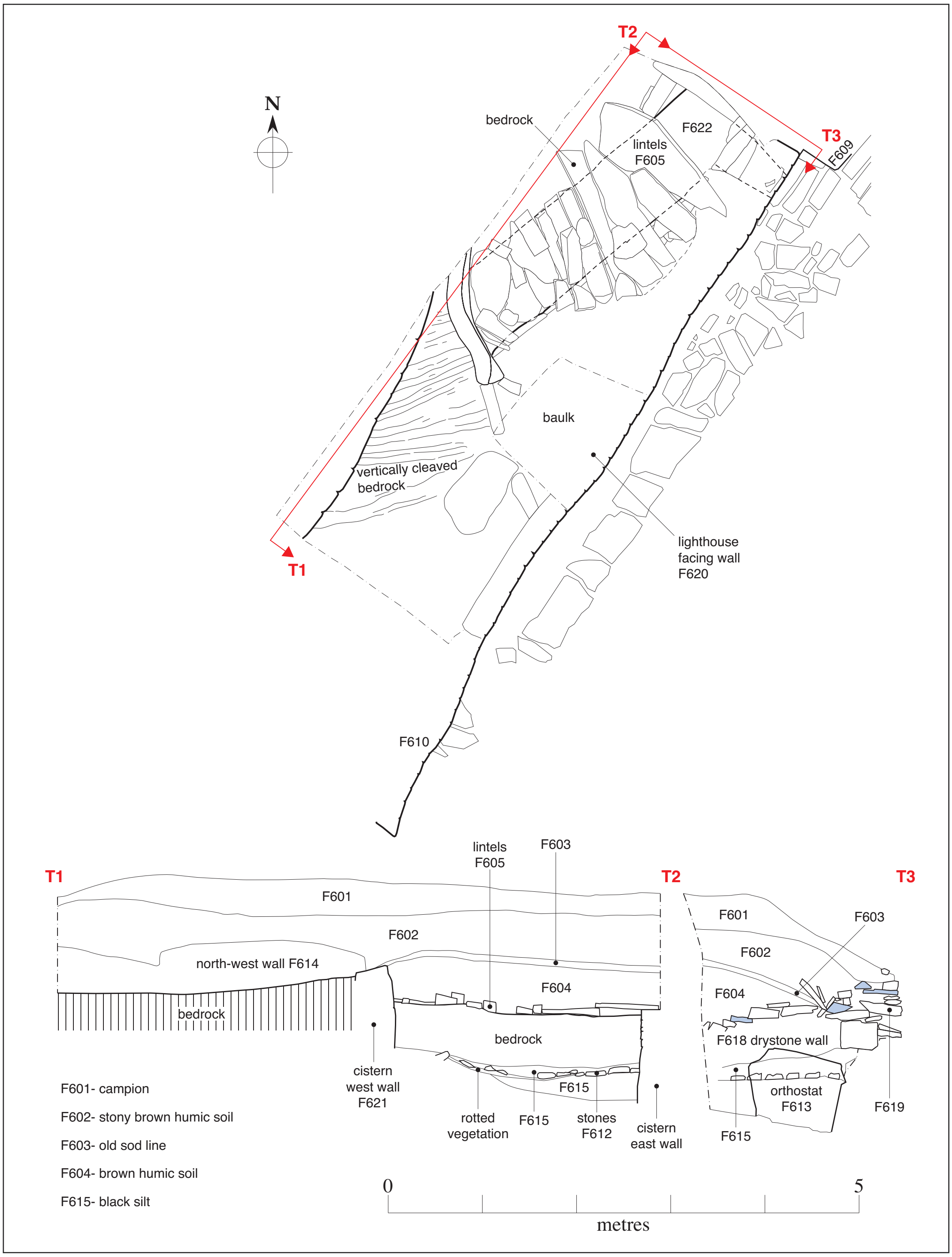
Two cuttings were opened, one (3m by 2.5m) directly over the lintels, and a second (2m by 2.5m) further west in order to check the stratigraphy beyond the known structure. The baulk between the two cuttings was subsequently removed in order to show the method of construction of the cistern (Ill. 2.80), and for the purposes of this report the two cuttings are treated as one.

The building of the cistern took advantage of a geological anomaly whereby on the north side of the area excavated there was a layer of solid sloping bedrock that partially overlay another. Above the lower layer of bedrock and beside the upper one was a layer of vertically cleaved bedrock, which was easily quarried out. An area (*c.* 3.7m by at least 2m) was quarried from the vertically cleaved bedrock to accommodate the cistern; the southern limit of the area quarried was not reached, as this would have required removing later walling constructed by the lighthouse-builders. At the south-eastern end of this feature a crudely built drystone facing wall (F621) was built. The north-eastern end of the cistern was blocked off by a large orthostat (F613), which measured 0.9m wide and 0.7m high and whose edges were caulked with dark red/orange/brown clay (F617) against the wall of bedrock and the base of the cistern. A drystone wall (F618) was built on top of this orthostat on which the north-easternmost lintels rested (Ill. 2.82).

The south-eastern side of the cistern was constructed by digging a 0.1m-deep hollow into the bedrock floor of the structure; five orthostats (F608) were set into this hollow and caulked with the same clay (F617) used to caulk F613. Four of these orthostats measured (0.79m by 0.1m by 0.3m high (F608.01); 1.14m by 0.08m by 0.35m high (F608.02); 0.31m by 0.06m by 0.37m high (F608.03); and 0.79m by 0.06 by 0.35m high (F608.04). They ran parallel to the north-eastern wall of the cistern and about 0.7m distant from it. The fifth orthostat (F608.05) was angled inwards somewhat in order to meet the orthostat (F613) that formed the north-eastern end of the cistern. It measured 0.61m by 0.1m by 0.36m high. All of these orthostats had collapsed inwards at an angle of about 45°. South-east of these stones was a packing of beige/gray shaly earth (F611). The full extent of this layer was not determined, as it ran under later lighthouse walls.

The cistern was roofed with 26 lintels (F605) running north–south (Ill. 281), which were comprised of two types:

- large lintels such as 02, 04, 05, 15, 20 and 24, which spanned the whole width of the structure; the largest of these (F605.02) measured 1.76m by 0.66m and was up to 0.16m thick;
- smaller lintels that were laid on top of and between the larger lintels to cover fully the space below. These ranged from largish stones such as lintel 03, which measured 0.95m by 0.29m and was up to 0.1m thick, to quite small stones such as lintel 25, which measured 0.14m by 0.19m and was only 0.06m thick.



Ill. 2.80—Plan and section of Cistern 3.

At the north-eastern end of the cistern the lintels ran north-east/south-west. They lay on top of the drystone wall (F618) above the orthostat at the north-eastern end, and lay on F605.02 at their south-western end. These lintels (F622.01–03) measured on average 0.65m long and varied in width from 0.39m to 0.16m and in thickness from 0.05m to 0.11m.

These lintels covered the cistern as far as the south wall but stood proud of the top of the wall, allowing direct access to the interior for the collection of water. Above the lintels was a layer of dark brown humic soil with stones, mostly rock chips (F604). This seems to represent some of the material

Ill. 2.81—The lintels during excavation (E. Bourke).

Ill. 2.82—East end of cistern with most of the lintels removed (A. Halmschlag).

quarried during the construction of the cistern. It covered the whole area of the cutting, except to the south-west; it was between 0.42m and 0.53m thick at the north-western baulk and tapered away at its south-eastern end, where it was in parts truncated by the building of the lighthouse wall (F620). Above this layer was a layer of old sod (F603), 0.08m thick. This too had been truncated slightly by lighthouse walls at the entrance to the cistern and ran out onto the bedrock at its south-western end.

A slightly curved wall (F614) built on the vertically cleaved bedrock was recorded to the north-west of the cistern but was not fully investigated (Ill. 2.83).

Cistern fills

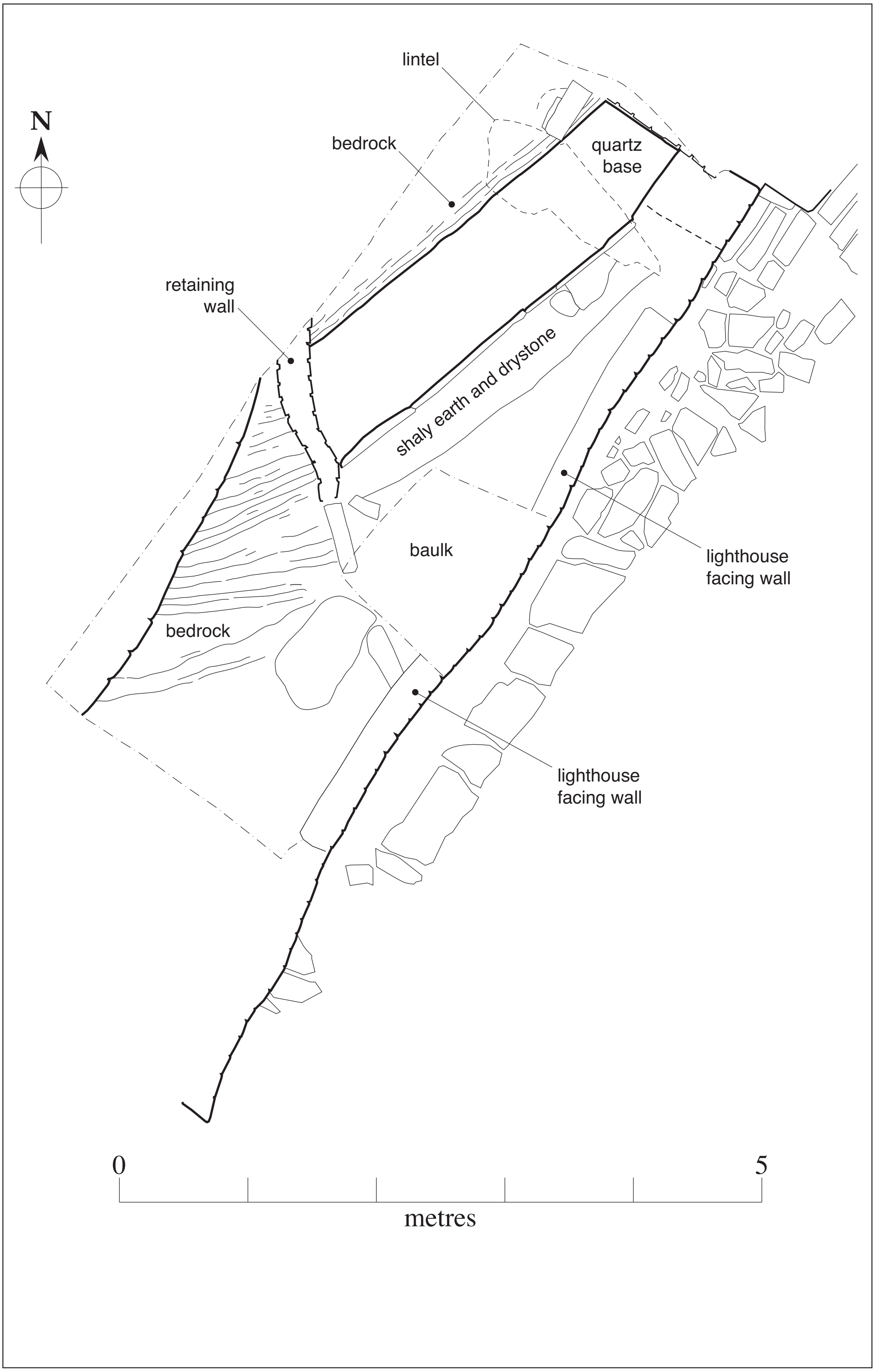
The fill of the cistern consisted of two layers. The uppermost (F606) consisted of material that had collapsed through the capstones during their removal as part of the excavation. Beneath this was a layer of dark brown silty material (F615), the upper part of which contained modern material such as a decayed diesel can, plastic, cans, remnants of rubber gloves and some polystyrene foam sheeting. Other finds in the fill consisted of coal, brick, some ten sherds of nineteenth-century pottery and a sherd of Ham Green A/B transitional ware. A soil sample from F615 produced some insect remains, which are listed in the palaeoenvironmental report, but given the diversity of the finds from this feature not much more can be said about these remains than that they indicate that the cistern may have been used as a cesspit at some stage. Given the proximity of the lighthouse toilet to the cistern, this may not be so surprising. A layer of stones at the base of this deposit (F616) may be the remains of drystone walling from between the orthostats and lintels, which would have fallen inwards when the orthostats moved (Ill. 2.84).

Lighthouse period alterations

The south-eastern edge of the cistern was largely remodelled during the lighthouse period. A long drystone wall (F620) was built along the south-eastern side and drystone

Ill. 2.83—Vertically cleaved rock and west wall of cistern (E. Bourke).

Ill. 2.84—Base of cistern, east end, showing orthostats leaning over (A. Halmschlag).



Ill. 2.85—Post-conservation plan.

Ill. 2.86—Opening into Cistern 2, inner enclosure (Con Brogan).

masonry was added to the north-eastern wall of the cistern (F619), with three more lintels added, all of which resulted in the partial obscuring of the original opening. This made entering the cistern, or getting water out of it, much more difficult. The last of the original lintels was directly above the orthostats that formed the south-eastern wall of the cistern. The addition of the extra lintels and the new wall meant that a new, narrower entrance had an opening 0.6m high and 0.38m wide that was 0.75m out from the side wall of the cistern.

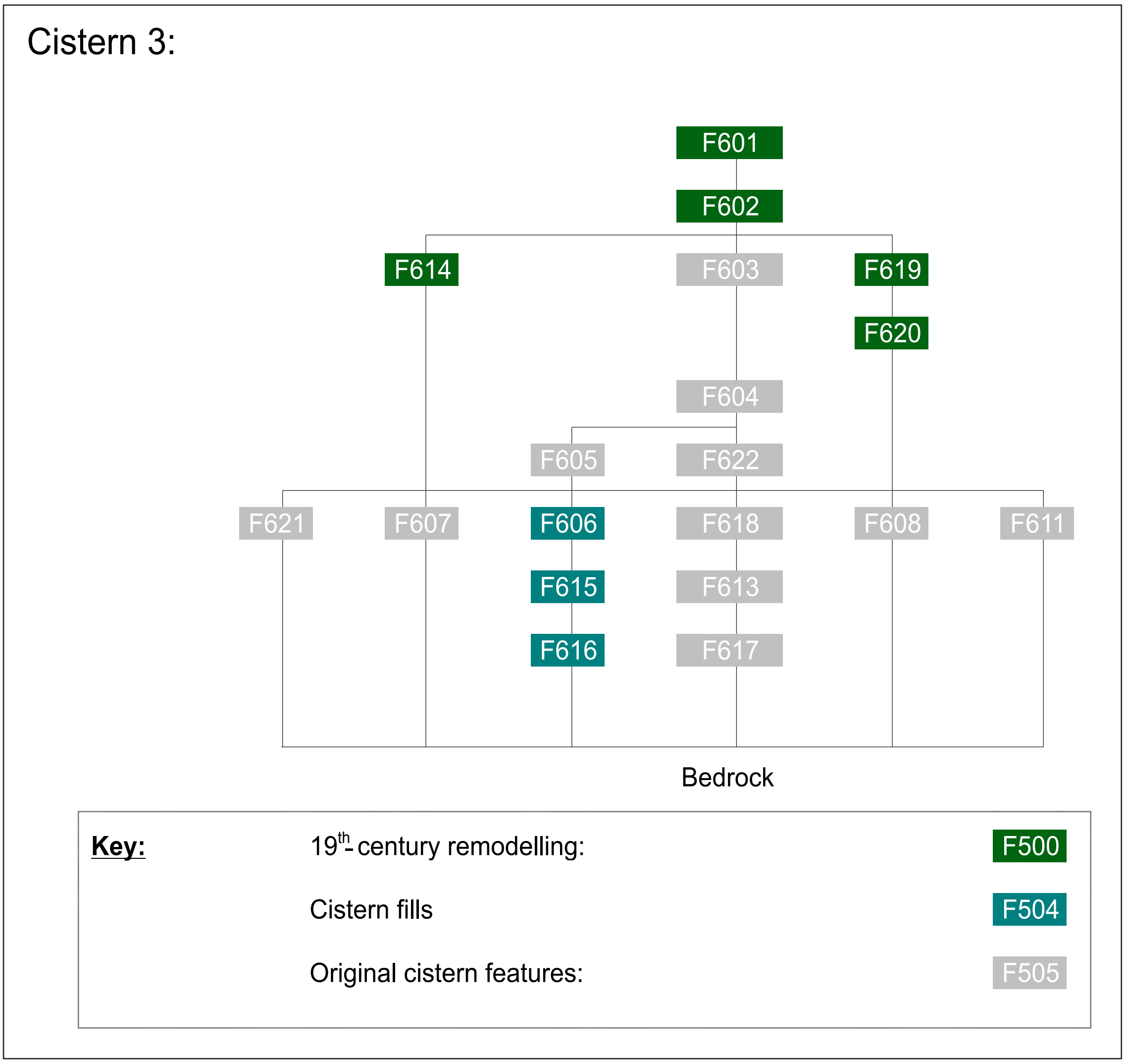
Above the new entrance a layer of brown soil and small stones (F602) was laid. This ranged in depth from 0.42m to 0.58m at the north-west baulk and tapered away where it met the lighthouse alterations to the south-eastern side (F619 and F620). Above this was a layer of campion and small stones (F601), which varied in thickness from 0.12m to 0.39m.

Interpretation

Cistern 3 was built in an area where there was a junction between solid, sloping, sandstone bedrock and an area of bedrock containing vertical lines of cleavage. This allowed the rainwater to filter down along the sloping solid bedrock, letting the water become trapped by the vertical cleavage lines in the upper layers and flowing down a gentle slope into the area excavated for the cistern. The orthostats to the south and east were waterproofed with clay in order to retain water within the cistern. Following reconstruction the cistern still retains water, even though no extra caulking was added (Ill. 2.85).

Examination of the location of all three cisterns within the monastery suggests that the same junction in the geology was exploited for each of them, as all follow the same north-east/south-west alignment. This implies a sophisticated understanding of the geology of the island and its potential for water-gathering.

The other two cisterns within the monastery are built into the base of drystone walls (Ill. 2.86) and are directly accessible from the front. Cistern 3 appears to have been an isolated structure, but the lighthouse period alterations to the front of the structure make it more difficult to understand the original access for drawing water from it.



Ill. 2.87—Matrix for Cistern 3.

The cisterns in the monastery itself need to be used constantly to prevent the water from becoming brackish. It was noted that those cisterns also needed to be emptied and cleaned from time to time for the same reason. Once used and cleaned, the water was potable. The same would have been true of Cistern 3, but the lighthouse additions made both emptying and cleaning the cistern much more difficult, and it seems to have gone out of use soon after that. By the twentieth century it had become a dump for old cans and used equipment.

2.2.7 THE LOWER MONKS' GARDEN

Lower monks' garden (east end) (93E195)

Edward Bourke

Introduction

A test excavation carried out in 1993 at the east end of the lower monks' garden (Ill. 2.88) revealed that the material here all appeared to be from a collapse of the east end of the south wall of the inner enclosure (F513). This collapse ran due south from the inner enclosing wall in the area to the south of the monks' graveyard (Ill. 2.89). All the material recovered appeared to be of nineteenth-century date and the decision

Ill. 2.88—Lower monks' garden from the south (Con Brogan, DAHG).

was taken that this was the correct area in which to begin conservation work in 1994. Unfortunately the site notebooks, finds register, sample registers, the plans and all but one of the sections were on the island when the fire took place in 1995 in the archaeologists' accommodation, so the description here is from memory and from the locations described on the finds and sample bags.

Initial inspection on the ground and from aerial photographs had shown that the later lighthouse wall (F1023) diverged from the earlier monastic wall (F640) further west, and that the lighthouse wall continued north-west of the original monastic wall (Ill. 2.91). A second wall (F1024) ran north-west towards a bedrock face, cutting off the east end of the lower monks' garden. The southern wall (F1023) measured *c.* 0.6–0.8m in thickness and 0.5–0.7m in height above the original ground surface of the garden. The north–south wall (F1024) varied in thickness between 0.4m and 0.8m, and was *c.* 0.6m on average above the original ground surface of the garden. The northern side of this end of the garden was delimited by a bedrock shelf, except at the east end, where a low, *c.* 1m-high wall (F1026) was built, joining the bedrock shelf with an outcrop of bedrock at the extreme eastern end of the garden.

One of the main reasons for removing the lighthouse walls and excavating this end of the garden was that the eastern end of the monastic wall (F640) was moving outwards at the top and the excavation

Ill. 2.89—Collapse over Cell G (E. Bourke).

of the material behind it would help to alleviate that pressure, while a new wall was needed to the east of it and tied into it to ensure that the surviving monastic wall stayed in position.

The excavation

The area excavated extended for 10m from a near-vertical slab of bedrock on the north side to a second, lower bedrock outcrop on the south side of the terrace, and from the east end of the garden for a distance of 15m in a westerly direction. The site sloped sharply downwards to the south, where the original monastic south wall of the garden appeared to have disappeared.

The southern wall of the outer enclosure

The earliest visible feature on the site was the outer enclosing wall, which formed the southern wall of the lower monks' garden (F640). This survived to the west of the area excavated, but only three steps of the original wall-walk survived into the area excavated in 1994 (see lower monk's

Ill. 2.90—Eastern end of outer wall of lower monks' garden (Con Brogan, DAHG).

Ill. 2.91—Divergence between upper and lower walls at eastern end of lower monks' garden (Con Brogan, DAHG).

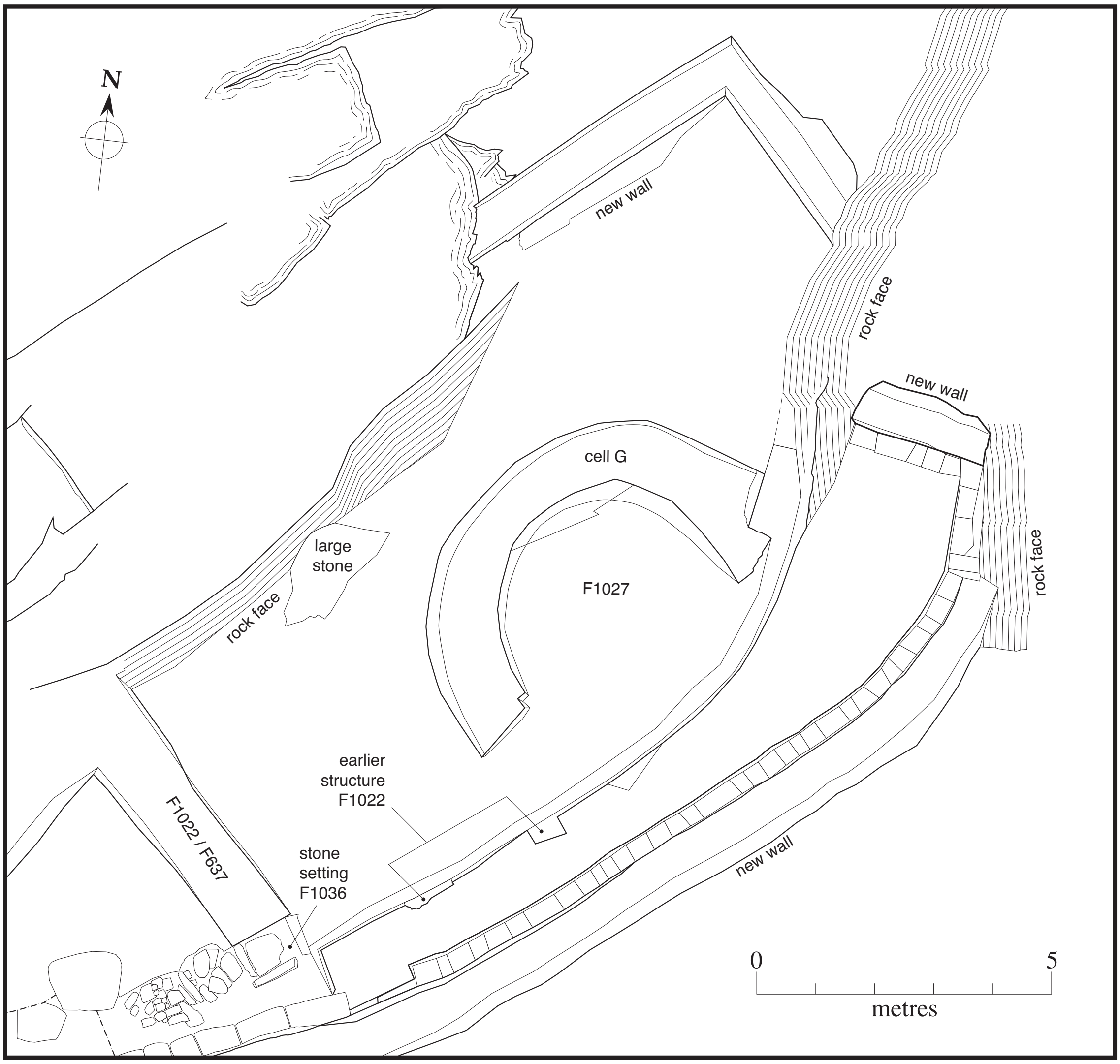
Ill. 2.92—Wall-walk at western end of the cutting after conservation (E. Bourke).

garden (middle section)). The area above the bedrock ledge was excavated—removing the absolute minimum quantity of soil—in order to find out whether any trace of the base of the original outer enclosing wall (F640) had survived (Ill. 2.92). At the eastern end of the ledge three or four base stones survived where they were protected by an adjoining piece of rock outcrop, so it was clear that the wall (F640) continued to meet the outcrop at its eastern end.

Directly above the bedrock there was a layer of dark reddish-brown compacted material (F1028). This appeared to be natural and a similar layer was found at the base of the southern wall of the inner enclosure at entrance 1. It seems that both walls were built on this natural soil rather than removing the soil and building directly onto bedrock. Above this layer (F1028) and beneath the campion there was a layer of dark organic material (F1021). This feature was observed just inside the wall (F640) below F1022 and produced one small piece of leather.

Walls at the east end of the lower monks' garden

There was no wall visible between the two parallel vertical rock outcrops that ran east–west at the south-eastern corner of the garden. A steep slope covered by campion ran down between the faces of the rock, which would have been extremely hazardous for visitors. A similar excavation to that for the east wall was carried out here. The absolute minimum of stratigraphy was removed and revealed a few stones in a line at the base. It was not absolutely certain that this represented the line of a wall, but some structure was needed here in order to retain this corner of the site and prevent anyone falling into the space between the two rock outcrops. A new wall was built here in order to retain the material behind it and make the area safe (Ill.2.93).



Ill. 2.93—Plan of eastern end.

A drystone structure (F1022) with a small jamb was visible on the surface of the slope, protruding from the campion (Ill. 2.94). This feature, which was the north wall of a small structure, measured 2.5m east to west and had a small southward projection at its east side that terminated in a jamb. This jamb measured 0.2m out from the south face of the wall and was slightly splayed. The surviving length of wall

Ill. 2.94—F1022 as excavated (E. Bourke).

being so small, it was impossible to interpret this feature. What can be said of it is that it is at a higher level than the surviving stones of the wall-walk of the original enclosing wall (F640) and therefore must date from a time when that wall-walk was no longer in use. It can also be shown that it lies beneath the paving surrounding Cell G (see below). Thus it can be shown that there are at least two phases of early medieval activity that post-date the original outer enclosing wall.

Overlying F1022, a layer of paving (F1027) survived both within and surrounding Cell G and extended eastwards to the break in slope, where it was retained by an outcrop of bedrock on its east side. This paving (F1027) consisted of small to medium-sized stones laid directly on the underlying soil, which was not excavated (Ill 2.95). Within Cell G, an east–west drain lay beneath the paving. This drain was 2.1m long, about 0.15m wide and 0.1m deep, and was overlain by single small paving stones, *c.* 0.3m by

Ill. 2.95—Pavement and stone setting, showing their stratigraphic relationship with F640 (E. Bourke).

Ill. 2.96—Large rock, part of the collapse that removed Cell G (E. Bourke).

0.2m by 0.02m (Ill. 2.96). This area of paving was separated from the western half of the lower monks' garden by a low drystone north–south wall (F1029). This was 4.7m long and ran from the bedrock at the northern side to a point 1.75m from the wall-walk of F640. It was 1.4m wide at its northern end and 1m wide at its southern end.

In the area between F1029 and the wall-walk, a stone setting (F1030) was defined by four stones set on edge enclosing a flat slab. This feature measured 1m east–west and 0.75m north–south, and the flat slab in the centre measured 0.8m by 0.7m. This structure was not excavated. Directly west of this feature the paving had been smashed by the earlier collapse of F638 (see below, lower monk's garden (middle section)), the twelfth- to fourteenth-century collapse on the western side of the lower monks' garden.

Description of Cell G

The remains of a circular beehive cell (Cell G) were revealed in the centre of an area of paving at the east end of the lower monks' garden. The northern half of this cell survives to a height of up to 2m. The cell would have been roughly circular in plan, measuring 3.9m in internal diameter from the northern jamb of the entrance to the east wall. The wall appears to have been corbelled, but this effect is exaggerated at the northern edge of the building, probably owing to movement of stones during its collapse. The north jamb of a west-facing entrance survives, with a rebate at the base of its inner face to take a door. The wall is 1.3m thick at its base at this point, and the rebate measures 0.2m by 0.2m. The wall is completely built of dry stone, using thin, flat stones of a small size. The middle of the south wall is built on a rock outcrop, and the outside face of the end of the wall to the east also lies on bedrock (Ill. 2.100). The paving outside the cell (F1027) rises towards the back of the cell, where the exterior wall survives, in places only 0.5m higher than the paving (Ill. 2.99).

The outline of the southern jamb of the entrance survives in negative form, where there is no paving in an area corresponding exactly with the location of that jamb (Ill. 2.98). It is interesting to note that Cell G is at a higher level than the surviving wall-walk of the monastic enclosing wall (F640), so there must have been a remodelling of that wall in the early medieval period to incorporate the southern side

Ill. 2.97—Cell G during excavation (E. Bourke).

Ill. 2.98—Cell G during conservation (E. Bourke).

Ill. 2.99—Northern side of Cell G, showing height of wall (Con Brogan, DAHG).

Ill. 2.100—Base of Cell G at south-eastern end, where it lay directly on bedrock (E. Bourke).

of Cell G into the top of the outer wall. All trace of this remodelling was removed by the collapse of the south wall of the inner enclosure and the demolition of half of Cell G.

Nineteenth-century use of Cell G and its collapse

It can be shown that Cell G survived intact into the early nineteenth century. The bottom layer of occupation soil within the cell was a layer of dark organic material (F1018). This layer, which was between 0.2m and 0.3m deep, lay directly on the paving inside the cell and contained ten sherds of nineteenth-century pottery. Above F1018, within Cell G, there was a layer of stones with a small admixture of dark soil at its base (F1015/F1017), *c.* 0.35m thick. This layer contained a clay pipe stem and seven sherds of nineteenth-century pottery.

Outside Cell G and just to the west of it, just above the pavement, a layer of dark organic material (F1016) contained a single sherd of nineteenth-century pottery, a clay pipe stem and a sherd of nineteenth-century glass. Just to the east and north of the cell, in the lower level of collapse (F1013), a clay pipe stem, a piece of coal, an oyster shell and ten sherds of nineteenth-century pottery were found. Close to the east and north of the cell, almost directly on the pavement (F1020), a ceramic lining for a furnace was found, which may be an early medieval survival.

It seems likely that Cell G was occupied by the lighthouse-builders in the early nineteenth century, but at some time during this occupation there was a catastrophic collapse of the south wall of the inner enclosure (F513) directly above the cell, which partially demolished the cell and went on downslope to remove almost all traces of the outer enclosure wall (F640) south of the cell.

The upper part of the fill of the cell consisted of rubble (F1014) that had collapsed inwards, leaving the stones jumbled and without any particular orientation. This layer was up to 1.2m deep on the north side of the cell and tapered out about 1m north of the break in slope at the edge of the pavement. It contained eight sherds of nineteenth-century pottery and one sherd of local medieval ware and appears to represent the collapse inwards of the upper part of Cell G.

A layer of collapsed drystone masonry (F1025) overlay the remains of Cell G and extended northwards to the bedrock. The lower part of this collapse against the bedrock consisted of stones with no particular orientation. Once this collapse had reached a point where it formed a slope of about 30–35°, its upper part was aligned with the angle of slope and ran southwards towards the break in slope delimited by the paving (F1027).

Later reuse of the east end of the lower monks' garden

Because its surface was sloping southward at an angle of 30–35°, this end of the terrace had now effectively been halved in size, and two new walls, F1023 and F1024, were built directly onto the collapse from F513 (see description above). Inside these there was a build-up of stones and campion roots (F1012) which contained nine sherds of nineteenth-century pottery and a piece of slag.

Above these layers lay the sea campion and its roots, which covered the whole of the east end of the lower monks' garden. This layer (F1011) was up to 0.3m in depth and covered both the area inside walls F1023 and F1024 and the slope that ran southward and eastwards to the edge of the lower ledge of bedrock at the southern edge of the garden. Finds from this layer included a clay pipe bowl, dating from between 1800 and 1830, 21 sherds of nineteenth-century pottery and one piece of slag.

Interpretation

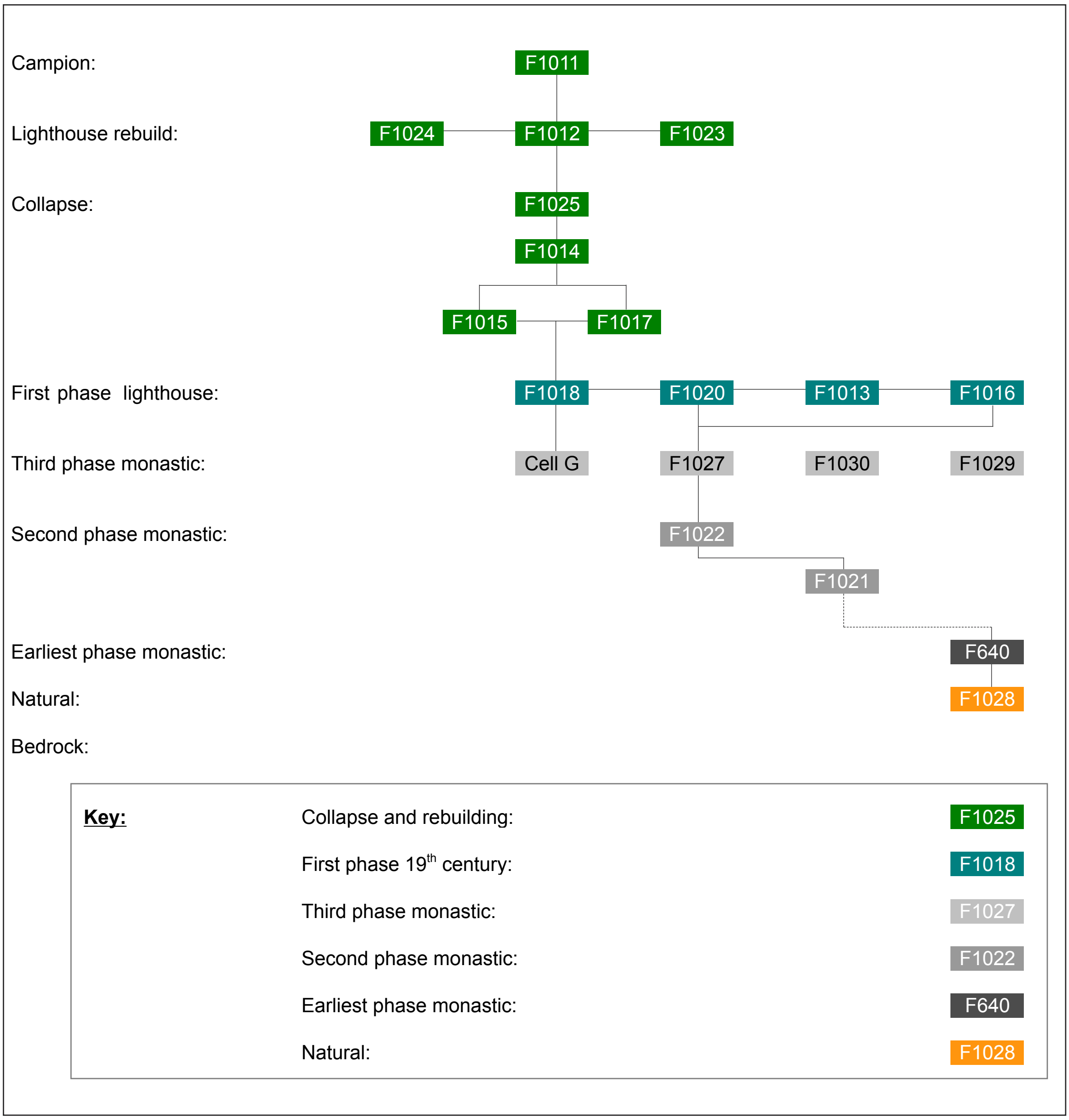
The last phase of construction by the lighthouse-builders when they walled in the smaller area left available to them at the east end of the terrace was poorly built, as the walls were constructed directly on top of the collapse (F1025). It is interesting to note that the pottery and pipes from this later intervention are roughly contemporary with the pottery found in Cell G, implying that the rewalling

Ill. 2.101—Eastern end of lower monks' garden after conservation, from north-west (Con Brogan).

happened quickly after the collapse. This makes sense, given that the monastery was probably only occupied by the lighthouse-builders in the 1820s.

It appears clear that Cell G and its surrounding pavement were used by the lighthouse-builders in the 1820s (Ill. 2.101). It is also clear that the western end of the lower monks' garden was already filled with collapsed material and redeposited soil from an earlier collapse of the wall of the inner enclosure, at some stage in the fourteenth century (see below, lower monk's garden (middle section)). So access to the east end of the lower monks' garden from the fourteenth century onwards was through the middle section of the lower monks' garden. This begs the question as to whether this area of the monastery was ever used as a garden. It can be seen that the pavement (F1027) was completely removed by the fourteenth-century collapse (F638), and it is probable that the original function of this part of the monastery was residential, or at least contained some buildings, prior to the fourteenth-century collapse. The stone setting (F1030) in pavement F1027 is an enigmatic feature, and the pavement continues for a small distance beyond the north–south wall (F1029) before being removed by the earlier collapse. This feature was not excavated and its function is therefore unknown. The paving is stratigraphically later than the wall-walk of the original south wall of the terrace (F640), which implies that there was an original surface beneath the level of the wall-walk in this area. The occurrence of a stone feature (F1022) beneath the paving associated with Cell G and also later than the wall-walk of F640 shows that there are at least two phases of early medieval activity post-dating the enclosure of the lower monks' garden (Ill. 2.102).

Unfortunately, it was not possible to excavate beneath the pavement, or to excavate a large enough amount of material at the base of the enclosing wall (F640) to date its construction. The nineteenth-century collapse was in a straight north–south direction. The fourteenth-century collapse was also in a north–south direction but fanned out in a north-west to south-east direction towards the north–south wall (F1029), where it was restrained from covering the paved area around Cell G. Thus the two areas of collapse hardly overlap at all except at the western end of the pavement, which was crushed by the fourteenth-century collapse (F638).



Ill. 2.102— Matrix for east end of lower monk's garden

Lower monks' garden (middle section) (93E195)

Edward Bourke

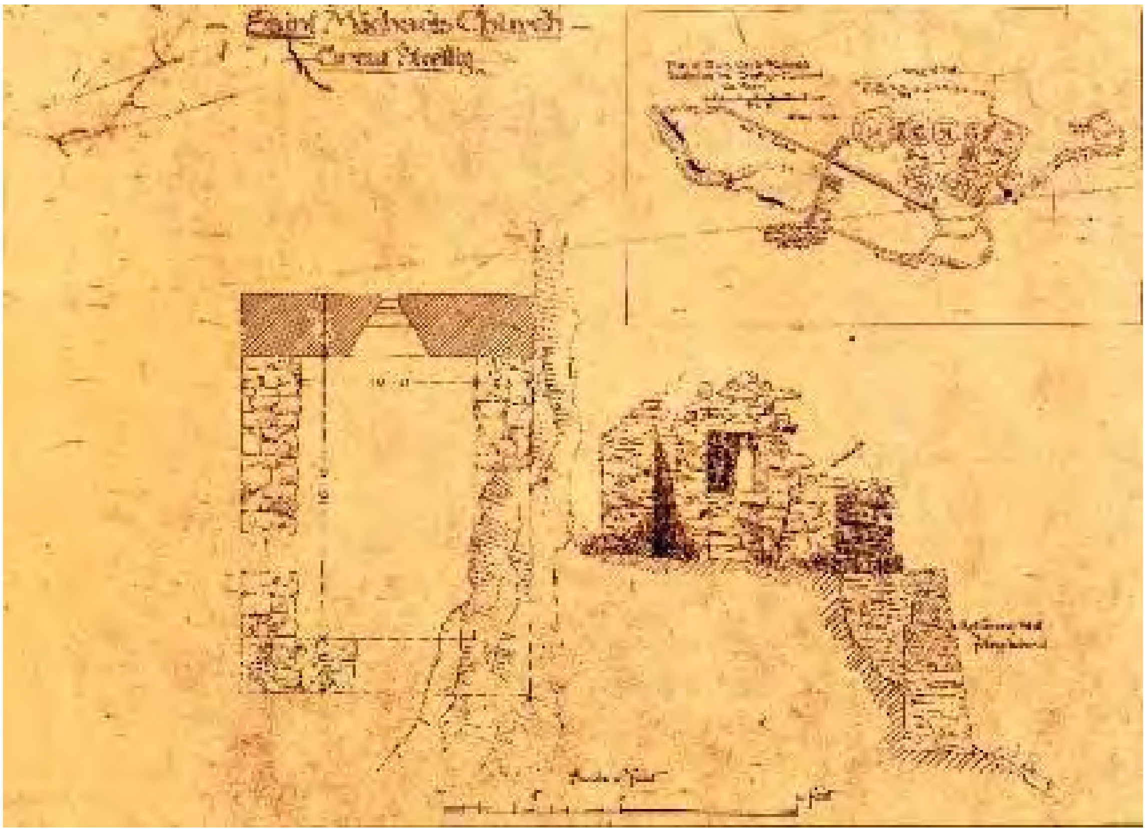
Introduction

The test excavation carried out in 1993 (Ill. 2.103) at the base of the wall east of St Michael's Church (Cutting A) revealed that this section of the inner enclosing wall had collapsed on two occasions in the past. The second occasion was in the latter half of the nineteenth century and the first was at some time in the medieval period. The northern end of the cutting started at the base of the exterior of the inner enclosure wall and revealed that the nineteenth-century rebuild was on a layer of rubble (Ill. 2.104). This was not what the workmen had been instructed to do, according to a surviving drawing from the archives of the OPW that shows how the wall was to be rebuilt (Ill. 2.105). In 1995 a more detailed test excavation took place (Cutting 2), which showed that the wall was built on a set of flat slabs lying directly on top of unsorted rubble from the previous collapse.

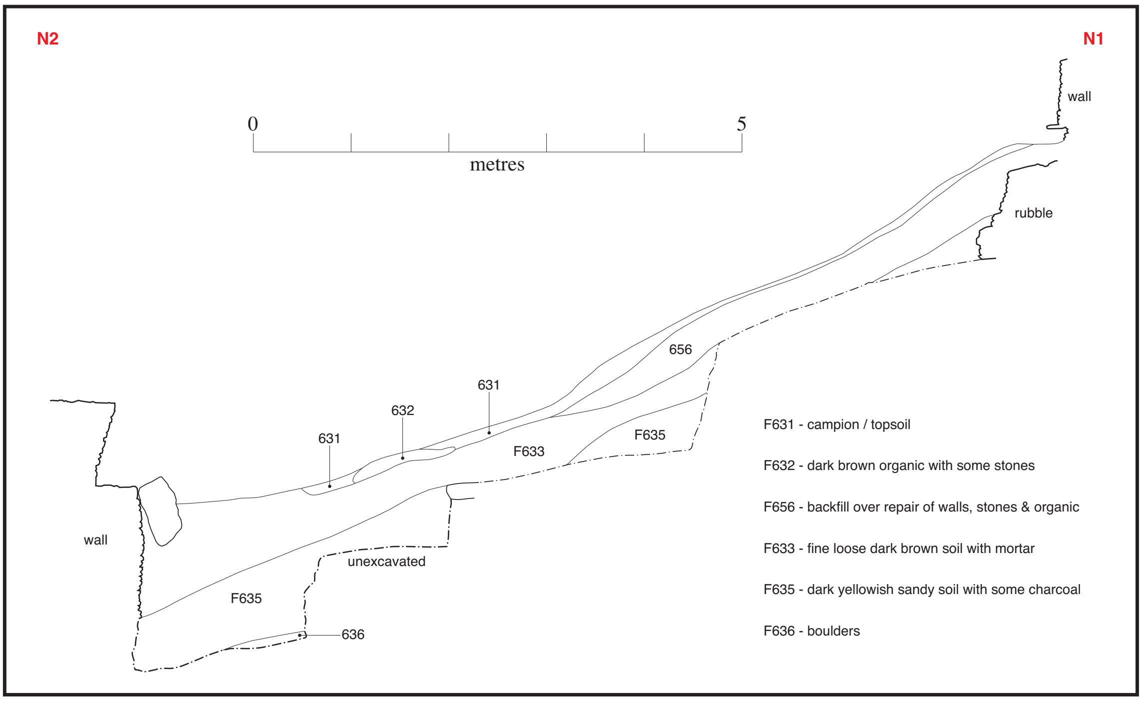
It became clear, even before going into the lower layers of stratigraphy, that the excavation of any

Ill. 2.103—The middle part of the lower monks' garden in the 1950s, from the east (DAHG Archive).

Ill. 2.104—Base of wall of inner enclosure, directly below St Michael's Church, showing 1890s rebuild directly onto unsorted rubble (E. Bourke).

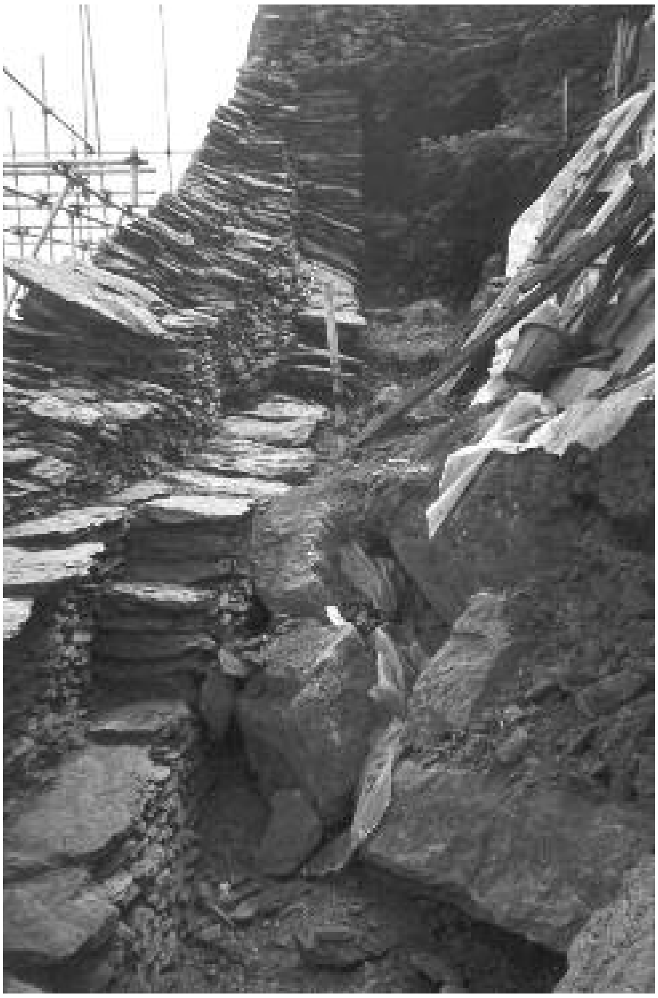


Ill. 2.105—Drawing from 1890s showing that the wall was supposed to be rebuilt onto bedrock (OPW).



Ill. 2.106—Test-trench section, Cutting A (1993).

more of the base of the wall could undermine it and cause another collapse. Excavation in 1993 (Ill. 2.106) continued to the south of this area and showed that beneath the nineteenth-century material were three further layers of collapse which contained no nineteenth-century pottery and which overlay a debris layer of large stones that lay up against the inner face of the monastic enclosing wall at the south end of the lower monks' garden.



Ill. 2.107—Boulders and F640 from east, showing the boulders collapsed against the interior of F640 and the resulting distortion of the wall (E. Bourke).

The nineteenth-century wall above this was not directly founded on the earlier wall and was in poor condition; it was also placing a heavy load on the monastic wall beneath. The monastic wall had a stepped wall-walk on its inner face and the lower collapse of stones had crashed down onto this, causing the wall-walk to move so that its stones were sloping inwards at an angle of *c.* 20° (Ill. 2.107).

It was decided, since it was most likely that the entire nineteenth-century addition to the south wall of the outer enclosure was in the same condition, that the preferred method would be to scaffold the wall on the outside in order to monitor any movement in it and to facilitate removal of the nineteenth-century wall (Ill. 2.108). It was also decided to attempt to reveal the monastic wall of the outer enclosure and to carry out conservation works on it. This would require the removal of the nineteenth-century wall above it along its entire length.

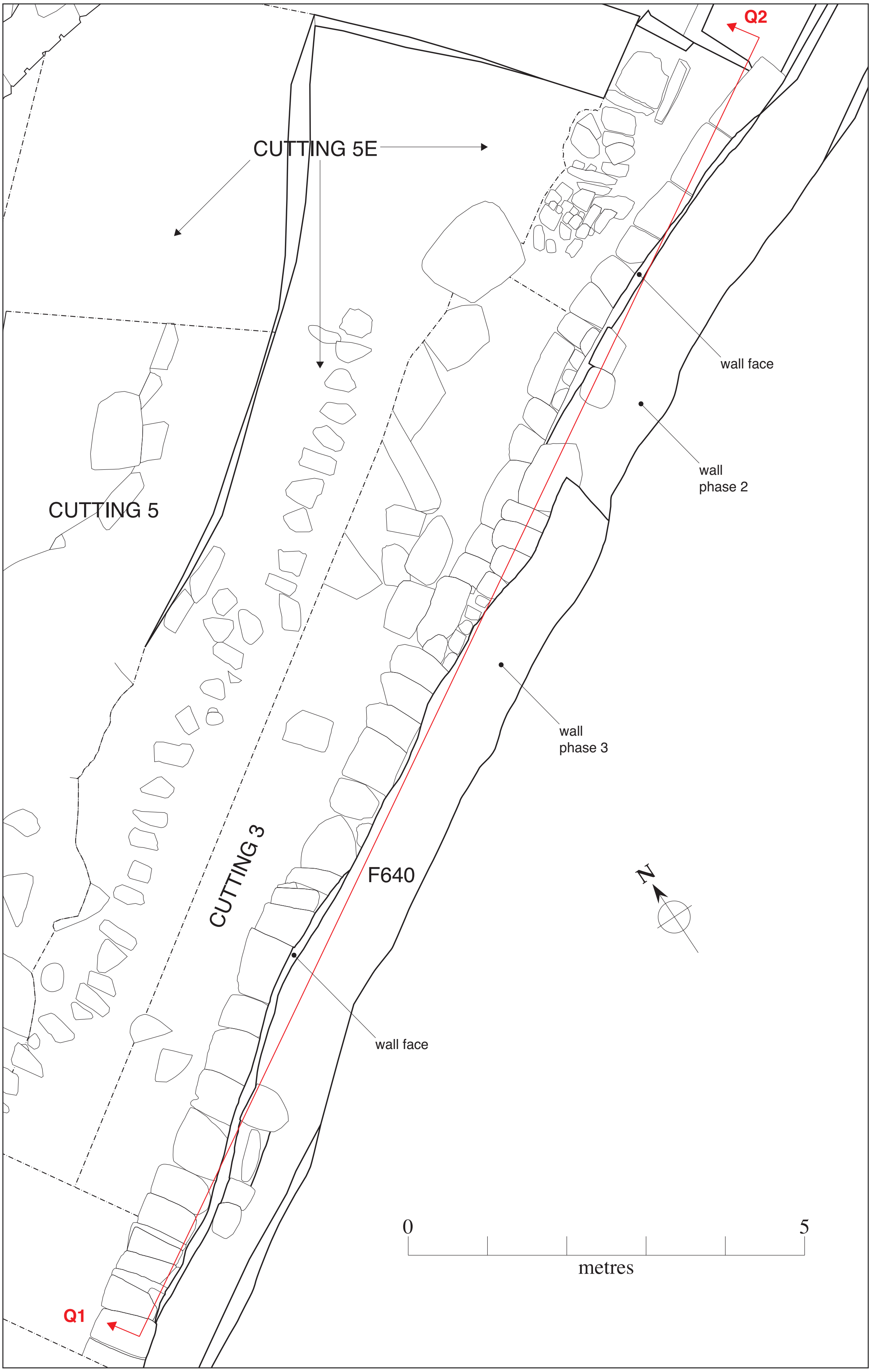
The outer enclosure wall

The earliest feature visible in the lower monks' garden was the original monastic wall (F640). This ran eastwards from the junction with the upper monks' garden as far as the western edge of the 1994 excavation of the east end of the 'garden'. Within the excavated area the base of the wall could not be seen anywhere. There had been a collapse of the south wall of the inner enclosure and these large stones obscured the base of the wall (see below).

The original top of the wall was up to 1.02m wide, with an internal wall-walk with steps in it. These steps varied in width between 0.52m and 0.38m. The internal face of the wall-walk had been altered on a few occasions and it was possible to associate these adaptations with attempts to reconfigure the wall-walk after the collapse that filled the garden (Ill. 2.109).

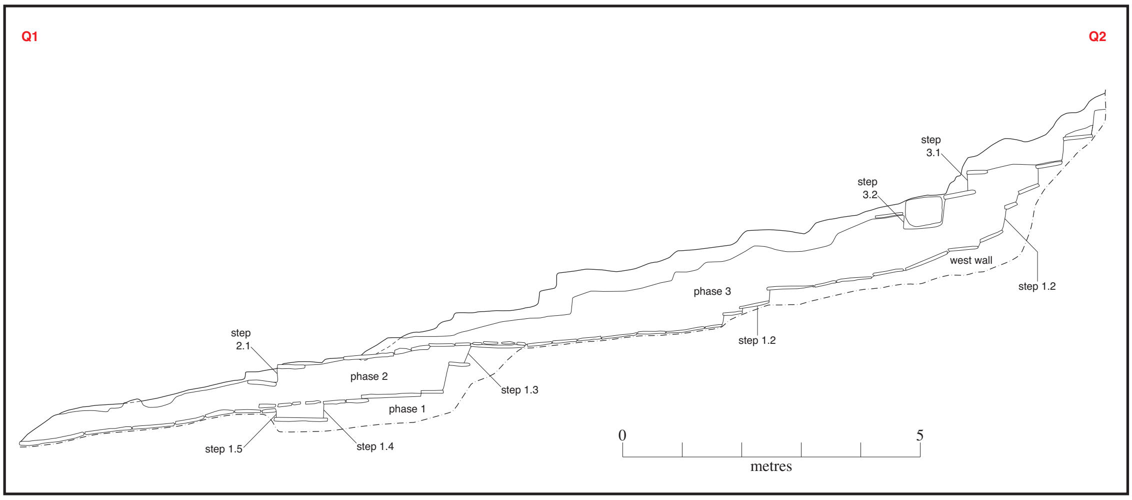
Phase 1

The first phase (F640(1)) of wall construction could be identified along the length of the middle section of the garden and through into the east end. At the western end of Cutting 1 the wall-walk began with a set of steps (Step 1.1), quite high up, starting just below the sea campion layer (F631(1)). A series of seven steps ran steeply downwards towards the east; they measured between 0.58m and 0.72m north/south and between 0.2m and 0.5m east/west. The top three steps were flat and had well-preserved drystone risers, but the next four had moved and sloped downwards towards the east with the drystone risers having slipped outwards, allowing the eastern end of the treads to fall (Ill. 2.110). East of these steps was a run of six slabs that sloped more gently towards the east, and these measured 0.38–0.78m east/west



Ill. 2.108—Plan of F640 and Cutting 3.

Ill. 2.109—Elevation of F640 and phasing.



Ill. 2.110—Composite photograph of elevation from the north (E. Bourke).

and 0.5–0.62m north/south.

East of these was another set of three steps (Step 1.2), descending towards the east and sloping only slightly downwards towards the east; they measured 0.22–0.82m east/west and 0.54–0.6m north/south. The drystone risers were almost vertical and had held their position well. East of these was another flat run of eight stones of the wall-walk, which sloped imperceptibly downwards towards the east; these measured 0.36–0.78m east/west and 0.58–0.69m north/south.

The end stone of that run formed the top step of two steep steps (Step 1.3) descending to the east. The middle step measured 0.43m east/west and 0.38m north/south; the drystone risers sloped slightly but both treads were roughly flat. The next run of flat wall-walk consisted of four stones that measured 0.38–0.92m east/west and 0.38–0.4m north/south.

The end stone of that run formed the only step (Step 1.4) down to the next level of wall-walk. This dropped down onto a flat slab that measured 0.84m east/west and 0.34m north/south. This slab did not fill the whole depth of the wall-walk at this point; three smaller stones laid flat to the south of it filled up the width of 0.48m. These stones were at a higher level and may represent a repair, possibly associated with phase 2 of this wall, as they would allow someone using the wall-walk to avoid having to step down into the area between Step 1.4 and Step 1.5.

The wall-walk rose again after this slab (Step 1.5), with a step up of only 0.12m onto the next gently sloping run. This step also occurred at the point where Cutting 3 came to an end.

The next, slightly undulating run of seven flat stones of the wall-walk ran eastwards into the 1994 excavation of the east end of the garden. These measured 0.21–1.09m east/west and 0.37–0.43m north/south.

Phase 2

A second phase of wall-walk (F640(2)) was built above the westernmost step of Step 1.3. This ran flat for ten slabs measuring 0.11–0.9m north/south and 0.15–0.63m east/west. This phase appears to be a repair, as the wall above it diverges gently back from the earlier wall-walk, with the initial part of this second phase being so narrow as to be almost useless. The wall above the wall-walk is *c.* 0.78m wide at this point and terminates where it collapsed over the last stone of the run described above. Beyond the end stone of this run was a gap of 0.55m where the stones had been removed to the last stone which lay on the surface of the wall; this stone, measuring 0.47m east/west and 0.41m north/south, formed the top stone of a single step (Step 2.1) that dropped 0.25m to the east. Only one stone survived from the next run of stones, and measured 0.5m north/south and 0.3m east/west.

Phase 3

A third phase of wall-walk (F640(3)) occurred at the western end of the site at the south-eastern end of Cutting 1. Here a higher piece of wall-walk, at the same level as the third step of Step 1.1, was built into the wall. The wall above appears to have been rebuilt and some damage had been caused by the nineteenth-century wall above but no direct connection can be determined with Step 1.1, as the stones which might have joined the two sets of wall-walk are now gone. The western end of this run of wall-walk is the top step of a pair of steps (Step 3.1) descending eastwards; these measured 0.41m by 0.32m and 0.32m by 38m respectively. The bottom stone of this feature measured 0.7m by 0.38m and the feature then stepped up again by 0.22m (Step 3.2). One stone, which measured 0.5m by 0.56m, remained at the east end of this feature; no other stones of this phase survived. The top of the wall at this point was only 0.58m thick.

The narrowness of the second and third wall-walks and the lack of formality in the way that they have to be approached from the phase 1 wall-walk imply that the second two phases are repairs, possibly after the phase 1 wall-walk had become difficult to use, following the collapse of the wall of the inner enclosure into the garden (see below).

The cuttings

In order to explain the stratigraphy in the cuttings, Ill. 2.111 shows the location of all the cuttings in the middle section of the lower monks' garden. A second plan (Ill. 1.112) shows the features revealed in each cutting.

Cutting A was a test excavation dug in 1993 (Ill. 2.106) to establish the stratigraphy at the western end of the middle section of the lower monks' garden. It ran north-west/south-east across the garden and was 5m long by 1.5m wide.

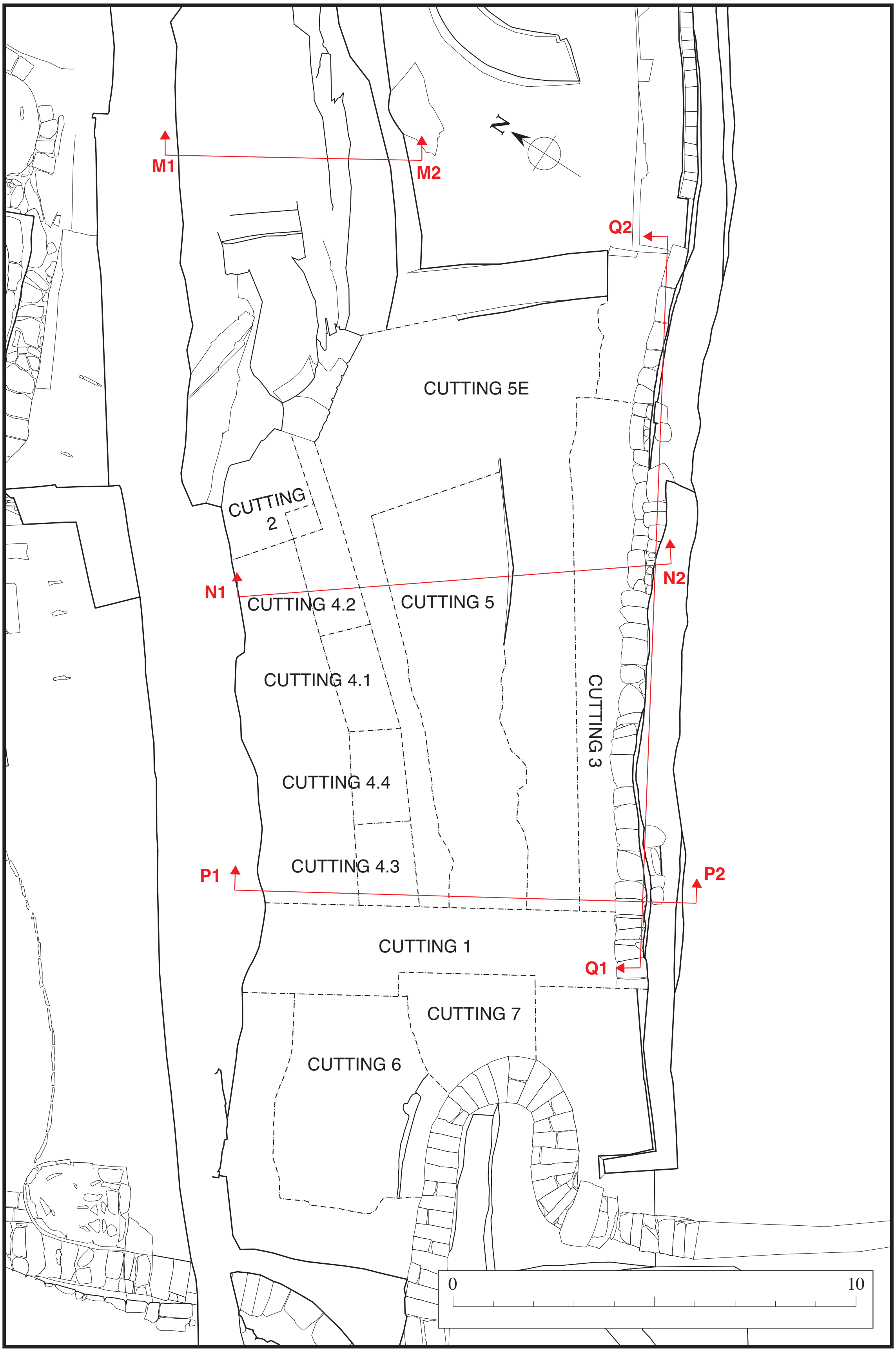
Cutting 1 ran north-west/south-east across the garden and was 9.5m long by 2m wide. This was excavated to determine the stratigraphy at the western end of the mid-section of the garden.

Cutting 2 was a small test excavation carried out to determine the stability of the base of the wall of the inner enclosure. It was located directly against the outer edge of that wall where it met a bedrock ledge; it ran north-east/south-west and was 2.5m long by 2m wide.

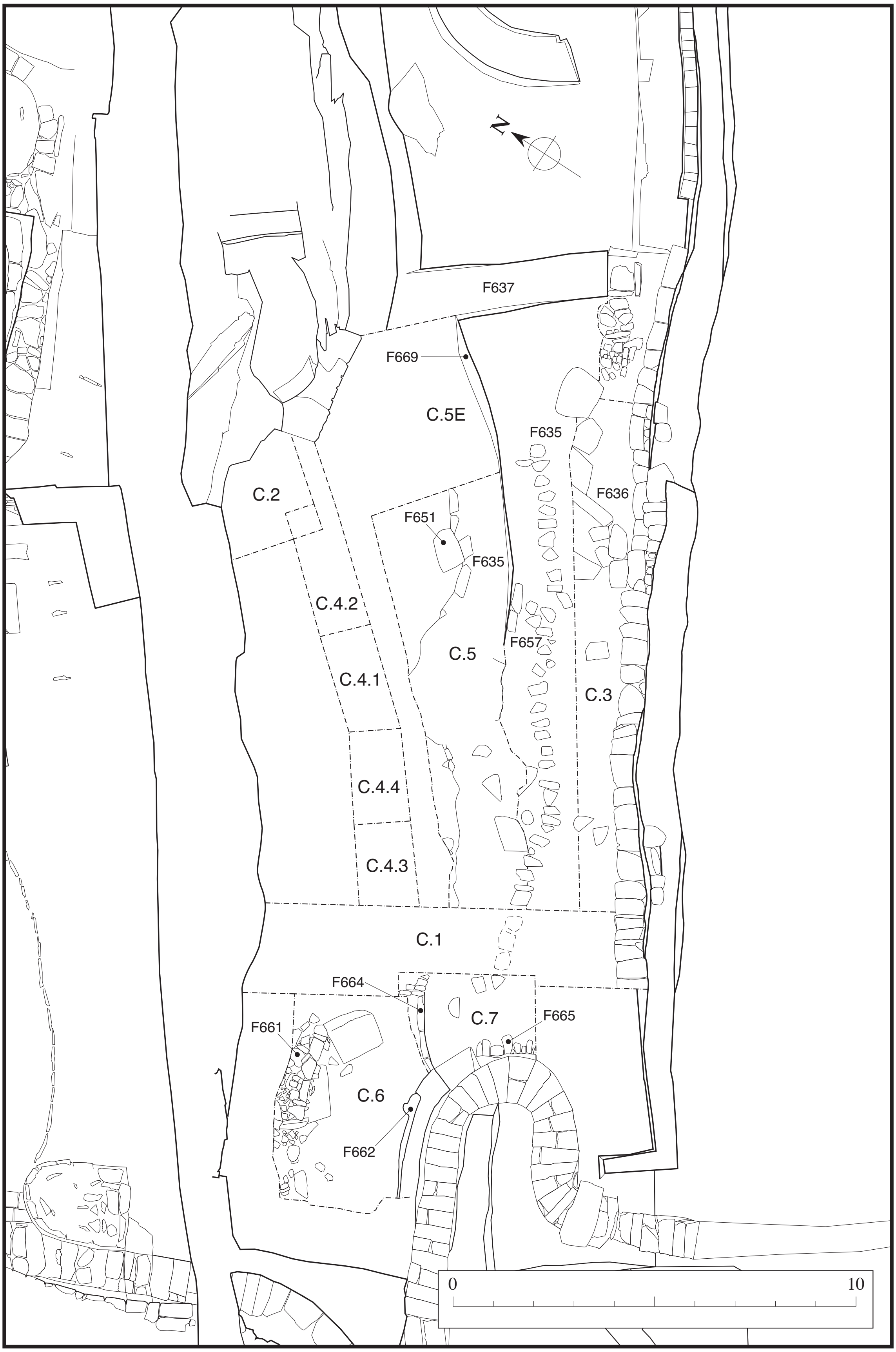
Cutting 3, a trench excavated east of Cutting 1 and against the inner face of the outer enclosing wall of the garden, ran north-east/south-west and measured 6.5m long by 3m wide.

Cutting 4 was excavated in order to build a retaining wall to consolidate the outer face of the inner enclosure wall, after it was discovered that this had been rebuilt on unconsolidated rubble. It ran north-east/south-west and measured 13m by 1.5m. It was excavated in four sections, numbered 4.3, 4.4, 4.1 and 4.2 from west to east.

Cutting 5 was directly to the west of Cutting 1 and south of Cutting 4. It ran north-east/south-west across the site and measured 10m long by 2–2.6m wide.



Ill. 2.111—Plan of cuttings in the middle section of the lower monks' garden.



Ill. 2.112—Plan of features in the middle section of the lower monks' garden.

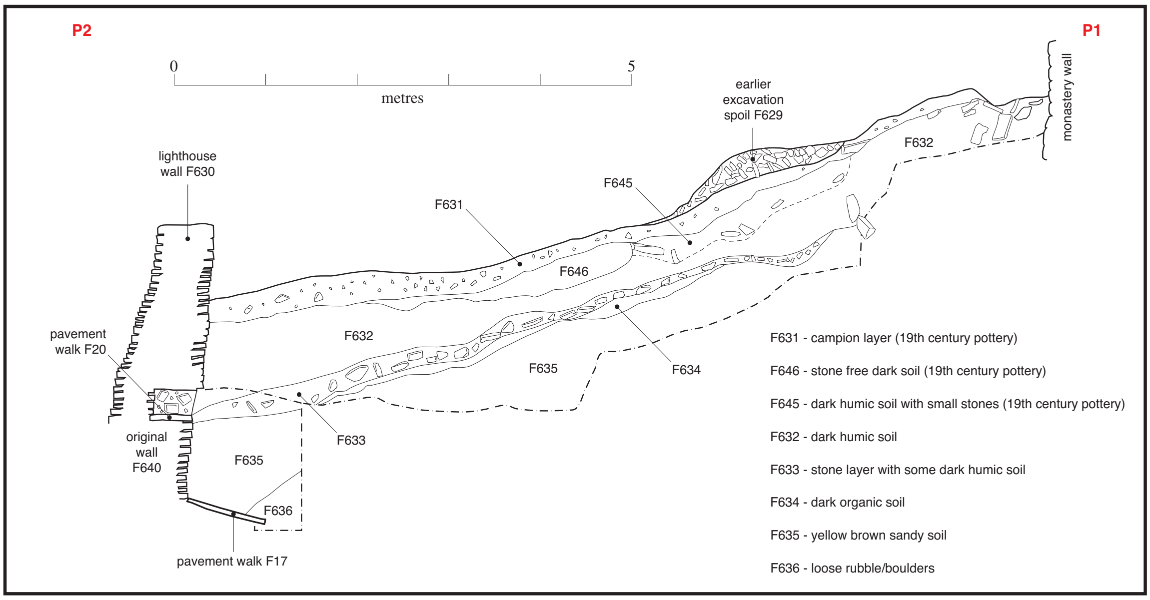
Cutting 5E was a roughly L-shaped extension southwards and eastwards of Cutting 5. Its total length was 16m along the edge of Cutting 3; it was 2m wide at the west end, increasing to 5.6m at the east end.

Cutting 6 was directly to the west of Cutting 1 and ran north-east/south-west. It was 5.4m long and 3.6m wide.

Cutting 7 was directly south of Cutting 6 and west of Cutting 1. It ran north-west/south-east and measured 2m long by 3m wide.

The excavation

A second north–south cutting was opened up in 1995 (Cutting 1), which revealed the same basic situation as in the 1993 cutting (Cutting A) further east. While there were some intervening features and layers, the same pattern of collapse and redeposition could be shown to have taken place in both cuttings (Ill. 2.113).



Ill. 2.113—Section, Cutting 1.

Layers that pre-date the medieval collapse

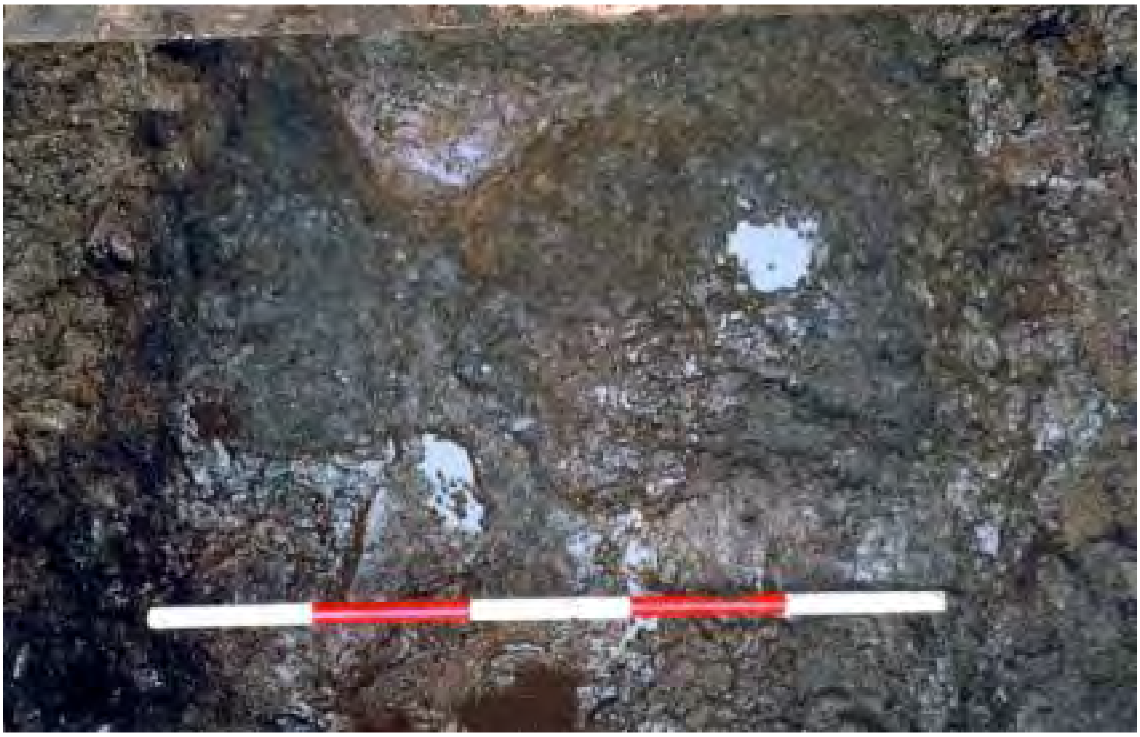
The earliest layers encountered in the lower monks' garden consisted of features that underlay the collapse; these features occurred in Cutting 4.3 and 4.4, along the north side of Cuttings 5 and 5E and Cutting 6.

Cutting 4.3 and 4.4. This cutting was excavated in order to put in a retaining wall to ensure that the inner enclosure wall to the south (F628) did not collapse into the lower monks' garden (see below).

Above the bedrock was a layer of natural, inorganic, red sandy clay (F653). This natural material (Ill. 2.114) has been recovered under the wall of the outer enclosing wall to the garden (F640) and under the stones of the inner enclosing wall at the east entrance (F513).

Above this was a layer of dark brown to black soil with well-preserved organic material (F643). Its structure was very fine and a bit gritty; it was 0.1–0.2m thick and survived because the shape of the bedrock meant that the soil was completely waterlogged at this level in 4.3 and 4.4 (Ill. 2.115). It did not occur in 4.2, as the wall foundation did not go down to bedrock, and was not encountered in 4.1. Owing to the good anaerobic preservation, numerous samples were taken from this layer, which had produced grassy material, but no finds were recovered and there was no material suitable for dating. Layer F643 directly underlay F636 in this cutting.

[2] Where a number appears in brackets after the feature number for a layer, it refers to the cutting in which the feature was found. Where a number appears in brackets after the feature number for a wall, it refers to the phase of the wall that is being discussed.



Ill. 2.114—Natural at base of Cutting 4.

Ill. 2.115—F643, organic material from beneath the collapse (F636) in Cutting 4 (A. Halmschlag).

Cutting 5. This layer (F643(5))[2] was also encountered at the north side of Cutting 5 at the level of the base of the retaining wall. Only the edges of the feature were uncovered and it was less well preserved than on the other side of the retaining wall. Excavation ceased at this level, as it was not regarded as safe, or expedient, to dig beneath the foundations of the retaining wall. No finds were recovered but several soil samples were taken.

Cutting 5E. Some of this layer of dark brown to black soil with well-preserved organic material (F643(5E)) occurred along the side of the new retaining wall in Cutting 5E, towards its eastern end; the state of preservation of the layer was even poorer than in Cutting 5, but some samples were taken.

Cuttings 6 and 7. The bedrock came close to the surface at the north end of Cutting 6 and stepped down three times at its north-western corner. Above the bedrock was a layer of red sandy clay with bedrock chips in it (F653(6)); this clay was equivalent to the layer found in Cutting 4 but contained patches of grey and yellow. Above this was a small pocket of the dark organic material (F643(6)), 1m by 0.4m in extent, which occurred next to the steps in the southern part of the cutting. The layer was very thin, less than 0.1m thick, and its preservation was not as good as in the other cuttings. Also beneath F635(6)), further west in the cutting, was a small layer of dark clayey soil (F660), 0.01–0.04m thick, which may represent the same layer in an even worse state of preservation. Apart from one large boulder (1.55m by 1.33m by up to 0.3m), F636 did not survive in this cutting, so the layers mentioned above directly underlay F635.

Early wall at east end of Cutting 5E

This wall (F637) ran northwards for a distance of 4.6m from the stone setting (F1030) exposed in 1994 towards the bedrock at the back of the cutting. Only its eastern side survived to any height. At the north-eastern end it was *c.* 0.4m high, while at its southern end, where it abutted the stone setting, it was only a couple of courses high. The stones were generally small, 0.2m by 0.1m by 0.6m. Its western side had been badly disturbed, as most of the stones were completely out of place and a repair had been carried out in the middle of the west face, where slightly larger, better-laid stones were added, probably after some collapse had taken place. There were two finds from this wall, a sherd of modern glass and a sherd of Ham Green A/B ware.

One stone of the collapse (F636) was found just west of the wall, and it is likely that this caused at least part of the damage. There was a layer of possible pavement (2m east–west by 1.5m north–south) west and north of this stone (F688), which appears to have been laid down on top of F636 after the collapse. These features and layers were directly overlain by F633 in this area.

Medieval collapse of inner enclosure wall (F636)

Cutting 1. At the east end of Cutting 1 was a layer of large boulders lying against the wall (F636(1)). This layer was never bottomed but a depth of up to 0.7m was exposed where it met the outer enclosing wall (Ill. 2.116). Some of the looser rubble at the top of this layer of collapse lay on the stones of the phase 1 wall-walk of the enclosing wall to the south (F640(1)). The main stones of this collapse were of large size, up to 0.8m by 0.4m by 0.12m in this cutting, though even larger stones from the same collapse occurred at the east end of Cutting 3. There was a high concentration of small stones among the larger stones and a number of chips of bedrock mixed between them.

Cutting 3. The layer of large boulders F636(3)) continued into Cutting 3, where the boulders were of even greater size, some up to 0.9m by 0.7m by 0.38m; one measured over 1.3m by over 0.3m but its depth could not be determined because of overlying large stones. The gaps between the boulders were not filled with any other material; a steel reinforcing rod was inserted as a probe into this layer and showed that it was at least another 1m in depth in the centre of the cutting. This layer produced a spatulate-headed pin, a stone cross, an iron object and two sherds of nineteenth-century pottery, and a fragment of a stone plate was found between the wall and the boulders. These finds that came from the edge of F636 and might be subject to contamination were given the feature number F638, to take into account the fact that they came from areas close to the wall where organic material had percolated down into the surface of F636.

Cutting 5. Three boulders of F636 protruded through Layer F635 at the west end of this cutting. None of them was fully exposed, but the largest measured 0.9m by 0.7 by 0.1m, while another triangular-shaped boulder measured at least 0.62m by 0.43m by 0.2m. Owing to the discovery of other features

Ill. 2.116—Lower monks' garden after conservation, showing stones of boulder layer left *in situ* (Con Brogan, DAHG).

associated with the layer above (F635), it was decided to conserve the middle section of the lower monks' garden as it would originally have appeared, with the boulder layer exposed where it met the outer enclosing wall.

Cutting 5E. The layer of boulders (F636(5E)) was only exposed along the line of the retaining wall next to Cutting 5 and in a very small area just north of the flagstone path (F657). The stones were again quite large, averaging 0.22m by 0.15 by 0.15m, being much blockier than the standard stones found in the drystone walls elsewhere in the monastery. These boulders also appear to have done quite some damage to the north–south wall (F637) that divided the east end of the excavation from the west.

Cutting 4. In Cutting 4.3 and 4.4 this boulder layer (F636) directly overlay F643 and was up to 1.4m thick. There was little or no soil between the stones, as was noted in Cutting 3, and because of the size of some of the stones the cutting was only bottomed at the western side. The one difference noticed in this cutting was the angle of the stones, most of which had been deposited at a very steep angle. There were very few small stones and chips of bedrock in this cutting, unlike the same deposit in Cutting 3. There were a few animal bones at the surface of this layer, but there is a strong likelihood that they may have washed into it from F635 above.

Cuttings 6 and 7. Apart from one very large stone (see above), this feature (F636) did not survive in Cutting 6. It seems likely that this is due to the closeness of the bedrock to the surface and to the fact that the lower courses of the inner enclosure wall (F628(1)) survive at this point. It may also be due to the fact that the bedrock slopes away southward in steps at this point. A second large stone that underlay F661 was not excavated, but it may also originally have been part of F636.

Redeposition in the garden following the collapse

Cuttings 6 and 7. The earliest feature connected with the backfilling is a structure (F661) at the northern edge of Cutting 6, consisting of a platform of stones set on top of a large, flat boulder. This boulder, which measured 1.26m by over 0.6m, was not excavated as it appeared to form the base of the stone structure. The platform was 2.7m long and at least 0.7m wide. Its northern extent was not excavated, as this might have undermined the south face of the inner enclosure wall. There were two courses of masonry visible, a lower course made up of stones measuring on average 0.25m by 0.12m and an upper course of seven stones measuring on average 0.5m by 0.3m; behind this upper course the stones were a mixture of sizes (Ill. 2.117). This presented a flat platform against which F635 had been dumped. It is tempting to see this as a work surface for the wall repair, as the bedrock was sloping southwards, with

Ill. 2.117—F661 from south (A. Halmschlag).

natural steps in it, across Cutting 6.

Main backfill layer (F635)

A layer of dark yellowish sandy soil with some darker charcoal-stained patches appeared in all of the cuttings except Cutting 2. It was over 1m deep in places, where bottomed. This layer was laid down over the layer of boulders (F636) across the site and only petered out at the east end of Cutting 5E, where the boulder collapse came to an end. It appears to have been laid out to form a garden once it was decided that the collapse was too large to clear from the enclosure.

Cutting 1. In Cutting 1 this layer (F635(1))[3] contained some pottery and a reasonable quantity of bird, fish and animal bones. It was up to 1.02m deep at the south end of Cutting 1, where it came up to just below the base of the phase 3 wall-walk of the outer enclosing wall (F640(3)).

The pathway down to the east end of the garden passed through Cutting 1 (see below). The three stones in this cutting were planned, but the plan did not survive the fire. These stones are marked approximately on plan as F648, while the rest of the pathway is fully recorded under the feature number F657 (Ill. 2.118).

[3] The finds from Cutting 1 were damaged in the fire in the archaeologists' accommodation in 1995; the same is true for Cutting 2 and Cutting 4. Cutting 1 was extended to the east after the fire and the finds for that area are labelled F635(1E). All the finds from the fire are registered under the feature number F1019.

North of these steps there were several upright flagstones (F649) placed in an open rectangle, perhaps to retain soil from north of the pathway (F648). The relevant plans and notes do not survive for this feature.

Cutting 3. This layer (F635(3)) extended downward across Cutting 3 to where it met the wall-walk of F640(3); it was up to 1m deep and ran across the whole cutting in a southerly direction.

Cutting 5. This layer (F635(5)) extended right across the cutting and was a little over 1m deep at its southern end, where the boulders had been exposed. The layer is the same as in the other cuttings, if perhaps a bit darker, with the same selection of animal bone as elsewhere. It also yielded two lumps of fused metal, one of which was fused onto a stone, and a whetstone of fine micaceous sandstone. Because this was the layer and level at which it was decided to conserve the garden in this area, the layer was not bottomed on its northern side.

Ill. 2.118—Pathway F657 from west (A. Halmschlag).

Cutting 5E. This layer (F635(5E)) covered all of Cutting 5 and most of Cutting 5E. It ran for *c.* 12m from the east baulk and only petered out against the pavement F1027, which surrounded Cell G and ran out past the north/south wall (F1029/F637). One piece of slag was retrieved from this layer. It became clear that the paving survived east of the collapse of F636, where it was partially preserved as an entrance into the paved area at the east end of the garden.

Stone features preserved in F635(5) and (5E). An 8.5m-long curving wall (F669) ran east–west along the cutting, west of F637 and north of the pathway F657. The junction between the two walls was badly disturbed so it was not possible to say which was earlier, particularly as only the bottom two courses of F637 survived and that wall had obviously been repaired on more than one occasion. It is likely that F669 post-dates F637, as it survives to a height of *c.* 0.5m at the junction. The wall is of drystone construction using small stones, but three large stones (F670) were added to the top of the wall midway along its length. These measured 0.6m by 0.2m by 0.18, 0.48m by 0.18m by 0.12m and 0.38m by 0.28m by 0.1m respectively. The wall had collapsed in the 0.7m gap between the most westerly of these stones and the other two. It seems that these heavy stones may have been put up onto the original wall and then destabilised it. This wall continues to the west, where it was only two courses high. The material behind the wall, which functioned as a terrace, was not excavated, as this appeared to be a medieval terrace wall associated with the conversion of the terrace into a garden.

South of this wall and level with its base was a pathway of stones (F657), set like stepping-stones

Ill. 2.119—Wall F669 from south-west during conservation (Con Brogan, DAHG).

Ill. 2.120—Wall F637 and eastern end of pathway F657 after conservation, from north (Con Brogan, DAHG).

from the end of F635 at the east and running upslope towards the steps leading down to the east entrance of the inner enclosure. There were 34 of these steps, running east–west across Cutting 5. There was one informal step up just south of the gap in F669 and a second informal step at the western baulk of the cutting. Three stones of this pathway were noted in Cutting 1, but unfortunately the relevant plan was destroyed in the fire. Their approximate location is marked by dotted lines on the plan (Ill. 2.112). Three further stones of this pathway were uncovered in Cutting 7, where they again lay on the surface of F635 and stopped just short of the bend in the stairway down to the east entrance to the inner enclosure.

Cutting 4. This layer (F635(4)) was sandier at its upper (northern) end than at the other end of the cutting, but it was still light brown to yellowish in colour and very uniform in its appearance. It was also thinner here, being only 0.1–0.2m thick. Bird, fish and (to a lesser extent) mammal bones were present in this layer, and a bulk sample was sieved for analysis. There was also some charcoal in the layer.

Cuttings 6 and 7. This layer (F635(6)) was yellower in these cuttings and became progressively wetter the closer excavation came to bedrock. The bones retrieved, which were only from mammals, were in a very bad state of preservation and crumbled when touched. The layer was *c.* 0.25m deep at the north end of the cuttings, where it abutted F661, and its depth could not be measured at the south end, as the bedrock was stepping downwards so steeply towards the south and there was a fear of undermining the steps down to the east entrance of the outer enclosure. F635 was the lowest level excavated in Cutting 7, as the western terminus of the pathway (F657) that had been found earlier in Cutting 5E and in Cutting 1 was laid on F635. This pathway seems to have led up to the corner of the steps leading down to the east entrance of the outer enclosure. Three sherds of local medieval ware, one sherd of Orléans-type ware, a cross of Valentia slate, a possible hinge strap and two pieces of slag were retrieved from this layer.

Dark organic soil (F634) redeposited over sandy layer (F635)

This layer of dark organic soil occurred in every cutting except Cuttings 6 and 7, Cuttings 4.1 and 4.2, Cutting 2 and the east end of Cutting 5E. It contained a high proportion of bird and fish bones, with a lesser quantity of animal bones.

Cutting 1. Layer F634(1) overlay F635 in this cutting. It was 0.1–0.3m thick and ran from 1m north of the outer enclosing wall back to within 2m of the inner enclosing wall.

Cutting 5. F634(5) occurred on the south side of Cutting 5, thickening to *c.* 0.2m at its western end, while further eastwards it became patchy and mixed with F633. These areas of mixing were given the feature number F639 and yielded one piece of slag. There was still a large amount of bird and fish bone in Layer F634(5)), together with a smaller number of mammal bones, and just in this area there was a large quantity of badly decayed mollusc shells. The soil became darker and patchier than in Cutting 1 and there was still an amount of charcoal mixed into the soil. A charred seed, a thin-walled piece of iron, possibly from a tin can, a roof slate, some stone and burnt mortar were retrieved from this layer.

Cutting 5E. The continuation of the dark organic layer (F634(5E)) petered out 7.5m from the west end of Cutting 5 and it was only slightly over 0.1m in average thickness at the western baulk. An iron object of uncertain function came from this layer, and a small bone gaming piece came from its base at the point where it petered out at its eastern edge. This layer did not overlie the pavement F1027 at the east end of the garden and in that area F633(5E) directly overlay F635(5E).

Cutting 4. The same layer appeared directly above F635 in Cutting 4. This layer (F634(4)) was dark grey/black with a fine texture and contained both traces of charcoal and some lumps of charcoal together with large quantities of fish and bird bone, but mammal bones were much less frequent. Bulk samples were sieved from this layer. It directly underlay the later nineteenth-century collapsed material from the outer wall of the inner enclosure that was repaired by the OPW (see below).

The nineteenth-century wall enclosing the lower monks' garden

The nineteenth-century wall (F630) was assumed to have been erected in the 1820s (Ill. 121) and mostly overlay the earlier monastic enclosing wall (F640) (Ill. 122). Cutting 3 was opened along the wall to establish the exact connection between the two. The nineteenth-century wall (F630) was 1–1.2m wide

Ill. 2.121—Nineteenth-century wall F630 and its position relative to the early medieval wall F640 (Con Brogan, DAHG).

Ill. 2.122—Wall F630 in the 1950s, from north (DAHG Archive).

Ill. 2.123 — Photo showing how F630 was built on soil and rubble above F640 in places (E. Bourke).

at its base, 0.6–0.7m wide on top and varied in height from 1m to 1.75m. The first thing that was done was to strip a layer of sea campion with some brick and yellow sandstone from the lighthouse period from the top of the wall. Then, as excavation of the upper layers of the backfilled soil continued, it became clear that while layers F631 and F632 lay against the lighthouse wall, the latter oversailed the monastic wall on the inside by between 0.06m and 0.4m along the interior face and lay directly on top of F635 and F636 as they rose and fell along the inner face of the wall.

Wall F630 consisted of two faces with a rubble core, and it was clear that it was not structurally sound. Part of it had collapsed during the digging of the test-trench in 1993, as its rubble core was unstable. It was decided to take down the lighthouse wall in order to reduce pressure on the monastic wall beneath. During this operation a clay pipe bowl dating from 1800–30 was recovered from the rubble core.

As the wall was being taken down, the reason for its instability became apparent. It seems that the top of the monastic wall had not been cleaned or secured before the addition of the later wall, and in places up to 0.4m of earth, dislodged stones, rubble and campion was sandwiched between the two walls (F652) (Ill. 2.123).

Nineteenth-century layers and minor rebuilding work in the lower monks' garden

Cutting 2 was excavated to explain how the wall was rebuilt at its eastern end. It established that the wall was built on unconsolidated rubble, with a layer of dark brown organic material with stones and some mortar inclusions (F633) left as the base layer after the wall was re-erected. The amount of mortar in F633 decreased in the area not directly below St Michael's Church and the layer did not occur at all in Cuttings 6 and 7, which are to the west of the wall collapse. Above this a layer of dark organic material (F632) had built up, equivalent to F656 in Cutting A. At the western end of the site, in Cuttings 6 and 7, there had been minor rebuilding work to the steps leading down to the east entrance in the lower monks' garden.

Cutting 2. This cutting was opened originally to establish the stability of the exterior wall of the inner

Ill. 2.124—Constructing the revetment wall in Cutting 4 (E. Bourke).

Ill. 2.125—North–south wall (F637) west of Cell G during excavation (A. Halmschlag).

enclosure above F628. The layer of stone collapse (F655) underlay the late nineteenth-century repair at the base of the cutting. This had been exposed in Cutting A in 1993 and it was intended to expand the area to see whether the wall was as unstable as it had looked at that time. The base of the reconstructed wall (F628(3)) was on a series of north/south-aligned slabs, upon which the rest of the wall was built (Ill. 2.104). This raft of stone lay directly on the rubble of the earlier collapse; it was unstable and had to be retained temporarily by grouting it with concrete. The layer of collapse contained two stone settings that looked as if they were temporary settings to allow entrance onto the collapse from either side.

The first setting (F1050)[4] was at the east end of the cutting, propped against bedrock. It was about 1.2m high and between 0.5m and 0.8m wide. Its top was approximately at the same level as a step in the bedrock to the east of the cutting. The entire structure proved to be

[4] While the section for this area survives from 1993, the plan and detailed sections for Cutting 2, as well as the finds and note-books, were destroyed in the fire in August 1995.

completely unstable and it partly collapsed shortly after it was exposed. Several pieces of nineteenth-century pottery were found in the soil around it.

On the west side of the cutting a second, smaller stone setting (F1051) was uncovered, *c.* 0.4–0.5m wide and *c.* 0.6m high. It was built on top of a very steep layer of collapsed stones and its structure was very irregular and unstable.

Above the collapse was a thick layer of dark soil containing lumps of mortar (F633(2)). A stone cross was banked up against the rubble within this layer and two sherds of nineteenth-century pottery were also found. This layer was not bottomed in Cutting 2.

Above the collapse, and also above F633, a layer of dark humic soil had been deposited (F656). This layer sloped southwards into Cutting 5E to about midway towards the outer enclosure wall, where it tapered off to nothing. It seems to be equivalent to F632.

Cutting 4. In Cutting 4 a layer of collapsed building stone overlay F634(4). This layer (F655) is associated with the later nineteenth-century collapse illustrated by Dunraven (Ill. 2.126) which damaged St Michael's Church, and a drawing was prepared by the OPW architect showing how the conservation work was to be carried out (Ill. 2.105). This was supposed to have involved excavation to a certain depth and rebuilding on firm foundations. This did not in fact happen, and at the east end of the wall in Cutting 2 it was apparent that a raft of stones was laid out on the original collapse and that the new wall was built up from that. This collapse (F655) was apparent in both Cuttings 2 and 4 and measured, where bottomed, up to 1m in depth. This layer also contained some mortar, and many of the stones were suitable building stones, either flat or roughly squared. Above this was a layer of dark brown humus and small stones (F656), similar to F632, which had been thrown over the stones of F655 to disguise the shallowness of the foundations. This layer was up to 0.5m thick and directly underlay the campion, F631(4).

Ill. 2.126—Photograph from Dunraven 1875–7, showing collapse of wall of inner enclosure.

Cutting 1. Above F634 in Cutting 1 was a layer of dark humic soil with some stones (F633(1)). This contained practically no mortar inclusions, as it is west of St Michael's Church; it appears that F633 only had mortar inclusions in the areas directly beneath the church, with little or none being incorporated into the layer further west.

Above F633 another layer of humic soil containing few stones (F632(1)) ran the whole way across the cutting. It was up to 0.4m deep at the north wall and up to 0.7m deep where it met the outer enclosure wall. This cutting was extended after the fire and produced seven sherds of nineteenth-century pottery and a rubber/hammer stone. The surface of this layer had been disturbed in the nineteenth century, firstly by a layer of dark humic soil with some stones (F645), which only occurred in the centre of the cutting and did not reach far beyond the baulk to either side. This layer was up to 0.4m deep at its centre and measured 2.3m north–south and about 2m east–west, occupying an area from the centre of the cutting northwards. It was cut by another small layer of stone-free dark soil (F646(1)), which cut the southern end of F645 and was also cut into the surface of F632.

Cutting 5. Above F634 was a layer of loosely compacted, very dark brown soil (F633(5)). This contained few bird bones, none of which was burnt; it also contained several large building stones, one of which had a straight chiselled edge. This layer can be interpreted as soil and some stones from the nineteenth-century collapse of the inner enclosure wall. It continued below the new retaining wall on the north side of the cutting, particularly at the east end. It also contained a good number of large lumps of mortar. Two sherds of Ham Green A/B transitional ware came from this context. This layer lay on F634(5) at its western end and directly overlay F635(5) at its eastern end. Mostly the transition was clear, but in some pockets there was a mixture of F635(5) and F633(5); a new feature number (F650) was given to the single sherd of unglazed pottery from the mixed layer.

Above this layer throughout Cutting 5 was a layer of dark brown loose humic soil (F632(5)) containing some animal bones and five sherds of nineteenth-century pottery. Between the two layers was a transitional layer with both layers mixed together (F641(5)); it is not certain how this layer was formed but it may have been the result of spade cultivation.

Cutting 5E. This fine, loose, dark brown soil (F633(5E)) was up to 1.12m thick at its deepest around the middle of the cutting. It still contained lumps of white mortar, and the only change noted in it was the occurrence of decayed marine molluscs in its lowest levels. A small hammered bronze wire was found in this layer near the retaining wall.

A group of six large boulders (F659) were found within F633(5E). Four of them were almost vertical but had subsided at an angle southwards; one was lying flat on the slope inside them and one only just peeped up through F635(5E). The recumbent boulder measured 0.95m by 0.64m by 0.18m, while the uprights averaged between 0.45m and 0.85m in length and between 0.08m and 0.18m in depth. They were up to 0.4m high and sloping southwards. It is difficult to say what this feature represents. Its base was in F635(5E) but it stood up well into F633(5E); it may have been the edge of a terrace or it could have been a platform, given the one surviving recumbent stone.

Above the collapse, and also above F633, a layer of dark humic soil (F656) had been deposited. It sloped southwards into Cutting 5E to about midway towards the outer enclosure wall, where it tapered off to nothing. This layer clearly seems to be equivalent to F632.

Cuttings 6 and 7. F633 did not occur in Cutting 6. A dark humic layer lay above F635 in both cuttings. This material had been dug through on several occasions for the insertion of the small walls F662, F664 and F665, but distinctions between the digging and backfilling associated with this work could only be

Ill. 2.127—Wall F664 from north (A. Halmschlag).

made where the trenches for the walls had been dug into F635.

The layer of loose dark soil (F632(6)) directly overlay F635 in Cutting 6, and during the time that it was accumulating there was a remodelling of the steps leading down to the east entrance. Two walls were built at this stage. The first (F662) was built against the north face of the steps as they exited into the upper monks' garden. A trench (F663) was dug into F635 and the wall was constructed within it. The trench was 0.42–0.87m wide originally and its backfill was a mixture of F635 and F632. This wall (F662) was 3.2m long and about 0.4m wide, except at its east end, where it widened to *c.* 0.6m. It was built against the outside of the steps and its base partly oversailed the steps themselves. The wall, given its thickness, was composed of quite small stones, with only a few spanning the full width from the front of the wall to the back.

Next to this wall was a second wall, only the lower courses of which survived (Ills 2.127 & 2.128). This wall (F664) curved eastwards from the end of F662 and was located in an extension of the foundation trench dug for both walls. It was *c.* 1.8m long and only consisted of a front face, roughly constructed against the slope of the garden. At its eastern end it was two stones thick, with the stones aligned north/south at right angles to the direction of the wall. The wall appeared to be petering out as it reached the eastern baulk. There was one incised cross-slab in its front face and there was a brick, with mortar still attached to it, at its eastern end. One piece of yellow sandstone—'Portland Stone'—from the lighthouse period was also built into the wall.

South of wall F662 was another (F665) that abutted F662. This wall, which consisted of a front face only, was laid out with the short axis of the stones facing the edge of the steps. Its stones ranged from very small (0.12m by 0.06m) to medium size (0.52m by 0.22m). The wall was dug into F635 and survived to a height of *c.* 0.6m. It ran straight north-east/south-west and ignored the curve of the steps. The area east of the wall was backfilled with loose dark soil with few mortar inclusions (F666). This layer was finer in consistency than F633 and there were no finds from it. On the western side of F665 the gap between the wall and the steps was backfilled with loose rubble (F667).

All this material beneath the campion and above F635 was registered under F632(6) and F632(7). A clay pipe, eleven sherds of nineteenth-century pottery, a sandstone piece of 'Portland Stone' and a water-rolled pebble were found in Cutting 6. A clay pipe, a hone stone and three sherds of nineteenth-century

Ill. 2.128—Wall F664 from south (A. Halmschlag).

pottery were found in Cutting 7. Cuttings 6 and 7 are to the west of the nineteenth-century collapse of the outer wall of the inner enclosure and thus none of the debris associated with that collapse would be expected in these cuttings.

Campion layer

Cutting 1. Above F632 was the campion layer, which survived across the cutting from north to south. This layer (F631(1)) measured up to 0.34m in thickness. Two modern glass tumbler fragments, which survived the fire, were found in this layer. Above this was a layer of earlier excavation spoil (F629), which had formed the base of a stone stack to contain stones from the 1993 excavation.

Cutting 3. This layer (F631(3)) averaged 0.3m in depth in this cutting. Three sherds of glass bottle, a turquoise glass bead, a sherd of an iron cauldron and twelve sherds of nineteenth-century pottery were recovered from it.

Cutting 4. This layer (F631(4)) averaged 0.15m in thickness in this cutting. All finds were destroyed in the fire.

Cutting 5. This layer (F631(5) and F631(5E)) averaged 0.2m in thickness. The finds from it were destroyed in the fire.

Cuttings 6 and 7. This layer (F631(6&7)) ranged in depth from 0.07m at its northern edge to 0.2m at the south. Two sherds of modern glass and seven sherds of nineteenth-century pottery were recovered from it.

Dating

A series of radiocarbon dates was obtained from the deposits in the lower monks' garden. The first of these is a date of AD 1024–1154 from F633, the layer of nineteenth-century collapse. Although some

Ham Green B ware was also recovered from this layer, there is no doubt that it is actually part of the debris from the collapse of the south wall of the inner enclosure. The fact that there was a great deal of mortar in this layer from beneath St Michael's Church and the fact that it ran down from the base of the rubble in Cutting 2 indicate this clearly.

There were three dates from the earlier redeposited soil (F634), AD 726–887, AD 773–946 and AD 689–870. There was no surviving pottery from this layer but there were two fragments of stone and mortar, a bone gaming piece and an iron rod of uncertain function. These dates show that the soil that made up this material must have been redeposited from elsewhere in the monastery, as there are secure pottery dates of the twelfth to fourteenth centuries from the layers below.

F635 produced a date of AD 1037–1167, but there are sherds of local pottery and a sherd of Orléans-type pottery securely from this context. Again this argues for the soil having been redeposited in the garden.

There is a date of AD 723–943 from F642, which is a transitional layer between F635 and F636. Again, there is no doubt that the material has been introduced from elsewhere, as the layer underlying it produced a later radiocarbon date.

A date of AD 1021–1153 was obtained from charcoal in F636. This layer produced a fish-bone pin and bead. The layer of collapsed stone was not normally filled with soil; where found, there was air between the stones. F638—a feature number given to finds recovered from close to the surface of this layer to take account of the fact that they may be residual (see above)—produced an iron object, a fragment of a stone plate and two sherds of nineteenth-century pottery.

Thus we can see that we must go for the latest uncontaminated date, and that is for the deposition of the medieval pottery. So the only thing we can say for certain is that the initial collapse took place at

Ill. 2.129—General view of monastery after conservation (Con Brogan, DAHG).

some time prior to the mid-fourteenth century (Ills 2.129–30).

Ill. 2.130—General view, after conservation, from north-east (Con Brogan, DAHG).

Interpretation

It was clear from the excavations at the east end of the garden (see above) that there were a number of phases pre-dating Cell G that post-dated the outer enclosure wall (F640). Only hints of this were revealed in the excavation of the middle part of the garden in Cutting 4, parts of Cutting 5 and in Cutting 6, where a layer of dark organic material overlay the bedrock at the north side of the excavation, just beneath the wall of the inner enclosure and underneath the collapse layer (F636).

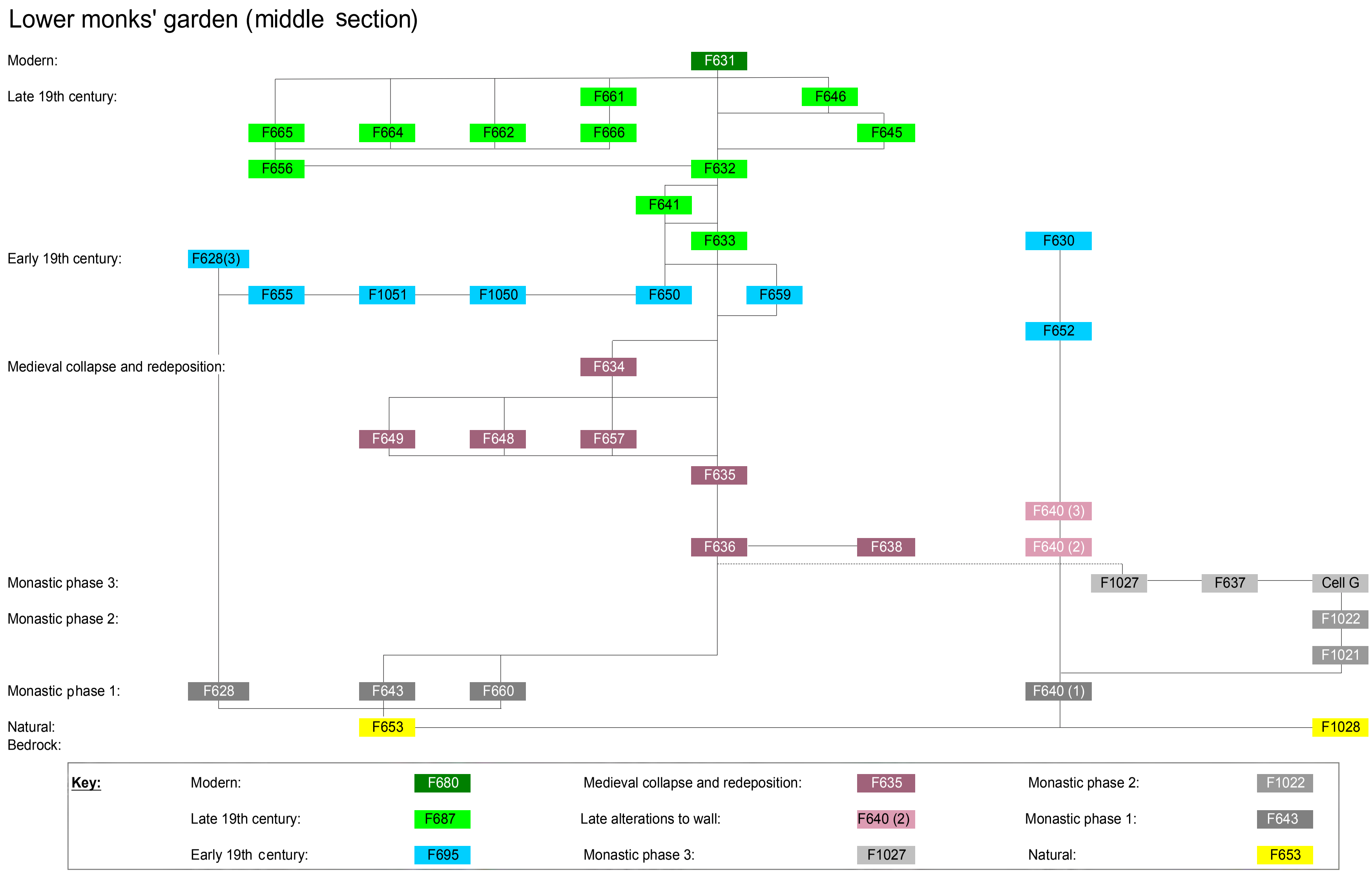
The next stage was the collapse of part of the wall of the inner enclosure (F628(1)), which left a debris field of large stones sloping southwards across the cuttings. This appears to have been too difficult to move and a layer of redeposited yellow sandy soil was laid out across this portion of the site. A smaller layer of organic medieval material (F634) was deposited on the surface of this layer. There was an informal pathway down to the east end of the garden, which still housed a standing building (Cell G), and there were stone terraces on the north side of this pathway, perhaps to create a small garden. The fact that there is not more medieval activity may not be surprising, as there are indications that the site was semi-abandoned from the thirteenth century onward. The partial rebuilding of the wall-walks of the outer wall (F640(2 and 3)) appears to date from about this time.

At some stage in the 1820s the outer wall of the outer enclosure of the monastery was raised, probably associated with the use of Cell G by the lighthouse-builders and the need to provide shelter on the way down to it. This wall was poorly built and was not fully founded on the earlier wall.

The second collapse of the outer wall of the inner enclosure occurred in the late nineteenth century. This wall was reinstated by the OPW but not on secure foundations. The debris from this collapse (F633) ran down to the nineteenth-century wall, and a subsequent development of soil raised the area inside the wall by between 0.5m and 0.8m. There was little subsequent activity, except for the development of a layer of campion that covered the whole garden (Ill. 2.131).

The fact that material with early medieval dates was redeposited from elsewhere on the site means that, although we cannot talk in specific terms about the individual deposits, we can speak in general terms about the occurrence of insects, plants and wood on the island in an early medieval milieu (see general discussion on environmental issues).

The pottery from the lower monks' garden is more exotic than expected, with non-local pottery predominating, and the finds, though few in number, are intriguing. The history of collapse in this part of the monastery is complex and shows that the evolution of the monastery continued even after its primary function was over.



Ill. 2.131—Matrix for lower monk's garden (middle section) with selected layers from the east end added to show all phases.

The Upper Monks' Garden (90E54)

Claire Cotter

Introduction

Repair work to the southern retaining wall of the terrace known as the upper monks' garden (i.e. the outer enclosing wall) necessitated the removal of the deposits immediately inside it. This report refers to the westernmost section of the wall (Ill. 2.132). An area measuring 8m east–west by 5m north–south was opened and stepped down to a maximum depth of 2.8m adjacent to the retaining wall (Ill. 2.133). The excavation revealed that the present retaining wall was a secondary feature constructed largely on the foundations of a more substantial earlier wall. The only finds recovered were from the secondary levels and date from the nineteenth century (Ills 2.135–6).

Ill. 2.132—Cutting during excavation from south-west (Con Brogan, DAHG).

Ill. 2.133—Cutting during excavation from north-east (C. Cotter).

Entry to the upper monks' garden is via an opening through a north–south step in the south wall roughly midway along its length (Ill. 2.134). A pathway, demarcated by low uprights and some horizontal slabs, runs east from this opening towards the lintelled entrance to the inner enclosure of the monastery (south entrance 2, inner enclosure) (Ill. 2.139). The pathway (F707) measures 1–1.3m in width and was marked for most of its length by uprights that varied in height between 0.14m and 0.47m. Six large slabs formed the southern side of the path towards its western end. The slabs rested on uprights, thus forming a box-like construction that prevented subsidence. The surface of the path consisted of compacted rubble and clay, about 0.1m in depth on average, which overlay nineteenth-century deposits. This pathway was not excavated but remained *in situ* adjacent to the cutting.

Ill. 2.134—The nineteenth-century entrance in the 1950s (DAHG Archive).

The present retaining wall (F700) along the south side of the upper monks' garden is 1.5m in height at the entrance and batters inwards from a width of 0.71m (just below present ground level) to 0.42m at the top. The easternmost section was rebuilt in 1998 and the walling between this and the entrance curves markedly inwards. There is a vertical drop of *c.* 5m on the outer face of the wall and the ground slopes away fairly steeply beyond this.

The projecting foundations of an earlier wall (F701) can be seen along the outer face of the terrace (Ill. 2.138). The surviving upper edge of this earlier wall varies from 0.45m below present ground level at the western end of the excavated area (Ill. 2.137) to 2m below present ground level at the eastern end. These foundations were laid on large, natural boulders resting on the bedrock. Over time the surviving upper courses of the wall, particularly at the western end, have been pushed outwards, rendering the whole structure unstable.

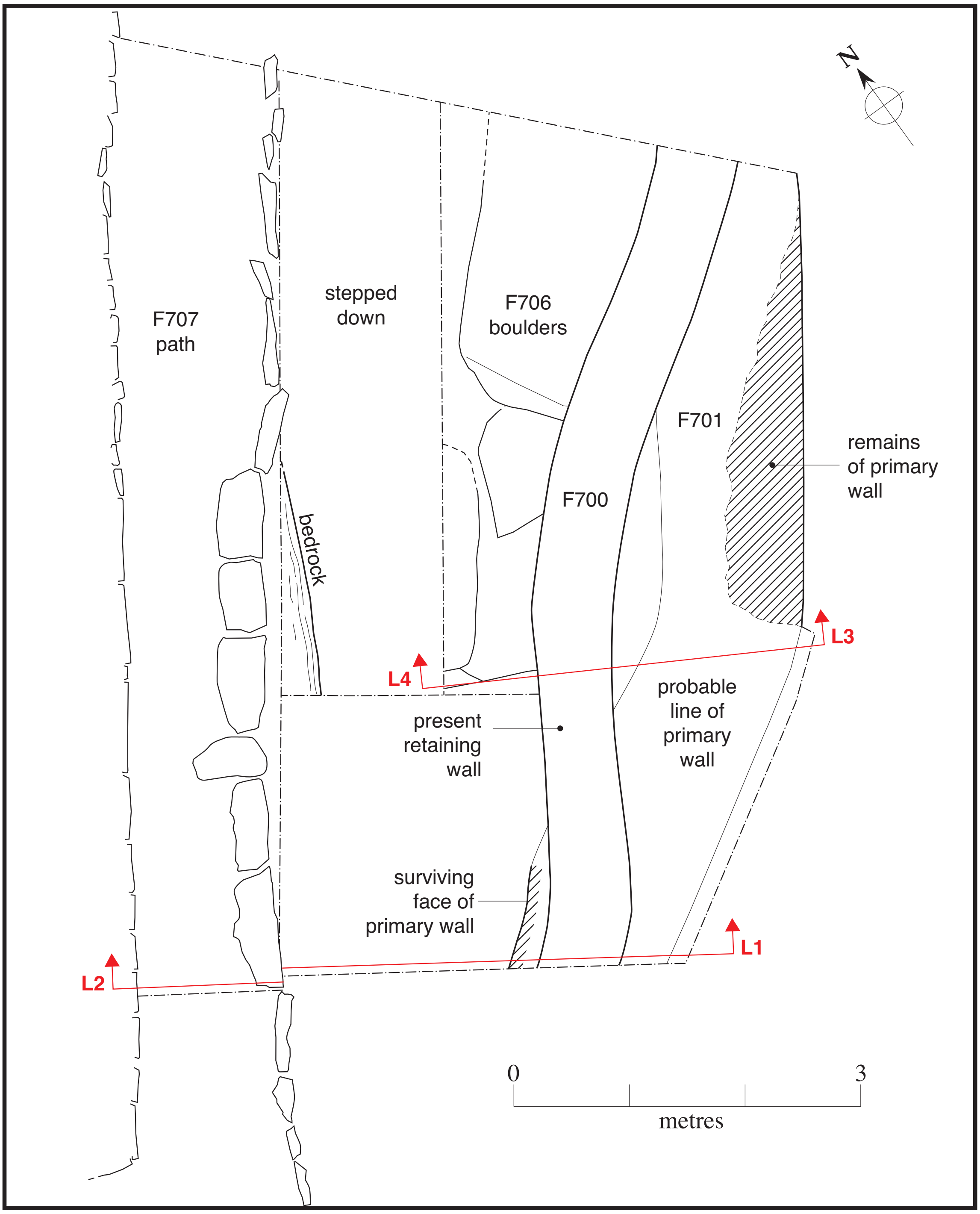
Prior to excavation, it was apparent that the present retaining wall represented a rebuilding, as it curved back inside the line of the original structure. As part of the repair work involved the insertion of concrete shuttering behind the wall, an area 8m by 5m was excavated and stepped down to facilitate this work.

The excavation

Monastic period

The earliest layer on the site was a layer of large boulders (F706) which ran across the base of the cutting and could be seen protruding from underneath the front of the original east wall (F701).

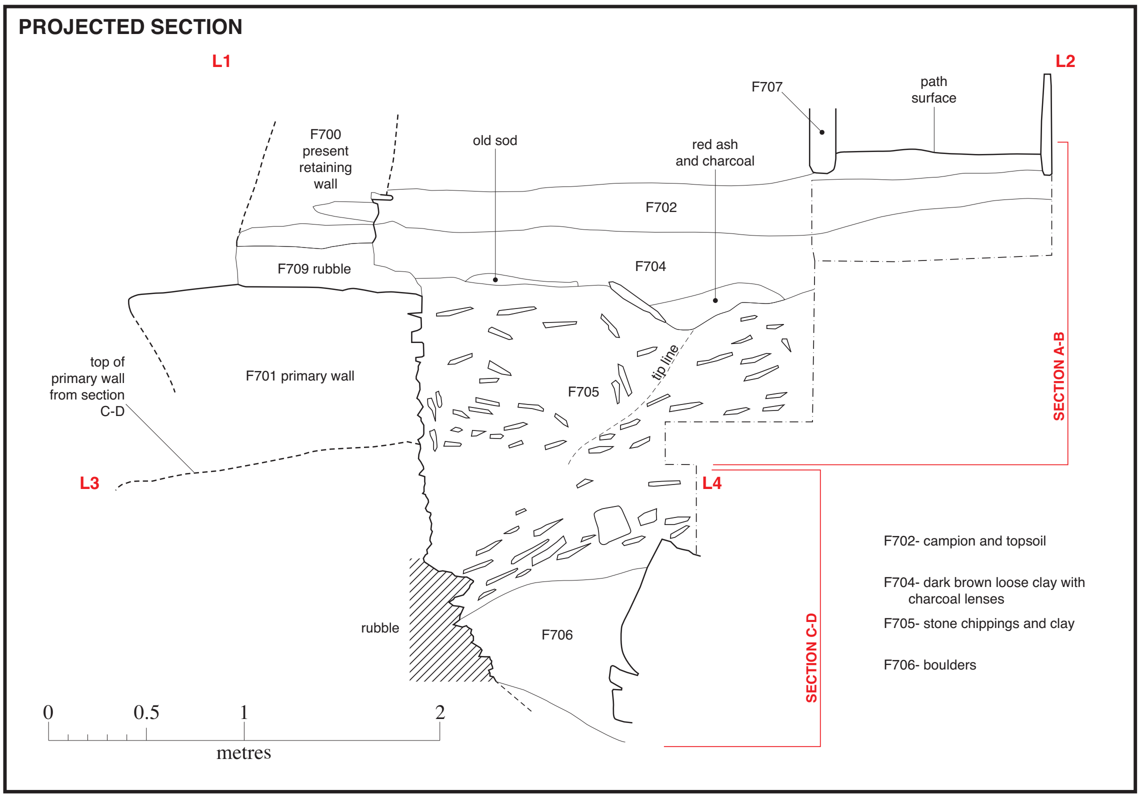
Towards the centre of the cutting bedrock outcropped *c.* 1m below present ground level and then



Ill. 2.135—Plan.

dropped vertically to a group of large boulders. The boulders measured up to 1.6m in length and 0.9m in height, and in places continued under the foundations of the original retaining wall.

The internal face of the earlier wall (F701) was not visible before the excavation began. Removal of the terrace topsoil (F702) revealed that the inner face survived only at the western end of the excavated area. The extant section runs for a distance of 0.9m from the west baulk and curves outwards west–east. Three courses of faced walling were evident at a maximum depth of 0.75m below present ground level. Below this level the wall consisted only of unfaced rubble. The original wall was therefore about 1.2–1.3m wide (allowing 0.2–0.3m for the displacement of the present upper courses). Over the remainder of the site, the bulk of the original wall had collapsed down to just above the boulder layer (F706). At



Ill. 2.136—Section

Ill. 2.137—Boulder layer inside cutting (C. Cotter).

Ill. 2.138—Boulder layer at exterior face of wall (C. Cotter).

Ill. 2.139—Pathway (C. Cotter).

roughly midway along the cutting, remains of the rubble core were evident, thus providing an approximate line for the wall. The wall had been butted back against the large natural boulders (F706) that formed the original ground surface prior to the construction of the terrace itself.

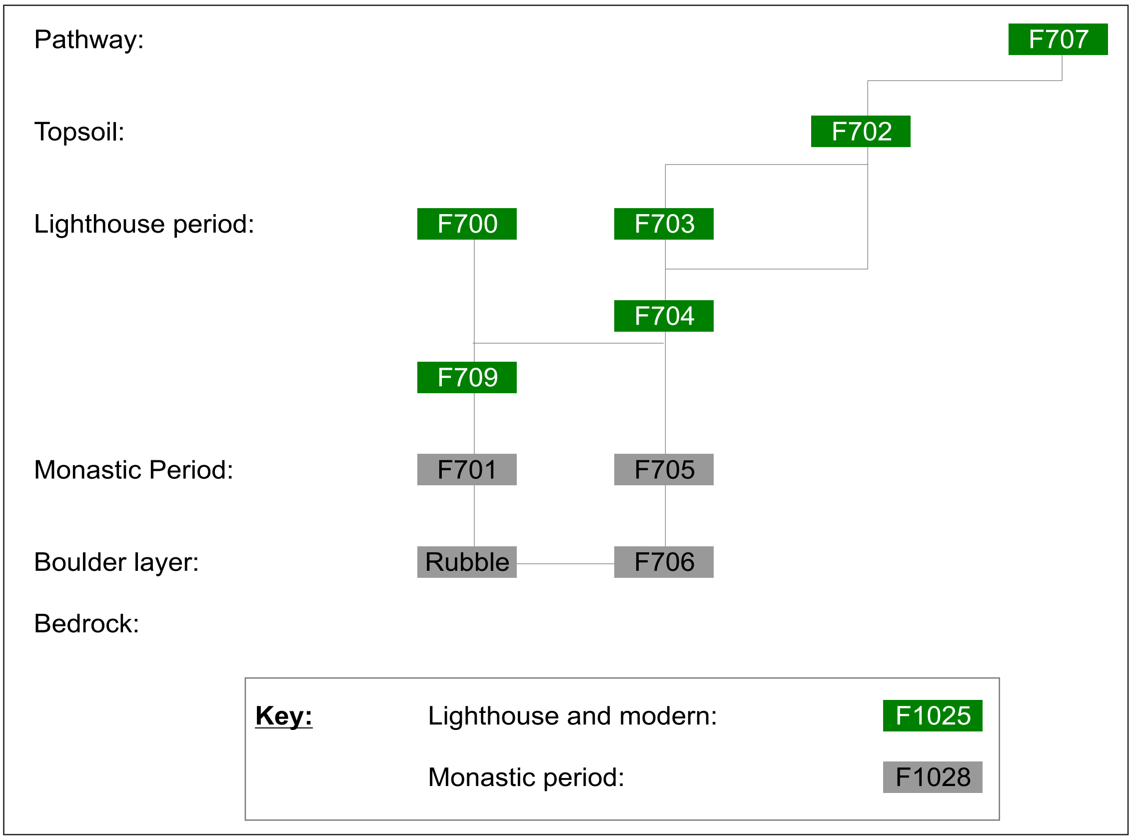
Above the boulder layer and behind F701 was a layer of stone chippings in a matrix of mid-brown silty clay (F705). The layer was fairly homogeneous throughout, with localised variations occurring mainly as a result of water-sorting or settling. The chippings consisted in the main of thin-sectioned spalls, 0.1–0.15m long, which had been tipped in from above. This layer was up to 2.2m deep in the western half of the excavated area but shallower elsewhere, indicating the possibility that a quantity of this material may have been carried away when the wall (F701) collapsed. A large flagstone was uncovered within this layer in the south-west quadrant. No finds were recovered and only an occasional charcoal fleck was observed.

Nineteenth-century material.

The secondary wall (F700) was constructed largely on the foundations of the original wall but was much narrower. At the eastern and western ends of the excavated area it was set back *c.* 0.5m from the original external face. Between these points, however, the secondary wall was deliberately curved inwards, with the result that, at roughly the mid-point of the cutting, the external face of the later wall lies more or less directly over the internal face of the original wall. At the western edge of the excavation the internal face of the original wall projects 0.17–0.25m inside the later wall.

The greatest area of collapse of F701 was in the eastern half of the cutting. At the eastern edge of the cutting, the secondary wall (F700) extended down for 2m below present ground level, with a substantial batter on its outer face. At the western edge of the excavated area, the foundations of the secondary wall lay 0.3m below present ground level and rested on a layer of rubble (F709) overlying the original wall.

A mixed deposit of dark brown loose clay, with spreads of red ash and some charcoal (F704), abutted the internal face of the secondary wall F700. The layer varied in depth from 0.5m at the western end of the excavation to 1.3m at the eastern end, where a more substantial portion of the earlier wall had fallen. In places this layer lay directly on top of the silty clay F705, but in other places a fragmentary layer of old sod lay on the surface of F705. Fragments of coal, about a dozen pieces of iron slag/bloom and a sherd



Ill. 2.140—Matrix for upper monk's garden.

of nineteenth-century pottery were recovered from F704. A clay pipe bowl decorated with a thistle motif was found *c.* 0.35m below the present ground level. This type dates from the last quarter of the nineteenth century.

Above F704 at the eastern end of the cutting was a layer of peaty sod (F703), up to 0.12m thick. This sod lay 0.18–0.3m below present ground level and ended abruptly at the south side of the pathway. It probably represents the ground level in the terrace prior to the spreading of soil there in 1988 (Ill. 2.140).

Modern material.

The upper layer encountered consisted of topsoil (F702), which varied from 0.18m to 0.3m in depth. Some of this material was spread here in 1988/9, when this part of the terrace was cultivated experimentally.

The finds[5]

Pottery

Five sherds of undiagnostic earthenware and creamware were recovered from the wall (F700) and from the nineteenth-century levels (F704).

Clay pipe

An almost complete clay pipe with a thistle motif was found in the upper levels of nineteenth-century material. The pipe bears all or part of the maker's stamp—ACY and mould number 203. These pipes were manufactured mainly in the period 1870–1900, but later examples of the type are also known. A portion of an unmarked clay pipe stem was also recovered from the same material.

[5] The current location of these finds is not known, thus they are not included in the finds catalogue (Appendix I).

Interpretation

The original retaining wall at the south side of the upper monks' garden was approximately 1.2–1.3m wide and appears to have curved slightly outwards. The inner edge of the wall is faced to a depth of 0.75m below present ground level, indicating the probable original ground level. No finds were recovered from the wall or the deposits that abutted it. The layer of stony chippings F705, which formed the bulk of the fill over the western half of the site, appears to be contemporary with the original wall and may be the detritus from quarrying or similar activity. This material is very similar to the foundation material from the garden terrace on the South Peak.

At some stage in the history of the site a portion of the retaining wall collapsed, probably carrying some of the terrace soil, backfill layer (F705) and other material with it. The greatest collapse appears to have occurred in the eastern half of the excavated area, where the later wall extends down to 2m below present ground level, as opposed to 0.3m at the western baulk. No hiatus was noted between the sterile layer of rock chippings and the nineteenth-century material. It is likely that some excavation was carried out here to facilitate the reconstruction in the nineteenth century.

The clay pipe was the only closely datable object recovered from the nineteenth-century material. Lying as it did near the surface of this horizon, it can only be considered as a *terminus ante quem* for the construction of the secondary wall. The pipe was manufactured around the last quarter of the nineteenth century, by which time the monastery was no longer occupied by the lighthouse-builders. Some structural work was carried out by the Board of Works at the monastery in the last quarter of the nineteenth century, and it is possible that the retaining wall was rebuilt at this time. The inclusions in the nineteenth-century levels and in the wall itself (coal, ash and slag) suggest, however, that the reconstruction was undertaken during the occupation of the site by lighthouse personnel.

2.2.9 STRUCTURE AT BASE OF EAST STEPS (93E195)

Edward Bourke

Introduction

In 2002, following the monitoring of the repairs to the east steps, a structure was identified at the base of the steps (Ill. 2.141) which warranted investigation and excavation. At the current base of the east steps there was a slight platform and a small area of sloping ground with some rock-cut steps at the edge of the cliff (Ill. 2.142). This cliff was formed when the lighthouse-builders dynamited out the landing below and commenced building the modern road to the lighthouses. Inspection of the base of this platform showed that the lowermost steps were much narrower than the others and turned at almost a right angle to them, in order to avoid an area of bedrock and also to respect a structure built into the side of the platform. It was clear that there was the north–south wall of a building with a return and a jamb in it. It appeared that some form of long, narrow structure had originally stood on the area of sloping ground.

Excavation was intended to provide information as to the structural soundness of the base of the plinth, and to see whether any trace of the south wall of the structure survived. It was also intended to examine the stratigraphy on the inside of the structure in the hope of determining its purpose and, if possible, its date.

Excavation

Excavation commenced towards the end of the season in 2002 and revealed that there were indeed some further structural remains in addition to those visible in the initial inspection. A threshold was revealed, as well as some layers of ash and paving. The site was covered up and left for the winter, and was excavated during the 2003 season (Ill. 2.143).

Features pre-dating structure

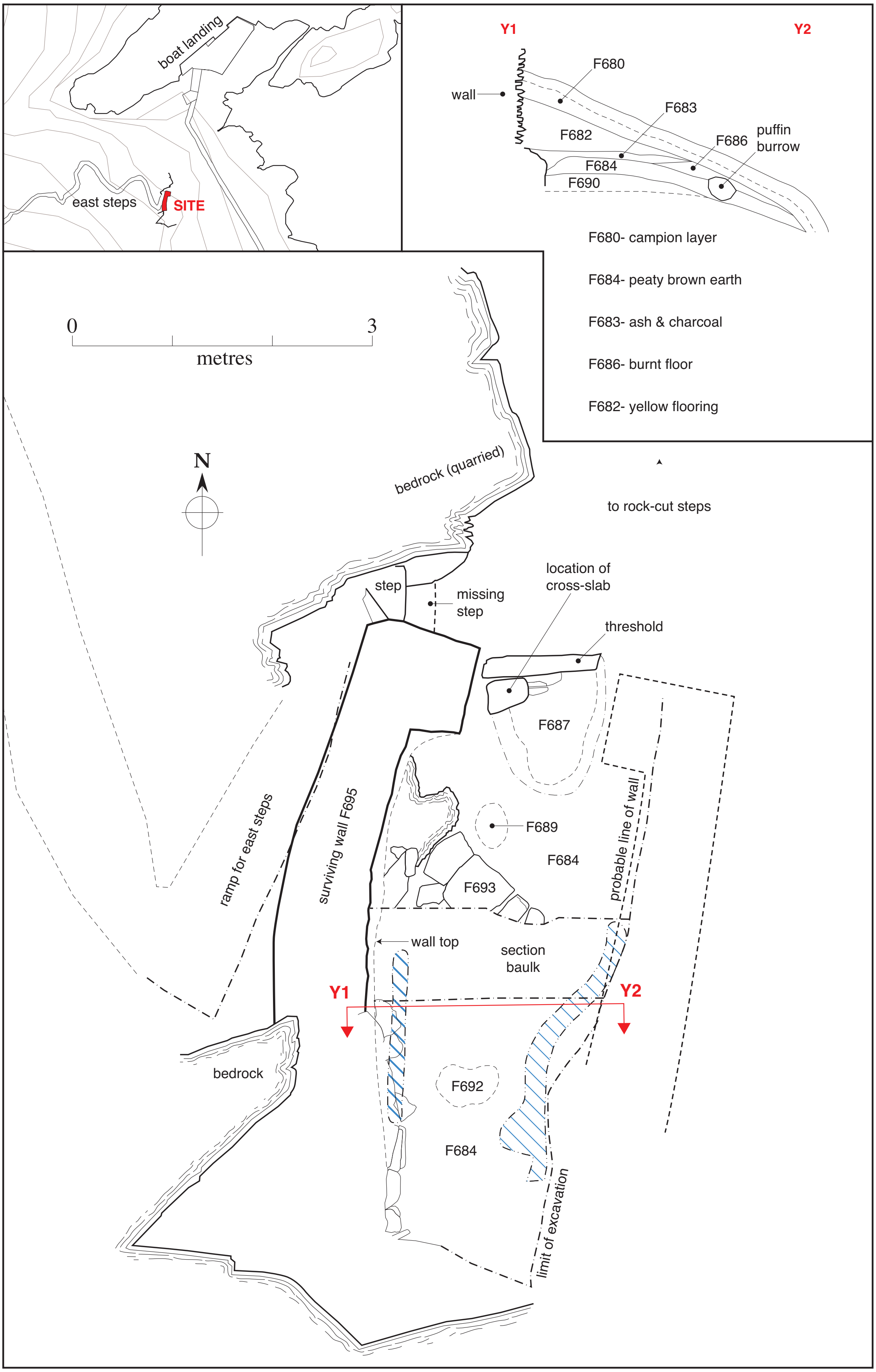
The basal layer was a dark grey friable soil that underlay most of the building (F690). This layer was left *in situ* when it became clear that it ran under the orthostats at the base of the west wall of the structure, and therefore its depth was not ascertained. Three large samples were taken for analysis in relation to insects, seeds and charcoal, but no useful data could be derived from them. A stone cross fragment was recovered from the surface of this layer and directly underlay the threshold of the structure.

Description of the structure

The western wall of the structure is the only one that survives (F696). It is 5.5m long with a jamb, 0.4m by 0.85m, at the north end. In the area of the jamb the wall is of drystone construction, using smallish stones. Further south, the construction consists of an orthostatic base surmounted by similar drystone masonry (Ill. 2.144). The middle part of the wall is built directly on bedrock, but the northern end is built upon layer

Ill. 2.141—General view before excavation (Con Brogan, DAHG).

Ill. 2.142—End of rock-cut steps above the landing (E. Bourke).



Ill. 2.143—Plan and section.

Ill. 2.144—Wall showing orthostatic base (E. Bourke).

Ill. 2.145—Wall and entrance jamb (E. Bourke).

F690. The wall displays evidence of corbelling, particularly at its north-west corner close to the jamb (Ill. 2.145). A threshold stone (F694), aligned east–west and 1.19m wide, appears to give a minimum width for the entrance of the structure. It was a long, flat stone, 1.19m by 0.38m, with four smaller stones on its the inner side.

The structure is built onto the end of the east steps, which respect it as they rise up in front of the structure, heading in a westerly direction for three steps and then turning south along the back wall (Ill. 2.146). In front of the structure there is an area of flat ground, at the end of which a set of rock-cut steps would have descended to the original landing. Only five of these steps survived the dynamiting out of the modern landing place.

Occupation layers

Overlying the threshold there was a layer of ash (F687), which measured 1.32m east–west, 1.26m north–south and up to 0.15m in thickness. Abutting this layer to the south was a layer of compacted small stones (F688), which petered out at the break in slope. A similar layer of compacted stones (F689), measuring 0.46m by 0.32m by about 0.05m in thickness and containing a mixture of gritty dark brown natural, lay at the same level against the paved area. Bedrock was exposed along parts of the western edge of the interior of the structure. A layer of paving stones (F694) had been placed against the bedrock to level out this area. The paving stones measured up to 0.55m by 0.58m and were up to 0.09m thick.

On top of all the features described above there was a layer of yellow stones in a gritty matrix (F684), which seems to have formed a floor level across the structure and measured up to 0.18m in depth. The western part of the layer was level, but it seems to have subsided downslope to the south. This feature was overlain by a layer of brown gritty soil with small stones and occasional tiny lenses of charcoal (F686), which was up to 0.14m thick and occurred at the edge of the break in slope. Above this was a layer of ash with some charcoal, which covered the eastern end of the structure (F683); it measured 2.45m east–west, 2.45m north–south and up to 0.06m in maximum depth. At its western end it had slumped into an area of erosion between the west wall and the underlying floor, where its thickness increased to 0.2m. A smaller spread of ash and charcoal (F691) at the western end of the structure measured 0.6m east–west, 0.41m north–south and up to 0.07m in thickness; this also overlay F684.

Ill. 2.146—Entrance jamb and steps (E. Bourke).

Features post-dating the structure

Overlying these layers was a layer of brown peaty earth with stones (F682). This was up to 0.95m thick against the west wall of the structure and petered out to the east at the break in slope. The stones were mixed up through the layer, lying in every direction. A large number of roof slates were found in this layer, which seems to represent the destruction of the structure.

Above this was a layer of campion roots and peaty soil (F681), 0.2–0.3m thick, which followed the slope downwards towards the east. A second layer of campion, 0.1–0.2m deep, had developed on top of this (F680) and also covered the entire area excavated.

Interpretation

This structure at the base of the east steps has posed almost as many questions as it has answered. Its wall had the same orthostatic base as the plinth under the large oratory, the large oratory itself and the inner wall of the oratory on the South Peak. The fact that it is built onto a set of steps is

Ill. 2.147—The site after conservation (Con Brogan, DAHG).

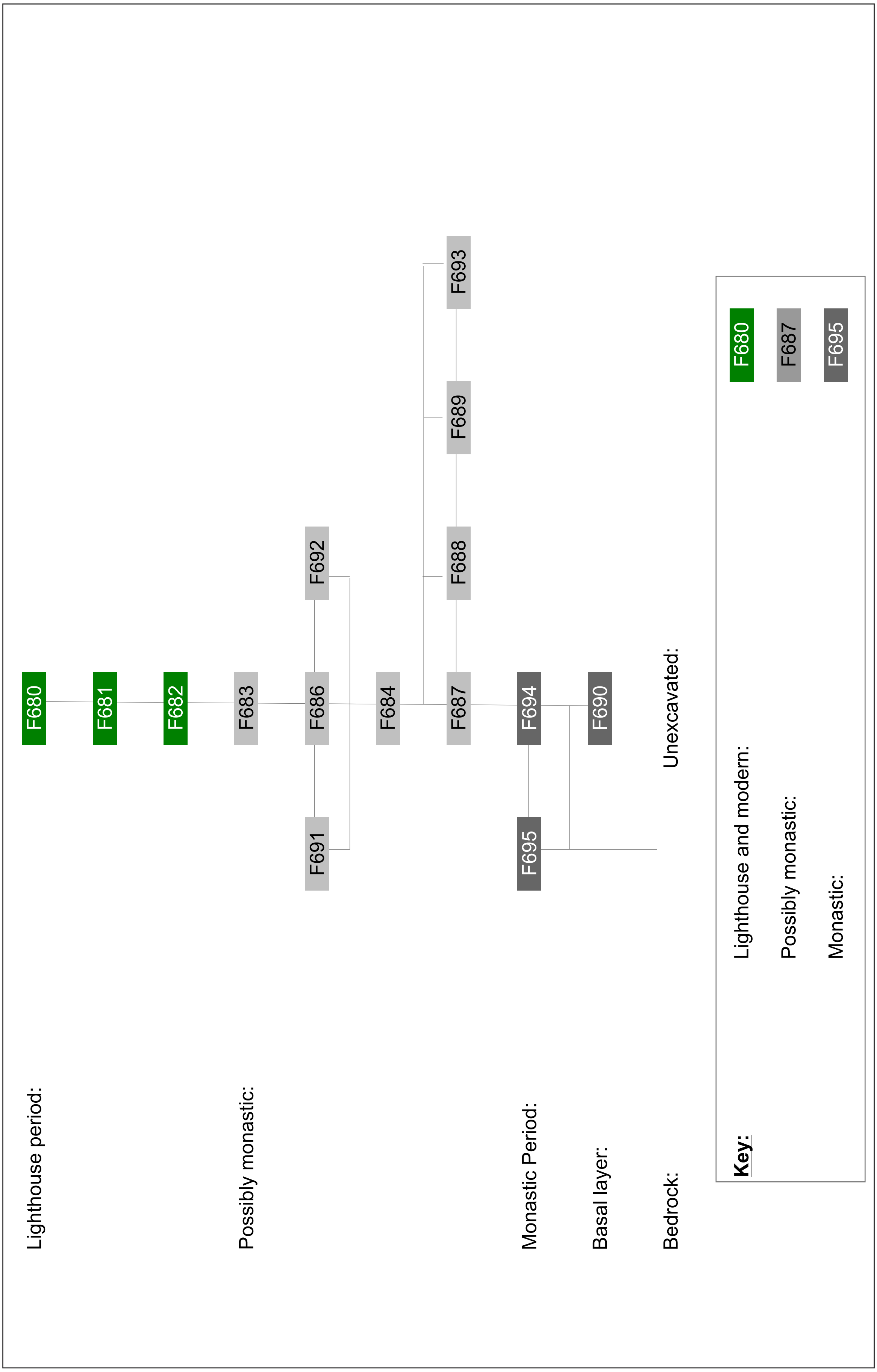
reminiscent of the oratory on the South Peak, where the steps run up the side of the building (Ill. 2.146).

The top three layers can definitely be assigned to the lighthouse period and later. There was one piece of iron from the top of the wall of the structure (F696) and no finds in the campion layers. A large quantity of slate was mixed through F692 and this appears to be from around the time of the dynamiting and the destruction of the south wall of the structure. There are no finds associated with any of the stratigraphy below this, except for the cross fragment from under the threshold, which pre-dates the construction of this building.

From an architectural point of view, the structure is unusual in that it uses bedrock for its rear wall, an orthostatic base with an upper level of flat-laid stones for its west wall and horizontally laid stones for the interior of the jamb. There are traces of corbelling along the west wall. Extrapolating to make the building roughly symmetrical, the internal dimensions would have been 2.3m by 5.1m with a wide, north-facing door, given that the threshold stone is *c.* 1.2m long. It is unlikely that the building was completely corbelled, as such a long, narrow building would be difficult to roof in that way. In fact, it is difficult to see how it might have been roofed. Given the large quantity of slates recovered from F682, it is possible that the lighthouse-builders reroofed the building, before accidentally destroying it.

The function of the building is also unclear. It might have been a storehouse placed close to the east landing so that material could be moved there prior to being carried up to the monastery. It may perhaps have been a place high enough above the landing to drag a boat out of the way of even summer storms (Ills 2.147–8). This makes a certain amount of sense, but it would require the route from the landing to have been of a reasonably gentle gradient and considerably less precipitous than the route above the structure— something we can never know, as the lighthouse-builders dynamited away all traces of this route in building their landing.

Ill. 2.148—The site during excavation, showing relationship between wall and steps (C. Brogan, DAHG).

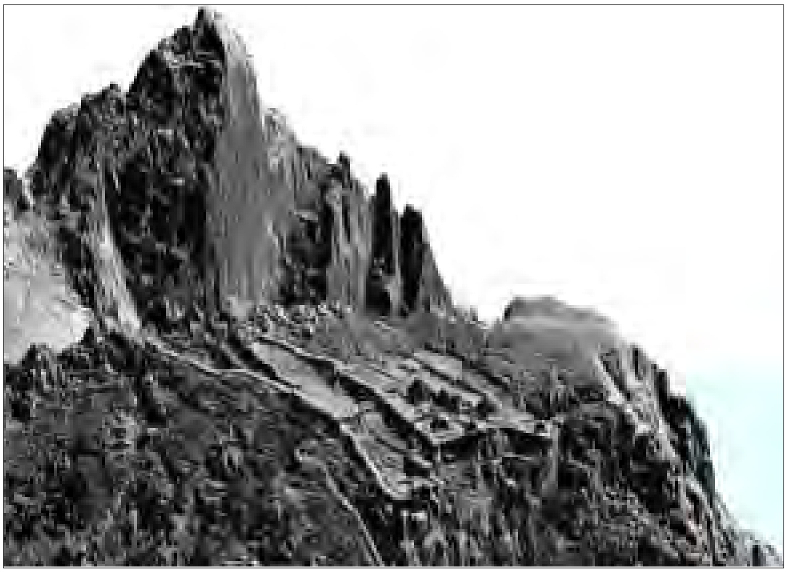


Ill. 2.149—Matrix for structure at base of east steps.

2.3 THE SOUTH PEAK

2.3.1 INTRODUCTION
Alan R. Hayden

Eighteenth- and nineteenth-century maps and accounts of pilgrimages to the South Peak and a few brief twentieth-century second-hand accounts mention the existence of man-made structures on the 218m-high South Peak of the island. It was only in the late 1980s, however, when Walter Horn, Jenny White Marshall and Grellan D. Rourke explored and surveyed the South Peak that the true extent and significance of the remains that survived there were revealed. They described and discussed their discoveries in *The forgotten hermitage of Skellig Michael* (Horn *et al*. 1990),[6] concluding that the dramatically situated drystone terraces and rock-cut features constituted an early medieval hermitage and pilgrimage site, perhaps unique in the physical challenge it provided.



Ill. 2.150—LiDAR image of the South Peak looming behind the monastery on Skellig Michael (DAHG).

Ill. 2.151 (left)—The South Peak from the east (A.R. Hayden).

Ill. 2.152 (right)—The South Peak from the south-east (A.R. Hayden).

[6] The second edition (published 2002) is also referred to below, as it contains a number of different photographs.

After the general completion of conservation works in the monastery on the island in 2003, the OPW focused the attention of its conservation works on the South Peak, where monitoring had demonstrated a visible and ongoing deterioration of the structures that survived there.

Seven seasons of archaeological excavation, survey, exploration and conservation works were undertaken on the South Peak between 2004 and 2010.

Ill. 2.153—The South Peak from the south-west (A.R. Hayden).

Ill. 2.154—The South Peak from the west (A.R. Hayden).

Ill. 2.155—The South Peak from the north-east (A.R. Hayden).

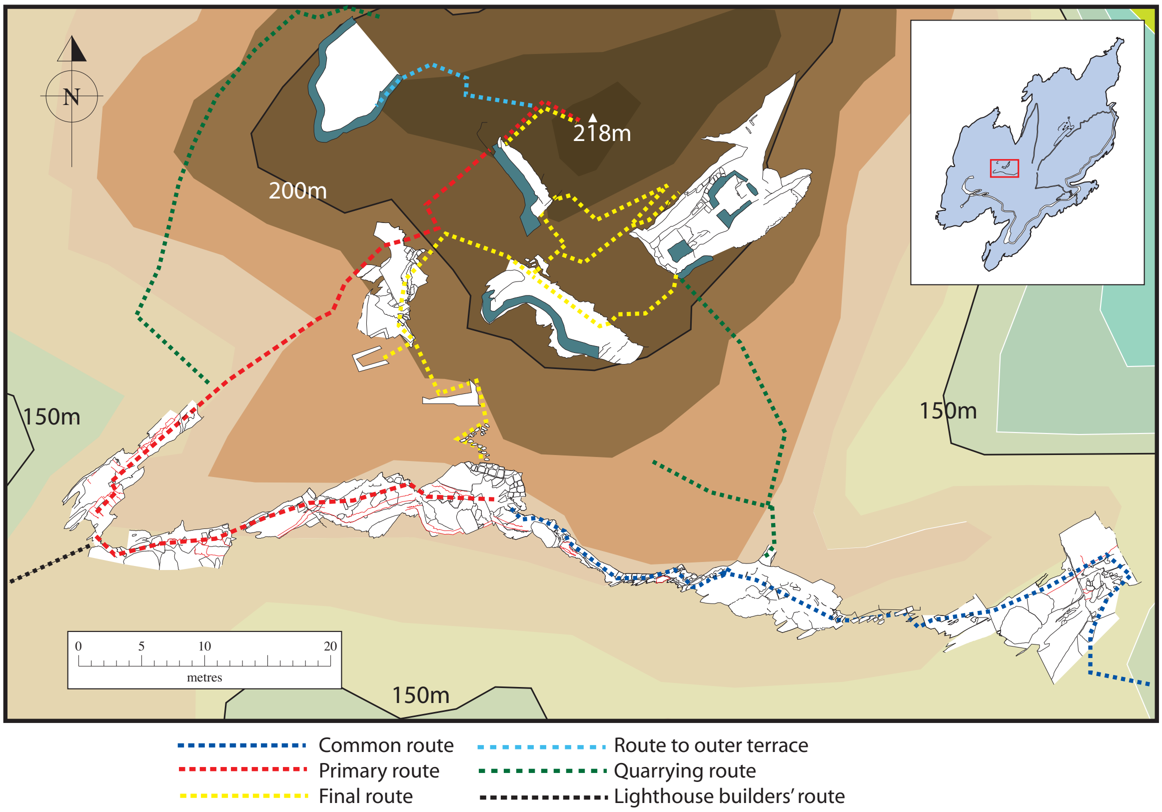
Ill. 2.156—The South Peak: looking up at the east end from the north steps (A.R. Hayden).

The South Peak is a harsh, erosive and unforgiving environment for both built structures and human beings. Its height, exposed location, steep slopes and confined spaces presented a special challenge to the undertaking of archaeological excavations and conservation works.

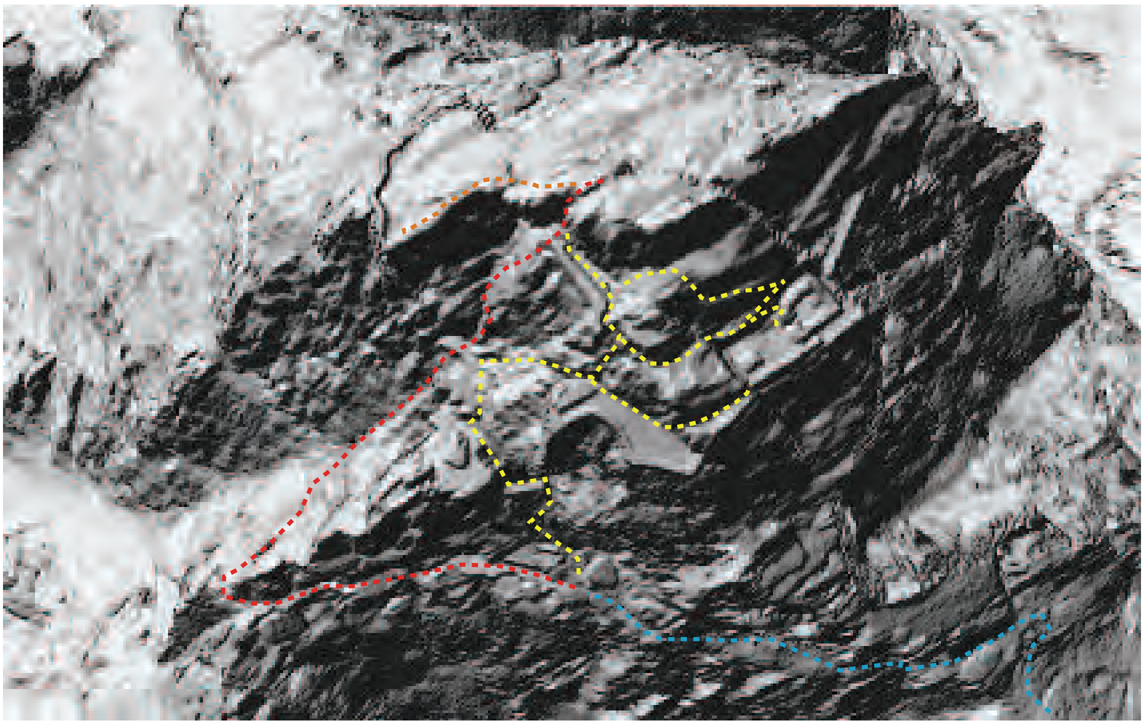
The works undertaken on the South Peak vividly revealed the highly collapsed and vulnerable state of the surviving remains and demonstrated that much original structure had unfortunately been lost over many centuries. Indeed, given the conditions that prevailed on the Peak it was often remarkable that anything at all survived in some parts, and the remnants spoke volumes about the flexibility of drystone architecture and the skill and daring of the original builders. The works also dramatically illustrated and recorded that in many places erosion and collapse were ongoing and that, if not halted, would have resulted in increased—and, in places, total—loss of the surviving structures and thus all evidence of their former existence.

There were two temporally distinct routes leading to the top of the South Peak. Both initially followed the same path upwards from Christ's Saddle before diverging at the base of the cliff beneath the infamous Needle's Eye. The final route is that described by Horn *et al.* (1990), while the primary route was only discovered during the recent work.

Ill. 2.157—The routeways on the South Peak.



The routes to the peak were naturally broken into separate terraces, traverses and climbs by the local physical conditions, and generally each of these small sections was excavated, recorded and conserved individually for practical reasons. For ease of description (and following the usage of Horn *et al.* 1990), each section was allocated a name that reflected its character or position but which attempted to avoid the ascription of a subjective interpretation of function. The titles given by Horn *et al.* (1990) to the various terraces and areas on the Peak, which have, by this stage, become firmly entrenched in the language of Skellig, were retained for continuity and simplicity.



Ill. 2.158—LiDAR image of the South Peak, with the main routes marked (DAHG and A.R. Hayden).

The recent works also clearly demonstrated the degree to which the monks altered the South Peak; in fact, there is almost nowhere on either of the routes to the top that the climber actually stands on a natural surface.

While the works on the South Peak were generally conducted from the top down, for ease of description this report will commence at the base of the climbs and follow them upwards. The lower part of the climb, which is common to both routes, is described first. The upper part of the primary route to the top of the Peak is next described, followed by the upper part of the final route.

Archaeological excavations on the South Peak

The works on the South Peak were undertaken under the overall on-site direction of Grellan Rourke (Senior Conservation Architect, Office of Public Works [OPW]) and in consultation with Dr Ann Lynch (Senior Archaeologist, National Monuments Service of the Department of Arts, Heritage and the Gaeltacht [NMS, DAHG]). Edward Bourke (Archaeologist, NMS, DAHG) directed the first season of archaeological excavation in 2004, and Alan Hayden (Archaeologist and Director, Archaeological Projects Ltd) directed the seasons from 2005 to 2010.

Because the island is only reliably accessible from late May to late September, each season of work was limited to a period of less than five months. Excavations were generally undertaken in three or four two-week sessions each year. Only one archaeologist was employed on the site at any time. The weather, the isolated nature of the site and in particular the steepness and ruggedness of the South Peak also had a major influence on the schedule and progress of the works undertaken. The severe constraints of access and space, and those imposed by the presence of protected wildlife and the very important issue of safety, also rendered working conditions somewhat challenging.

All these factors, along with the fragility and vulnerability of some of the remains uncovered, meant that excavation and conservation work had to be closely integrated at all times.

A schedule and timetable of the proposed works was drawn up prior to each season's work.

Ministerial consent and appropriate licences were applied for and received before each season of work was undertaken. Safe rope access was first established to the areas to be examined, and scaffolding constructed where it could be and would be required. The structures to be conserved were assessed before any works were undertaken, and a final detailed programme of work was then agreed upon before the works were begun.

The individual features in each area were first photographically recorded before any works were carried out. Then (where required) they were excavated, recorded, photographed and planned at a scale of 1:20 during or after excavation. Excavated spoil was surveyed by metal-detector under licence. In general, conservation was undertaken immediately after the completion of excavation and recording, but some structures had to be conserved or secured during the excavations owing to their fragility and structurally unsound state.

The conservation works were also fully recorded, described, photographed and filmed, and the conserved features were all subsequently fully surveyed, drawn and photographed after the completion of works. Photographs were also taken of the conserved features each year to record vegetation growth, wind damage etc.

The works on the South Peak were filmed on a regular basis by professional film crews commissioned by the OPW. Aerial photographs were also taken periodically before, during and after the work was undertaken.

Reports detailing each season's work were submitted annually to the National Monuments Service and summaries were published in the annual *Excavations Bulletin* series.

Site conditions

No occupation deposits survived anywhere on the South Peak and excavation generally consisted of little more than the removal of sea campion and other growth, followed by the removal of collapsed stonework to reveal the surviving drystone remains. The only deposits encountered consisted of the quarry waste used to infill the terraces and limited areas of naturally accumulated silt. In many areas excavation simply involved the clearing of plant growth from bedrock. As a result, sieving of excavated material was not possible, nor required.

Excavation of the individual terraces often had to be undertaken in a piecemeal fashion owing to the restrictive terrain, the requirement to retain all spoil and stones, and the lack of space in which to store them.

Apart from plant growth, all the spoil from the excavations was sorted and retained and reused in the conservation works. The well-drained and acidic nature of the site and the lack of any occupation deposits meant that few finds were uncovered. Those uncovered consisted of roughly carved cross-shaped slabs and a few water-rolled pebbles.

[Left] Ill. 2.159—Excavation on the oratory terrace (A.R. Hayden).

[Right] Ill. 2.160—Conservation works on the north-west passage (A.R. Hayden).

Progress

Excavation of the lower traverse, the two platforms above the Needle's Eye, the small enclosure above the Needle's Eye, the climb from the Needle's Eye to the 'garden' terrace and a test-trench across the 'garden' terrace was undertaken under the supervision of Edward Bourke in 2004.

The works in 2005–7 concentrated on the upper terraces and structures above the Needle's Eye—the 'garden' terrace, the oratory terrace, the upper traverse and the outer terrace. From 2008 onwards the structures and features of the newly discovered primary route to the South Peak and the beginning of the climb to the South Peak were explored, surveyed and excavated.

The excavation and conservation works were completed in 2010, but there are several areas and features on the Peak that will be recorded and surveyed in the coming years.

Schedule of works undertaken on the South Peak

2004

Excavation: the lower traverse, the upper and lower platforms, the small enclosure above the Needle's Eye and a test-trench on the 'garden' terrace.

Conservation: the lower traverse, the upper and lower platforms and the small enclosure above the Needle's Eye.

2005

Excavation: the 'garden' terrace and part of the oratory terrace.

Conservation: the 'garden' terrace and part of the oratory terrace.

2006

Excavation: completion of the oratory terrace (including the interior of the *leacht*), the upper traverse, *sondage* in the outer terrace, the ledges beneath the oratory terrace, and the possible mini-terraces in the upper gully.

Conservation: completion of the oratory terrace, the upper traverse and the possible mini-terraces in the upper gully.

Post-conservation survey: the 'garden' terrace.

[Left] Ill. 2.161—Aerial photography in progress (A.R. Hayden).

[Right] Ill. 2.162—Filming on the north-west passage (A.R. Hayden).

2007

Excavation: the outer terrace, ledges below the outer terrace, the southern traverses of the north-west passage, and the platform and steps at the base of the cliff beneath the Needle's Eye.
Conservation: the outer terrace, started on the southern traverse of the north-west passage, and the platform and steps at the base of the cliff beneath the Needle's Eye.

2008
Excavation: the northern traverse and the stairs of the north-west passage, the northern cliff ledges, the lower gully, and the second narrow ledge from the blind corner to the cliffs below the Needle's Eye.
Conservation: completion of the southern traverses of the north-west passage, the northern traverse and stairs of the north-west passage, and the second narrow ledge from the blind corner to the cliff below the Needle's Eye; repairs to the outer terrace, the upper traverse, the oratory terrace, the platforms above the Needle's Eye and the north steps.
Post-conservation survey: the outer terrace, the upper traverse, the oratory terrace, and the upper and lower platforms above the Needle's Eye.

2009
Survey: parts of the route from the start of the climb to the blind corner, the Needle's Eye, the steps in the gully, photographic survey of all steps and a three-day EDM survey.
Post-conservation survey: the north-west passage, and the path from the blind corner to the cliffs beneath the Needle's Eye.

2010
Excavation: the ledge with fallen stones and the broad ledge.
Conservation: the ledge with fallen stones and the broad ledge.
Post-conservation survey: the ledge with fallen stones and the broad ledge.

Ill. 2.163—The South Peak crew 2008 in front of the UNESCO World Heritage Site plaque on Skellig Michael. Left to right: Micheál O'Sullivan, Tom Kerrisk, Mike Connors, Colin McGorlick, Alan Hayden, Grellan Rourke, Pat O'Shea, and Johnny Lyne (A.R. Hayden).

A note on the plans and photographs

The plans included in this report are but a preliminary working of the field plans and surveys undertaken on the site. The plans of the lower part of the route and the primary route have been colour-shaded, as their intricacy meant that man-made features might not be readily recognisable amongst all the background detail. The plans of the uppermost terraces on the Peak have not yet been so treated. The detail in the shaded plans remains to be checked on site.

The detailed natural setting—rock ledges, cliffs, slopes, gullies etc.—forms an important part of the site and is vital to its interpretation. The legible illustration of the complex nature of these features has required a lot of thought and work. They have to be shown in enough detail to be understandable while not obscuring the man-made features, which were cut into and built on them. Graduated shading (with the darkest shade indicating the base of a slope and the darkness of the shading representing the steepness of the slope) has been utilised and combined with lines indicating the edges and shape of the slope to attempt to convey the natural features. The different character (direction of grain, smoothness, slope etc.) of the bedrock bases of the ledges had also to be illustrated. This was generally done using lines running with the grain of the rock. Little of the 'flat' bedrock at the base of the terraces was in fact flat and level. Illustrating these slopes proved difficult if they were not to be confused with steeper slopes and obscure the illustration of the character of the rock. These slopes have generally been shown flat, as it was felt that the accompanying photographs would adequately illustrate the slope of individual sections. Areas where vegetation survived and was not removed during the excavations are shown with a green shade, and areas where soil and stones survived and were not removed are shaded a light yellow-brown.

On top of all this, the man-made structures had also to be shown. Again a graduated shade, but without parallel lines, is used to show stones lying at an angle. A dark grey-brown is used to show vertical stones, and a light grey shade indicates flat stones. The sloping faces of walls are illustrated with a darker grey shade. The top and bottom edges of walls and structures and rock-cut features are outlined in red, and the possible/probable lines of now-vanished structures are illustrated with dashed red lines.

The excavation field plans were drawn by A.R. Hayden at a scale of 1:20. Plane-table surveys of the conserved sites were drawn and surveyed by G.D. Rourke and A.R. Hayden at a scale of 1:50. A three-day EDM survey of parts of the lower part of the route, the north-west passage and the area above the Needle's Eye by Seán Obida (Malachy, Walsh and Partners) represents the only such survey undertaken in the seven years of work on the Peak. The final plans and the shading scheme used were devised and drawn by C. McHale (Archaeological Projects Ltd), with some amendments by A.R. Hayden.

Photography, both on the ground and aerial, was also used extensively to record the works and only a small part of the archive has been used for illustration in this report. In many areas it is difficult to adequately convey the site and its features without photographs. The location of steps and features marked on some of the photographs remain to be fully checked on site.

Ground photography had its limitations, as the cramped spaces and partly obscured views sometimes restricted the ability to show what was intended. Aerial photographs taken by Con Brogan (NMS, DAHG) from various helicopters proved very useful. They illustrate much that was not accessible or visible, and also allow more panoramic and more contextually inclusive views than are possible from the ground.

It is also hoped in the future to use the LiDAR survey of the island to illustrate long vertical sections through the Peak. This will perhaps best illustrate the verticality of the site, which is impossible to adequately convey in plans. Although a work in progress, the LiDAR survey unfortunately does not appear to include sufficient detail to replace ground survey, and in the steeper locations it shows little or no detail of the structures and features that survive; indeed, in places it does not show substantial structures at all. It appears to have worked best on the flatter and more gently sloping terrain of the island, most of which lies elsewhere than on the South Peak! It is, however, very useful for generating more general views of areas, as the images can be turned and viewed from almost any angle.

2.3.2 The influence of the geology of the South Peak

The underlying geology[7] had a fundamental influence on the structures built on the South Peak.

The Peak was formed of sandstone laid in roughly horizontal bedding planes, which were deformed by folding and now lie at slight to moderate angles. Where these bedding planes are exposed, they erode to form rough ledges that slope usually relatively gently in one or two directions. The routes up the Peak generally follow these ledges and it was on these ledges that the drystone terraces were built.

The vertical cleavage planes in the bedrock run generally on north-east/south-west lines through the South Peak. They split the rock into thin vertical sheets, rather like a deck of cards set on edge. They also had a strong influence on the layout, construction and survival of the terraces. Where the cleavage planes run parallel to the cliff face, the cliff face is vertical, smooth and straight (as it follows the cleavage planes), and hence any walls built on these cliffs (generally on the south and north sides of the Peak) were straight but had a poor resistance to sliding and collapse. Where the cleavage planes run transversely to the cliff, the cliff face is deeply fissured and uneven as a result of erosion along the exposed ends of the cleavage lines. The walls running along these cliff faces (generally at the west side of the Peak) tend to be curved or sinuous. Because the walls cross the eroded cleavage lines, their bases rise and fall and consequently have a greater 'grip' on the rock, rendering them more stable.

Ill. 2.164—The south face of the South Peak, showing the main geological fractures: red = bedding planes; blue = cleavage planes; yellow = fracture lines (A.R. Hayden).

Where the cleavage planes run parallel to the cliffs, they also allowed large blocks of rock both to detach naturally and to be removed by quarrying. Large stones detach and fall naturally from the cliffs on the north and south sides of the Peak, which run parallel to the cleavage planes. These falling stones naturally gather on the roughly horizontal bedding plane ledges. The accumulated stone on these ledges, while it provided a source of building material, had to be cleared to make the ledges accessible and usable. There are a number of ledges that were not built upon but that lack naturally fallen stone, which the monks appear to have stripped for building work elsewhere.

To complicate matters further, a series of vertical faults run through the South Peak, generally on north-east/south-west and north-west/south-east lines, dividing the rock into large blocks, which are often twisted at an angle or raised or lowered to a different height than adjacent ones. The fault lines are often eroded out to form deep vertical gullies, which provided vertical access routes. The faults also break the horizontal flat bedding plane ledges into blocks divided by deep gullies. Hence the fault lines often determine the size or length of terraces.

[7] A detailed report on the geology of the South Peak is being prepared by the Project Geologist, Michael O'Sullivan. In this report I have liberally used information provided by Michael while we were working on the South Peak.

The flat ledges eroded out along the bedrock bedding planes naturally gather fallen stone.

Left: Ill. 2.165—A ledge on the cliffs below the north side of the monastery.

Right: Ill. 2.166—A ledge on the west side of the rock tor west of the scree slope (A.R. Hayden).

2.3.3 THE LOWER PART OF THE ROUTE

Introduction

The lower part of the route to the top of the South Peak, which was common to both the primary and final routes, was only briefly examined and described by Horn *et al.* (1990, 23–9) and had not been previously surveyed, explored in detail or excavated. As the conservation and excavation works on the South Peak were undertaken generally from the top down, it was only after the completion of the works on the upper terraces of the primary and final routes in 2008 that work was undertaken on the lower part of the route.

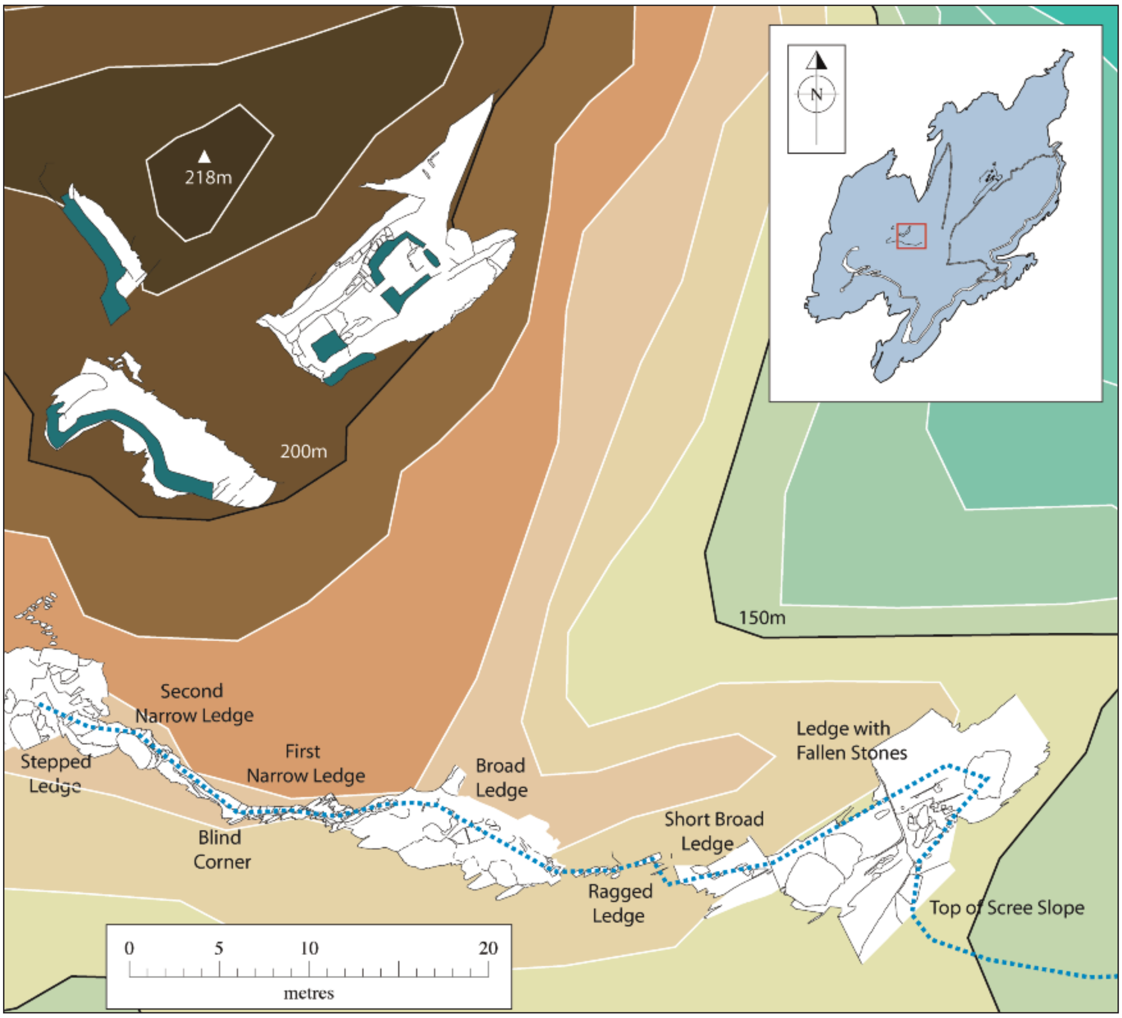
Much of the lower part of the route consisted of rock-cut features, which were fully exposed and only required cleaning, recording and surveying. Perhaps, because of the large amount of human traffic on this part of the route and its vulnerability to stone falling from the cliff above, all the areas where masonry had originally been constructed were highly eroded and only the last remnants of the original structures survived. Little of any of the surviving masonry structures was visible or recognisable before excavation.

The lower part of the route as far as the blind corner also sees the most human traffic on the South Peak. The narrowness of the path and the high and vertical cliff at the blind corner deter many people from proceeding further up the climb. The surviving remains up as far as the blind corner were therefore highly vulnerable and, as they represented but the last vestiges of formerly substantial structures, there was a real possibility that they could have been lost and all evidence of their former existence could have disappeared.

The scree slope

The route to the South Peak begins at Christ's Saddle (elevation 130m OD), the valley between the lower (elevation 185m OD) eastern peak of the island (where the monastery lies) and the 218m-high South Peak.

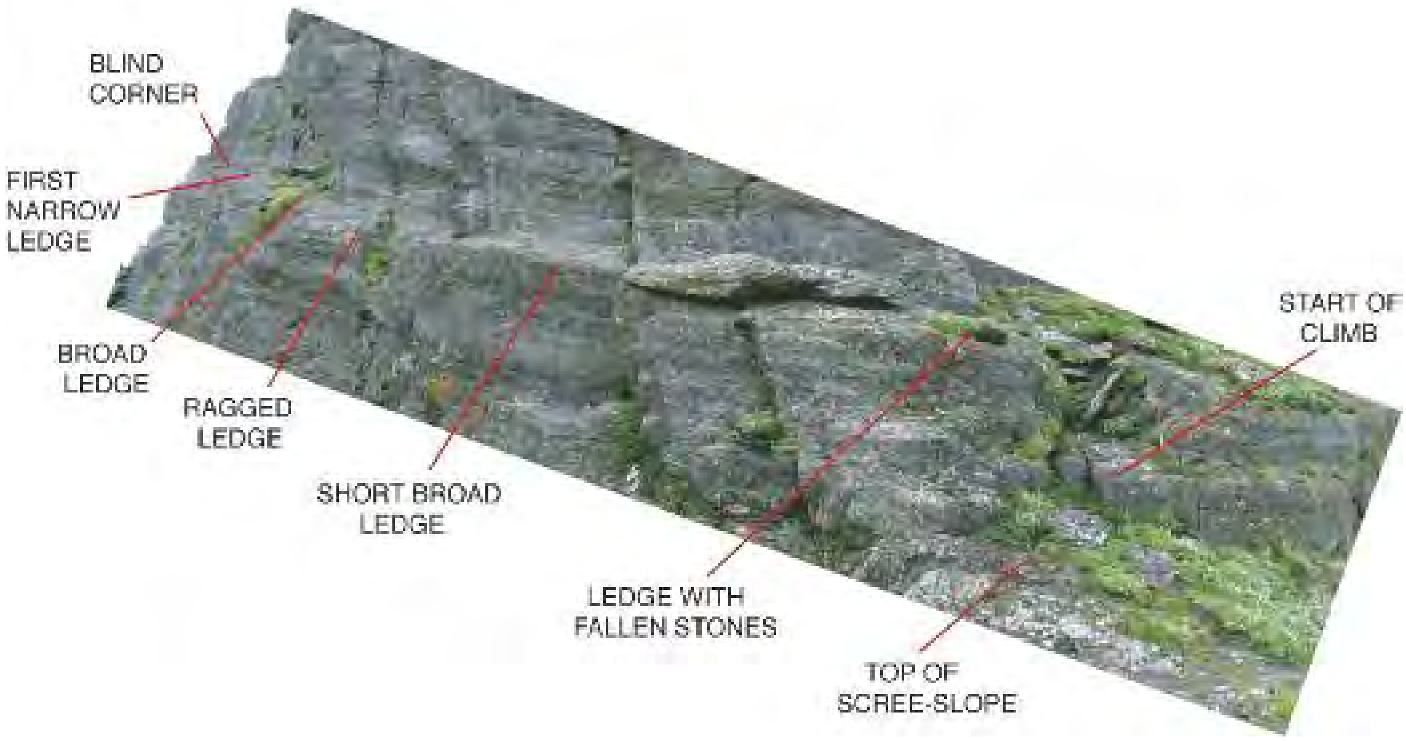
The route initially extends up the steep scree slope that lies at the western side of Christ's Saddle.



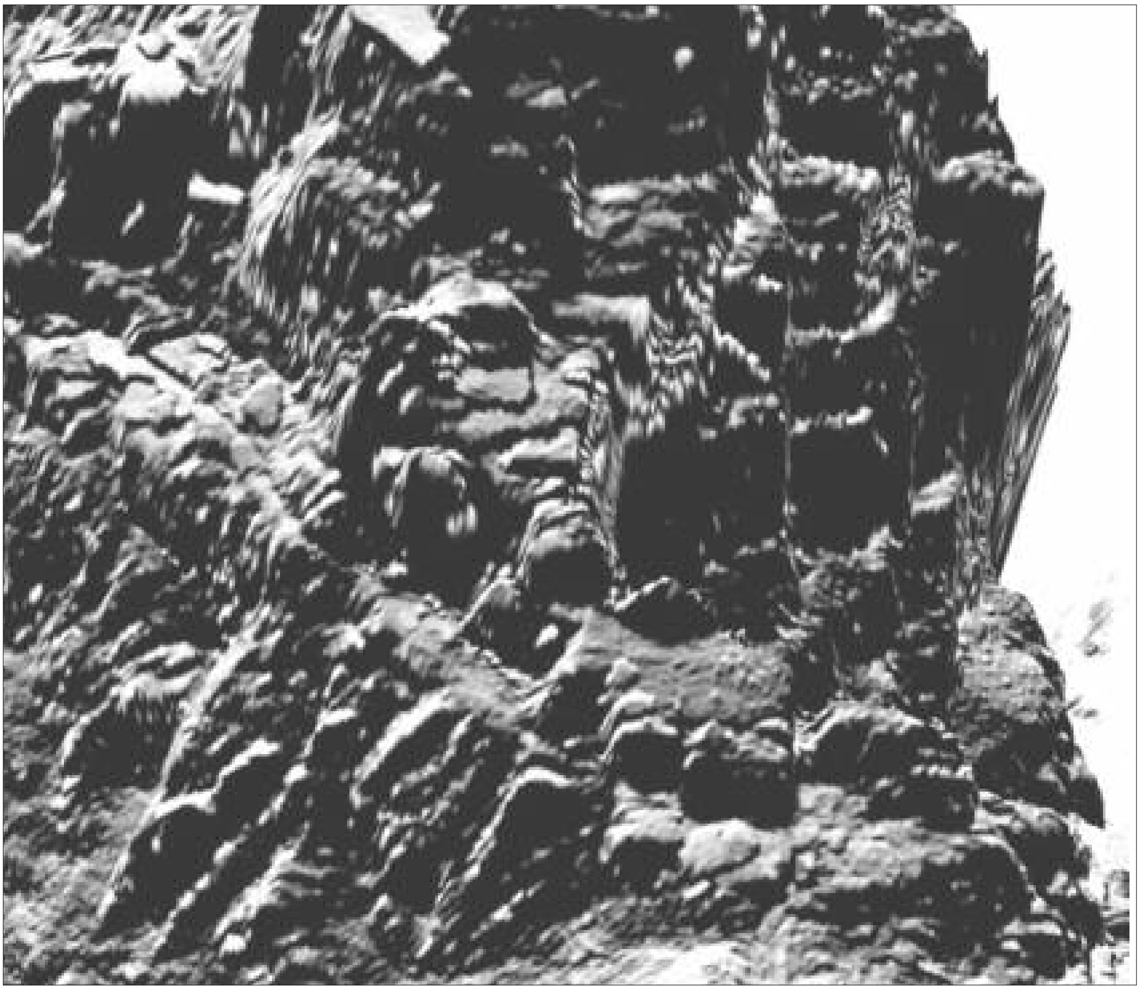
Ill. 2.167—The ledges on the lower part of the route.

Ill. 2.168—Composite photograph of the south face of the South Peak. The route follows the prominent bedrock bedding plane ledge that curves upwards from the lower right (A.R. Hayden).

Ill. 2.169—Aerial view of the lower part of the route; the top of the scree slope is at the lower right (Con Brogan, DAHG).



Ill. 2.170—The ledges at the beginning of the lower part of the route, viewed from the south (A.R. Hayden).



Ill. 2.171—LiDAR image of the lower part of the route (DAHG).

Ill. 2.172—The highly eroded paths on the scree slope when it was open to public access (A.R. Hayden).

This slope is covered by thick campion growth but several well-worn modern tracks run up it. The scree slope also slopes steeply down to the north-east. A high and easily climbed rock tor delimits its west side. A substantial number of large rocks that have tumbled off this high tor lie on the scree slope.

The lighthouse men cleared the lower part of the scree slope to create a small field, which is partly defined by a drystone wall composed of large stones robbed from the top end of the north steps, a short section of the south steps and probably from the masonry stairway that led up the scree slope to the start of the climb up the South Peak (see below).

The steepness of the scree slope and the loose nature of the stones and soil with which it is covered render it very vulnerable to erosion. There was a noticeably high degree of erosion on the slope when it was open to the public. Erosion of some of the pathways has continued, however, even though it has been closed to public access and the works crew were supposed to be the only human traffic. If the scree slope is to be reopened to the public, recording, surveying and possibly excavation and conservation works will probably be required, as early features have been noted on it.

No archaeological excavations, conservation work or surveys have been undertaken on the scree slope.

Cross

There is a small, cross-shaped slab set erect at the base of the west side of the scree slope. It is very similar in form to a smaller cross that was found fallen from, and lying on a ledge below, the oratory terrace. There was formerly a second cross here but it is no longer extant (G. Rourke, pers. comm.). The surviving cross lies in the area cleared by the lighthouse men to create a field and so may not be in its original position. A cross is shown here on the first-edition OS map of 1841, however, and so one or both of these crosses could mark the start of the route to the South Peak. There appear to be crosses and *leachta* along the route up the Peak, and so it would be expected that one would have been set up to mark the start of the route.

Ill. 2.173—Cross-shaped slab in the lighthouse field, possibly marking the start of the route to the South Peak (A.R. Hayden).

The 'cave'

Two small chambers were created by partly blocking off the areas beneath large fallen rocks on a ledge to the west of the Saddle. A clear drystone-walled terrace leads to them. There are two cross-shaped slabs in and beside these chambers. No excavation or survey work was undertaken in this area.

The stairway

It had long been suspected that there must have been some form of formal pathway or stairway leading up the scree slope to the start of the climb to the South Peak, as the slope is slippery and awkward to cross and all the rest of the route is provided with terracing and stairways. No definite features were, however, previously noted on the slope.

The warm and dry weather of the spring and early summer of 2010 somewhat restricted campion growth on the slope and resulted in an early die-back of the plants. As a result, several man-made features became clearly evident there for the first time. An opportunity arose to examine the scree slope in some detail, and several features were discovered that clearly prove the former existence of a masonry stairway leading up the slope.

Ill. 2.174—The scree slope, showing the location of the visible early features (A.R. Hayden).

Clearance

Large rocks naturally detach from the high rock tor on the west side of the scree slope and tumble down onto it. It is noticeable that the mass of fallen rocks abruptly ends in unnatural straight lines. In places along the edge of the fallen rocks stones are piled on top of each other, two or three in height. To the east of the edge of the fallen stones there is a flat area about 3m wide extending up the slope. This area is free of large fallen stones and interrupts the otherwise uniform west–east slope of the area. East of the flat area fallen stones again are present. It is therefore probable that the flat area was cleared of naturally fallen stone.

Ill. 2.175— Looking down the scree slope. Stone fallen from the high rock tor lies to the right of the ranging rod; the area cleared of stone lies to its left (A.R. Hayden).

Stair risers/cross-walls

Within the narrow, flat area, six definite lines of drystone masonry were discovered extending transversely across the slope. There are up to half a dozen other possible lines of masonry also visible, but too little of each is evident to confirm that they are walls. All these lines of masonry are potentially either remnants of drystone risers of the stairway or the remains of structural walling within the stairway.

Ill. 2.176—One of the visible lengths of drystone walling on the scree slope (A.R. Hayden).

Stair treads

On the upper half of the flat area there are numerous thin, flat and subrectangular stone slabs, which could have been the treads of the stairway. A few may still be roughly *in situ* but more have slipped out of place. Several thin flat slabs also survive at the top of the scree slope; it is probable that these are not fallen rocks and they may be further remnants of treads of the stairway.

Ill. 2.177—Slipped stair treads on the upper half of the scree slope (A.R. Hayden).

The stairs in the lighthouse field

No stone treads appear to survive on the lower half of the scree slope, within the lighthouse field. The lighthouse men clearly removed the stone treads of the three stairways on the Saddle to build their field walls. Nevertheless, the survival of at least one drystone riser/wall of the stairway to the South Peak within the area of the field and the form of the surviving field walls suggest that the lighthouse men removed only the larger stones from the stairways. This means that some of the original risers/cross-walls of both the steps to the South Peak and the top end of the north steps could survive within the area of the field. The field also lies at the base of the scree slope and hence should have a thicker soil cover because of the natural downslope migration of soil and stones owing to erosion, which could have covered and protected the early remains.

The top of the scree slope

A 2m-high, east/west-aligned, rising bedrock cliff delimits the top of the scree slope. At the base of the cliff there are two large, flat stones, which could be the last remnants of masonry steps facilitating access to the climb up the low cliff to the ledge with fallen stones above.

Possible leacht *on rock tor to west of the scree slope*

A group of loose quartz blocks and a small loose stone with a possible carved notch on one of its sides were noted on a flat ledge near the base of the tor on the west side of the scree slope, about three-quarters of the way up the slope. The small flat ledge measures about 1.5m across and is accessible from the south up a narrow gully in which there are several probably natural ledges, which make convenient steps. There is a lot of stone at the base of this gully and it is possible that some may be collapsed drystone masonry or steps.

[Left] Ill. 2.178—Possible masonry (left arrow) at base of climb to possible *leacht* (right arrow) on the rock tor at the west side of the scree slope (A.R. Hayden).
[Right] Ill. 2.179—The possible masonry or steps at the base of the climb to the possible *leacht* (A.R. Hayden).

Ill. 2.180—The climb up the cleft to the possible *leacht* (A.R. Hayden).

The presence of the quartz blocks on the platform suggests that it may have been some form of *leacht* or marker, now hidden beneath campion cover. This area has not been excavated. The ledge lies in a prominent position on the side of the tor on the west side of the scree slope, and any structure that may have stood on it would have been clearly visible when climbing the scree slope or when looking down over it from the beginning of the climb to the South Peak. Other small *leachta,* platforms, crosses and gatherings of quartz blocks were noted elsewhere along the route to the Peak. They may have acted as stations or markers along the route.

Stone was also apparently quarried from the rock tor for use on the South Peak (Michael O'Sullivan, pers. comm.), and it is easily climbed.

The ledge with fallen stones

Introduction

Above the low cliff at the top of the scree slope there is a long, east/west-aligned broad ledge (the ledge with fallen stones), which follows a bedrock bedding plane. The ledge slopes quite steeply down from west to east and also from north to south. A north/south-aligned bedrock fault divides the western third of the ledge from its eastern two thirds. Steep rising cliffs mark the inner (north) side of the ledge.

Before any works were undertaken here, bedrock was exposed over most of the western third and the southern 2m of the ledge. A thin, campion-anchored soil cover existed on the inner side of the eastern two thirds of the ledge. Several stones fallen from the cliffs to the north lay on the ledge. A very large flat rock lay near the eastern end of the ledge, several smaller ones lay at its centre and two large stones lay slightly overlapping at its west end.

On the western third of the ledge the bedrock floor of its inner (northern) 1–1.5m was extremely rough and difficult to walk on. The bedrock on the outer side of the ledge was smooth and weathered, however. There was a clear, straight, east–west linear boundary between the two areas. The difficulty of crossing the rougher bedrock in wet weather (when it is one of the most awkward and slippery parts of the climb) and the differential erosion suggested that formerly there could have been terracing covering the rougher area of bedrock.

A number of small rock-cut features were also evident on the exposed bedrock at the centre of the terrace. In order to record these features, the sparse vegetation growing in cracks in the bedrock on the western half of the ledge was cleaned away and the bedrock brushed down in 2009. The soil-covered eastern half of the ledge was excavated in 2010 to determine whether any remains of a putative terrace survived there.

Early features—quarry and tripod holes

In the centre of the 2m-high cliff at the top of the scree slope that marks the southern side of the ledge with fallen stones there is a small, subrectangular rock quarry, measuring 1.8–2m east–west by 2.4–2.6m north–south. Its west side is straight, as it is defined by the fault line that divides the ledge with fallen stones, while its east side is ragged. The north side is also straight, as the quarrymen utilised the straight, east/west-aligned bedrock cleavage planes to remove large, straight-sided slabs. The quarry pre-dates the layout of the lower part of the route to the South Peak, as the first nine steps of the climb run through it (see below).

The quarrying appears to be contemporary with an interesting and possibly unique group of features. A south-east/north-west line of four small bowl-shaped hollows (A–D) was carved into the sloping bedrock of the ledge east of the quarry. The hollows measured 180–220mm across and were up to 120mm deep. There could originally have been a fifth (E, the eroded notch at the north-east corner of the quarry) in this line.

Ill. 2.181—The tripod holes (yellow rings) surrounding the small quarry on the ledge with fallen stones (A.R. Hayden).

Another four rock-cut hollows (F, G, K and L), measuring 160–200mm across, survive to the north of the quarry. One of these (G) was partly cut away when the final slab was removed from the quarry. West of the quarry there are three further similar hollows (H–J) on a north-east/south-west line (lying at right angles to the first-mentioned series). One of this line lies almost on the cliff edge (which also appears to have been substantially quarried back over much of its length) and is much larger than the others. It measures 400mm across and 200mm in depth.

The holes all appear too small to be steps; they are certainly not typical of steps elsewhere on the South Peak, as they are bowl-shaped rather than flat-based and are too small to accommodate a foot. Michael O'Sullivan (Project Geologist) interpreted these features as holes to secure a tripod that would have been used to raise large stones up the low cliff at the start of the climb. They are perhaps a unique survival.

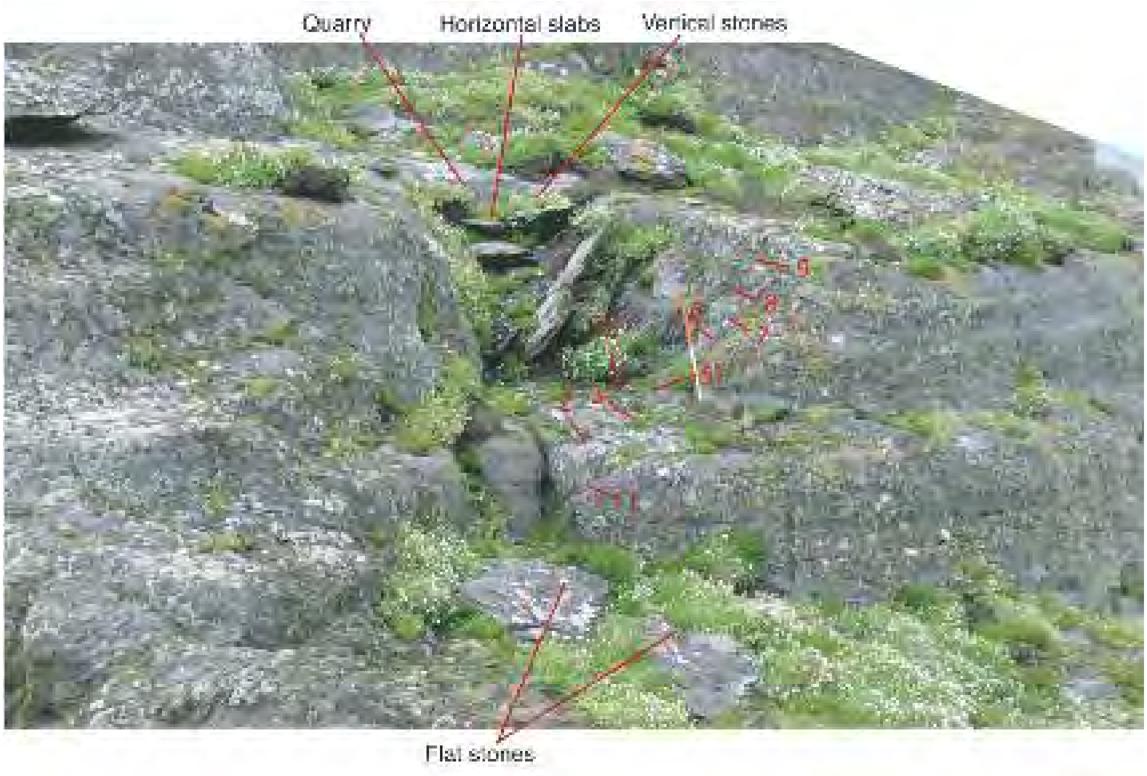
Ill. 2.182—The eastern line (A–E) of tripod holes (A.R. Hayden).

[Left] Ill. 2.183—Three (F, G and K) of the northern tripod holes; G was partly cut away by the quarry at right (A.R. Hayden).

[Right] Ill. 2.184—The western line (H–J) of tripod holes (A.R. Hayden).

It is probable that the tripod holes and the quarrying were contemporary, the holes being used to secure a tripod to lift the quarried stone. This would explain why the west and north legs of the tripod seem to have been periodically moved further to the north, allowing the tripod to be repositioned over the stones as the quarrying progressed inwards (northwards). One of the holes at the north side of the quarry has also clearly been partly removed by the quarrying.

Michael O'Sullivan noted that some of the stone used on the South Peak was quarried from the



Ill. 2.185—The cliff at the top of the scree slope leading up to the ledge with fallen stones, showing the rock-cut access steps, quarry and cross base, before excavation (A.R. Hayden).

[Left] Ill. 2.186—The base of the lowest rock-cut steps (A.R. Hayden).

[Right] Ill. 2.187—The upper steps leading up the low cliff at the top of the scree slope to the ledge with fallen stones (A.R. Hayden).

rock tor at the west side of the scree slope, and stone quarried there for use further up the Peak could also have been hauled up the low cliff using the tripod.

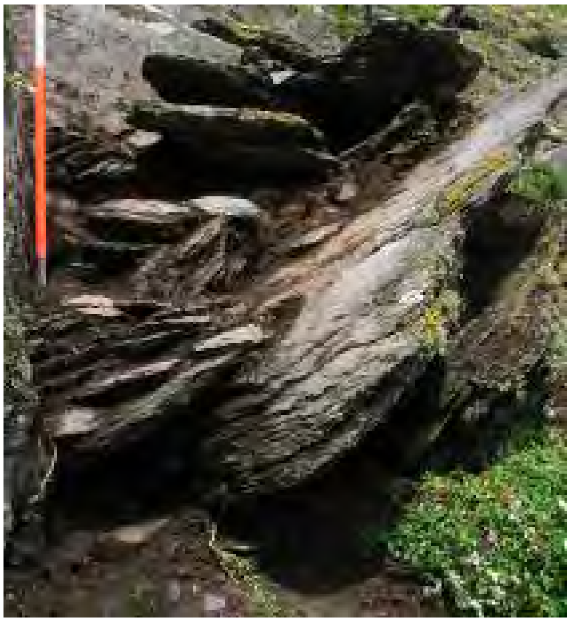
Large stones later either fell into or were deposited in the quarry, partly filling its base and east side. The impact of the falling stones, or the removal of slabs during quarrying, broke and twisted southwards the protruding bedrock spines at the east side of the quarry. The uppermost of the stones filling the quarry is a very large, thin slab that appears to have two notches cut from its southern side. These do not appear to be natural and are not of use as handholds for the climb. While it is possible that this stone may have been the last removed from the quarry but not utilised (its length matches the width of the quarry), the notches do not correspond to any features that survive around the edges of the quarry.

The climb to the ledge with fallen stones

In the low rock face below the quarry there are two clear rock-cut steps (1 and 2) in the 0.8m-high western end of the rising cliff. They lead upwards to the east to a short and narrow flat ledge, where there is a third large and shallow rock-cut step (3). The fourth and fifth steps should also lie on this ledge but its surface is heavily eroded and no definite worked areas survive. The route continues up the eastern side of the quarry. The bare stump of a sixth step (for the left foot) and just the innermost end of the seventh (for the right foot) survive close to the edge of the rising cliff slightly higher up. The eighth and ninth steps survive to a greater extent and lead up to the outer edge of the ledge with fallen stones.

Cross base

A drystone structure was built in the disused quarry on top of the fallen stones immediately to the left of the rock-cut steps described above. Three short lengths of walling were constructed, each set back



[Above left] Ill. 2.188—The cross setting in the disused quarry viewed from the west (A.R. Hayden).

[Above right] Ill. 2.189—The cross setting in the disused quarry viewed from the south-east (A.R. Hayden).

[Right] Ill. 2.190—Drystone walling under the south side of the cross setting in the disused quarry (A.R. Hayden).

from the underlying one, between the western edge of the quarry and the fallen stone choking its eastern side. They were all composed of small stones and all survived poorly.

At the top of the quarry several large stones were laid down flat. The topmost and largest of these was deliberately and deeply notched to create a socket, into which a number of flat slabs were set upright. These may have secured the base of an upright stone cross or pillar, which would have marked the side of the route to the South Peak.

The ledge with fallen stones (centre and east)

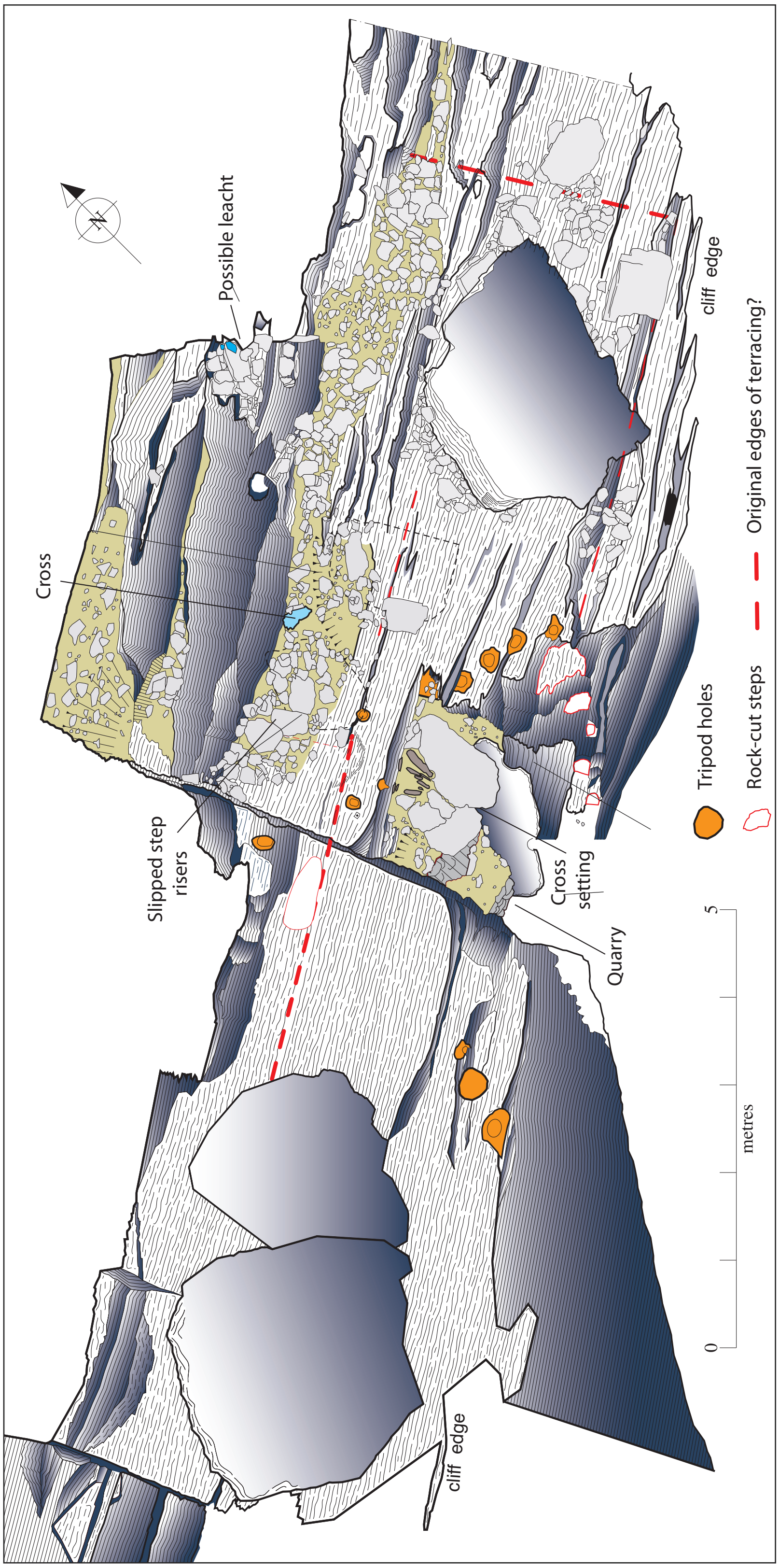
Ill. 2.191—The ledge with fallen stones after excavation, from the east (A.R. Hayden).

It was previously unclear where the route initially ran across this sloping ledge, as there are no traces of any rock-cut steps here. The topography suggested, however, that the access route was unlikely to have extended south from the top of the rock-cut steps owing to the steepness of the bedrock slope here. It appeared most likely that it would have led first eastwards along the outer edge of the ledge before turning south for a short distance and then turning again to the west to run along the inner side of the ledge.

Ill. 2.192—The possible eastern end of the masonry terrace at the east end of the ledge with fallen stones (A.R. Hayden).

The impact of the huge fallen stone now lying on the central part of the eastern end of the ledge could have removed much of any possible surviving terracing but also prevented much of the area of the ledge from being excavated.

A broad and deep gully extended eastwards along the outer edge of the ledge. It is possible that this gully could have been used to anchor the outer wall of the putative terrace. There were a number of stones within the gully but too few survived to determine whether they had been deliberately laid. One much larger stone bridged the top of the gully towards the eastern end of the excavated area. It is possible that it could have stood near the south-east corner of the terracing, but it



Ill. 2.193—Plan of features uncovered on the ledge with fallen stones.

may also have slipped into this present position.

East of the large fallen stone a number of stones survived on the sloping bedrock across the full width of the ledge. These were in the main relatively large and flat and appeared to have slid downslope into their present positions. There were also several large flat stones and smaller stones trapped beneath the large fallen stone. One group of smaller stones at the centre of the end of the ledge appeared to be intact; the setting had a relatively straight eastern side and it is possible that this may be the last remnant of the eastern end of the terracing.

A small quantity of loose stone lay on the northern (inner) side of the centre and eastern end of the ledge. Beneath it were several larger stones, which appeared to have been deliberately and neatly laid flat in natural gullies in the bedrock. The surviving structure consists of a 0.7m-wide, east/west-aligned band of largely unstructured stones that lacked a clear defining wall. These stones did not naturally accumulate in this location (M. O'Sullivan, pers. comm.), however, and represent the last and very disturbed remains of a possible terrace. A wide natural break in the east/west-aligned bedrock ridges could have marked the eastern end of the terrace, as it would have formed a natural setting in which to secure the eastern end wall. It lined up with the straight edge of the masonry noted towards the eastern end of the ledge.

Ill. 2.194—Remains of the drystone terrace on the centre of the ledge with fallen stones, looking east (A.R. Hayden).

The southern edge of the stone spread appears to follow a shallow cleft in the bedrock and it is probable that it was used to anchor the original retaining wall, none of which survived. This cleft lines up with the line between the differently eroded sections of bedrock further west, which also seemed to mark the outer edge of the putative terrace (see below). The western end of the stone spread was defined by the fault line where the ledge suddenly narrows and rises.

Two larger stones, which appeared to have originally lain with their east sides in a line, remained amongst the stonework. They could have been the base of a stair riser or cross-wall. One of the stones had slipped slightly out of place.

Ill. 2.195—Detail of slipped step riser, visible at the left of the preceding photograph (A.R. Hayden).

Cross

A small stone, cross-shaped slab was also found amongst the loose rubble at the centre of the terrace. The cross appears to have been too small to stand in the stone setting built in the disused quarry on the southern side of the ledge. Examination of the rock ledges higher up and north of the cross failed to reveal any structures into which this cross could have been set. It could have been associated with a possible *leacht* (see below). It is, however, not impossible that it could have fallen from the oratory terrace and tumbled down the cliff to land where it was uncovered; a cross fallen from the oratory terrace was found on the ledges below the oratory terrace, which lie immediately above this point (see below).

Ill. 2.196—The cross-shaped slab found on the ledge with fallen stones (A.R. Hayden).

Possible leacht

A group of flat stones survived on a small ledge in the rising bedrock cliff about 1m above the centre of the ledge. Two fist-sized pieces of quartz lay on the stones and against the cliff face. These were the only quartz stones found anywhere on this ledge. The bedrock here and in the cliffs at the inner side of the ledge lacks any quartz veining, which suggests that the two pieces of quartz were deliberately deposited by a human hand. It is possible, therefore, that the stonework beneath the quartz could be some sort of small *leacht*-like structure. The stonework was examined and excavated but little survived and no definite structure was detected.

Ill. 2.197—The possible *leacht* at the back of the ledge with fallen stones; note the quartz (A.R. Hayden).

The ledge with fallen stones (west)

Immediately west of the fault line, which marks the western side of the early quarry, the ledge narrows on its northern (inner) side and begins to rise more steeply. This is the area where the differential erosion of the bedrock may evidence the previous existence of now-vanished masonry. The innermost metre or so of the ledge here has a very rough surface, contrasting with the smoothly eroded rock surface of the remainder. The junction between the two areas, if extended eastwards, lines up perfectly with the groove in the bedrock, which possibly held the outer edge of the stonework uncovered at the centre of the ledge. There is a clear worked and artificially flattened area (no. 10) measuring 0.8m east–west by 0.5m north–south in the rougher area. It could have been cut to help secure the base of stonework. It certainly does not work as a step in its own right.

Ill. 2.198—The west end of the ledge with fallen stones, showing the large fallen rocks and differential erosion of the bedrock (11); 10 marks a flattened area, and L is the northernmost of the tripod holes (A.R. Hayden).

Possible masonry visibly survived beneath and between the two large fallen stones that lie near the western end of the ledge. It was possible to excavate only a small area, as the masonry mainly lay under the stones, which were too massive to move. A thin layer of small stone fragments and clay covered the masonry. What appeared to be regularly laid masonry lay beneath the larger, western and uppermost of the fallen stones. It appeared to have a roughly straight southern edge that could have been its original face, but it was not possible to see this with any clarity. When the larger stone fell, it landed partly on the smaller eastern fallen stone and partly on bedrock about 2m

[Left] Ill. 2.199—The possible drystone masonry surviving beneath and between the two large fallen stones at the western end of the ledge with fallen stones (A.R. Hayden).

[Right] Ill. 200—The short broad ledge. The westernmost of the two large fallen stones at the western end of the ledge with fallen stones is visible on the right on the east side of the fault line that marks the start of the short broad ledge (A.R. Hayden).

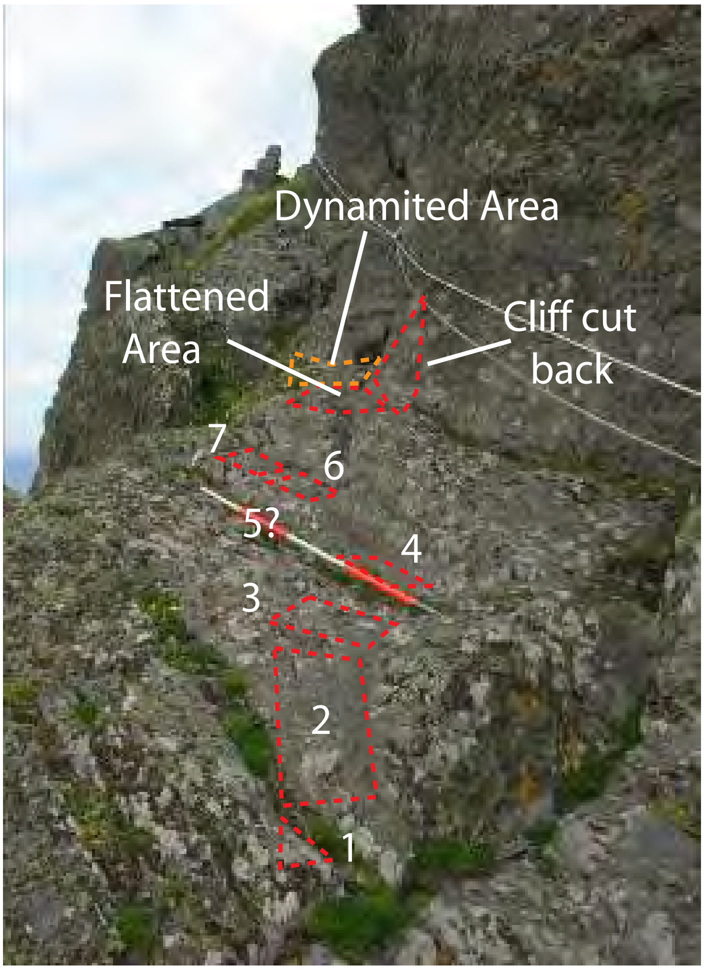
to its west, and so it may not have directly hit this masonry. The remains of the underlying structure could therefore be relatively intact.

The smaller fallen stone, however, had clearly landed on the possible stonework, as there was a clear impact crater around it, marked by crushed stones and disturbed stones lying nearly vertically. Such impact craters were also noticed around stones fallen on terracing elsewhere on the South Peak (see below).

Immediately west of the fallen stones, the ledge ends on a straight, roughly north/south-aligned fault line.

The short broad ledge

After the fault line, the ledge broadens on its north-western (inner) side, but the cliff edge on its outer side also abruptly steps back northward, so the connection between the two ledges is narrow. The slope of the bedrock plane also reduces, so the surface of the short broad ledge only slightly rises to the west. No excavation work was required on this ledge as all the surviving features here were rock-cut.



Ill. 2.201—Features on the short broad ledge, looking west (A.R. Hayden).

There are a number of clear, shallow, rock-cut steps leading across this ledge. The first (1) is a small triangle on the southern edge of the narrow gully that marks the fault line. The step originally would have been wider; the erosion of the side of the cliff has removed much of it. The second and third steps (2 and 3) are much larger but very shallow. Only the northern side of the fourth (4) survives on the side of a natural gully, where it is cut into the side of a low spur of bedrock. No clear worked area survives where the fifth step would have lain. The sixth and seventh steps (6 and 7) lie slightly higher up on a narrow ledge.

The western end of the ledge turns slightly to the north-west, where there is a worked and flattened area that would have been the next step. The cliff at the corner here was also clearly cut back to widen the passage. A wide fault marks the western end of this ledge.

The ragged ledge

After the wide fault line the bedrock is fractured by a number of fissures eroded along the cleavage planes of the bedrock, and several deep faults cross the ledge on north–south lines. This has resulted in the division of this 7m-long area into uneven narrow ledges of irregular width and uneven slopes. The western 2m of the ledge, which is less fissured, turns to the north-west around the inner bedrock cliff. A number of rock-cut steps survive on this ledge.

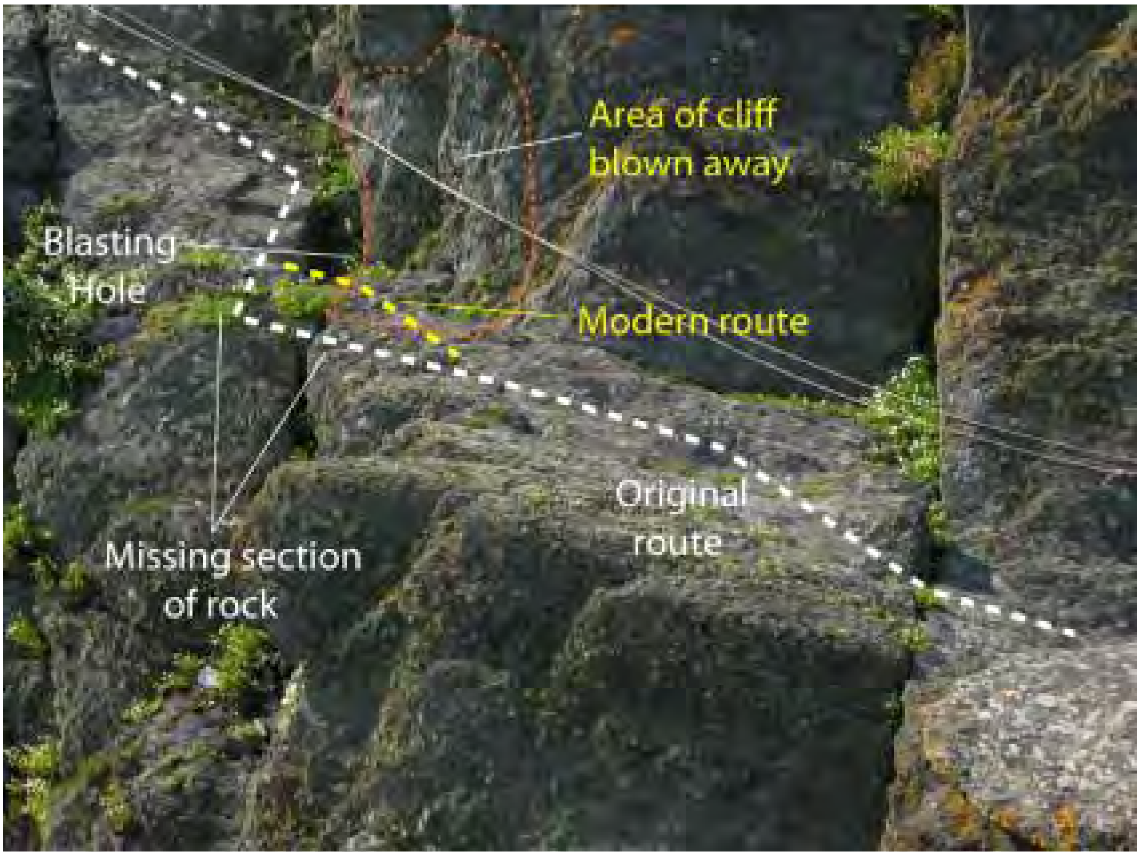
Ill. 2.202—The ragged ledge. The wide fault separating it from the short broad ledge is at the right. A deep fault also runs across the centre of the ragged ledge (centre of photograph). The lower end of the broad ledge lies at the corner of the cliff to left of centre (A.R. Hayden).

No excavation work was required here, as all the surviving features are rock-cut.

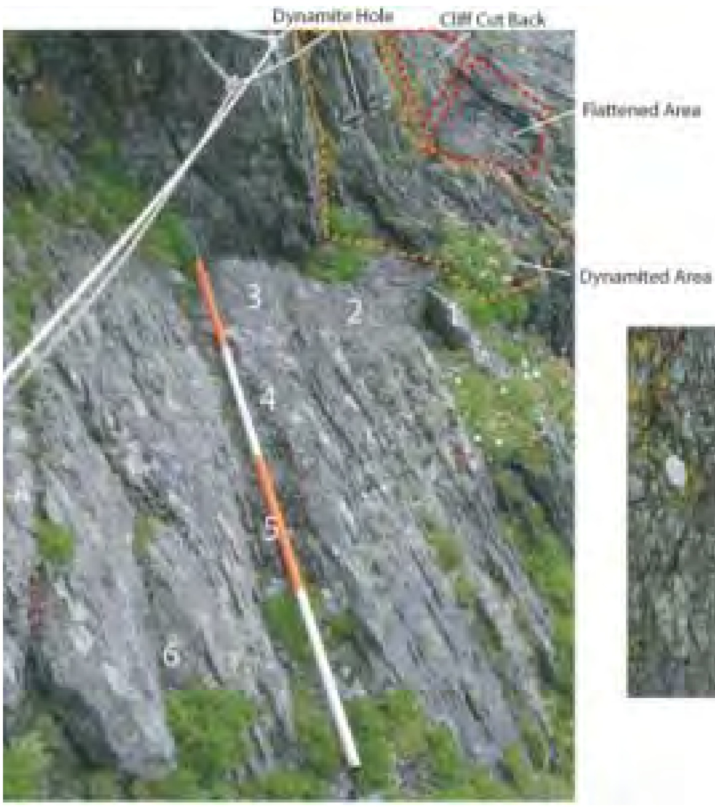
On the east side of the fault line that marks the end of the short broad ledge there is a roughly horizontal drilled blasting hole, 40mm in diameter and 380mm long, low down on the west-facing rock face on the north side of the ledge. The north-western side of the hole has largely been blasted away. The lighthouse-builders created the hole. There are at least two sizes of drilled holes (40mm and 65mm in diameter) visible along the road to the lighthouses, and the smaller of these corresponds to the size of the hole on the South Peak. The route where the drilled hole lies probably originally ran straight westwards from the end of the short broad ledge toward the cliff edge and skirted around a formerly protruding part of the cliff (which was blasted away), before turning at a right angle to the north to join the first surviving section of steps on the ragged ledge from the south. The first three steps (1–3) on the ragged ledge run from south to north.

The junction between the ragged and broad ledges is marked by two closely spaced fault lines, the easternmost of which is particularly wide, and so it is not surprising that a section of rock close to the cliff edge could have fallen away, thereby severing access. The blasting removed part of the cliff to re-establish access to the next section of the route. The fact that the lighthouse-builders went to the trouble of reopening this route suggests that it was of importance to them. It is possible that the lower part of the route combined with the southern part of the north-west passage provided an access route and short cut between the monastery (where the lighthouse-builders lived) and the upper lighthouse (see below).

On the west side of the wide fault line there is a narrow spine low down on the left that has clearly been flattened and forms the first step (1), which may originally have been wider but has been reduced by erosion and perhaps by the blasting. The step clearly links now-absent steps to its south-west (beyond the modern cliff edge) with the second and third steps to its east. The second and third surviving steps are large and finely cut. The route then turns through a right angle back to the west, where there is a wide flattened area (4) and then a step formed by flattening the top of a narrow ledge (5) on the rock spur that rises at the inner side of the ledge.



Ill. 2.203—The original and modern routes and the area of the cliff blown away at the junction of the short broad and ragged ledges (A.R. Hayden).



[Left] Ill. 2.204—Features at the junction of the short broad ledge and the ragged ledge, looking east (A.R. Hayden).
[Right] Ill. 2.205—Close-up of the drilled blasting hole (A.R. Hayden).

Ill. 2.206—Features on the ragged ledge, looking west (A.R. Hayden).

The route then crosses another deep fault line. It is probable that there could have been masonry here spanning this fault, as it could have been easily built and securely footed in the fault. No stonework survived here, however, which is not surprising, as the blasting of the rock at the lower end of this section of the ledge could have removed any masonry that might have remained at that time.

The next step (6) is on a narrow ledge on the rising rock on the right. Then there are two fine rock-cut steps side by side (7 and 8), followed by a series of five (9–13) very finely preserved and large rock-cut steps that lead up to a slight turn to the right, where the cliff on the inner side of the ledge was clearly cut back. Around the slight corner there is a worked and flattened area (13) on the surface of the ledge, and then, where the ledge rises and turns to the north-west, there are four

[Left] Ill. 2.207—Masonry built by the OPW crew on the ragged ledge to aid the transport of stone up to the broad ledge for conservation. There could well have been masonry here originally also (A.R. Hayden).

[Right] Ill. 2.208—The western end of the ragged ledge as it turns and opens onto the broad ledge (A.R. Hayden).

clear rock-cut steps (nos 14–17). The first and the last two are poorly preserved. There is a handhold on the rock to the right above the junction between steps 16 and 17.

The broad ledge

After this corner the route opens onto a 4–4.5m-wide ledge that rises evenly and steeply upwards from south-east to north-west for a length of 12m. This is the broad ledge, one of the naturally widest parts of the climb to the South Peak.

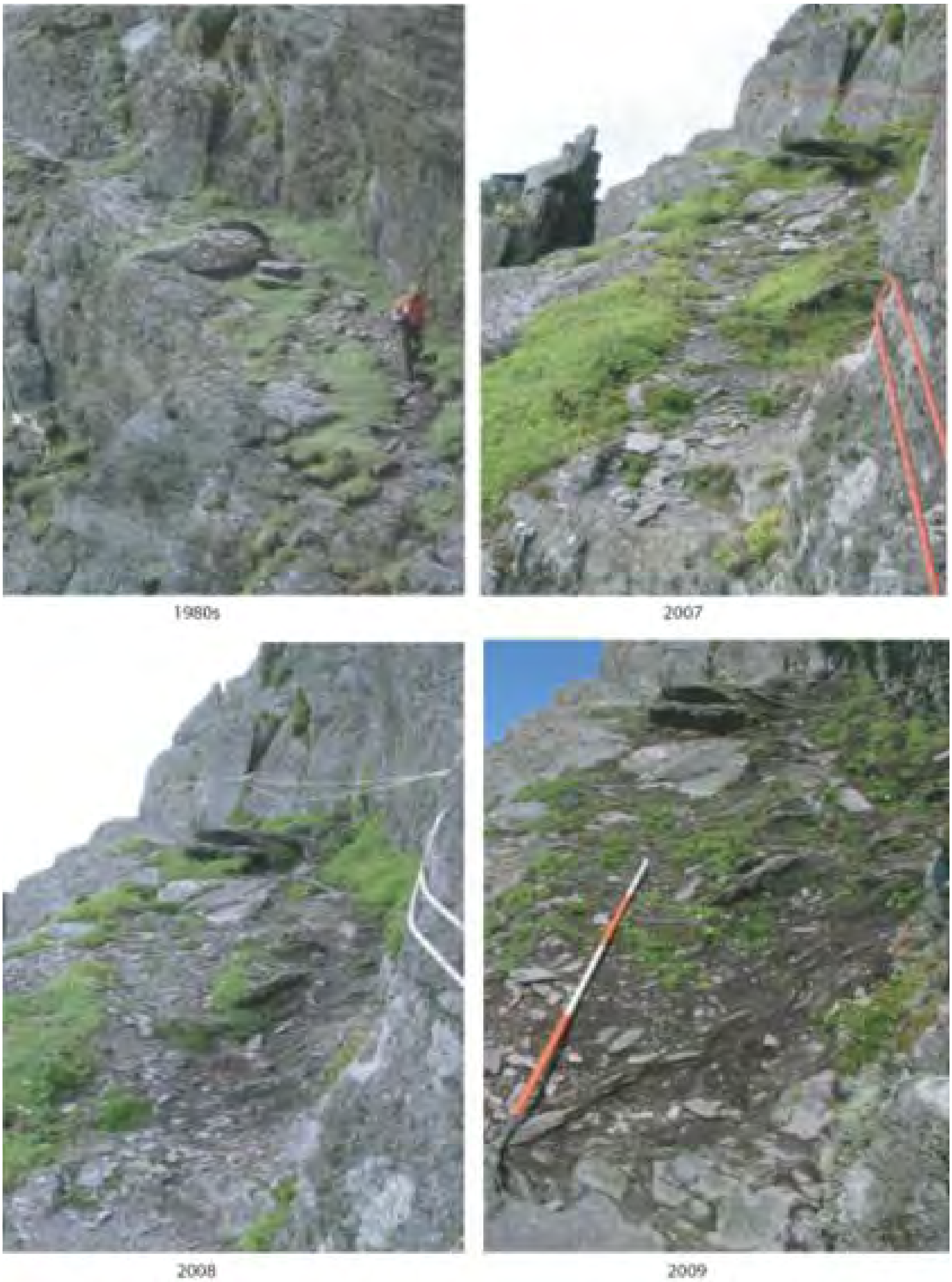
Ill. 2.209—The broad ledge from the west before excavation (Con Brogan, DAHG).

[Left] Ill. 2.210—The broad ledge before excavation, from the south (A.R. Hayden).

[Right] Ill. 2.211—The broad ledge before excavation, from the north-west (A.R. Hayden).

High and ragged cliffs, where the ends of the bedrock cleavage planes are exposed and unevenly eroded, mark the inner side of the ledge. The outer edge of the ledge is also ragged for the same reason.

About two-thirds of the way up the broad ledge there is a near-vertical gully in the cliff forming the inner side of the ledge. There are rock-cut steps in the upper half of this gully, and it provided access to the area beneath the oratory terrace where stone was won or quarried and raised to build the oratory and 'garden' terraces (see below). There are many large, loose rocks in the gully and it is clear that many have tumbled down onto the broad ledge—and, indeed, more are likely to do so in the future.



Ill. 2.212—Continuing erosion evident on the broad ledge. The large stone visible near the top of the ledge in the top left photograph had disappeared by 2004. (Top left, Horn *et al.* 2002, fig. 15; remainder, A.R. Hayden).

One such large stone lay at the lower end of the broad ledge, close to the cliff on the outer side of the ledge. A second huge stone, shown in 1980s photographs on the upper end of the ledge, fell over the cliff before 2004. In general, however, this ledge was devoid of fallen stones and so must have been cleared by the monks, as the width of the ledge means that a large quantity of stone would naturally have accumulated on it.

Before excavation, bedrock was exposed at the upper end of the ledge and along its outermost 1.5m or so. There are a number of what appear to be man-made hollows on the exposed bedrock at the outer side of the ledge. These were partly obscured beneath scree and campion.

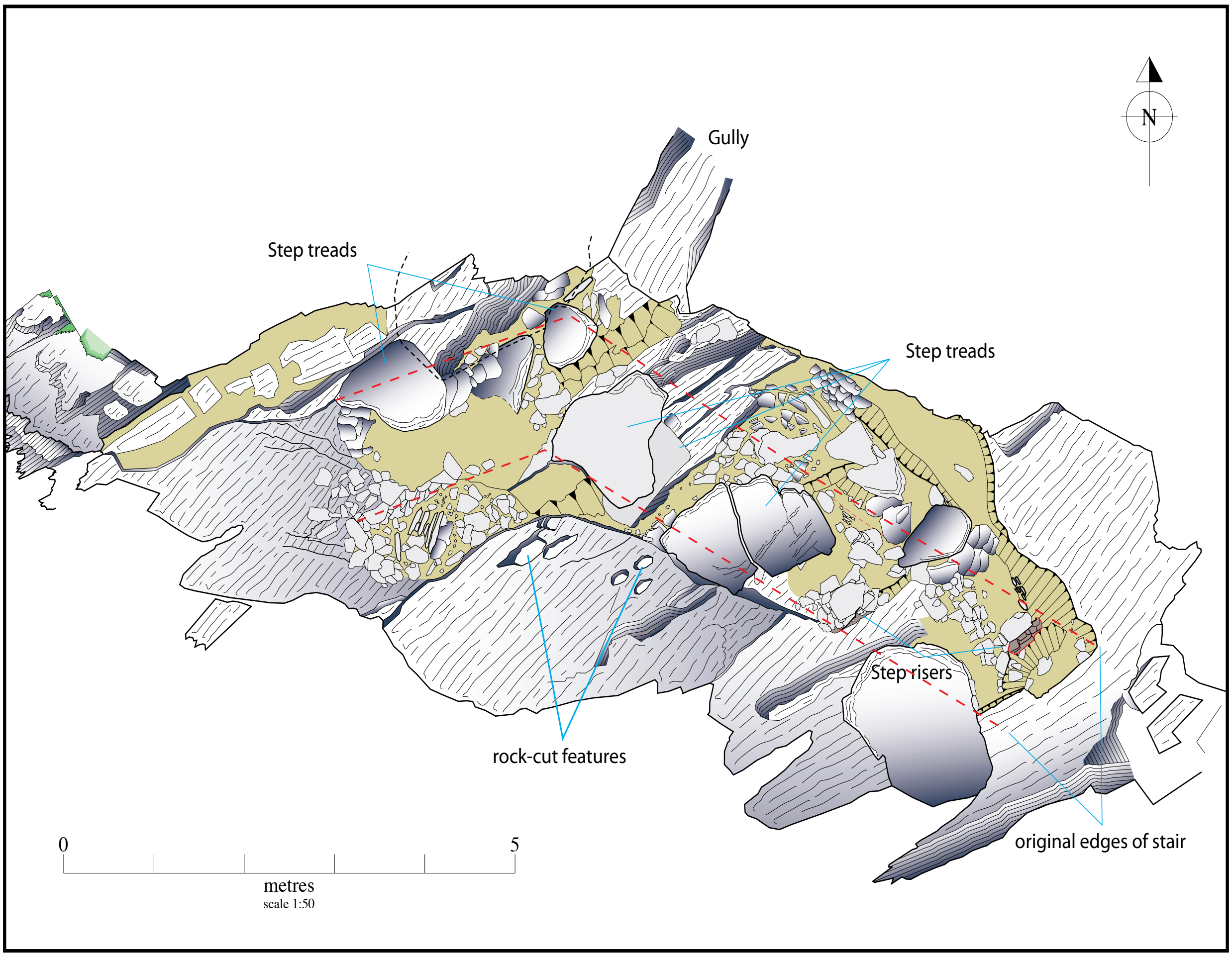
The area along the base of the rising cliff on the back (north-east) side of the ledge contained vertical or near-vertical stones set in a mineralised silt matrix. This is typical of an area where much water is flowing down a cliff face and eroding the ground (like a drip gully); a similar feature was observed on the inner side of the upper traverse. The water in the drip gully flowed downslope and then across the ledge close to its lower end, where it had gouged out a significant hollow. The flowing water also deposited a large debris fan on the outer side of the ledge where it flowed over the cliff.

Before excavation a few large stones were visible protruding through the thin cover of soil, stones and campion on the ledge. Two stones lay on top of each other about two-thirds of the way up the ledge and appeared to be step treads. They were roughly *in situ* but both appeared to have slipped downhill somewhat and there was a likelihood of further slippage, as the ground beneath them was heavily eroded and undercut. The remains of the base of a possible drystone riser were also visible towards the lower end of the ledge. These stones also lay at a steep downhill angle; they had slipped considerably and were clearly likely to move further downhill. These survivors seemed to represent the last remnants of a very poorly preserved masonry stairway, which originally could have extended up the full length of the ledge.

Ill. 2.213—The broad ledge after initial clearance and excavation (A.R. Hayden).

The thin soil cover that protected the last remnants of the stairway was also being eroded at an increasing rate. This was very noticeable over the three wet and windy summers of 2007–9. The amount of soil and vegetation on the terrace was noticeably less than in the 1980s (compare to Horn *et al.* 2002, fig. 15, which shows the ledge almost completely covered in growth). Falling stone also posed a danger to the surviving remains. The large stone shown towards the north-western end of the terrace in the 1980s was probably knocked off the ledge by another falling stone.

The increase in human traffic if the area was to be reopened to the public would only add to the erosion. The climb



Ill. 2.214—Plan of the broad ledge after initial clearance and excavation.

up this part of the route to the Peak is also relatively easy until the blind corner, just beyond this ledge, is reached. It is at that point that many people turn back. Therefore it was anticipated that there would be a relatively large amount of human traffic, and hence disturbance, on this ledge when the site was reopened to the public.

The broad ledge was excavated in 2010.

Rock-cut features

A number of small, shallow depressions, cut into the smoother surface of the bedrock, lay just south-west of the fault line about midway up the ledge. These were fully revealed by the excavation. In this area there are also a number of small bedrock ledges, which looked like they had been levelled and flattened. All these features were very heavily eroded. It is not clear what they represent. The cut features appeared to be too shallow and small to have been rock-cut steps and they did not appear to conform to any recognisable pattern that would have aided a climber. In view of the survival of the tripod holes on the ledge with fallen stones, it is possible that the features on the broad ledge could have functioned in a similar way and provided anchorage for timbers used in moving large stones.

The stairway

Excavation revealed the last remnants of a number of parts of a formerly extensive stairway beneath the very thin covering of shillet, clay and campion.

The possible step riser noted before excavation towards the lower end of the ledge appeared to be just a coincidental alignment of stones, several of which had been moved to their present position owing to the impact and damage caused by falling stones. A definite step riser was discovered further downslope, however, near the lower end of the ledge. It was a drystone structure and composed of quite small stones. Its eastern edge may have been intact, but some of it could have been disturbed and removed by erosion down the drip-gully channel. Its western end was partly demolished when the huge fallen stone slid over it towards the cliff edge and pushed it slightly downhill. There was a clear impact crater in the surviving stonework on the eastern side of the large slipped stone.

The very base of a second drystone riser was revealed a few metres upslope. This, however, was greatly disturbed and only one or two courses of stonework survived.

[Left] Ill. 2.215—Detail of the lowest step riser (A.R. Hayden).

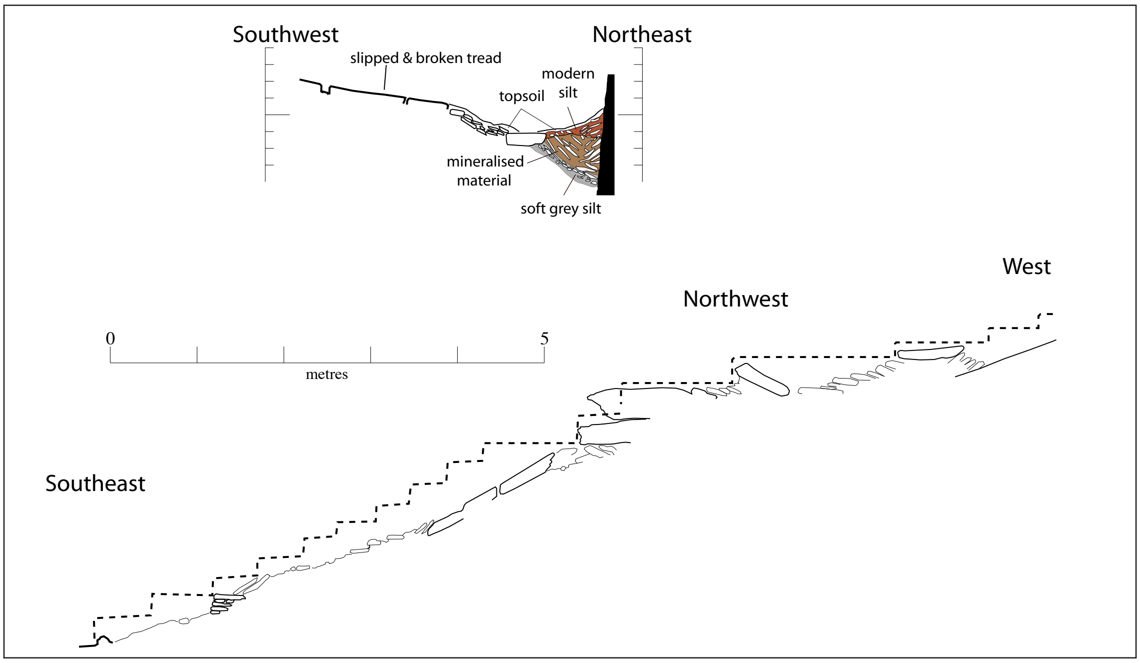
[Right] Ill. 2.216—The second step riser (above the ranging rod). The large fallen stone that damaged the first riser is visible at the left (A.R. Hayden).

Ill. 2.217—Step risers and treads on the lower two-thirds of the ledge (A.R. Hayden).

Ill. 2.218—The three surviving stair treads midway up the ledge (A.R. Hayden).

Further up the ledge three stair treads survived but all had slipped out of position to varying degrees. The uppermost two were those visible before excavation. The lowest and newly revealed stone had slipped downwards considerably and had cracked in half. It was removed after recording, but only disturbed stonework survived beneath it. The two uppermost large stones were still roughly in position but had rotated clockwise and slipped slightly downhill.

A straight-edged fault runs along the length of the ledge about 1.5m from its outer edge. The slope of the ledge follows the bedding plane of the rock south-west of the fault and is smooth. North-east of the fault the bedding planes of the rock are generally horizontal (resulting in a series of flat-topped natural steps) except against its immediate north side, where it is twisted, broken and uneven and protrudes in places above the lower rock to its south-west. The edge of the fault line was utilised by the monks to retain the outer edge of the masonry staircase; the rougher rock surface north-east of the fault line also provided a more secure base on which to build.



Ill. 2.219—Top: south-west/north-east section across the lowest surviving step tread and the drip gully. Bottom: longitudinal section up along the ledge.

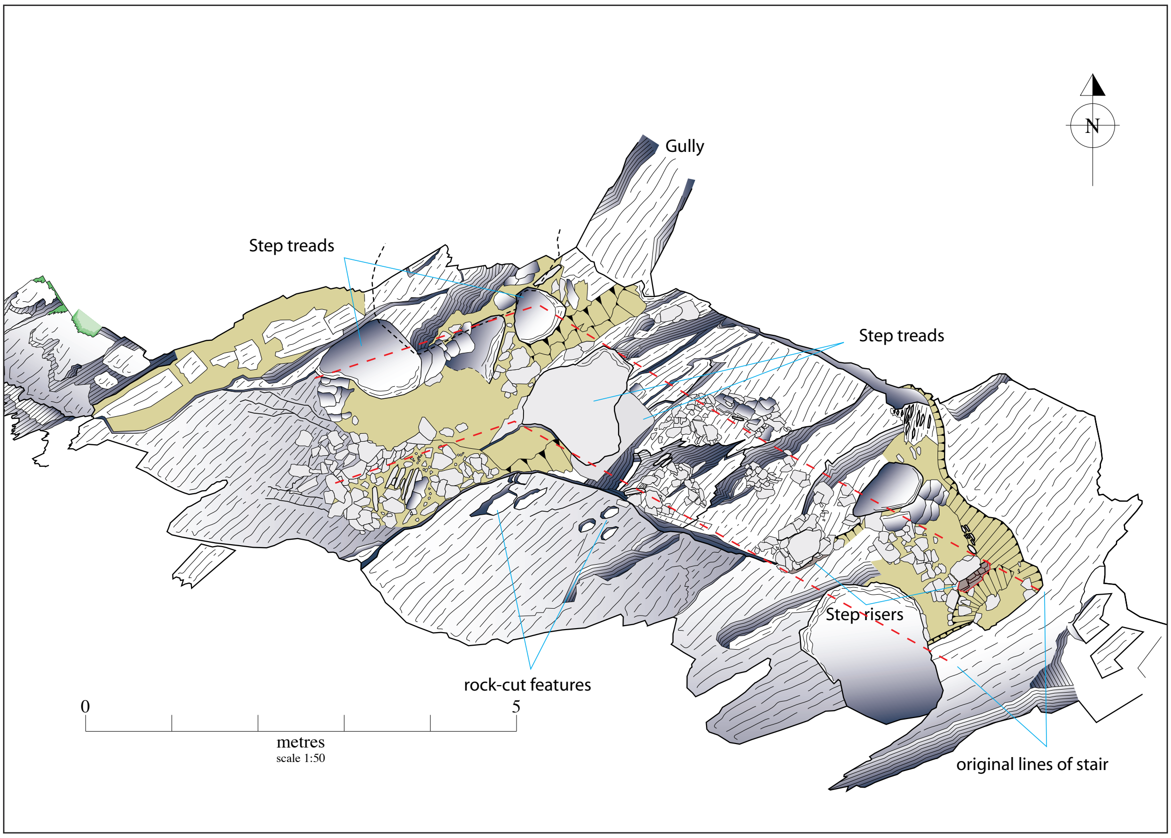
The surviving remains of the stairway show that it ran roughly straight up the lower two-thirds of the ledge before turning to the west near its top. The stairway appears to have originally measured about 1.5m in width.

The bare inner side of a number of step treads and the walling supporting their inner edge survived at the beginning of the upper third of the ledge, where the bedrock cliff on its inner side turns to the west. The stairway there also turned at about 45° to the west. Only its neatly aligned and straight inner (north-eastern) edge survived. Much of the remaining stonework in this area was badly crushed; indeed, the stones that survived were only partial remnants of the originals, the remainder having been crushed and broken away. This destruction was caused by the impact of large stones, which fell down the steep gully at the inner side of the ledge. The bedrock in the gully is unstable and fractured and there are several large stones there, which will likely fall at some time in the future. Stone falling from this gully was probably also responsible for most of the destruction evident on the lower part of the stairway.

After the turn, the individual steps would have been fewer and more elongated, as the slope the stairway covered was much more gentle. The stairway is likely to have continued right to the western end of the ledge, where it would have merged into the rising bedrock. Its north-western end led on to the rock-cut steps on the next ledge.

Ill. 2.220—The surviving inner side of the stairway at the northern end of the ledge, from the east (A.R. Hayden).

Ill. 2.221—The upper end of the stairway from the west; note the crushed and fractured stones (A.R. Hayden).



Ill. 2.222—Plan of the broad ledge after the completion of excavation.

Drip gully

The base of an original drip gully, naturally formed by water trickling down the steep cliff face at the inner side of the ledge, underlay both the modern drip gully and the surviving stonework of the stairway and was filled with soft, grey, silty clay. The inner side of the stairway was set away from the cliff on the inner side of the ledge, sensibly maintaining a drain along the base of the cliff. Deposits built up in the drain/drip gully after both the construction and the destruction of the stairway. These deposits consisted of heavily mineralised stones and clay and were so hard that they could only be removed by chiselling and pickaxing.

The silting up of the drip gully at the eastern end of the northern cliff restricted drainage and caused the formation of a pool of water between the cliff and the inner side of the steps at the northern end of the ledge. The fill of the pool was only partly excavated, as it was unnecessary to remove it all. Its fills were again heavily mineralised.

Ill. 2.223—The gully that gives access to the ledges beneath the oratory terrace and down which stones fell, damaging the stairway on the broad ledge; note the crushed stones at the base of the gully (A.R. Hayden).

Ill. 2.224—The drip gully on the inner side of the stairway (A.R. Hayden).

The first narrow ledge and the blind corner

The broad ledge narrows abruptly at its upper end, where bedrock was again fully exposed before excavation. The ledge then turns to the west and, narrowing further, extends upwards to the blind corner. There are two well-preserved runs of rock-cut steps on this part of the climb. The ledge in this area has been almost entirely cut from bedrock.

No excavation was required in this area, as all the surviving features were rock-cut.

Ill. 2.225—The first narrow ledge, leading from the broad ledge (right) to the blind corner (left). The rock-cut steps and lower ledge outside them are clearly visible (A.R. Hayden).

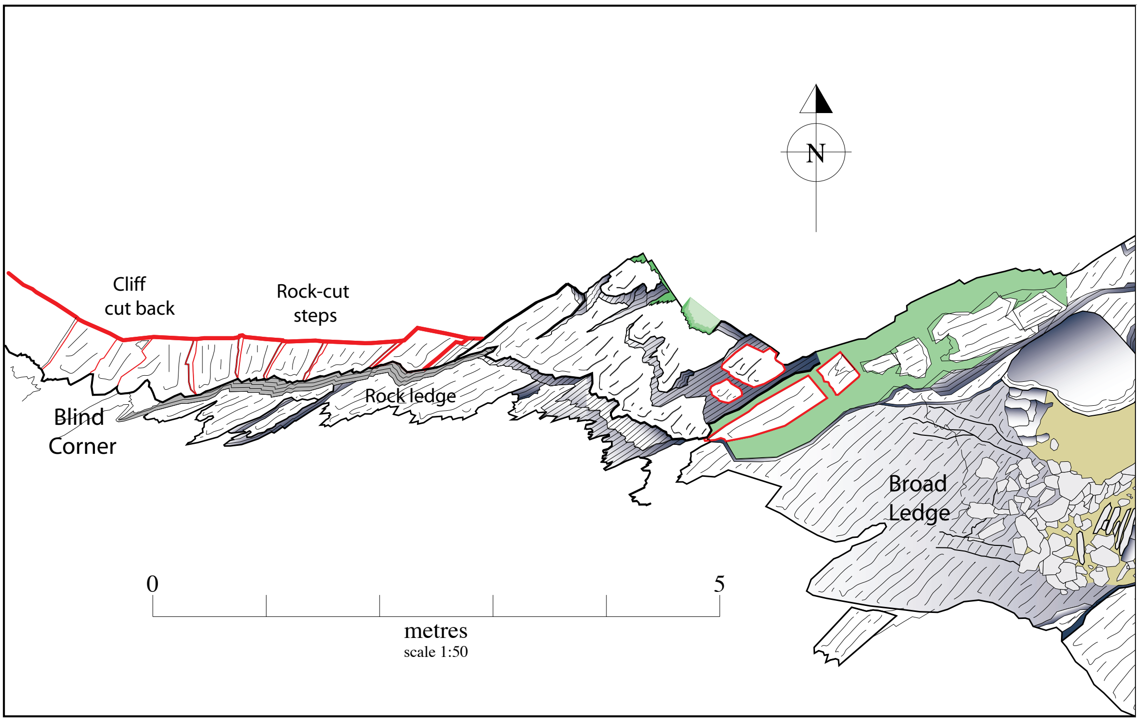
Above the top of the masonry stairway there is a low spur on the cliff at the northern end of the broad ledge. The top of the eastern end of this spur was worked and flattened. There is a clear rock-cut step (1) on the centre of the spur, followed by two more rock-cut steps (2 and 3) further to the west. A fourth rock-cut step lies to the north of the last and brings the route around a slight turn to the north, where the cliff has clearly been cut back. There is then another clearly worked and flattened area (5). There is a further worked and flattened area in the angle formed by the rising cliff on the right. This was not a step, as it lies off the line of the route.

The ledge then narrows considerably and is clearly totally man-made, having been dramatically cut from the steep cliff face. There is a fine run of nine shallow rock-cut steps (6–14) on the inner side of the quarried ledge. There are also two rock-cut handholds (about 1m above steps 10 and 13) on the cliff on the inner side of the route before it rounds the blind corner, and a third one and a fourth, less definite one opposite step 14 immediately after the blind corner.

There is a long, narrow ledge, partly natural and partly carved following a natural bedding plane, outside and 200–300mm below the level of the rock-cut steps on the first narrow ledge. A photograph taken in the 1980s (Horn *et al*. 1990, fig. 17) clearly shows drystone masonry capped by a large flat slab lying on the lower end of this ledge. This masonry does not survive today but its former presence shows that the pathway around this vertiginous corner was augmented by masonry built on the lower ledge on

[Left] Ill. 2.226—The junction of the broad ledge and the first narrow ledge (A.R. Hayden).

[Right] Ill. 2.227—The upper part of the first narrow ledge (A.R. Hayden).



Ill. 2.228—Plan of the top of the broad ledge and the first narrow ledge.

its outer side, and so the passage here would have been wider and less daunting than it appears today. Masonry with an identical function survives on a similar ledge just around the blind corner, and also on the new route discovered in 2010 leading to the early entrance to the monastery on the other peak of the island.

It is also possible that the eight rock-cut steps before the blind corner may have been intended to secure stonework rather than being actual steps on which to walk. To securely anchor the masonry on the narrower ledge it probably would have been necessary to key it into stonework laid on the rock-cut steps.

It is also possible, of course, that the masonry on the lower ledge could be a later augmentation, and it is therefore unclear whether the features here represent a single phase or several phases of activity.

The passage here is of sufficient width to have allowed the construction of a narrow parapet wall along the cliff edge, but no evidence of such a structure survived.

[Left] Ill. 2.229—Masonry that survived in the 1980s on the narrow ledge, evidencing the former existence of a wider pathway or parapet wall (Horn *et al.* 1990, fig. 17).

[Right] Ill. 2.230—The same view today (A.R. Hayden).

Ill. 2.231—The third handhold at the blind corner (A.R. Hayden).

Ill. 2.232—The blind corner viewed from the west (A.R. Hayden).

The second narrow ledge

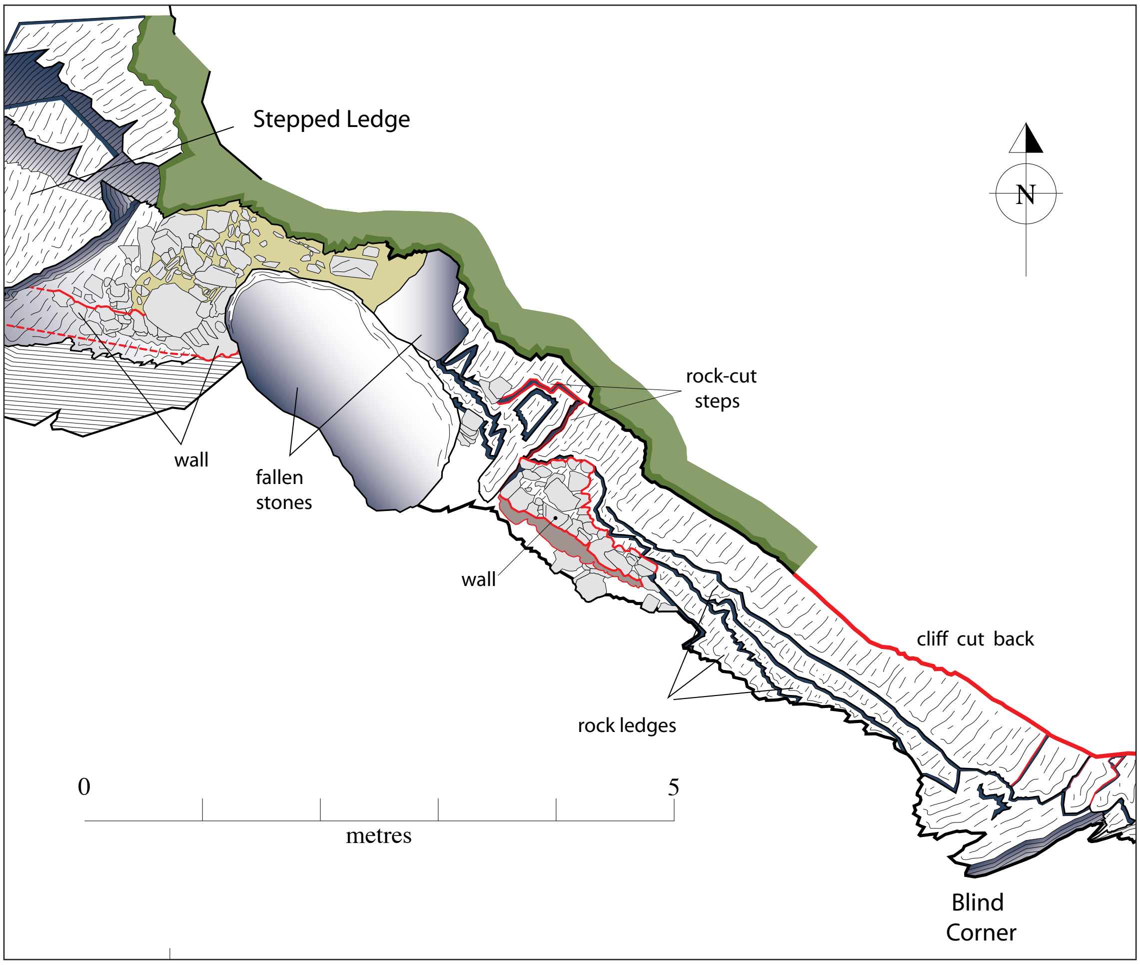
Ill. 2.233—View south-east from the stepped ledge along the second narrow ledge towards the blind corner, before excavation. Note the large, naturally fallen stones (A.R. Hayden).

The route turns to the north-west as it rounds the blind corner, and here the pathway is again completely cut from the rock cliff. It runs flat and straight, as its base was quarried down to a naturally flat bedding plane in the bedrock. The pathway then turns back to the west, where there are two large stones fallen from the cliff above. It then broadens and extends a short distance to the north-west to worked and enhanced rock ledges (the stepped ledge) that lie at the base of the cliff beneath the Needle's Eye.

The last remnants of some very poorly preserved stonework were visible before excavation on a ledge just below the middle section of the second narrow ledge. The masonry appeared to have fulfilled the same function as that which had been lost since the 1970s on the first narrow ledge and therefore could have been the only surviving masonry that evidenced the former existence of such walling on either of these ledges. The masonry was loose and very collapsed and hence highly vulnerable. The full length of the path from the blind corner to the base of the cliff below the Needle's Eye was excavated in 2008 to reveal any surviving masonry and allow it to be recorded and conserved.

[Left] Ill. 2.234—The quarried pathway of the second narrow ledge and remnants of walling on the ledge below it, looking north-west (A.R. Hayden).

[Right] Ill. 2.235—The quarried pathway of the second narrow ledge and remnants of walling on the ledge below it, looking south-east (A.R. Hayden).



Ill. 2.236—Plan of the second narrow ledge from the blind corner to the stepped ledge.

Ill. 2.237—The second narrow ledge: rock-cut steps leading up from the western end of the narrow quarried ledge (A.R. Hayden).

Ill. 2.238—Walling surviving west of the large fallen stones along the cliff edge where the second narrow ledge widens and turns to the west (A.R. Hayden).

The path beyond the blind corner initially is completely cut from the almost vertical rock cliff and measures about 400mm in width. Its outer side is ragged and uneven. There are narrow ledges outside and approximately 300mm and 600mm below the main ledge, which retained some poorly preserved stonework at their western ends. This masonry clearly demonstrates that the pathway here, like that before the blind corner, was wider than at present, as it had masonry on its outer side. An approximate height of 600mm of drystone walling survived over a length of 2m south-east of the first large fallen stone. Its base was constructed on a narrow rock ledge that lay about 600mm below the rock-cut base of the pathway. The face of the wall was poorly preserved but it appears to have been battered. There was a second, 200mm-wide ledge at a higher level (about 200–300mm below the path level) at the eastern end of the surviving wall. It extended east to the blind corner and it too could originally have held masonry. These ledges were clearly worked and widened.

These ledges indicate that the passage here was formerly of sufficient width to have allowed the construction of a narrow parapet wall along the cliff edge, but again no evidence of such a structure survived.

The pathway steps upwards towards the western end of the length of surviving walling, just before it reaches the first large fallen stone. A deep rock-cut ledge survived on the bedrock here. The quarried flat top of the bedrock immediately above this ledge provided a second step up. These steps may have held masonry and were not necessarily intended as steps for the feet of the climber. Originally there must have been at least two masonry steps here on top of the rock-cut ledges, which raised the pathway upwards to its evident level beyond the large fallen stone.

North-west of the large fallen stone the pathway broadened and turned to the west. A maximum of two courses of drystone walling, 1.2m in length, survived of the original wall that defined the outer side of this part of the pathway, which was approximately 1m wide. The walling ran along the cliff edge,

Ill. 2.239—The stepped ledge viewed from above (north). The rock-cut slot visible in the bottom right corner of the planning frame drains water from the inner side of one of the quarried surfaces (A.R. Hayden).

which sloped upwards to the west. The impact of the large fallen stone, which still lay on the walling, formed a readily recognisable crater where the underlying walling was heavily distorted; many of the original stones in the walling were smashed or twisted to lie nearly vertically. This feature is paralleled on the first section of terracing of the north-west passage, which was also hit and partly demolished by a large stone that fell from above (see below). This side of the Peak is particularly prone to damage from stones falling from the cliff above owing to local geology.

The stepped ledge

The broad pathway at the western end of the second narrow ledge leads up to a wide and open area where there are a series of flat rock ledges, which were quarried from the rising bedrock following natural bedding planes. There is a clearly evident drain cut into the outermost of these ledges. It prevented water pooling on this broad step, the surface of which sloped slightly downwards to its inner side. A number of huge fallen stones lie on the gently sloping ground inside and to the north-east of the exposed bedrock of the stepped ledge.

No excavation was undertaken here as the surviving features were rock-cut and fully exposed.

2.3.4 The primary route to the South Peak

Introduction

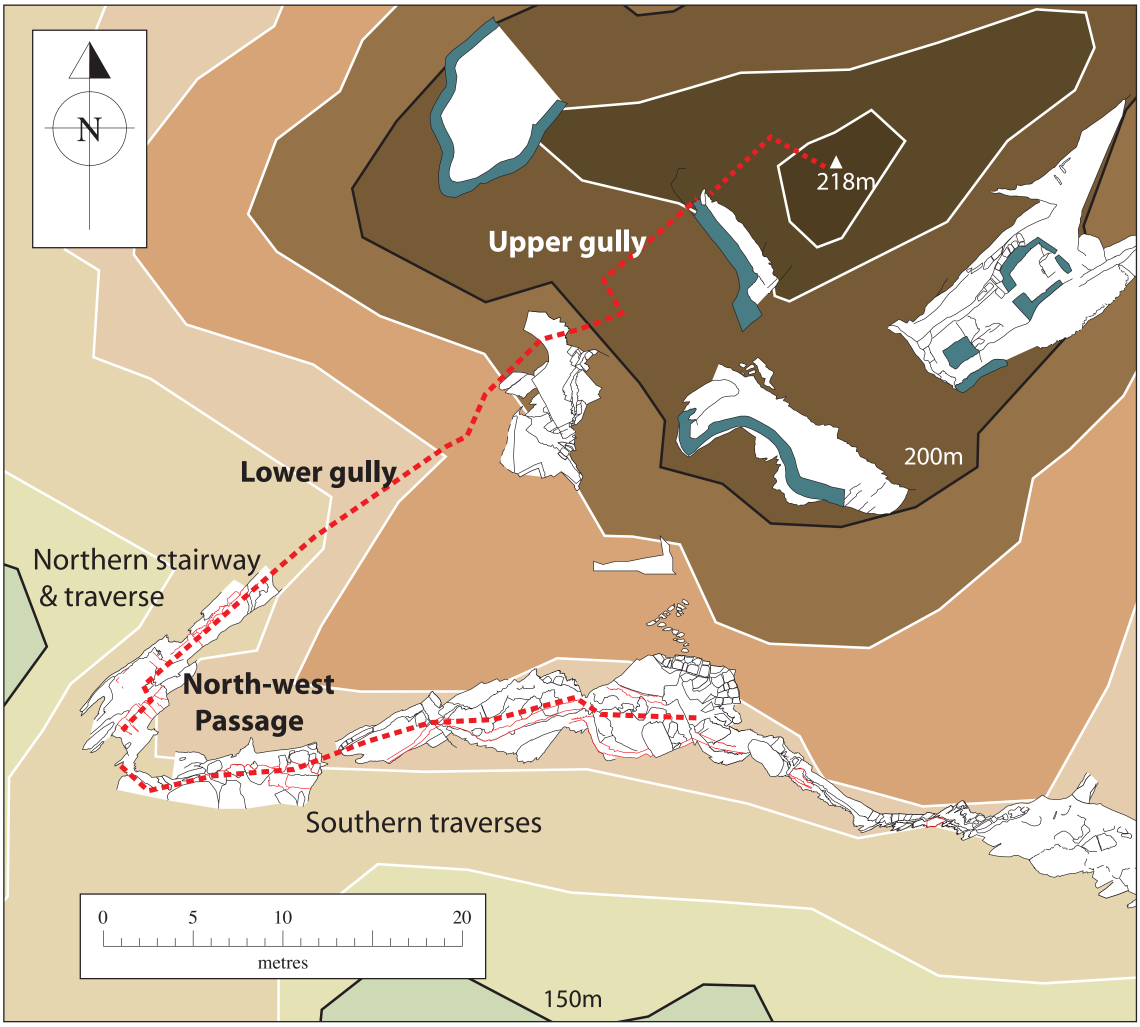
From this point the two routes to the top of the South Peak diverge. The final route climbs up the cliff to the north-east. The primary route runs west and around the north-west corner of the Peak (the north-west passage). It crosses four sections of terracing (the southern traverses) as it runs to the north-west corner of the Peak. Turning the corner to the north and east, it descends down a masonry stairway and across another masonry traverse into a steep gully. It then ascends this gully directly to the top of the South Peak. This route was only discovered during the recently undertaken works.

The north-west passage

The north-west passage was composed of a number of elements. Four sections of terracing—the southern traverse—led west to the north-west corner of the Peak. Rounding the corner, the route descended to the north-east down drystone stairs—the northern stairway—to a short length of terracing—the northern traverse—which ended at a steep gully.

Before excavation an obvious route led west from the stepped ledge along a prominent ledge to the north-west corner of the Peak. No structures were visible along most of this route, but just before the corner at the western end of this part of the route there were a number of rock-cut steps leading down to a well-preserved, although partly collapsed, section of drystone terracing (southern traverse, section 4). Around the corner there was a possible routeway following a narrow ledge hugging the vertical cliff. It sloped downwards at first but then levelled out and ran into a long, steep gully that extended up from the sea (where it is called Glengarrif on the six-inch OS maps, sheet 104, from 1841 onwards) right to the top of the Peak. A few flat stones protruded through the soil cover on these latter parts of the route.

The terracing on section 4 was cleared of plant growth in 2007, revealing a substantial section of surviving terracing. The survival of this masonry suggested that other masonry structures could have been erected on the other parts of the southern traverse, and they were subsequently excavated in that year. The discovery of the very poorly preserved terracing on these sections suggested that the route they represented was important and potentially of early date. The ledges around the corner on the northern side of the Peak (the northern stairway and northern traverse) were excavated in 2008.



Ill. 2.240—The upper part of the primary route to the Peak.

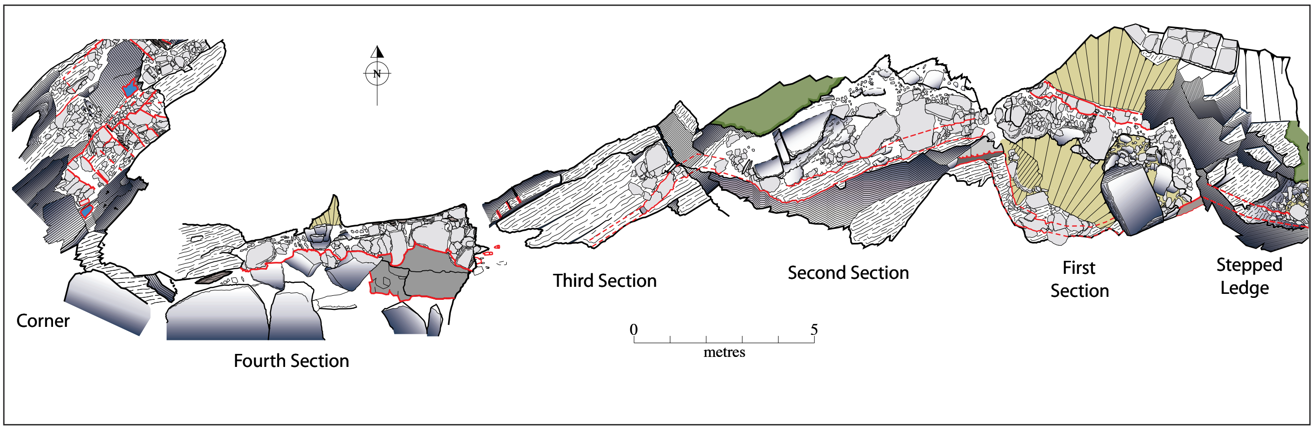
Ill. 2.241—The southern traverse (red line) of the north-west passage, viewed from the lower lighthouse. The fourth section of the traverse lies behind the rock tor at the left. The blue line indicates the final sections of the lower part of the route (A.R. Hayden).

[Left] Ill. 2.242—Looking west along the southern traverse of the north-west passage before excavation (A.R. Hayden).

[Right] Ill. 2.243—Looking down on the fourth section of the southern traverse; the collapsed terracing is clearly visible (A.R. Hayden).

Ill. 2.244—LiDAR image of the southern traverse of the north-west passage and the north-west corner of the Peak (DAHG).

Ill. 2.245—Aerial view of the southern traverse of the north-west passage during excavation (Con Brogan, DAHG).

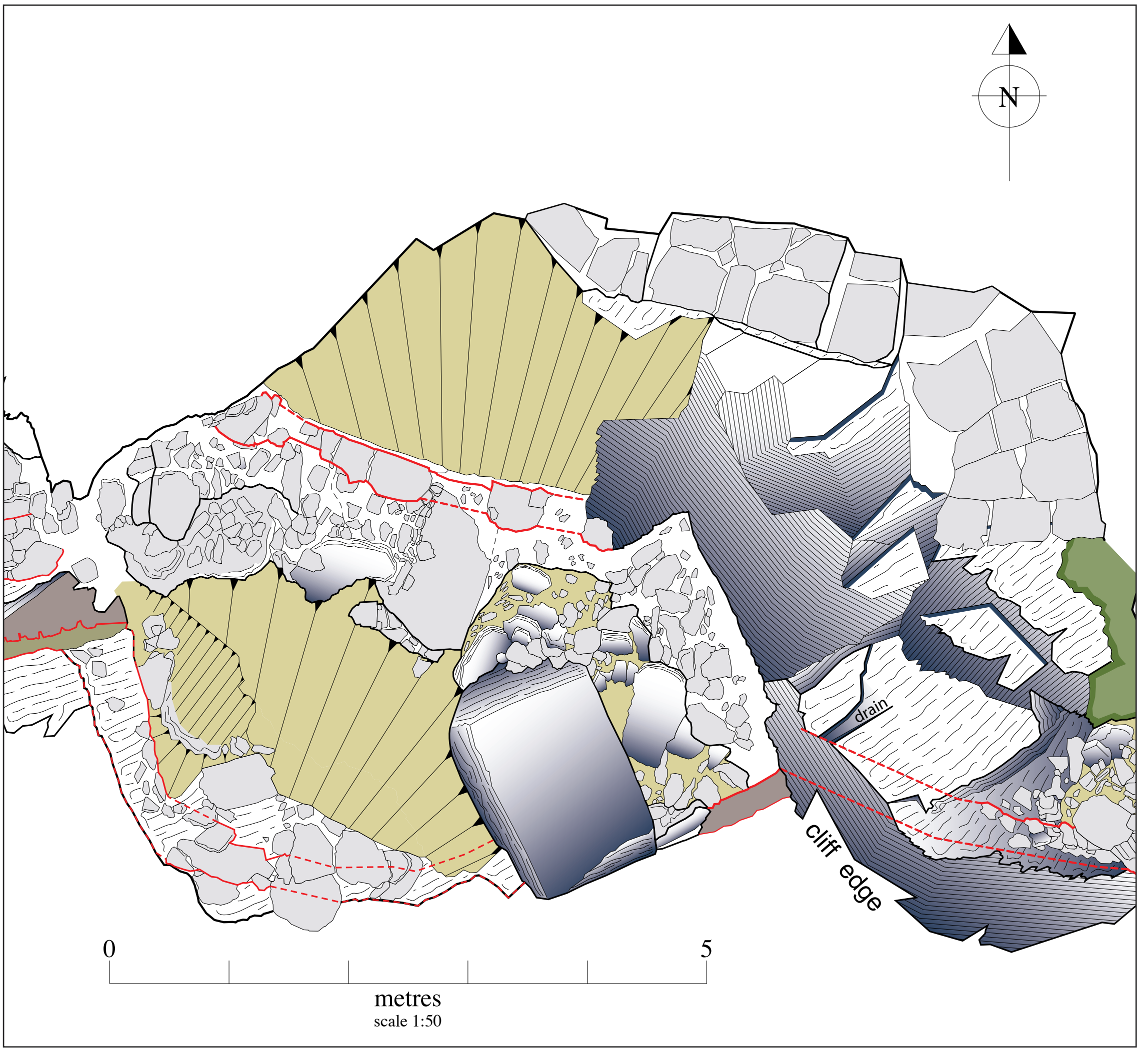


Ill. 2.246—Plan of the southern traverse and north-west corner of the north-west passage. The red lines indicate the edges of masonry steps and walls.

The southern traverse

First section

The easternmost section of the southern traverse consisted of a very wide and irregular-shaped terrace. Its curving outer wall was built following the cliff edge. Very limited and poorly preserved walling, only one to two courses in height and laid along the curving edge of the cliff, survived along the outer edge of the eastern end of the traverse. At the south-west end of the traverse none of the outer face of the walling survived, but a tell-tale vertical edge containing some small backing stones survived fronting the infilled stone and quarry waste lying just back from the cliff edge. This edge marks the former line of the inner face of the terrace wall, which was typically composed of stones smaller than those used in the outer face.



Ill. 2.247—Plan of the first section of the southern traverse, with the stepped ledge at the right. The wall designed to stop debris from washing down onto the terrace lies at the base of the slope at the back of the terrace (top).

Ill. 2.248—Looking down on the first section during excavation. Collapsed paving slabs can be seen in the foreground, and part of the surviving traverse wall at the back (A.R. Hayden).

The west end of this first section of terracing is marked by a deep gully, which severely constricts the width of the access route. To allow transit across it, a wall was built in the gully, based on a narrow ledge at a lower level than the main wall of the traverse. Only a small part of this drystone wall survived and it was in very poor condition. The cliff on the inner side of the traverse just before (east of) the gully also appears to have been partly quarried back to facilitate transit; the end of a protruding rock spur has clearly been quarried away down to just below the finished level of the terrace—it was left untouched at a lower level.

Ill. 2.249—Looking east at the outer side of the first section. Traces of outer walling survive at the right, and the wall crossing the gully is visible at the left (A.R. Hayden).

Ill. 2.250—Drystone retaining wall at the back of the first section, looking east (A.R. Hayden).

There was a low drystone retaining wall, where a steep-sided fan of debris cascaded down from higher gullies, on the inner side of part of this traverse. The wall was laid in a straight-sided cut made through the lower end of the debris fan and was obviously intended to retain material washing down the cliff and stop it from spreading onto the traverse. After the traverse went out of use and the wall collapsed, a considerable amount of debris again accumulated here, as owing to the surrounding topography this area is a natural collection point for material falling from the cliffs above.

Originally this traverse was paved with

some very large, flat stones that later slipped southwards and downwards after the collapse of the outer wall. The collapse of the terrace wall may have been, at least partly, caused by large stones falling from the cliffs above. One huge rock, weighing several tonnes, which fell from the cliff landed on the terrace and still lay embedded in its south side. There was a clear impact crater around the stone where the underlying walling had been pulverised, pushed downwards and partly trapped beneath the stone. Stones turned to lie vertically marked the outer edge of the crater.

Ill. 2.251—First section: fallen stone and crater around it. Paving and drystone retaining wall at the inner side of the traverse visible at right (A.R. Hayden).

Ill. 2.252—Worked stone found on the first section of the southern traverse (A.R. Hayden).

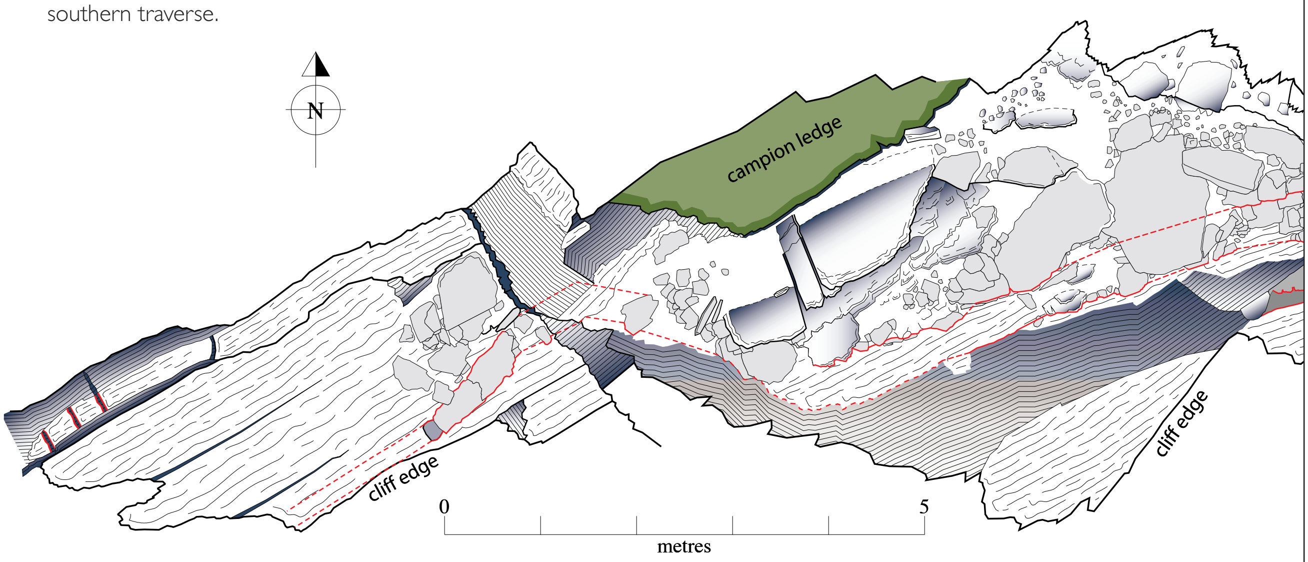
Second section

The next section of the southern traverse consisted of a broad bedrock ledge that slopes slightly upwards to the west. There were traces of an outer wall along the straight cliff edge, but again the walling survived very poorly and to only one or two courses in maximum height. This section of the traverse was also paved with very large stones, although only a few survived and those that did had also slipped downwards and southwards after the collapse of the outer wall. The terrace-builders left some of the naturally accumulated rock *in situ* at the western end of this section, as it lay beneath the intended finished level of the traverse. Its presence highlights the absence of other, similar naturally accumulated stone elsewhere on the north-west passage and clearly demonstrates that the ledges were cleared of naturally fallen stone (which provided a convenient source of building stone) before the terraces were built.

[Left] Ill. 2.253—Looking west along the second section. Traces of the original outer wall and paving visible. Wall crossing gully from first section at front left (A.R. Hayden).

[Right] Ill. 2.254—Looking back eastward along the second section. Naturally fallen stones left on bedrock ledge in foreground, as they lay beneath the finished terrace level (A.R. Hayden).

Ill. 2.255—Plan of the second and third sections of the southern traverse.



Third section

A deep gully crossing the ledge marks the start of the next section of the southern traverse. In the gully there were again traces of the base of external walling built on a lower ledge to facilitate transit. The cliff on its inner side was also partly quarried back to widen the passage and facilitate the crossing of the gully. The surface of the main ledge here slopes quite steeply upwards to the west. The base of the cleared level of the ledge lies at the same level as the finished top of the first and second sections to the east and shows that originally the tops of these three sections of the traverse lay at the same level. The finished level of these sections lay well above any of the surviving stones on the rock ledge of the third section, except at its western and higher end, where the bedrock would have lain close to the original finished level. The western end of this traverse was largely devoid of any stone, and the bare, sloping bedrock was exposed before excavation.

[Left] Ill. 2.256—Looking east from the third section; walling at its east end visible in foreground (A.R. Hayden).

[Right] Ill. 2.257—The walling at the east end of the third section viewed from the east (A.R. Hayden).

Fourth section

The top of the fourth section of the southern traverse lay more than 2m below that of the preceding one and was separated from it by another fault line, this time not marked by a gully but by a 4m drop in the level of the underlying bedrock bedding plane.

A small piece of bedrock stands proud of the rest of the cliff leading down to the fourth section of the traverse. It is possible that this was once carved into a cross, but it was very highly eroded and no evidence of working remained.

A narrow, east/west-aligned cleft close to the cliff on the inner side of the western end of the third section of the traverse contained three shallow and narrow rock-cut steps that led down towards the top of the cliff down to the fourth section of the traverse. The stumps of three further rock-cut steps survive at the base of this low cliff. These latter steps are very poorly preserved and there clearly must have been more steps here originally. The cliff here is highly eroded. There are two clear handholds on the top of the rock spine on the northern side of the climb down. There may also have been another on this side

Ill. 2.258—The cliff leading down from the third to the fourth section. Note the small piece of protruding bedrock at right, possibly once a way-marker cross (A.R. Hayden).

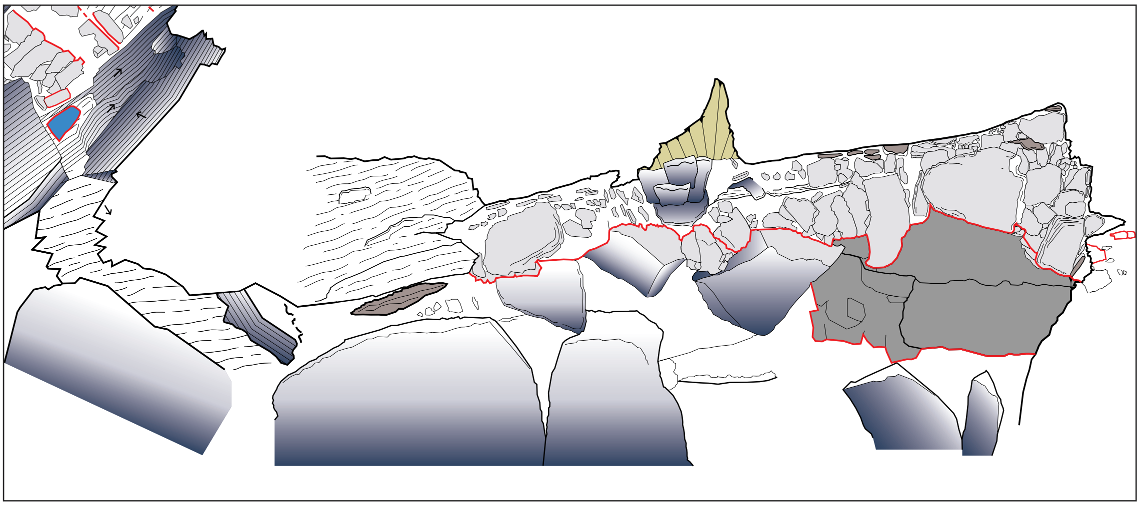
and one on the southern side, but the rock is very fractured and no clear remains survived.

The fourth section of terracing was the best-preserved structure on the whole north-west passage, surviving to almost 2m in height. Nevertheless, even this terracing had severely collapsed inwards, causing some of the basal stones to burst outwards, and there were substantial voids in the base of the walling. The stones of the upper part of the wall had moved inwards considerably and slumped downwards at their inner ends. The uppermost courses of walling, however, were horizontal and level and had clearly been rebuilt at some time, possibly by the lighthouse-builders. There is a possible route that may have been used by the lighthouse-builders from the upper lighthouse up the gully at the north-west corner just beyond this terrace (see below).

Ill. 2.259—The rock-cut steps (white) and handholds (yellow) in the cliff leading down from the third section to the fourth section of the southern traverse (A.R. Hayden).

The eastern end of the terrace would originally have measured almost 2.5m in width, but owing to collapse its top survived to little over 1m wide. The terrace originally narrowed to only 1m in width over its western half. The inner side of the terrace must have consisted of loose material deposited inside its outer walling. The presence of a high cliff close to the rear face of the terrace wall meant that water gathered and flowed down though the back of the terrace and removed much of the finer material behind the wall, causing it to collapse inwards.

The stones used in the wall of this traverse were noticeably large, perhaps because of the easy availability of large rocks, which fell from the broken ends of the adjacent cliffs. Many huge, naturally fallen rock slabs litter this area. Most pre-date the construction of the traverse, as they are incorporated



Ill. 2.260—Plan of the fourth section of the southern traverse.

[Left] Ill. 2.261—The gaps at the base of the wall of the fourth section (A.R. Hayden).

[Right] Ill. 2.262—The gaps in the base of the wall were built up with stone to support the wall as the excavations progressed (A.R. Hayden).

[Left] Ill. 2.263—Looking down on the fourth section terracing from the east. The flat stones on the lower ledge are visible on the left (A.R. Hayden).

[Right] Ill. 2.264—Looking down on the ledge below the fourth section from the west (A.R. Hayden).

into it, but some also clearly fell at a later time.

Excavation in this section consisted simply of removing the sea campion growing between the joints in the outer face and top of the terrace wall and cleaning over the ledge at the base of the terrace. The voids in the base of the terrace wall had to be infilled with masonry to secure the wall before the lower ledge was excavated.

Several large, flat stones were visible on the broad, roughly flat ledge below and outside the base of the terrace wall. This ledge was cleared of plant growth but not further excavated. The large stones may have been deliberately laid either to facilitate construction of the terrace or to provide a usable space on this wide ledge. There are a number of other, lower-lying broad and flat ledges on the cliffs below, which are easily accessible from this ledge. None of these were excavated or examined in detail, but there is possibly a route here leading down the cliff face.

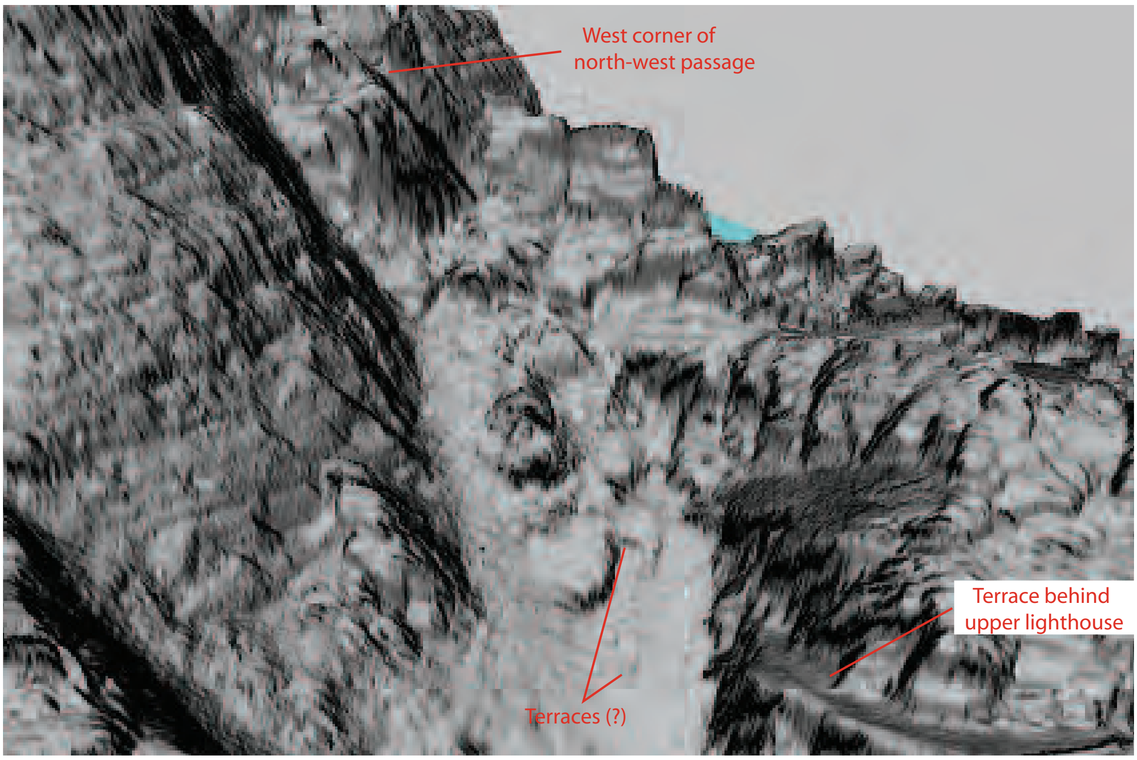
The north-west corner

Westwards from the fourth section of the southern traverse, the route follows a natural ledge around a tight corner at the north-west end of the South Peak. There is a deep and initially narrow gully extending downwards from this corner. Several large and naturally fallen stones were lodged in the head of the gully and provided a convenient transit across it.

Possible lighthouse-era route to upper lighthouse

This gully descending from the north-west corner looks like it could be easily climbed, and it is possible that there was once a routeway here leading down to the (lighthouse-era?) terraces that lie above the back of the upper lighthouse. This route has not been climbed or explored in any way as yet.

The blasting hole at the junction of the short broad ledge and the ragged ledge and the repaired top of the terracing of the fourth section of the southern traverse suggest that the lighthouse-builders may have used this route as a short cut between the monastery (where they lived) and the upper lighthouse.



Ill. 2.265—LiDAR image showing the possible route from the north-west corner of the north-west passage down the gully to drystone terraces and on to the long terrace at the back of the upper lighthouse (DAHG and A.R. Hayden).

Ill. 2.266—The possible route from the back of the upper lighthouse (arrowed left) up the gully to the corner at the western end of the southern traverse (arrowed right) (A.R. Hayden).

Ill. 2.267—The northern side of the north-west passage before excavation (A.R. Hayden).

Rounding the north-west corner

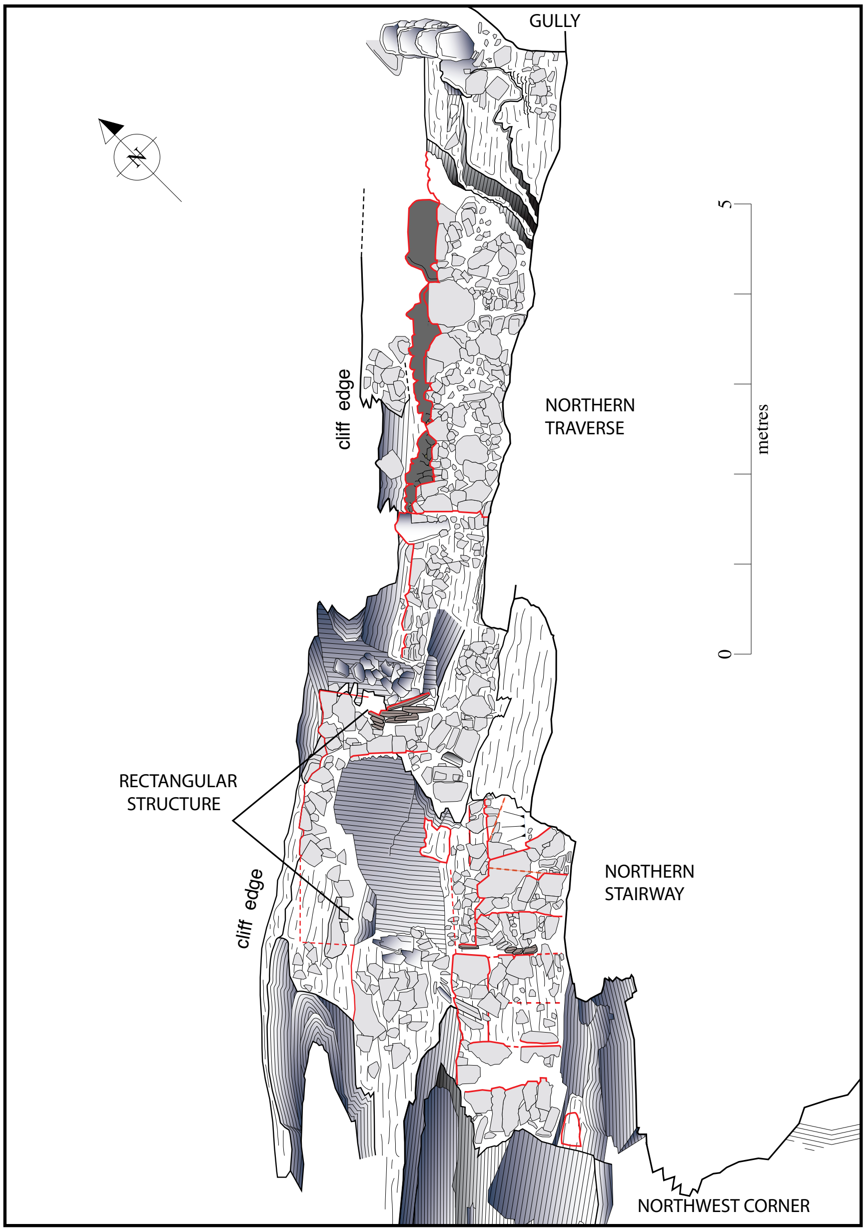
The bedrock ledge leading from the head of the gully around the corner is heavily eroded owing to its crossing the exposed western ends of the cleavage planes of the bedrock. It is not clear whether this ledge was man-made, partly enhanced or totally natural. No excavation was undertaken here, as there were no suggestions of man-made structures surviving in the area.

The northern side of the north-west passage

After the corner the route turns back to the north-east, where there are a few worked natural bedrock ledges leading downwards to two more sections of masonry lying on narrow ledges on the vertical to overhanging cliff. These two sections were discovered, excavated and conserved in 2008.

The first section of masonry consists of a flight of masonry steps (the northern stairway) leading down along natural sloping bedrock ledges, past a small rectangular platform on the cliff edge to a long, narrow terrace (the northern traverse). The terrace led into a prominent natural gully that runs up from the sea right to the top of the South Peak.

Ill. 2.268—The northern stairway and traverse after excavation (A.R. Hayden).



Ill. 2.269—Plan of the north side of the north-west passage.

The northern stairway

Stepping down off the bedrock after the corner there is evident masonry. The last step down onto a bedrock ledge is high and there are traces here of the base of a drystone step, which, originally being higher, would have rendered the step down easier. The base of another masonry step survives below it. This is the uppermost of eight former steps that led downslope for a length of 3.8m to the east.

Ill. 2.270—The northern stairway after excavation, from the north-east (A.R. Hayden).

The masonry of all but one of this flight of steps survived. The existence of the missing step is evident, however, as the steps were all of roughly equal width and the missing section of stonework was of this width. The steps survived as little more than one and occasionally part of a second course of stone that were just the bare bases of the original steps. Tell-tale stones had slipped to the vertical against the lower ends of some of the steps, clearly showing the former existence of more masonry on the surviving stonework. Sloping bedrock immediately underlay the surviving stones.

Traces of a narrow wall that had almost totally collapsed outwards survived on the outer side of the steps. The steps would then originally have had a narrow parapet wall along their outer side that would have incorporated their outer ends within it. Including the wall, the structure here measured 1.3m in width. It is not clear how far down the steps the parapet wall stretched, as no trace of it survived over their lower half.

The stairway turned at a right angle to the north-west at its lower end, where the bases of two steps survived at the lower end of the bedrock slope. These steps led down to a large and shallow notch cut into the next sloping bedrock ledge below. This notch was too far down to have been the surface of a step in itself and so was probably cut to anchor a masonry step on the sloping rock. From this point the route turns back again through 90° to the north-east. Originally, there must have been further steps here owing to the evident height difference but only the very base of the lowest step survived. A line of small stones that had slipped to the vertical marked a joint in the masonry, showing the position of this lowest step.

Rectangular platform

Just after the second turn of the steps the bedrock cliff turns abruptly inwards (south) along a fault line.

[Left] Ill. 2.271—The junction of the northern stairway and the northern traverse, looking east (A.R. Hayden).

[Right] Ill. 2.272—Detail of the junction, showing vertical stones, looking west (A.R. Hayden).

The cleavage planes here run east–west and the edge of the cliff consists of a narrow bedrock spine with a steep-sided cleft inside it. A large stone was jammed upright across the eastern end of the rock cleft. This was deliberately done, as it was secured in place by several smaller, tightly wedged stones. The vertical stones retained the eastern side of a short length of drystone walling (of which both faces survived) that extended northwards for the short distance to the cliff edge. A notch was cut in the end of a protruding bedrock spine to retain the western face of this wall at one point. The wall appeared to turn to the south-west, following the cliff edge. This suggests that there was a small rectangular terrace or platform here. It is not clear where its south-western end lay; it may have extended up the cliff in line with a clear narrow step in the bedrock that would have provided a secure footing for its end wall. If this were the case, the structure would have measured about 3m in length by 1.4–1.8m in width, but the bedrock there slopes so steeply upwards to the south-west that it is difficult to see how any usable enclosure or structure could have been constructed. The form and function of this putative structure remain unclear. It would, however, have faced in roughly the same direction as the small enclosure above the Needle's Eye and that at the north-western end of the 'garden' terrace and so could have fulfilled a similar function, i.e. as some form of small contemplation or prayer station. Alternatively, the structure could have been built to house a *leacht*, cross or some other form of marker alongside the route.

Ill. 2.273—The rectangular structure at the turn of the northern stairway. Its north-eastern wall lies to the left of centre at the bottom of the photograph; its south-western wall follows the cliff edge (A.R. Hayden).

Ills 274 and 275—Details of the north-eastern wall of the rectangular structure, showing upright stones jammed into a bedrock fissure as support (A.R. Hayden).

Ill. 2.276—Looking down on the northern stairway and the northern traverse from the upper platform above the Needle's Eye (A.R. Hayden).

The northern traverse

The northern stairway led down to a narrow, drystone-walled terrace—the northern traverse. The terrace had an outer retaining wall set on a bedrock ledge, which sloped down to the north-east. There was a clear masonry face on the outer side of the south-western end of the terrace wall, where bedrock was at its highest. Along the remainder the wall of the terrace has largely collapsed, but the original line of its face was clear, as it followed the cliff edges of the bedrock ledges down to the north-east. The outer face of the terrace originally ran on a straight line but because of the irregular line of the cliff on its inner side the terrace varied from 1m to 1.4m in width.

The easternmost 2m of the terrace was very poorly preserved, heavily disturbed and covered by material (stones and soil) that

Ill. 2.277—The northern traverse after excavation, from the north (A.R. Hayden).

cascaded down the steep gully that lies at its north-eastern end.

The surviving part of the terrace measures 3.9m in length from the line of the step at its western end to the first rise in bedrock at its eastern end. Originally it may have measured 5.6m in length if, as seems likely, it covered the bedrock ledges beyond its north-eastern end. Its surface was probably level and appears to have been paved, as several large, flat stones survived among the general collapsed rubble on its surface.

The steps described above indicate that the finished surface level of the terrace originally lay at the same level as the base of the final rock ledge north-east of the terrace. Therefore the terrace would originally have measured just over 1m in height at the most.

Including the masonry steps, a total of 12m of linear structure survives on this side of the north-west passage. Combined with the 27.5m of terracing uncovered on the southern side of the north-west passage, this gives a total length of nearly 40m of new stonework discovered on this route.

The northern cliffs

Several natural bedrock ledges and large lumps of slipped bedrock lead upwards from the eastern end of the northern traverse into a large gully. The gully extends upwards from the sea, passing under the uppermost of the two platforms above the Needle's Eye and extending higher up, beneath the northern end of the upper traverse, before petering out just below and to the north of the top of the Peak.

It was initially thought that the north-west passage crossed this gully and led on to roughly flat ledges beyond it on the west-facing cliff and around the corner to further ledges on the north side of the Peak. These ledges were excavated in 2008 but no definite man-made structures were noted.

Ill. 2.278—The northern part of the north-west passage (right arrow) runs down and into the gully (left arrow) up which the primary route then runs to the top of the Peak. Roughly flat ledges extend around the cliff to the left from the point of this arrow (A. R. Hayden).

First cliff ledge beyond the northern traverse

A clear ledge led north-westwards from the other side of the gully beyond the end of the northern traverse to the south-western corner of the cliff. The rock at the level of the ledge contained several horizontal layers of softer material, which eroded out to form small holes and flat ledges. There were a number of areas of this softer rock that had been heavily worn by feet and which may also have been carved to create footholds on the south-eastern half of the ledge, where the passage was restricted and awkward.

Ill. 2.279—The ledge on the cliff north-east of the end of the northern traverse, before excavation (A.R. Hayden)

The north-western end of this ledge was broad and relatively flat, and it was initially thought that the clearly worn areas might have led to terracing at this end of this ledge. The broad area was excavated but no evident structure survived and all the stones on the ledge appear to have accumulated naturally. The stone consisted of a single layer lying on the uneven original rough surface of the ledge, which is composed of fallen rock and *in situ* bedrock. A small ledge slightly higher up, which lay beneath a low overhang in the cliff to the north-east, was also excavated. It proved to have been covered with only a single layer of very small fallen stones.

Ills 2.280 and 2.281—Worn and carved footholds on the ledge (A.R. Hayden).

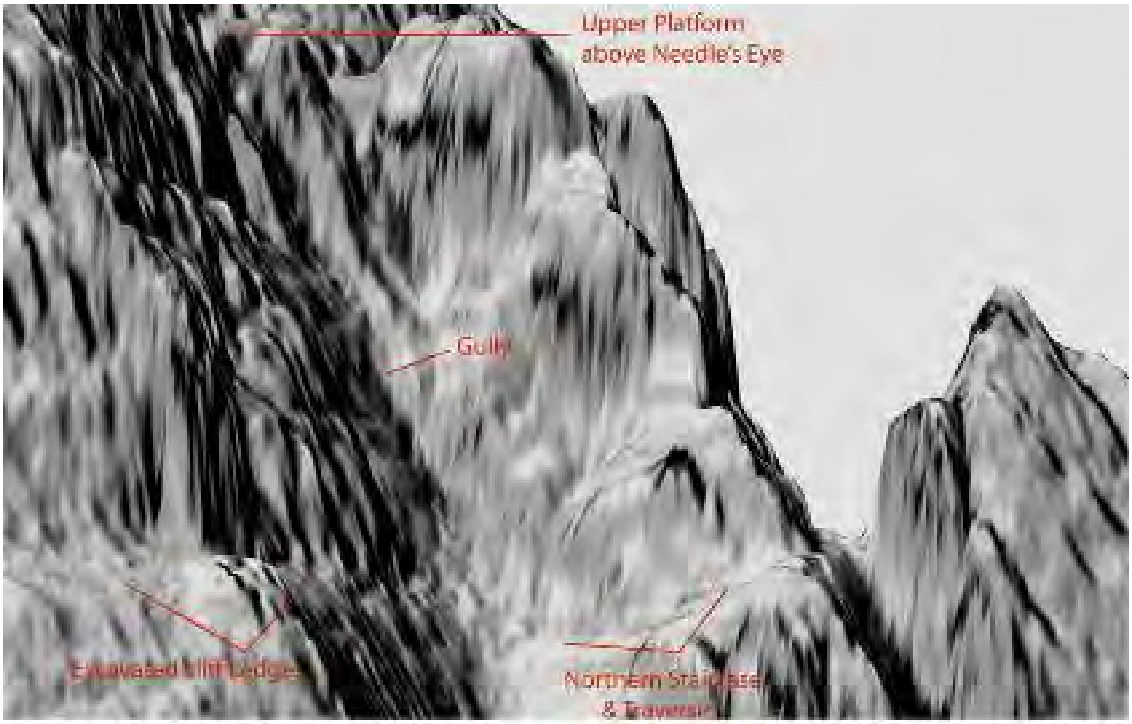
The second cliff ledge

The broader ledge led to a slightly higher and easily climbed flat-topped spur of rock, which marks a turn in the cliff around to the north-east. The turn leads to a broad (1.5–2m in width), northward-sloping ledge that extends eastwards for a length of about 10m. This ledge was also excavated in 2008. There was no man-made structure evident on this ledge and only a very small quantity of fallen stone was present.

Ill. 2.282—The area excavated at the end of the ledge, from the south-west (A.R. Hayden).

[Left] Ill. 2.283—The area excavated on the ledge, from the north (A.R. Hayden).

[Below] Ill. 2.284—LiDAR image showing the location of the excavated northern cliff ledges (DAHG and A.R. Hayden).

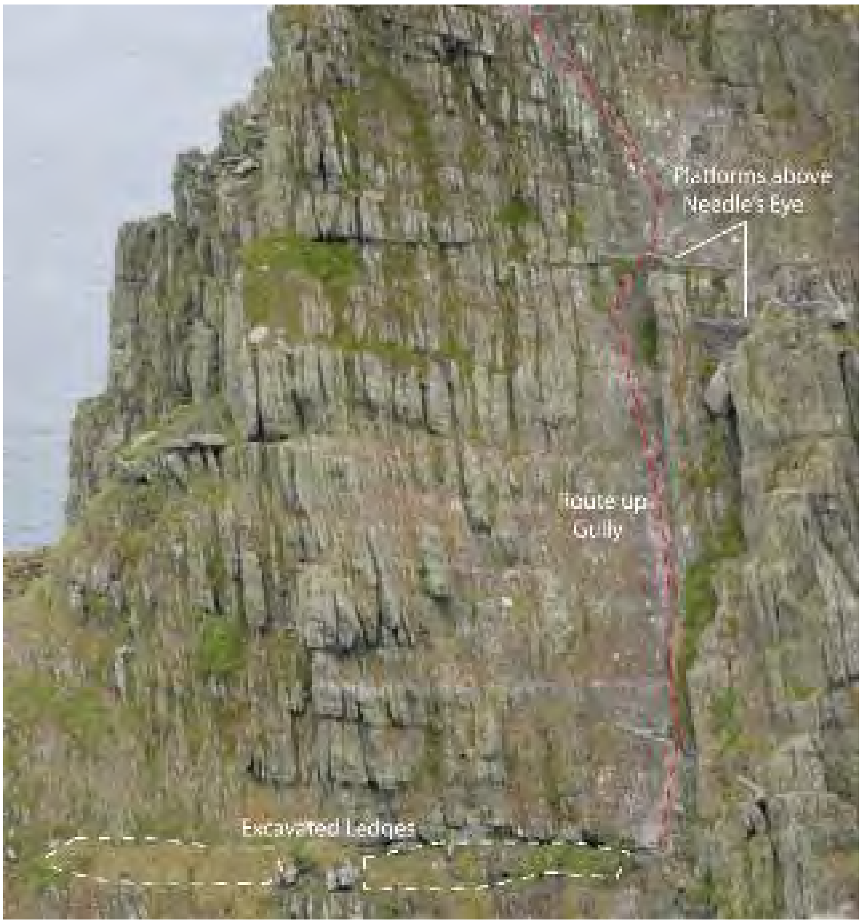


[Left] Ill. 2.285—The ledge beyond the corner on the northern side of the Peak before excavation, looking west (A.R. Hayden).

[Right] Ill. 2.286—The ledge beyond the corner on the northern side of the Peak after excavation, looking east (A.R. Hayden).

The cliff face north of the gully

As no evidence of structures was found on the ledges north of the gully, the cliff face to the north of the gully was also carefully examined to determine whether it contained any possible climbing routes, as it initially appeared to present an easier climb than the gully. The climb up this cliff face is awkward, however, as the rock often protrudes out above and beyond lower ledges, and as a result they are difficult to climb onto and impossible to follow. There were many places where the climb was difficult, and at none of these locations—or, indeed, anywhere on the cliff face—was there any evidence of man-made features.

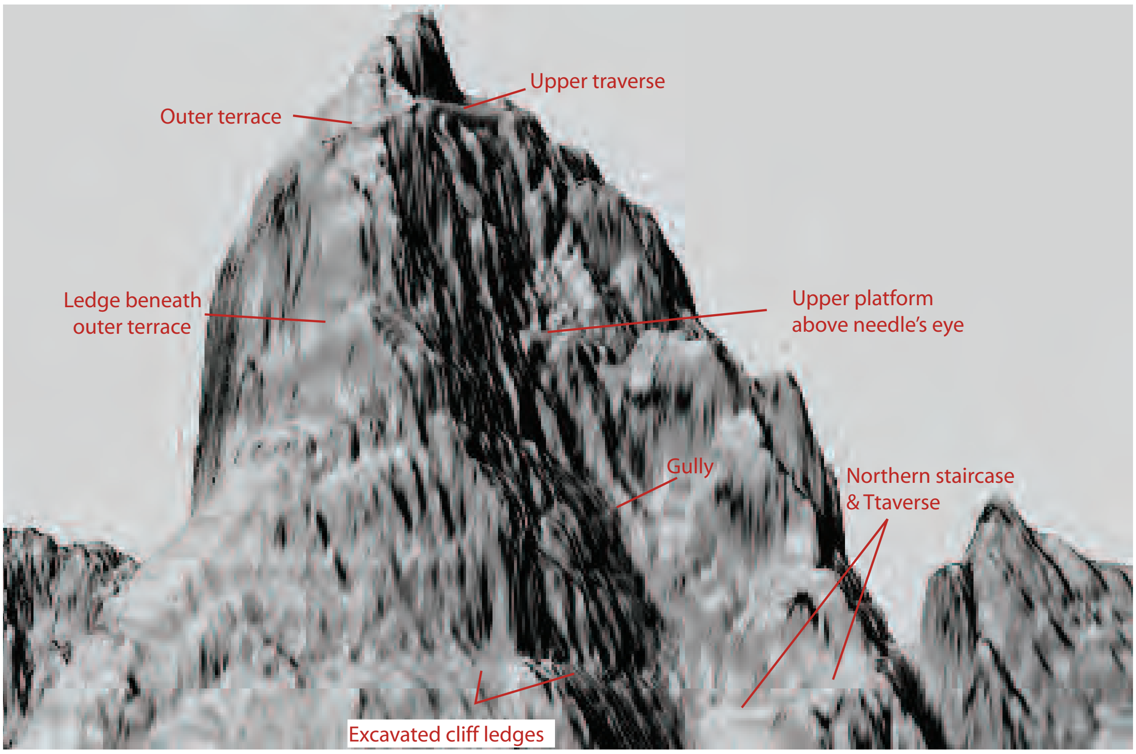


Ill. 2.287—The cliff face north of the gully (Con Brogan, DAHG).

The gully

Introduction

The absence of man-made structures elsewhere suggested, unlikely as it seemed at the time, that the route evidenced by the north-west passage must have continued up the gully at the north-eastern end of the northern traverse.



Ill. 2.288—LiDAR image of the south-western side of the South Peak (DAHG and A.R. Hayden).

Rope access was established down the gully from the upper platform above the Needle's Eye, and the lower quarter of the gully was cleared of campion and silt in 2008 and cleaned down. This revealed no features. Subsequent examination of the upper part of the lower half of the gully downwards from the upper platform beneath the Needle's Eye revealed, however, that quite a number of rock-cut steps and handholds survived there. These clearly showed that the primary route did in fact extend up this almost vertical climb.

Con Brogan of the DAHG took photographs, looking horizontally into the gully from a helicopter, in July 2009. In August 2009 the features in the gully were examined and recorded in poor weather conditions, and their locations were roughly marked on enlarged prints of these photographs. Close-up photographs and

Ill. 2.289—The north-west passage and the route up the gully to the top of the Peak (Con Brogan, DAHG).

video of the individual steps and handholds were also taken during the examination of the gully. The steps and other features in the gully have yet to be surveyed in detail.

The gully—lower section

The gully at the level of the end of the northern traverse was choked for a height of 8m or so with rock and silt that had fallen or had been washed down it, all covered by thick sea campion growth. The fallen rock lies at an angle of about 45º and impedes transit across the gully. There are no evident foot- or handholds

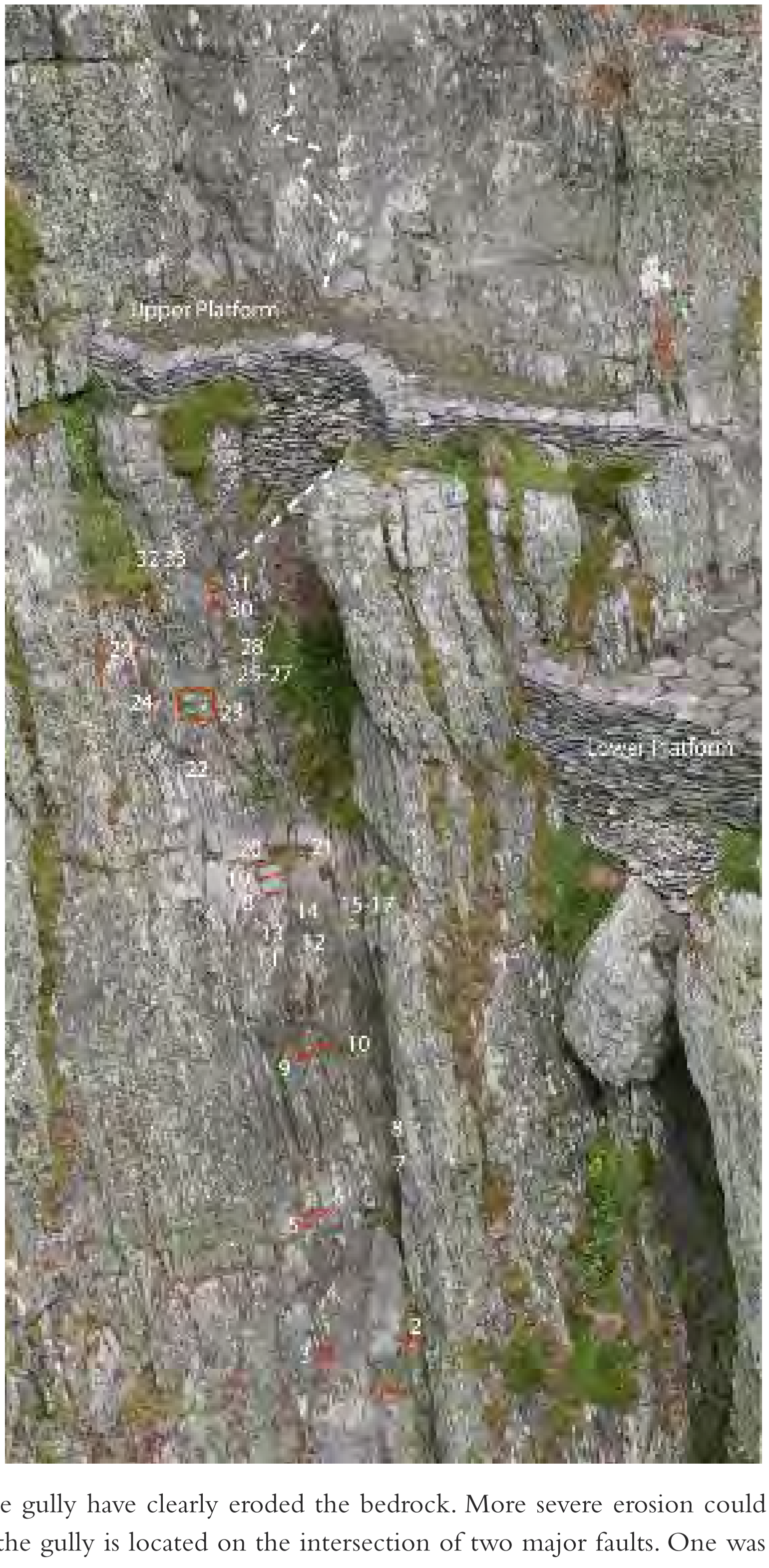
[Left] Ill. 2.290—Looking up the gully from the end of the northern traverse at the start of excavations (A.R. Hayden).

[Right] Ill. 2.291—Looking up the gully from the end of the northern traverse after excavation; note the fan of debris at the base of the gully (A.R. Hayden).

Ills 292 and 293—Views of the gully, showing the smoothed and highly eroded bare rock in its lowest 20m or so (A.R. Hayden).

in the fallen bedrock and no remains of walling, so crossing the gully was awkward, but not impossible. This fan of fallen rock and debris was not removed; the campion and plant growth was simply cleaned from its surface.

The bedrock in the lower 20m or so of the gully immediately above the end of the northern traverse was highly smoothed by erosion, and there were several eroded 'bruises' (shallow, bowl-shaped indentations) on the rock face caused by the impact of falling stones.



Ill. 2.294—Steps (red) and handholds (yellow) recorded in the lower half of the gully (Con Brogan, DAHG; survey: A.R. Hayden).

The first man-made features (nos 1–4) were noted between about 21m and 21.5m up the gully above the level of the top of the northern traverse. The position of these features is significant, as they lay below the ledge on the cliff face, which could have been the top of an alternative climb up the cliff face to the north that attempted to avoid using the lower, steepest part of the gully. These steps suggest that the lower part of the climb must originally have ascended straight up the gully. The lack of any man-made features in the lower part of the gully is clearly the result of erosion; those that survive above were all heavily eroded. Silt and stones washing down and stone falling down the gully have clearly eroded the bedrock. More severe erosion could have occurred here, however, as the gully is located on the intersection of two major faults. One was aligned east–west and is reflected in the line of the gully itself. The second is aligned north–south and is reflected in the line of the cliff to the north of the gully. This intersection meant that the bedrock in the gully was very unstable and liable to fracturing and breaking away in large blocks, and hence any man-made features would not survive. The instability of the rock here also suggests, perhaps, that the lower part of the gully in the past may not have been as steep as it is now and may once have been more easily climbed.

[Left] Ill. 2.295—Rock-cut step (1) on a narrow ledge (A.R. Hayden).

[Right] Ill. 2.296—Flat top of rock spine (2) that may have been worked (A.R. Hayden).

Features recorded in the lower gully

Some of the rock-cut steps in the gully were clearly evident and contain definite evidence of human working—these are described below as definite steps. Climbing the gully revealed several locations where there clearly should be steps. In some of these locations there are notches or hollows in the rock face where either too little survived or no clear working was evident that would allow them to be definitely identified as steps. These are described below as possible steps.

Ill. 2.297—The finely preserved rock-cut step (3) (A.R. Hayden).

Ill. 2.298—The left-hand side of the ledge crossing the gully, with a possible step (5) in the deep notch on the left and another (6) on the flat-topped rock spine at the centre (photo: A.R. Hayden).

No evidence of any man-made features survived in the lowest 20m of the gully, where the rock was most eroded. About 20m up the gully, a narrow ledge extended across its full width and here the first rock-cut steps and features survived. There was a very definite rock-cut step (1) 200mm from the south rock wall of the gully on this ledge. To the right of this there was a broad rock spine, attached to the south wall of the gully. It had a flat top (2) that appeared to be worn and its surface could also have been worked.

Half a metre above the northern end of the ledge there was a large and very definite inner end of an exceptionally well-preserved rock-cut step (3) that measured 200mm in width and 150mm in depth. About 400mm above this step were the bare remains of the triangular inner end of a possible rock-cut step (4).

These steps show that the climb here ascended the left-hand side of the gully and led up to a pronounced ledge that crossed the gully. This is the ledge that could represent the top of a possible alternative climb up the cliff face to the left (north). It should originally have held at least one step but no definite worked areas survived. Possible steps may be indicted by a deep, square notch (5) at the left side of the ledge, and the flat and smooth top of a rock spine (6) that stands proud of the centre of the ledge. No definite evidence of working survived on either of these features, however.

Above this ledge the route may have moved southward towards the right-hand side of the gully. No definite steps survived here, but two small notches that measured 100mm in width and depth in the steep bedrock (7 and 8) could be the last remnants of steps. They retained no evident traces of working.

The route then seems to have run back towards the northern side of the gully, where it reached another narrow ledge. There were two possible rock-cut steps (9 and 10) at the left side of the gully, one just below and one on this ledge. No. 9 measured 220mm in width and 180mm in depth. No. 10 was 270mm wide and 100mm deep, and its possible tread was largely broken away.

Ill. 2.299—The ledge crossing the gully, with possible step 9 lying at the left side of the photograph and possible step 10 at the centre (photo: A.R. Hayden).

The next group of steps lay a short distance above this ledge, roughly at the centre of the gully. They were the best-preserved run of steps in the lower part of the gully and seven consecutive steps are evidenced, although only the very innermost ends of the lower four steps survived. The first four (11–14) lay in a vertical line spaced 300–400mm apart, and were cut into the end of a narrow vertical spine of rock protruding slightly from the gully. Three further steps (18–20) lay above and slightly to the left of this line and led up and onto another ledge. Some of the right-hand side of this ledge (21) may also have been worked flat.

Ill. 2.300—The inner ends of steps 11–14 on the narrow rock spine at the centre of the gully (A.R. Hayden).

Ill. 2.301—Steps 18–20 run from the bottom left corner of the photograph diagonally up and onto a narrow ledge, the right-hand side (21) of which also appears to have been worked (A.R. Hayden).

Ill. 2.302—Handholds 15 and 16 lie one above the other on the sloping rock on the left, while the notch (17) lies on the right (A.R. Hayden).

There are two handholds (15 and 16) carved one above the other to the right of the lower four steps close to the right side of the gully. A small notch (17), which could have been another handhold or could have been cut by a rope, lay on the rock wall of the right side of the gully.

The next surviving step (22) lay about 1.6m above the ledge, towards the left side of the gully. It was relatively well preserved and measured 130mm in width and 120mm in depth. The route from this point upwards hugged the left (northern) side of the gully.

Ill. 2.303—Step 22 (A.R. Hayden).

A short distance above the last step there was a large, rectangular, natural or enhanced hole (23) that measured 400mm in width and 500mm in depth. There were three or four rough courses of small, horizontally laid stones in its base. These could have been deliberately placed but were in too bad a condition to determine whether or not they represent definite structure. The masonry certainly helps the climb to the step above.

There was a fine handhold (24) on the rock to the left of the hole (23).

Ill. 2.304—Rectangular hole with possible masonry (23) (A.R. Hayden).

Ill. 2.305—Handhold 24 at the left side of the gully (A.R. Hayden).

There were three very fine knobbed and notched handholds (25–27) for the right hand on a rock spine slightly to the right just above this hole. The topmost lay immediately below the next surviving step (28). Step 28 was 170mm wide and 300mm deep, and its tread was very worn.

[Left] Ill. 2.306—The three handholds (25–27) running diagonally up the crest of the rock at the centre of the gully. Step 28 lies at the top left corner of the photograph.

[Right] Ill. 2.307—Step 28, with the two uppermost handholds (26 and 27) visible below it (A.R. Hayden).

Out on the left side of the gully there was a possible step (29). It appeared to be worked but lay out of line with the other steps in the area. If it is a step, it may indicate that the route up this part of the gully was realigned at some stage.

Ill. 2.308—Possible step (29) at the left side of the gully (A.R. Hayden).

Next there were two fine, rock-cut steps (30 and 31) at the centre of the gully. No. 30 was a well-preserved rectangular step that measured 250mm in width and 300mm in depth, while step 31 was less well preserved and narrower, measuring 150mm in width and 280mm in depth.

Ill. 2.309—Steps 30 (left) and 31 (right) (A.R. Hayden).

There were two fine, rock-cut handholds (32 and 33) on the rock at the left side of the gully just above the level of step 31.

Above step 31 the route seems to have turned to run across the gully to the right and up its centre or right side. There are several narrow natural ledges in the bedrock here just below the base of the wall of the upper platform above the Needle's Eye, which crosses and blocks the route. The ledges provided natural steps and were unworked.

Ill. 2.310—Looking down the gully from the upper platform above the Needle's Eye. The northern stairway and traverse are visible below on the left; the large terrace behind the upper lighthouse is visible at the centre right (A.R. Hayden).

Ill. 2.311—The steps and handholds recorded in the upper half of the gully to below the upper traverse (Con Brogan, DAHG; survey: A.R. Hayden)

The gully—upper section

The upper section of the gully was examined in 2006 and a number of rock-cut steps were noted in it. Three small lengths of very poorly preserved possible terracing (the mini-terraces), built on narrow ledges on the north side of the gully, were also discovered and excavated in 2006. The rock-cut steps in the gully were recorded in 2009 but have not yet been fully surveyed.

The primary route in the upper gully. The route re-emerges above the upper platform outside the right-hand (southern) side of the gully and runs diagonally to the right (south) up a vertical, rough and very eroded rock face to a roughly flat rock ledge. As many as ten steps could survive here. The uppermost steps (39–43) on the flatter surface survived the most clearly. Those (34–38) below on the vertical rock face were very poorly preserved and it was difficult to determine which were actual steps. The steps may have been partly removed by quarrying associated with the construction of the upper platform above the Needle's Eye. The quarrying left the rock face stepped and broken. Nevertheless, a left–right sequence does seem to be indicated by the surviving steps. A single rough handhold (44) survived to the left of these steps.

The route then turns back to the north and runs up a narrow, stepped ledge back northward towards the gully. The steps (45–51) on this ledge

[Left] Ill. 2.312—The primary route where it reappears above the upper platform (A.R. Hayden).

[Right] Ill. 2.313—Looking down on the first steps above the upper platform (A.R. Hayden).

[Left] Ill. 2.314—The route above the upper platform to where it turns back into the gully (A.R. Hayden).

[Right] Ill. 2.315—The steps up the narrow ledge where the route turns back into the gully (A.R. Hayden).

were generally very well preserved and clearly visible. At its northern end this line turns to the north-east around a protruding rock spur and re-enters the gully. There were two carved handholds above step 49 and three (54–56) above step 51 on the corner of the rock spur. The lowest handhold (54) was very finely carved and well preserved.

Back in the gully the rock is very fractured and eroded. There is a natural rock ledge on the left-hand side, on which the lowest of the mini-terraces was built (see below). Only the bare inner side of a single step (57) appeared to survive in this part of the gully. It lay to the right of the base of the second of the three mini-terraces.

Three more bare stumps of steps (58–60) appeared to survive to the right of the uppermost of the three mini-terraces.

The gully above this point cut through a thick stratum of much harder and darker-coloured rock. Here two very fine and large steps (63 and 64) survived above three less well-preserved ones (60–62).

Above an eroded bedding plane the gully continues vertically upwards for about 2m, where the rock was very eroded and no features appeared to survive.

The route then reappears and initially hugs the left-hand side of the gully, where there was a run of six poorly preserved steps and possible steps (65–70) carved into the fractured rock. The gully turns to the right slightly above these steps and after a short gap the route reappears, running upwards along the southern side of an upward-sloping rock ridge, the top of which was highly fractured. One possible step (71) and two very definite broad and well-preserved rock-cut steps (72 and 73) lead to the base of the wall of the upper traverse (see below). The wall of this terrace was actually built on top of step 73 and completely blocks the original route.

Ill. 2.316—The rock-cut handholds where the route turns back into the gully (A.R. Hayden).

The possible mini-terraces. There were three short rock ledges on the north side of the gully about midway up the climb of its upper part. They lay in a vertical line, each about 2m above that below. The ledges all sloped slightly down to the south across their narrow axes. The remains of possible stonework survived on all three. The stonework was very loose and extremely poorly preserved. Some of the uppermost stones on each ledge could have fallen from above and lodged there. The lower stone on the ledges appeared to be structural, and each length had a rough but straight outer face. So little structure survived, however, that it was difficult to be sure whether these actually were lengths of very disturbed walling.

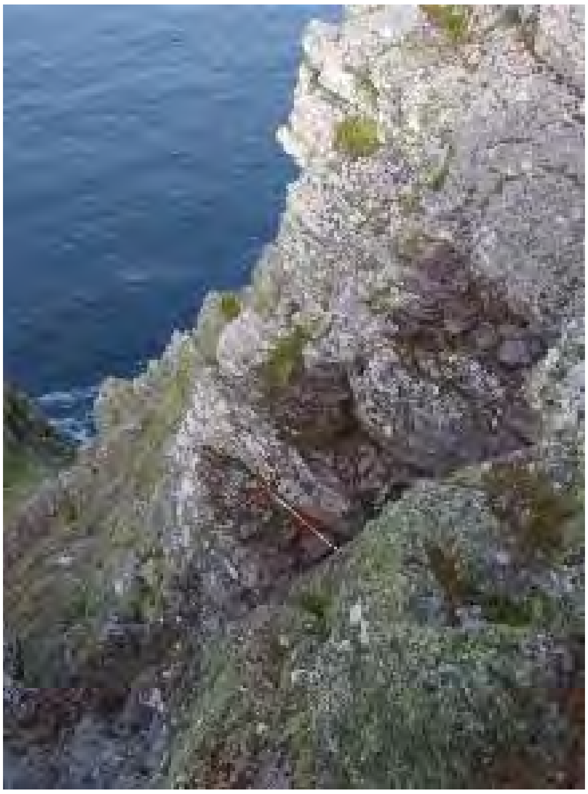
If these stones were walls, they were of no use in the climb up the gully; if they had been higher originally, they may in fact have hindered it somewhat. It is difficult to be sure what they represent. They lie under the almost vertical cliff beneath the south side of the outer terrace and would appear most likely to have been connected with the building of that terrace. They may simply have been storage spaces for stone that was to be lifted up to the terrace for construction or repairs.

Ill. 2.317a—Steps 60–64 in a harder band of rock (A.R. Hayden).

Ill. 2.317b—Steps 65–73 in the gully below the upper traverse (Con Brogan, DAHG).

[Left] Ill. 2.318—The two uppermost steps (72 and 73) beneath the upper traverse. The wall of the upper traverse, which blocks the primary route, was also clearly built on step 73 (A.R. Hayden).

[Right] Ill. 2.319—The upper section of the gully before excavation (A.R. Hayden).



[Left] Ill. 2.320—The three possible mini-terraces in the upper gully, from the south (A.R. Hayden).

[Right] Ill. 2.321—The three possible mini-terraces in the upper gully, from the south-east (A.R. Hayden).

Ill. 2.322—The three possible mini-terraces in the upper gully from above and east (A.R. Hayden).

The top of the gully

Re-emerging above from behind the upper traverse, the gully extends upwards to a shoulder about 3.5m below the northern side of the top of the Peak. This short but awkward climb contains a clear run of at least seventeen rock-cut steps. No excavation was required here as the steps were clearly evident.

Ill. 2.323—The top of the Peak from the west (Con Brogan, DAHG).

Ill. 2.324—The steps in the top of the gully above the upper traverse (Con Brogan, DAHG; survey: A.R. Hayden).

The last part of the climb and the top of the Peak

From the shoulder at the top of the gully the climb turns to the south and runs up a 2m-high sloping and stepped rock slope to the base of a 1.5m-high vertical cliff, which marks the last part of the climb. There are several small rock-cut steps on the north-western and western sides of this cliff, which lead up to a broad rock ledge that slopes down to the east. The top of the Peak lies on a narrow, 1m-high rock ridge bordering the southern side of this ledge. From the top of the Peak there are fine views east over the monastery and the Little Skellig.

Ill. 2.325—The awkward climb up from the upper traverse (A.R. Hayden).

[Left] Ill. 2.326—The top of the Peak on the left, the rock ledge below its northern side on the right (A.R. Hayden).

[Right] Ill. 2.327—Lighthouse weather-vane before its top broke off in 2006/7 (A.R. Hayden).

Ill. 2.328—The stone that formerly stood at the end of the spit (photo: Horn *et al.* 1990, fig. 47).

The partial remains of an iron weather-vane of lighthouse date survive on the top of the Peak. Its pointed top broke away recently and presently lies on the ledge above and south-east of the upper traverse.

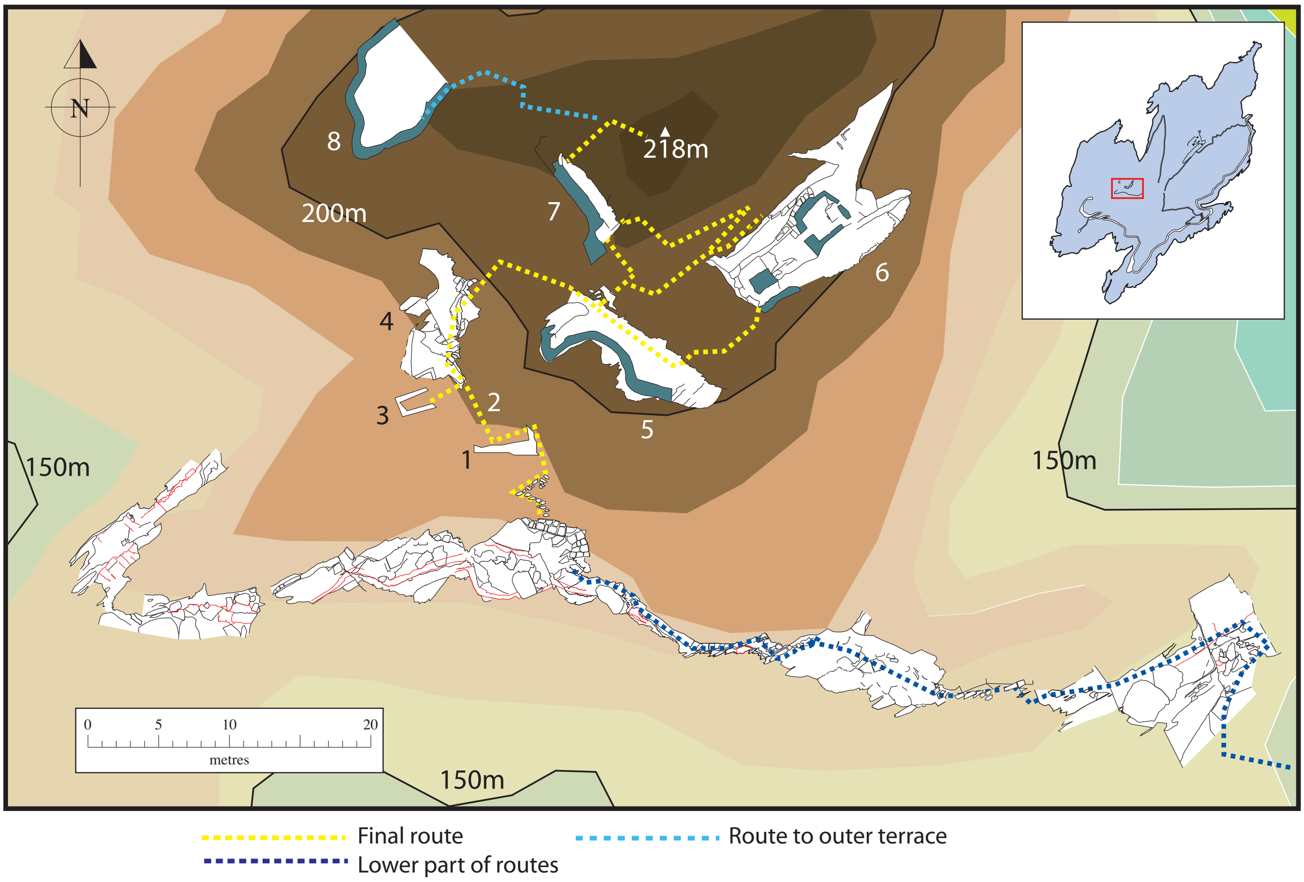
Eighteenth-century accounts of pilgrimages to the Peak mention that the final act of penitence was a terrifying crawl out along the vertiginous and narrow spit (a 200mm-wide ridge that slopes markedly down to the east) to a tall, slender stone set upright in a rock cleft at its end. Apparently the stone had a small cross roughly scratched on it. It is not known when this stone was erected but it fell and was lost in the 1970s.

Ill. 2.329—The view eastwards along the spit from the top of the South Peak, with the monastery, Little Skellig and the Kerry coastline from Valentia to Waterville visible in the background (A.R. Hayden).

2.3.5 The final route to the South Peak

Introduction

The final route to the top of the South Peak is that discovered and published by Horn *et al.* (1990). The lower part of this route is shared with that of the primary route. Its upper part begins at the stepped ledge at the base of the cliff beneath the Needle's Eye, where the north-west passage also begins. The final route leads up the cliff to the north via rock-cut steps to masonry steps and a small traverse (the lower traverse) at the base of the Needle's Eye (a widened, almost vertical rock cleft). Exiting the top of the Needle's Eye, there are two masonry platforms that give access to the base of a long climb up rock-cut and masonry steps to another widened rock cleft, which leads up to the 'garden' terrace. From this terrace there are two routes leading upwards to the oratory terrace and the shrine terrace, one via a small traverse (the outer passage) on the southern side of the Peak, the other via rock-cut steps and ledges higher up. There are likewise two routes from the oratory terrace up to the next terrace (the upper traverse): one doubles back on the second route to the oratory terrace from the 'garden' terrace mentioned above, while the second leads up the cliff at the north side of the oratory terrace. The final route rejoins the uppermost part of the primary route to the top of the Peak at the northern end of the upper traverse.



Ill. 2.330—The final route to the Peak: (1) the lower traverse, (2) the Needle's Eye, (3) small enclosure, (4) platforms above the Needle's Eye, (5) the 'garden' terrace, (6) the oratory and shrine terraces, (7) the upper traverse and (8) the outer terrace.

Steps and platform below cliff under the Needle's Eye

Ill. 2.331—Remnants of masonry steps between the stepped ledge and the base of the cliff beneath the Needle's Eye (A.R. Hayden).

Some traces of masonry survived beneath a small amount of stone (collapsed from the lower traverse) and sea campion on the sloping ground at the base of the vertical rock face that gives access to the Needle's Eye. This area was excavated in 2007.

The last remnants of a number of heavily disturbed drystone steps were revealed below campion cover and loose stones and silt that had washed down from the cliffs above. Very little definite structural masonry survived, however. All that remained were small and much disturbed parts of the core of a masonry stairway. Part of the possible face of one of the steps (the second up) may be evidenced by an alignment of three stones. These appeared to have slipped downslope somewhat and were probably not in their original position. Judging by the height and gradient of the slope, there would have been four or five masonry steps here originally.

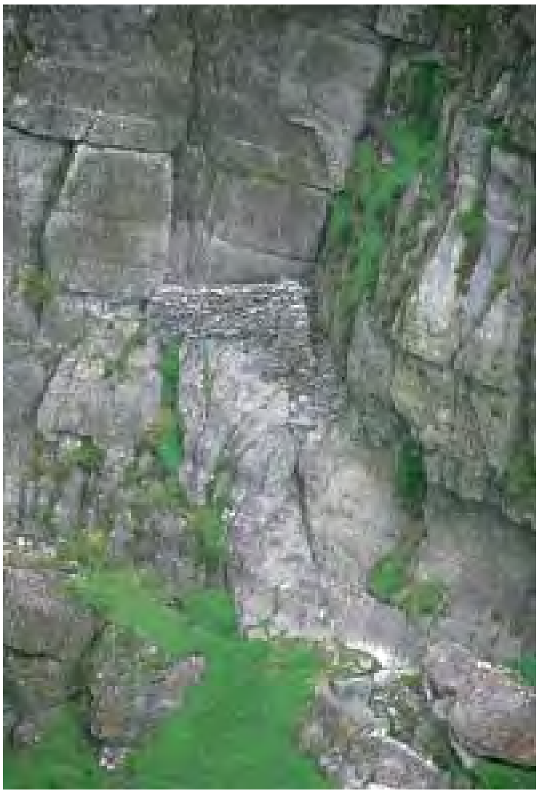
A small, low and poorly preserved rectangular drystone platform stood above the masonry steps against, and giving access to, the base of the cliff. The platform had a small extension leading west to the base of natural steps in the cliff, which in turn led to a long, narrow ledge leading west up and across the cliff face. This ledge was free of fallen stone and appears to have been cleared and possibly widened and levelled by the monks. It was cleaned of growth in 2008 but no man-made features were revealed on it. The ledge is easily traversed but does not lead anywhere.

Ill. 2.332—The small platform at the base of the cliff beneath the climb to the Needle's Eye before excavation (A.R. Hayden).

Ill. 2.333—The small platform at the base of the cliff beneath the climb to the Needle's Eye after excavation (A.R. Hayden).

The climb to the lower traverse

From the top of the small masonry platform seven rock-cut steps lead up and slightly to the west across the bare rock of the rising cliff. There is a fine handhold in the rock on the right. Five rock-cut steps then lead back and up to the east along a narrow natural ledge. There are two very definite and two more possible handholds on the top of the rock above these steps. All these features were clearly visible and no excavation was undertaken here.



[Left] Ill. 2.334—Aerial view of the climb up to the lower traverse and the Needle's Eye (Con Brogan, DAHG).

[Right] Ill. 2.335—The climb up to the lower traverse and the Needle's Eye from below (A.R. Hayden).

The climb crosses a cleft and then there are six rock-cut steps leading straight up along the end of a protruding rock spur. The topmost step is little more than a notch, but the others are fine examples. There is a clear handhold on the west side of the topmost step. The cliff on the east side of these steps has also been very clearly cut back to facilitate passage.

No excavation was undertaken in this area, as all the features were rock-cut.

Ill. 2.336—The rock-cut steps and handholds (yellow) on the climb to the upper traverse, from below (A.R. Hayden).

Ill. 2.337—The rock-cut steps and handholds (yellow) on the climb to the upper traverse, from above (A.R. Hayden).

[Left] Ill. 2.338—Handholds on the left side of the climb to the upper traverse (A.R. Hayden).

[Right] Ill. 2.339—Close-up of steps 14–18 and handholds on the climb up to the lower traverse (A.R. Hayden).

Masonry steps and the lower traverse

The rock-cut steps give access to the base of a very well-preserved run of eight masonry steps, which lead upwards to the south-east end of the lower traverse, a terrace constructed to allow easy passage to the base of the Needle's Eye, which lies near its western end.

The masonry steps were cleared of campion in the 1980s, but this had grown back by 2004 and largely covered the stairs. In 2004 a *sondage* was opened up through the campion cover, which revealed that it measured 200–350mm in depth. The campion was subsequently cleared from the steps in the same year. All the steps lay in their original positions and were intact.

Ill. 2.340—Looking down on the masonry steps at the east side of the lower traverse (A.R. Hayden).

The steps were built between the vertical cliff and the south-eastern end of the lower traverse. The lower traverse was *c*. 4m long and 1.3m wide. It was cleared of campion growth in 2004. This revealed that the base and top of its eastern end wall, which lined the western side of the masonry steps, was loose and partly missing. Nevertheless, this end of the traverse survived to almost its original height. Its western end, which lay directly below the entrance to the Needle's Eye, was less well preserved. Perhaps a height of about 400mm of its top had collapsed. The collapse was probably largely due to the impact of visitors jumping down onto this end of the traverse from the lowest surviving step, which lay about 1m above, in the base of the Needle's Eye, the lowest original steps having broken away long ago.

The Needle's Eye

The route next ascends almost vertically through an artificially widened fault line—the Needle's Eye—that lay in the cliff at the back (north) of the lower traverse, close to its western end. The side walls of the cleft were clearly quarried back and it appears that originally the cleft must have been only a narrow crack, which was subsequently extensively widened to facilitate access up through it. A huge fallen stone lies vertically lodged against the upper half of the outer side of the cleft, effectively transforming this part of the cleft into an enclosed chimney. A long, narrow piece of stone lies horizontally trapped between the larger stone and the outer side of the rock to either side of the cleft.

There was no need for excavation here, as the rock-cut steps were all clearly visible and free of plant growth.

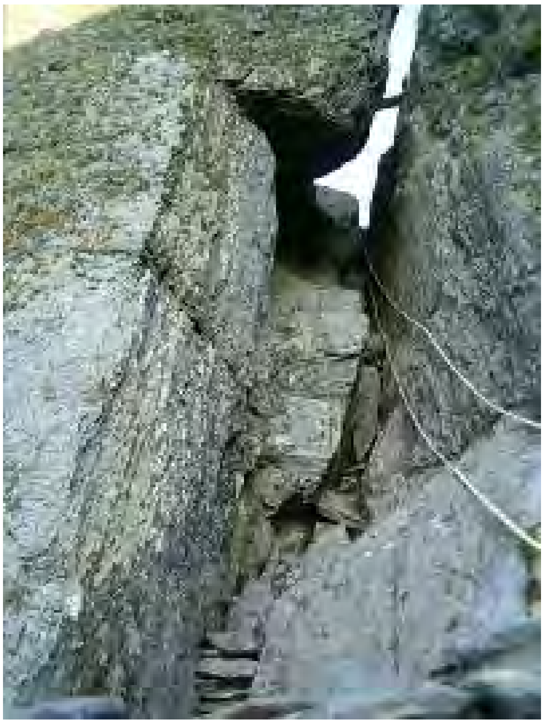
A fine run of rock-cut steps survived in the cleft. The steps at the very base of the Needle's Eye were, however, poorly preserved, but there appear to have been at least two narrow masonry steps in the narrow base of the cleft, followed by another two or three rock-cut steps at the centre and right side. It is difficult to be sure where these latter steps lay originally, as there are several possible narrow ledges in the eroded bedrock, none of which retain evidence of working, which could be the stumps

Ill. 2.341—The lower traverse and the Needle's Eye before excavation, from below (Con Brogan, DAHG).

of the original steps. The rest of the steps up through the Needle's Eye were much better preserved. First, there were two clear steps on the eastern side of the cleft, followed by one on the west and another on the east. The steps then run up the western side of the cleft, where there is a clear line of seven steps, with an extra and smaller step further west between the fourth and fifth steps of this run. This step is of no help in the climb and may relate to the period when the cleft was initially quarried and worked. There are a number of narrow ledges in the deeper and narrower southern side of the cleft. Several of these have flat tops, which could have been deliberately worked. These, while not necessary to the climb, we have found useful when transporting equipment through the Needle's Eye.

[Left] Ill. 2.342—The lower steps in the Needle's Eye (A.R. Hayden).

[Right] Ill. 2.343—Rebuilt masonry steps at the base of the Needle's Eye (A.R. Hayden).



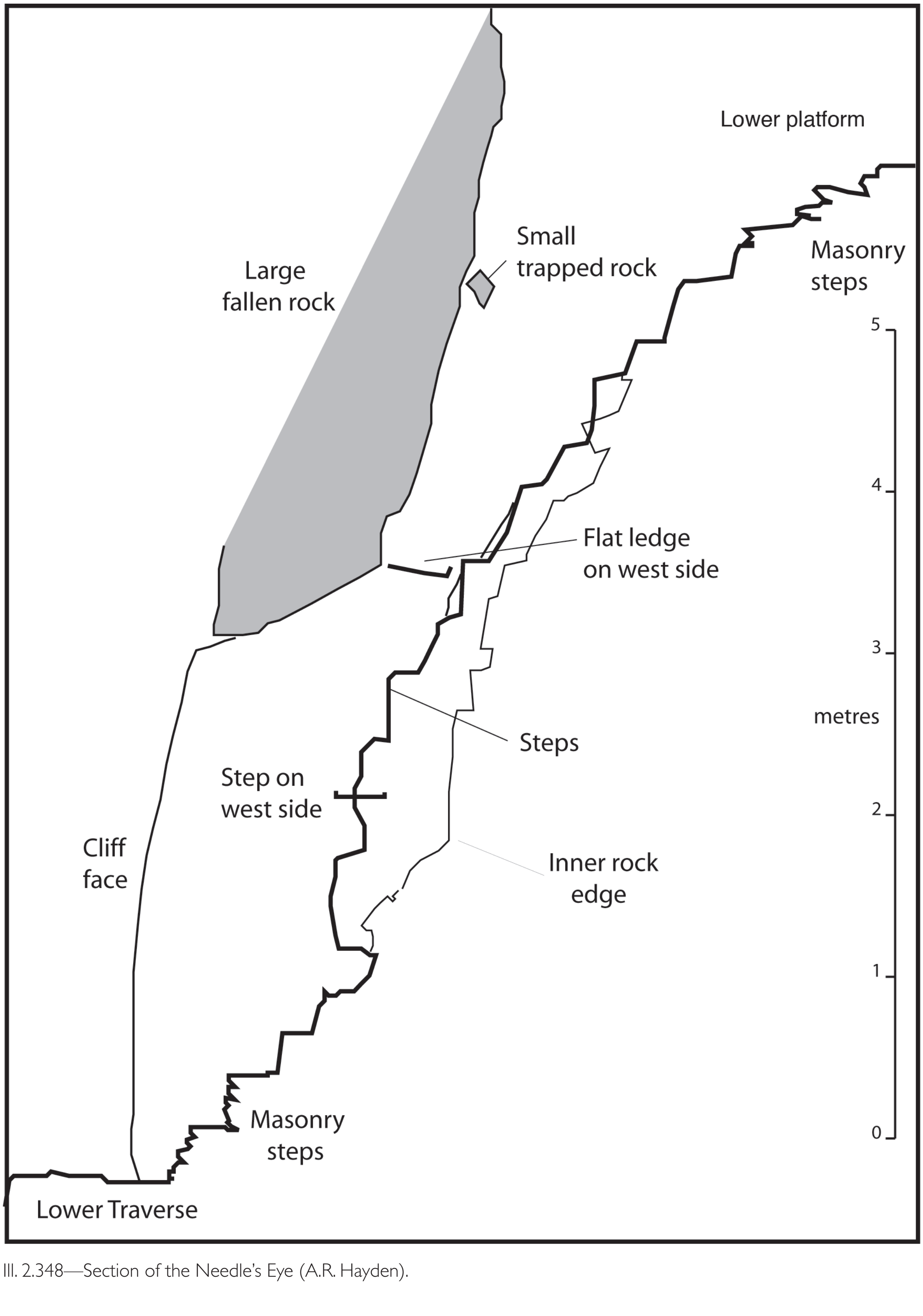
[Left] Ill. 2.344—The middle and upper steps in the Needle's Eye (A.R. Hayden).

[Right] Ill. 2.345—Looking down the Needle's Eye. Note the narrow stone trapped behind the larger fallen one (A.R. Hayden).

The cleft then narrows and there are three more steps that occupy its full width. The final step leads onto a drystone traverse—the lower platform above the Needle's Eye.

Ill. 2.346—Looking down at the uppermost steps in the Needle's Eye (A.R. Hayden).

Ill. 2.347—The exit from the top of the Needle's Eye onto the lower platform. The upper platform lies at the front left, the lower platform is to its right and the small enclosure is at the back right (A.R. Hayden).



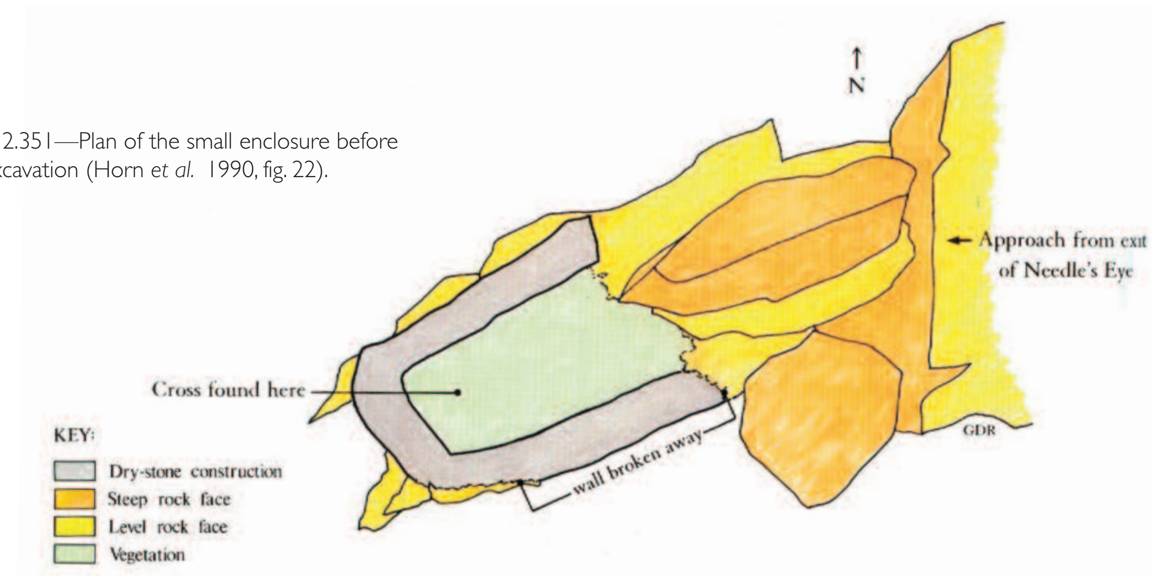
Ill. 2.348—Section of the Needle's Eye (A.R. Hayden).

The small enclosure

A small, drystone-walled enclosure occupied a broad rock spur above and west of the top of the Needle's Eye. Edward Bourke excavated this structure in 2004. The small enclosure is accessed from above the western side of the exit from the Needle's Eye. The initial part of this climb out to it is a slightly awkward one, and is not aided by handholds or rock-cut steps. The small enclosure was built on a flat, subrectangular rock ledge, which was quarried or cleared down to a 40mm-thick layer of quartz, which formed its finished internal surface. The ledge was surrounded by drystone walling on three sides; a high rising block of bedrock delimited the eastern side. Excavation revealed that a 350mm-thick layer of campion and small stones covered the interior. The walling survived in good condition, apart from some loss of stone at the base of the outside of the wall at the south-west corner of the enclosure. Three water-rolled pebbles, which must have been brought onto the island from the mainland, were found in the interior of the structure. A stone cross-shaped slab and the stump of a candle were found in the small enclosure in the 1980s (Horn *et al*. 1990, 32).

[Left] Ill. 2.349—The small enclosure before excavation (Horn *et al.* 1990, fig. 21).

[Right Ill. 2.350—The small enclosure immediately after excavation (E. Bourke).



Ill. 2.351—Plan of the small enclosure before excavation (Horn *et al.* 1990, fig. 22).

The east/west-aligned long axis of the enclosure leads the viewer to look west, where there is nothing to see but the ocean. Indeed, on a misty day there is nothing at all to be seen from here. This place, then, could have been a prayer or contemplation station.

The lower and upper platforms above the Needle's Eye

On exiting the top of the Needle's Eye, there are two drystone-walled terraces (the lower and upper platforms), one above the other, linked by a short run of one masonry step and three poorly preserved rock-cut steps. These platforms were excavated and conserved in 2004.

The surface of the lower platform sloped steeply down to the cliff to the north-west and was covered by a thick layer of campion growth.

Ill. 2.352—The poorly preserved steps linking the lower and upper platforms above the Needle's Eye (A.R. Hayden).

Ill. 2.353—The upper platform viewed from above (A.R. Hayden).

During repairs in 2009, necessitated by wind and water damage, traces of distorted paving, composed of fine, large, flat slabs, were noted on the upper platform a few centimetres beneath its surviving surface. A worked stone, possibly part of a cross, was also uncovered. The upper platform cuts across and blocks the line of the primary route up the gully to the top of the Peak. The two platforms were not strictly necessary on the climb up the final route and so could have been built either to provide storage space for materials or as a gathering place for prayer or ritual associated with the pilgrimage to the Peak.

Ill. 2.354—Distorted paving at the back of the upper platform (A.R. Hayden).

Ill. 2.355—Possible cross fragment from the small area excavated at the back of the upper platform (A.R. Hayden).

Ill. 2.356—Looking down from the outer terrace on the climb from the upper platform (bottom right) to the 'garden' terrace (upper left). The heavily quarried surface of the slope behind is clearly visible (A.R. Hayden).

The climb to the 'garden' terrace

From the uppermost of the two platforms above the Needle's Eye the final route runs upwards to the 'garden' terrace. Initially the route climbs north-eastwards through an area that was heavily and unevenly quarried but where there are many clear rock-cut steps leading upwards to the point where the primary route turns back onto the gully. From this point the final route follows a steep and stepped natural cleft or gully upwards to the south-east. There are many well-preserved rock-cut steps, some masonry steps and rock-cut handholds on this climb. At the top of the climb, the rock cleft narrowed just before it reached the 'garden' terrace. There are clear tool marks visible on its rock sides here, showing that it was substantially widened to facilitate access.

This run of steps and the quarried rock surfaces were cleaned down in 2004. The lower section was surveyed by EDM in 2009, but the upper part of this climb remains to be surveyed.

[Left] Ill. 2.357—The start of the climb from the upper platform to the 'garden' terrace (A.R. Hayden).

[Right] Ill. 2.358—The middle and upper sections of the climb; note the masonry steps (A.R. Hayden).

[Above] Ill. 2.359—Looking down on the top of the climb (the 'garden' terrace lies to the left); note the rock-cut steps and the cut-back face of the rock cleft (A.R. Hayden).

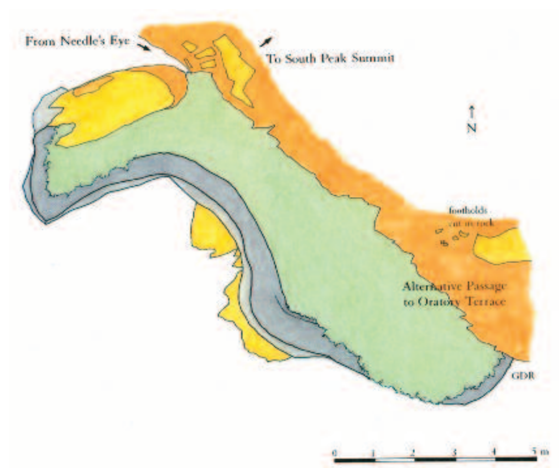
[Right] Ill. 2.360—Possible tool marks still visible on the side of the widened cleft at the top of the climb (A.R. Hayden).

The 'garden' terrace

This is the only terrace/traverse on the South Peak whose given name subjectively allocates a function. Even though it is by no means certain that this structure was either a 'garden' or a 'terrace' (as opposed to a traverse), the name is utilised here for continuity.[8]

This sinuous structure is aligned with its long axis on a north-west/south-east line. The bedding plane of the bedrock in the area dips downwards to the south-east, which means that if the terrace had a level top the walling at its southern end would have been the highest built here. The vertical cleavage planes in the bedrock run east–west, roughly parallel to the short axis of the terrace. This means that the cliff along the outer edge of the south-western side of the terrace is deeply fissured and uneven, so the terrace wall is of sinuous shape. The base of the wall rises and falls as it crosses the gullies that mark the ends of the unevenly eroded cleavage lines. It is only at the north-western and south-eastern ends of the terrace that the wall was aligned parallel with the cleavage planes. There it was built on straight, sloping, bedrock bedding planes that ran parallel to its line.

The outer face of the retaining wall of the northern half of the terrace appeared to be in good condition and little changed from photographs taken in the 1980s. It did, however, contain some gaps and plant growth. The wall at the southern end of the terrace was much more poorly preserved. It had partly collapsed and much was lost by the 1980s, when it was first recorded in detail.



[Left] Ill. 2.361—The 'garden' terrace in the 1980s (Horn *et al.* 1990, fig. 25).

[Right] Ill. 2.362—Plan of the 'garden' terrace in the 1980s (Horn *et al.* 1990, fig. 26).

The surviving top of the terrace echoed the slope and level of the surviving top of the outer wall. It was roughly level in the north-eastern quarter of the terrace, but the southern three-quarters slopes downwards to the south-east, gently at first but with increasing steepness towards its south-eastern end. The steep slope was the result of the collapse of the outer wall at the lower, southern end of the terrace and the subsequent erosion of the material that filled its interior. Examination of this end

Ill. 2.363—The steep slope of the south-eastern end of the terrace, before excavation (A.R. Hayden).

[8]As informally defined by Horn *et al.* (1990), a 'traverse' is a section of terracing built to provide access to another area, while a 'terrace' is a built self-contained unit, a destination in itself.

of the terrace in 2004 revealed that the erosion was continuing and that some of the outer walling that survived in the 1980s had collapsed over the cliff edge. More of the finer material that constituted the infill behind the wall had also been lost. The south-eastern end of the terrace existed as a steep and unstable slope on which there were many loose stones lying at a steep angle on loose soil, and hence it was in a very vulnerable and unstable state.

The north-eastern end of the terrace wraps around two sides of a high spur of rock that forms a small extension, possibly at a higher level than, and almost separate from, the rest of the terrace. This may form a small enclosure similar to that above the Needle's Eye, which also faces in the same direction.

[Left] Ill. 2.364—The wall at the south-western side of the terrace, gradually lessening in height as it progresses southwards (A.R. Hayden).

[Right] Ill. 2.365—Only the basal stones of the wall survived at the south-eastern end of the terrace. Note the loose and slipped stones ready to fall (A.R. Hayden).

[Above] Ill. 2.366—The small outshot at the north-eastern end of the terrace in the 1980s (Horn *et al.* 1990, fig. 24).

[Right] Ill. 2.367—The small outshot after conservation, showing that its shape, its alignment and possibly its purpose echo that of the small enclosure below (A.R. Hayden).

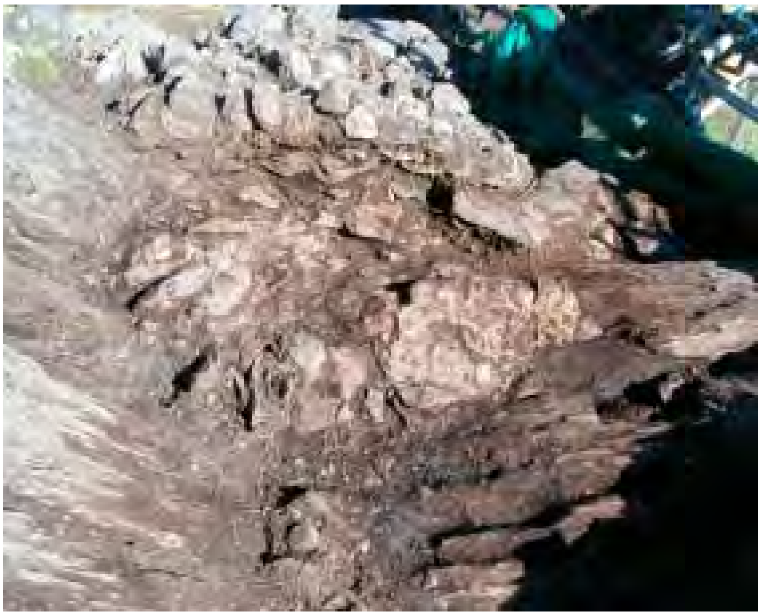
The high rock outcrop was quarried down to a layer of white quartz (as was the base of the small enclosure) that formed its finished surface. This is surely no coincidence. The importance and significance of white quartz is well known from this and other early ecclesiastical sites. It is probable that the finished top of the terrace here lay level with the top of the rock outcrop. It is also possible that a wall formerly stood on top of the northern side of the rock outcrop, enclosing the outshot on three sides.

A shallow and roughly north/south-aligned test-trench was opened midway along the terrace in 2004 to examine the condition of the internal face of the terrace wall. This revealed what appeared to be a second roughly constructed drystone wall inside the outer wall. The short length of the internal face of the terrace wall exposed was also cleared and conserved in 2004. The terrace was excavated in 2005 to allow for the conservation and stabilisation of its southern end, to determine what the apparent inner wall represented and to allow the inner face of the main wall to be conserved as it was in poor condition. Scaffolding was first bolted to the cliff outside the southern end of the terrace. The lower (southern) end of the terrace was then excavated to bedrock, as there the terrace wall appeared to have almost totally collapsed. Much of the material filling the terrace had also been lost at this end, and the steepness of the slope of the surviving deposits meant that loss was continuing. Subsequently the remainder of the terrace was excavated but generally to a much shallower depth (less than 0.5m), as there was no requirement to fully remove all the material from its interior. The interior of the narrow northern end of the terrace, beside the high rock outcrop that marks its northern end, was also excavated to bedrock.

The southern end of the terrace was excavated northwards until intact and stable layers of the original infill were revealed.

The wall at the southern end of the terrace had largely collapsed but its base and more of its easternmost end survived. The higher eastern end of the section of the wall was partly keyed into an almost vertical natural bedrock fissure in the cliff. This crack rose at a slight inward slope to well above the probable finished level of the terrace. It would have held and secured the full height of this end of the outer face of the terrace wall. This keying of the wall into a fracture or behind a bedrock ridge is repeated elsewhere on the South Peak.

The short length of wall surviving at this end was also the only place on the South Peak where the outer face of a terrace wall was sealed behind collapsed material, as it was only here that the wall was built set back from the cliff edge. The facing stones were still tightly jointed and their external surfaces were well preserved and unbroken, showing how fine the masonry originally looked. Its appearance contrasted sharply with that of the rest of the terrace wall, where the stones were often cracked, their edges eroded and the joints between them larger and more open.



Ill. 2.368—The surviving outer walling at the south-eastern corner of the terrace, looking south, with collapsed stone inside it. The wall at the south-western corner (right) had gone completely (A.R. Hayden).

A 1.5m length of the wall at the south-western corner of the terrace had collapsed completely and no traces of it remained.

The area excavated here was the only place on the Peak where such a depth of infill survived on a terrace and where it was possible to see the full construction sequence in section. Any fallen stone first appears to have been removed from the natural bedrock ledge before building work began; the ledge seemed to have been cleared right down to bedrock. The underlying bedrock rose to the north-east in a series of irregular steps, following natural shelves and joints. The outer face of the terrace wall (which consisted of large, flat stones) was first built to a height of two or three rough courses, a total of 300–400mm in height. The interior of the terrace was then infilled with dumps of large and small stone fragments in a matrix of smaller stone chips and clay, to the level of the top of the retaining wall. This infilled material is clearly the waste from the quarrying and breaking up or shaping of stones. The base of this material had a thick manganese mineral pan within it. The terrace wall was next built higher but in a wider form, now with an inner face resting on the infilled quarrying waste. Further dumps of quarry waste were subsequently deposited behind the wall as it was built, raising the level of the terrace to its full height.

Ill. 2.369—The surviving southern end of the intact wall at the western side of the terrace. Note that the inner face rests on infilled material while the outer face rests on bedrock (A.R. Hayden).

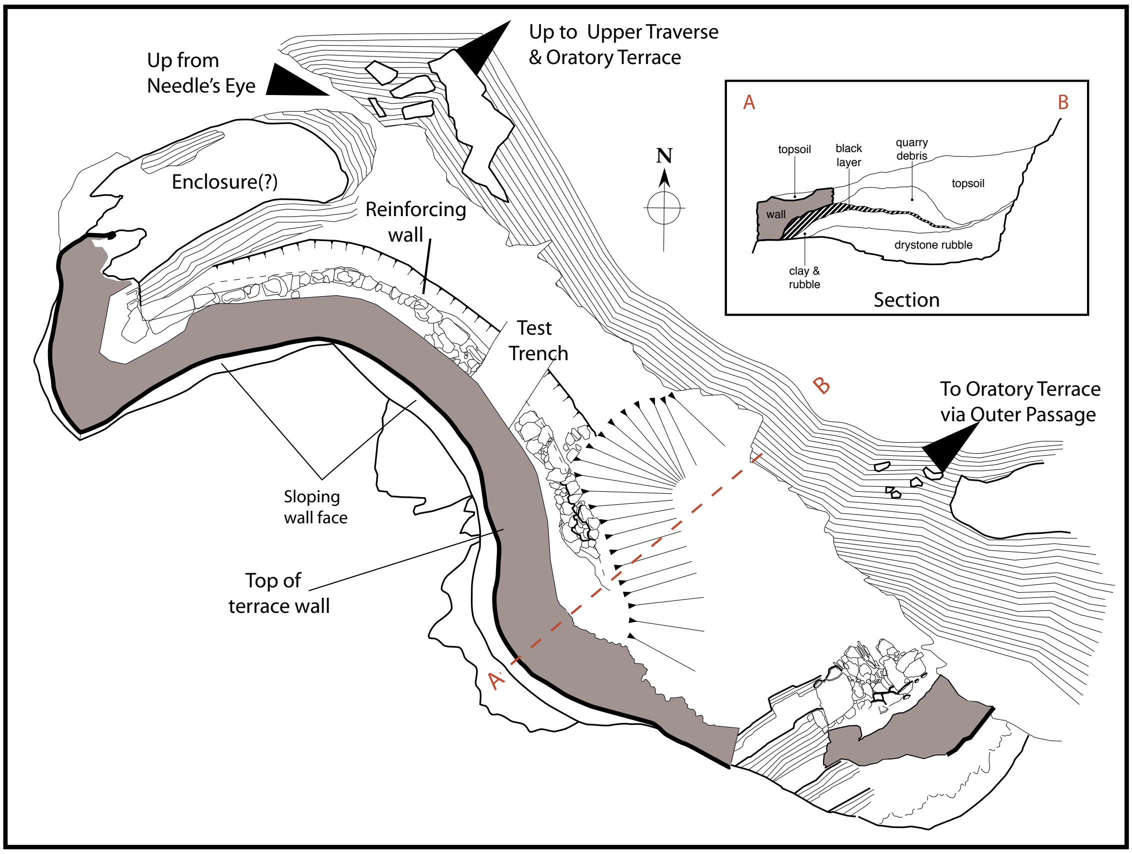
The wall at this end of the terrace may originally have stood to a considerable height, as the bedrock ledge on which it was built sloped down to this end of the terrace (see below). The underlying bedrock slope also meant that much of the drainage on this terrace would have been through the wall at this end, which would have resulted in the leaching out of the infilled material behind the wall and the degradation of the stonework by fluctuating moisture levels. The compaction over time of the infill behind the wall would also have destabilised it. The poor quality of the inner face and its founding at least partly on soil rather than bedrock may also have contributed to its weakness. In addition, the outer face of the wall was footed on a smooth bedrock ledge that sloped downwards towards the outer side of the wall and hence provided limited grip for its base. It is noticeable that the section that survived best was that keyed into the cleft in the bedrock at the south-eastern corner of the terrace.

It is not clear here whether the wall initially collapsed outwards or, as evidenced elsewhere, slumped inwards to a point where it lost its stability, collapsed and was lost over the cliff.

The inner face of the wall over the rest of the terrace was also in general composed of much smaller stones than those used to form its outer face, probably an indication of the shortage of large stones available. It was also in generally poor condition. This was most apparent at its northern end. There the standing wall was also wider than elsewhere, except at the southernmost end of the terrace. The wall here had partly slumped inwards but initially appeared to be in good condition. When the stones were examined in detail, however, it became clear that they were all cracked and fractured, many were little more than dust and the wall retained little structural integrity. A combination of the wetting and drying of the adjacent material that filled the terrace, the exposure of much of the outer face of the wall to constant sunshine during the daytime and movement of the wall caused by the leaching out of the finer deposits filling the terrace may have been responsible for its deterioration.

[Left] Ill. 2.370—The inward slumping of the wall at the northern end of the terrace, with the reinforcing wall at its base (A.R. Hayden).

[Above] Ill. 2.371—The degraded state of the stonework of the inner face of the wall at the northern end of the terrace (A.R. Hayden).



Ill. 2.372—Plan and section of the 'garden' terrace.

The excavation of the remainder of the terrace revealed that the inner wall noted in 2004 was built to reinforce the main wall of the terrace and evidenced an attempt to prevent it from slumping inwards.

A trench, varying from 700mm to 850mm in width, was first dug inside the line of the terrace wall. Flat stones were next set upright and flat against the inner face of the terrace wall. Then a drystone wall, up to 450mm wide, was built in the outer side of the trench, tight up against the flat stones and the inner face of the main wall. This wall was largely composed of small stones but the occasional larger one was also used. It had a reasonably good face on its inner side but was much rougher on the side that lay against the inside of the terrace wall. Larger and thicker and more block-like stones were then tightly rammed down between the drystone wall and the inner edge of the trench. A large number of these stones consisted of roughly rectangular quartzite blocks. The use of quartz blocks may be of no more significance than that they were the only available type of stone that came in thick blocks—the sandstone that makes up most of the peak generally breaks into thinner slabs. Thin flat stones were also hammered vertically down between the stonework to further tighten the structure.

In the narrow turn at the northern end of the terrace the reinforcing wall filled the whole interior of the terrace between the outer wall and the high bedrock outcrop to its north-west. The reinforcing wall survived to its greatest height at the northern end of the terrace and gradually became lower and more ruinous as it extended southwards. Over the southern third of the terrace the feature survived only as a trench filled with loose soil and stones, and it did not survive at all at the southern end of the terrace.

This form of buttressing finds a parallel in the nearby early monastic site on Church Island in Valentia Harbour, excavated by O'Kelly in the 1950s. There the inward slumping of part of the inner face of the cashel wall was buttressed by hammering flat stones vertically downwards, with their broadest faces against the inner face of the wall.

Ill. 2.373—The reinforcing wall viewed from the south-east (A.R. Hayden).

Ill. 2.374—The reinforcing wall viewed from above (A.R. Hayden).

None of the original finished surface level of the terrace survived. Rock-cut steps survive in the bedrock at the inner side of the southern end of the terrace leading up and over to the oratory terrace via the outer passage (see below). The lowest of these steps lies well above the present top of the southern end of the terrace but is roughly level with its surviving northern end. This could suggest that originally the terrace had a level top (which is to be expected) and therefore the surviving southern end now lies well below its finished level. This would also suggest that the wall at the southern end of the terrace would originally have been about 3m in height.

It is possible, however, that the whole terrace could originally have been about 1m higher. It is likely that the surface of the out-turn of the northern end of the terrace would originally have been level with the flat-topped bedrock outcrop there, and so was originally much higher than evidenced today. It is not clear whether this higher area was originally elevated above the rest of the terrace or whether the whole terrace was built to this level.

The rock-cut steps at the southern end of the terrace could, however, pre-date the construction of the 'garden' terrace, and hence the height of the lowest step may be of irrelevance. The possible burial of the lowest part of this route would have been of no consequence as it would still have been usable subsequently.

The digging of the wide foundation trench for the reinforcing wall meant that when it was being built the usable width of the terrace varied from only 0.65m at its narrowest to 2.15m at its widest (reduced from the 1.5–3m width defined by the original wall). Horn *et al.* (1990, 67–9) speculated that a building could once have stood on the wider southern end of the terrace, but the erection of the reinforcing wall suggests that this was highly unlikely.

The southern end of the 'garden' terrace gives access to the route that runs via the outer passage to the oratory terrace, and hence the terrace may in fact have been a traverse. The presence of this routeway (if it was contemporary with the use of the 'garden' terrace) and the reinforcing wall also means that it was unlikely to have been a garden, at least in the later stages of its use.

The two routes to the oratory terrace

Introduction

There were two distinct routes linking the 'garden' terrace with the next terrace above—the oratory terrace. One route led from the south-eastern end of the 'garden' terrace up and around the cliff at the southern side of the Peak via a short length of terracing—the outer passage—to the south-west corner of the oratory terrace. The second route ran from the north-western end of the 'garden' terrace up the cliff and then turned to the south and east around a corner, following partly quarried and partly natural ledges to the north-west corner of the oratory terrace.

The route via the outer passage

A number of poorly preserved rock-cut steps survive on the 2m-high cliff at the inner side of the 'garden' terrace, close to its south-eastern end. They mark the start of the first route to the oratory terrace. There is also a handhold on the higher rock to the left.

Ill. 2.375—The short climb up to the outer passage from the south-eastern end of the 'garden' terrace (A.R. Hayden).

Ill. 2.376—Looking down on the rock-cut steps leading up to the outer passage (A.R. Hayden).

[Left] Ill. 2.377—The location of the rock-cut handhold on the climb to the outer passage (A.R. Hayden).

[Right] Ill. 2.378—Close-up of the handhold (A.R. Hayden).

The outer passage

The steps lead up to a short length of terracing—the outer passage—on the top of the cliff on the south side of the Peak. The outer passage consists of walling erected on a narrow rock ledge. A large stone was laid flat on top of drystone walling to form the surface of the pathway. The infill behind the walling had washed out and as a result the inner side of the large stone slumped downwards.

There is a quarried ledge that retains clear tool marks outside and below the base of the wall of the outer passage. It would have provided a foothold on the outer side of the wall when it was being built. A worked ledge, also retaining tool marks, survives in a similar location outside the southern wall of the oratory terrace (see below).

A number of rock-cut steps lead down from the eastern end of the outer passage to the top of the outer wall of the oratory terrace. There must originally have been one or two masonry steps (which did not survive) here on the top of the western end of the wall of the oratory terrace. This suggests that this route to the oratory terrace was in use after the oratory terrace was built and therefore was not just a route used during the construction phase.

No excavation or survey was undertaken on the outer passage, as conservation involved simply rebuilding the areas of missing walling to support the large stone.

[Left] Ill. 2.379—The outer passage from the west (A.R. Hayden).

[Right] Ill. 2.380—The outer passage from the east. Note the worked ledge on the cliff below the masonry (A.R. Hayden).

[Left] Ill. 2.381—The junction of the outer passage and the oratory terrace from the east before conservation (A.R. Hayden).

[Right] Ill. 2.382—The junction of the outer passage and the oratory terrace from the east after conservation (A.R. Hayden).

The second route to the oratory terrace

The second route to the oratory terrace starts from the opposite end of the 'garden' terrace, just above the point where the route up from the Needle's Eye enters the terrace. The 'garden' terrace was not necessary to this route, as this climb does not involve actually setting foot on the terrace. The route leads up a steep rock slope where there are a large number of well-preserved rock-cut steps and handholds. One of the lower steps has largely broken away and makes the start of the climb somewhat awkward.

At the top of the cliff there was a broad, flat rock ledge extending to the left and the right. Turning left brings the climber towards the upper traverse. Turning right and following partly natural and partly

[Left] Ill. 2.383—The rock-cut steps and handhold on the climb up from the west end of the 'garden' terrace (A.R. Hayden).

[Right] Ill. 2.384—Close-up of handhold (A.R. Hayden).

[Above] Ill. 2.385—The wide sloping rock ledge west of the oratory terrace; the route follows its inner edge (A.R. Hayden).

[Right] Ill. 2.386—The ledge and steps leading down to the northern side of the oratory terrace (A.R. Hayden).

quarried rock ledges leads to a wide rock ledge, which slopes down to the east. This ledge was at least cleared of fallen stones and may have been partly quarried. It has a layer of quartz on its surface. The cliff at the lower end of this ledge lies on a north/south-aligned fault, which continues into the cliff on the left (north) as a gully. East of the gully there is a narrow rock ledge on which several steps were cut. The steps lead east and down along the 1.5m-high cliff at the northern side of the oratory terrace to just beyond the north-western corner of the oratory. There they turn to the west, where there are masonry steps formed in the wall of the north-western corner of the oratory leading down to the surface of the terrace.

No excavation or survey was undertaken on this route. All the features were rock-cut and free of plant growth.

The oratory terrace

Introduction

The oratory terrace occupies a broad rock ledge on the steep cliffs on the southern side of the Peak. Major north/south-extending faults mark the eastern and western ends of the terrace. The rising cliff at the western end is vertical and even, while the descending cliff at the eastern end of the terrace is deeply fissured and drops away steeply. A high cliff that extends up to the top of the Peak delimits the northern side of the terrace. A minor fault runs on the line of the western wall of the oratory and influenced the shape and line of the southern side of the terrace. The bedding plane of the bedrock on this terrace is roughly flat on the north–south axis but dips downwards to the east, while the vertical cleavage planes in the rock run on east–west lines. These two sets of planes formed narrow flat ledges on the cliff on the southern side of the terrace.

Ill. 2.387—The oratory terrace before excavation, viewed from the west. The route from the western end of the 'garden' terrace runs down the rock at the left side of the picture (A. R. Hayden).

The walls defining the southern side of the terrace survived poorly, and only two short sections of their outer faces were visible since at least the 1980s. They were both partly collapsed and the stonework was gapped and loose. The outer edge of the terrace sloped down to the cliff edge and there had evidently been much loss of walling and infilled material along all but the westernmost end of the

Ill. 2.388—The oratory in the 1980s (Horn *et al.* 2002, fig. 31).

Ill. 2.389—The oratory from the west before excavation. Note the large flat stone in the doorway, possibly the lintel. Water basins visible at left (A.R. Hayden).

Ill. 2.390—The rock-cut water cisterns; note the channels carved on the rock face (A. R. Hayden).

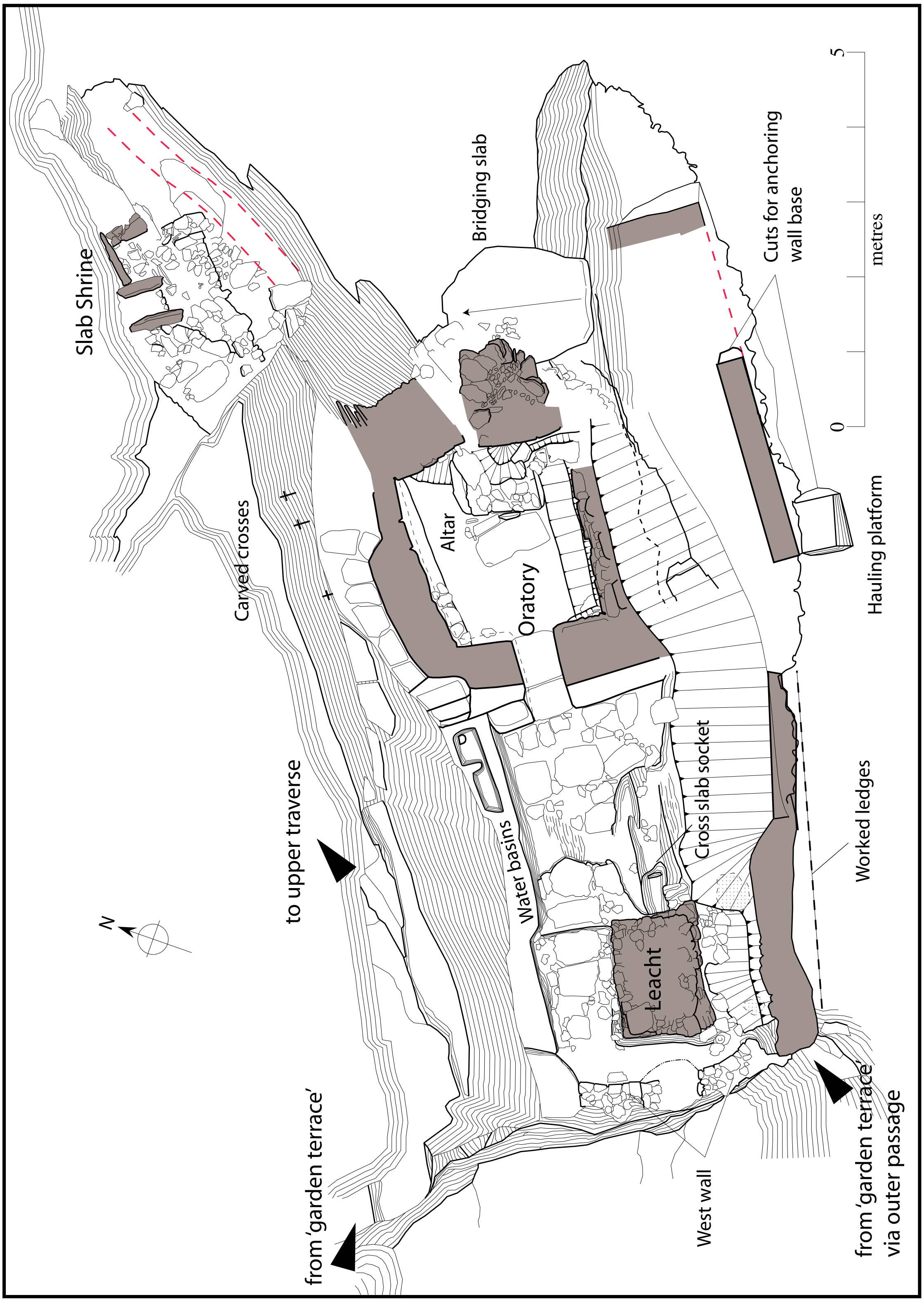
Ill. 2.391—The rock-cut water cisterns, from above (A. R. Hayden).

terrace. Loose stones lay on the slope and it was clear that collapse here was ongoing. No traces of the eastern wall of the terrace were visible before excavation.

The remains of the north and west walls of a small oratory built at the eastern end of the terrace survived and were clearly visible before excavation. The north wall of the oratory survived to about 1.5m in height, but less than a 0.5m height of the west wall survived. The doorway in the west wall was clearly evident and a large slab, probably its lintel, lay inside it. No traces of the east or south walls of the building were visible. The area of the oratory was partly cleared of campion growth in the 1980s but it had regrown over and covered it again by 2005. A 300mm-thick layer of campion growth also covered the rest of the terrace.

West of the oratory, some paving composed of large stones was visible in the 1980s but was again covered by campion in 2005. The top of a rectangular drystone *leacht* was partly cleared of campion growth and revealed west of the oratory in the 1980s and was visible standing proud of the ground in 2005. Part of a fine slate slab inscribed with a ringed Latin cross was found between the *leacht* and the oratory in the 1980s and was removed to the OPW depot in Killarney.

Two rectangular inter-linked water cisterns were cut into the rock ledge on the inner side of the terrace just west of the north-western corner of the oratory. They have previously been described in detail (Horn *et al.* 1990, 45–6). The cisterns are fed by water trickling down a series of small grooves carved in the cliff face to their north. Some of these grooves run behind the north wall of the oratory, and so it is clear that the water collection system was created before



Ill. 2.392—Plan of the features on the oratory terrace and the shrine terrace.

the oratory was erected. It is likely that the cisterns had some form of cover or lid, as they lie on the lower end of the route down to the terrace and have often proved to be a water trap for unwary feet! The grooves on the rock face were clearly carved before the oratory was erected, as they run behind and beneath its north wall.

The instability of some of the structures surviving on the oratory terrace required that they be conserved as the excavation progressed, and so the area was excavated and conserved on a phased basis, progressing from west to east.

The instability and the loose nature of the outer wall of the terrace required excavation to facilitate its conservation. Scaffolding was first bolted to the cliff just below the base of the walling at the southern side of the terrace and the area of the wall was excavated in 2005. This revealed that the upper part of the wall only survived at the westernmost end of the terrace. Over the remainder of its line the top of the wall had fallen over the cliff and the material infilled behind it had also washed away. This severely undermined the base of the southern side of the *leacht*. The surface of the terrace west of the oratory was excavated to allow the *leacht* to be conserved in 2005. After underpinning and consolidation, the *leacht* was enclosed in a timber frame composed of scaffold planks for protection.

The oratory was excavated later in 2005. This revealed its southern and eastern walls and a small altar, a vertical cross-slab and paving inside the east end of the building. These parts of the oratory were, however, very poorly preserved. The outer face of the south wall of the oratory had completely collapsed, while the east end of the structure slumped alarmingly downwards to the east. The slumping and movement proved to have been caused by the slippage of a large stone, which underpinned the east end of the oratory. The stone had been placed across the top of a deep gully but one end had slipped down into the gully, causing the collapse of the oratory. The large stone lay at a precarious angle and had minimum purchase on a quarter-inch-wide ledge on the northern side of the gully.

Ill. 2.393—The western end of the oratory terrace. Outer wall visible at top, *leacht* and paving in foreground. The two paving slabs on the right are modern (A.R. Hayden).

Ill. 2.394—The western end of the eastern section of outer walling, with the western section above in the background. The small hauling platform lies at the left (A.R. Hayden).

In 2006, after the completion of the major conservation works on the oratory terrace, the interior of the *leacht* was excavated.

Outer walling

The walls defining the southern side of the oratory terrace survived to varying degrees. At the south-western corner of the terrace the wall stood to almost full height, but its base had partly collapsed where it bridged a deep fissure that marks the major fault line at the western end of the terrace. This part of the terrace wall runs on a straight line as far as the minor fault just west of the oratory. The eastern end of this section of walling had totally collapsed. The wall was footed on a narrow bedrock ledge following a bedding lane, which sloped down to the east.

East of the minor fault, the rock is twisted slightly anticlockwise, and so the cleavage planes and the cliff edge run slightly more northwards; hence the wall defining this half of the terrace runs also at a slightly different angle. Here the cliff also extends further outwards. The outer walling here was footed on a lower ledge than that to the west and followed a sloping bedding plane, and so the base of the wall lies further to the south and at a lower level than the western section. The more easterly wall only survived in small lengths, but a clear corner was uncovered at its eastern end, marking the south-eastern corner of the terrace. A notch was cut into the bedrock on which the wall was built, to counteract the tendency for the wall to move downslope (east). There was also a larger notch cut into the bedrock higher up and well inside the line of the western end of this section of the wall. This may have functioned in a similar fashion to the other mentioned but no walling survived here.

Ill. 2.395—The eastern section of outer walling, with the base of the south-east corner wall visible in the background (A.R. Hayden).

Ill. 2.396—Hollow cut on rock ledge to secure foundations at east end of eastern section of outer walling (A.R. Hayden).

Ill. 2.397—The hauling platform. Note hollow cut in rock ledge to secure its base (A.R. Hayden).

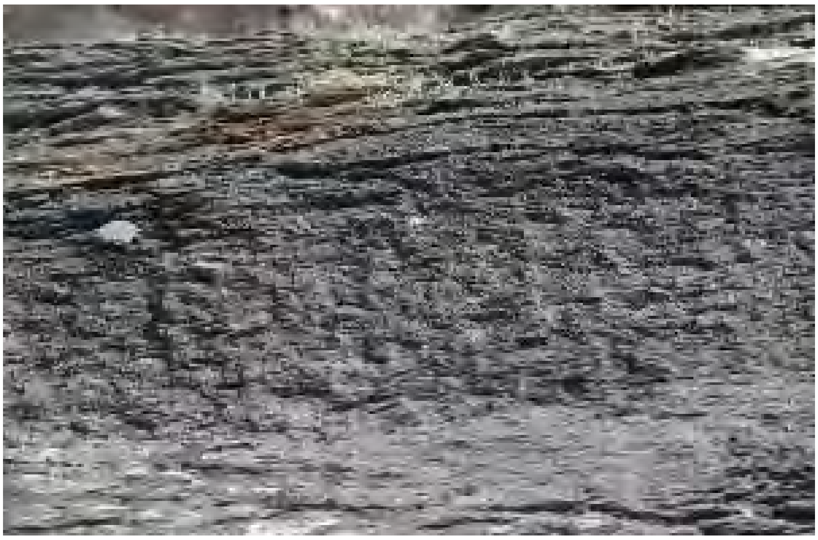
The junction between the two lengths of walling did not survive. As both the sections of wall ran on different lines and the bases lay at different heights, it is not clear how this junction was handled.

This eastern length of walling was not necessary to support the south wall of the oratory, as it is clear that its south wall rested on a bedrock ridge at a higher level (see below). Coupled with

Ill. 2.398—The worked ledges on the cliff below the southern wall of the oratory terrace (A.R. Hayden).

the evidence of access around the east end of the oratory afforded by a large bridging stone (see below), it is clear that this wall was built purely to allow access around the south side of the oratory. Circumambulation of the oratory therefore appears to have been an important consideration for the builders of the terrace. The narrowness, slope and smoothness of the ledges on which the terrace walls were built did not provide much of a grip for the base of the walls, and so they would have been vulnerable to slippage and collapse.

Apart from the southern corner, none of the eastern wall of the terrace survived. This was due to the catastrophic collapse caused by the movement of a very large stone under the oratory, on which the wall would have been footed. There could have been a narrow wall here resting on the outer side of the then collapsed stone, leaving enough room for a narrow passage around the back of the oratory.



Ill. 2.399—Detail of the tool marks still visible on the worked ledges below the southern wall of the oratory terrace (A.R. Hayden).

Hauling platform

A small, isolated, rectangular block of drystone masonry stood on a ledge at a lower level below the western end of the eastern section of walling. It was not connected with the terrace walls and may have been a constructional feature, possibly used to haul rock from the extensively quarried ledges beneath the oratory terrace (see below).

Worked ledges below the southern wall

A number of narrow sloping ledges below the outer wall of the terrace retained evident tool marks. These ledges (like that on the outer passage) would have provided a foothold during construction.

Terrace infill

Before excavation the west end of the terrace was covered by a thickness of 350–400mm of sea campion and its rooted soil, while the paving at the centre of the terrace was devoid of any cover and was fully exposed.

The rough bedrock surface of the interior of the terrace was levelled with quarrying debris, composed of small stone chippings and dusty clay, before the paving and *leacht* were constructed. Bedrock lay directly beneath the surface of the most of the terrace, but along its southern half, where the rock sloped away steeply, a greater degree of filling was necessary to provide a level surface. The infilled material here would originally have measured up to about 400mm in thickness but no more than a depth of about 200mm survived.

Two small patches of oxidised clay were encountered in the infilled material at the western end of the terrace; similar material was also present on the rock surface beneath the centre of the *leacht*. The oxidised clay was sampled but on analysis did not contain any charcoal or organic material and so was undatable. It is likely to represent small cooking fires used by the monks during the construction of the structures. The burning was neither intensive enough nor widespread enough to suggest that fire was used to aid the removal of rock from the terrace.

A low, flat rock ledge was left after the clearance of the terrace along its northern side at the base of the rising cliff. This extended almost the full length of the terrace and also ran beneath the oratory (see below). The rock-cut cisterns were cut into this rock ledge.

The westernmost end of the ledge in the north-west corner of the terrace was either cut away or was naturally cut out, forming a depression 220mm deep. Apart from the quarry waste used to infill the lower-lying areas of the terrace, no stratigraphy survived apart from a layer of modern topsoil and campion roots.

[Above] Ill. 2.400—The gully under the eastern end of the oratory terrace viewed from the east (A.R. Hayden).

[Right] Ill. 2.401—The collapsed upper bridging stone over the gully viewed from the north-east before excavation (A.R. Hayden).

The bridging stones beneath the oratory

The eastern end of the ledge on which the oratory was built was ragged and deeply fissured along the lines of the exposed cleavage planes in the bedrock. The triangular inner end of a large and deep gully ran under almost the full length (east–west) of the centre of the oratory. The top of this gully had to be bridged to allow building here. Several stones were placed across the top of the gully, resting on spines in the centre of the gully and on the rock on its northern and southern sides. Water washing down the gully in the rising cliff north of the stone appears to have eroded and 'rotted' both the bedrock and the northern end of the uppermost and largest bridging stone. This caused its northern end to fracture off, and this end of the stone slipped downwards into the gully, lodging on a very narrow ledge, less than 25mm in width, on the northern face of the gully. The movement of this stone would have been sudden and would have caused the catastrophic collapse of most of the oratory.


[Left] Ill. 2.402—The bridging stones beneath the oratory viewed from the north (A.R. Hayden).

[Right] Ill. 2.403—The bridging stones beneath the oratory viewed from the west (A.R. Hayden).

The larger and upper bridging stone lay much further to the east than was necessary to support the east wall of the oratory. It therefore appears to have been laid down to allow for access around the east side of the oratory. The width allowed here would have made it possible to build a parapet wall along the eastern edge of the stone.

There was a small hollow at the centre of the upper surface of the bridging stone. A narrow drain was carved from it leading to the eastern edge of the stone, where there was a deeper notch carved on the edge of the stone to allow water to drain away efficiently.

The movement of this large stone caused the collapse of both the oratory and the western end of the walling of the shrine terrace. The collapse of the wall of the shrine terrace in turn undermined the paving on it and the wall around the shrine itself, causing both to slump and collapse (see below).


Ills 2.404 and 2.405—The upper bridging stone replaced, showing that there was ample room for access around the east end of the oratory, even though the stone was replaced further to the west than its original position (A.R. Hayden).

The oratory

The northern wall and the northern two-thirds of the west wall, which includes the doorway of the oratory, were visible before excavation. The interior of the oratory appeared to have been cleared out previously, as the 400mm thickness of campion-rooted soil in its interior contained very little stone: there should have been a much greater quantity from the collapse of the structure. The realignment of the paving in front of the altar in the east of the oratory after the altar moved significantly (see below) also suggested that the oratory had been cleared out for reuse after its partial collapse. Removal of modern topsoil and the small amount of collapsed stone revealed the base of the southern and eastern walls of the oratory, allowing its full plan to be reconstructed. The building was almost square in plan, measuring 2.32m in length and 1.9–2.28m in width.

Ill. 2.406—The oratory terrace after the completion of the excavation and conservation of its western end and before the excavation of the oratory (A.R. Hayden).

Ill. 2.407—The interior of the oratory after excavation, from the south-west (A.R. Hayden).

The corners and the outer face of the southern wall of the structure had collapsed entirely and did not survive. A bedrock ledge, on which the southern wall would have been footed, was uncovered at a lower level than the interior of the oratory, however, and clearly marks the original line of the outer face of the wall. Three courses of stonework survived of the wall's inner face. While they were roughly *in situ,*

Ill. 2.408—The slope and loose stone beneath the line of the southern side of the south wall of the oratory (A.R. Hayden).

the individual stones had all slumped dramatically down to the south and lay at an approximate 30° slope. There was a clear channel inside the face of the wall from where the stones had slipped, marking the original line of the inner face.

Ill. 2.409—The surviving northern face of the south wall of the oratory. Note how stones have slumped outwards. Altar in left foreground (A.R. Hayden).

Ill. 2.410—The southern end of the inner face of the east wall. Note how it has twisted and moved (A.R. Hayden).

Ill. 2.411—The east wall of the oratory, showing its partly intact inner face and possible remnants of its slipped outer face (A.R. Hayden).

The full inner face of the east wall survived, but its southern end was deformed and had moved eastwards. A possible short length of the original outer face of the northern end of the wall survived but it was not *in situ*, having slipped eastwards. The east wall had split and moved substantially outwards at its centre and downwards into the underlying void.

The base of the north wall of the oratory consisted at its western end of a ridge of bedrock that stopped abruptly about midway along the wall, where it was replaced by large flat slabs set upright on edge, giving the impression of almost cyclopean masonry. There were a number of grooves carved in the top of the bedrock supporting the wall. They seem to have been designed to channel water down the rock face to a shallow and narrow drain below. The drain ran along the inside of the north and west walls, exiting through the south wall. The drain was in reality little more than a shallow scooped gully, a few centimetres deep, covered with a few small flat stones.

[Left] Ill. 2.412—The drain and rock ledge inside the north wall of the oratory (A.R. Hayden).

[Below] Ill. 2.413—Base of the north wall of the oratory. The upright rock on the left is bedrock; two upright stones support the wall on the right. Note the grooves in the top of the bedrock, which channel water down to the drain (A.R. Hayden).

The aforementioned bedrock ledge left along the northern edge of the terrace lay just below the floor of the north side of the oratory, while the remainder of the interior was covered with infilled clay, stones and gravel. The only surviving original flooring consisted of the two large threshold slabs in the western doorway; over the remainder the surviving ground level lay beneath the original floor of the building.

Altar

The collapsed remains of a small altar survived against the inner face of the east wall of the oratory. The altar was literally sucked downwards into the void created by the collapse of the underlying footing stones. It survived to a maximum of three courses in height and to a trapezoidal shape, as its eastern corners had been pulled down and inwards. It had also rotated clockwise, its north-west corner lying some 100mm east of its original position. Originally the altar appears to have measured approximately 900mm east–west by 960mm north–south. Its front was vertical but the base of the sides sloped outwards noticeably. The sloping sides would originally have been partly hidden beneath floor level.

The centre of the altar had been completely sucked downwards and only a hole choked with collapsed stone survived. Indeed, so great had been the collapse that one of the southern side stones lay turned through 90º in the horizontal and 90º in the vertical, so that it was pointing directly downwards.

Ill. 2.414—The altar, stump of upright cross-slab and kneeling stone, from the west; collapsed inner face of east wall of oratory visible behind (A.R. Hayden).

Ill. 2.415—The altar from the north-east, showing the dramatic slumpage (A.R. Hayden).

Kneeler, paving and cross-slab

The base of a vertically set stone, which is likely to have been a cross-shaped or cross-inscribed slab, survived in front of the altar, anchored in place by smaller stones hammered vertically around it.

There was a small area of re-laid paving in front of the altar. A large, flat, slate kneeling slab lay in front of the original position of the altar. This stone was not in its original position, however, as it had a man-made notch at the centre of its west side, which clearly corresponded to the surviving base of the small slab set vertically in front of the centre of the altar. The stone had clearly been turned around and re-laid at some time. There were eighteen very finely scratched simple Latin crosses on the upper face of the paving slab. The fineness of the scratches suggests that they were made with a metal blade, and their survival on the exposed upper face suggests that they could be of relatively recent origin. A number of small slabs were inserted in the gap between the kneeling stone and the altar, presumably after the kneeling slab had been realigned but also after the altar had moved eastwards by about 150mm. This suggests that these slabs were laid down after the collapse of the oratory and, coupled with the small amount of collapsed stone in the interior of the oratory, indicates that the structure was cleared out after it had collapsed so that the altar could be reused. It is not clear when this happened but it could have been in post-medieval times, when regular pilgrimage to the site was still popular.

Ill. 2.416—The finely incised crosses on the kneeling stone marked by chalk (A.R. Hayden).

Main terrace paving

The terrace west of the oratory was originally paved with flat slabs. The paving immediately west of the oratory was visible before excavation, while the western end of the paving underlay a 300–400mm thickness of sea campion. The surface of this area of the terrace originally consisted of three broad steps leading upward to the west, with the *leacht* and the curving west wall (see below) located on the uppermost level. Paving survived outside the western end of the oratory at the same level as the threshold slabs in the doorway. Bedrock ridges lay unevenly directly beneath these slabs, with the hollows infilled with quarry waste. The paving was stepped upwards twice as it extended westwards. The edge of the first step did not survive, but the edge of the uppermost step did and it lay on the line of the eastern end of the *leacht*.

Two paving slabs overlay topsoil that in turn lay on the paving slabs at the north-western side of the *leacht*. These two slabs were therefore placed here relatively recently. They may have been laid down to give a firm surface to the damp north-western corner of the terrace, as water and silt gathered here after being washed down the gully at this corner of the terrace. It is possible to jump down to this point from the higher rock above, where the route crosses the gully that marks the beginning of the oratory terrace. This was the most obvious way to get down to the oratory terrace in recent times.

Ill. 2.417—The western end of the oratory terrace during excavation. The two rearmost paving stones to the right of the *leacht* are modern. Note steps up in the original paving (A.R. Hayden).

Ill. 2.418—The western end of the oratory terrace after the completion of excavation (A.R. Hayden).

Wall bench

A low, narrow drystone wall was revealed after the removal of the sea campion cover at the western end of the terrace. The wall ran on a gentle curve, reflecting the line of the higher cliff that delimited the western end of the terrace. Its centre was disturbed probably in relatively recent times, as it contained only loose topsoil and campion. It is not clear whether the wall extended right into the north-western corner of the terrace, as both natural erosion (caused by water running down the fault line) and human erosion had greatly disturbed this area. The wall may not have stood to much more than its uncovered height (320mm) and would most likely have been used either as a bench on which weary pilgrims could rest or as a shelf on which to display devotional objects etc.

[Left] Ill. 2.419—The wall bench and *leacht* at the western end of the oratory terrace, from the north-east (A.R. Hayden).

[Below] Ill. 2.420—The wall bench and *leacht* at the western end of the oratory terrace, from above and west (A.R. Hayden).

The leacht

The *leacht* was located with its eastern end on a line with the step down off the highest level of the paving at the western end of the terrace.

The drystone-walled *leacht*, which measured 1.56m east–west by 1.14m north–south and stood to just over 400mm in height, was built in a 100–150mm-deep trench cut through the infilled material of the terrace down to bedrock. The construction trench was only revealed at the western end and the western end of the northern side of the *leacht* owing to its erosion on the southern side and the presence of paving which was not removed on its northern and eastern sides.

[Left] Ill. 2.421—The *leacht* viewed from the north-east (A.R. Hayden).

[Right] Ill. 2.422—The south face of the *leacht* (A.R. Hayden).

The southern side of the *leacht* was the most poorly preserved and the wall at the centre of this side had partly collapsed. The two ends of this side had also moved outwards. The undermining of this side of the *leacht* resulted from the outwash of the terrace infill beneath it after the outer wall at the southern side of the terrace had collapsed. The northern and western sides of the *leacht* were in good condition but many of the facing stones of its north-western quarter were missing, and this corner of the structure only survived to about 200mm in height. There were many fist-sized and larger lumps of quartz on the surface of the *leacht* and on the ground around it.

After the conservation of its outer walls, the quartz on top of the *leacht* was removed and an irregularly shaped area (measuring a maximum of 1.2m by 1m) of the interior was excavated in 2006. The facing stones of the *leacht* were left undisturbed. The interior, which contained loose soil and only a few stones (including several pieces of quartz), proved to have been totally disturbed by two animal or bird burrows. A number of bird bones and parts of a dead puffin were found in the base of one of the burrows. A small area of burnt clay was revealed on the bedrock under the *leacht*; analysis found that it did not contain organic material, however, and so it was undatable.

A few small, roughly carved stone crosses were found in the collapsed stone and topsoil around the *leacht*.

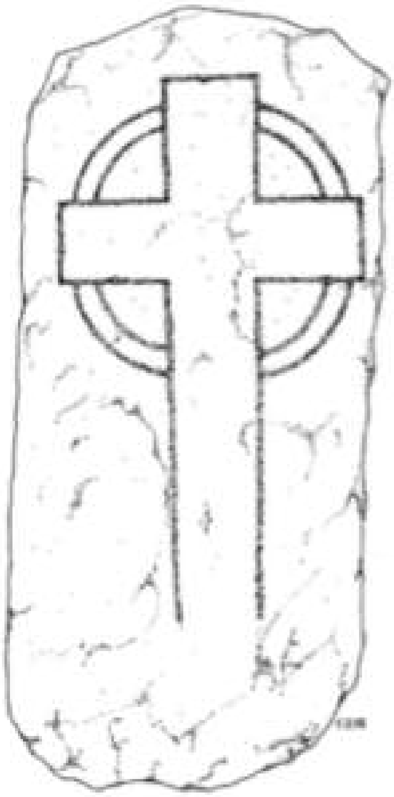
[Left] Ill. 2.423—The *leacht* after conservation and before excavation of its interior, from the west (A.R. Hayden).

[Right] Ill. 2.424—The interior of the *leacht* after excavation (A.R. Hayden).

Cross-slab and setting

A flat stone was driven vertically into and across one of the natural crevices in the bedrock just to the east of the *leacht*. This setting is similar in form to that used to hold the small vertical slab erected in front of the altar in the oratory. It is therefore possible, and indeed probable from its location, that this is the setting for the fine ninth-century cross-inscribed slab that was previously found lying prone just to the north-east of this point (Horn *et al.* 1990, 45).

Ill. 2.425—Stone jammed upright into and across a natural bedrock furrow (to left of uppermost end of top red segment of ranging rod), probably part of setting to hold the upright cross-slab just east of the *leacht* (A.R. Hayden).



[Above] Ill. 2.426—The cross-inscribed slab found on the oratory terrace in the 1980s (Horn *et al.* 1990, fig. 36).

[Right] Ill. 2.427—Reconstruction drawing of the original slab (Horn *et al.* 1990, fig. 59).

Carved crosses

Three crosses carved into the bedrock cliff on the northern side of the oratory were discovered and photographed in 2008. One, which is a finely pocked simple Greek cross, lies only a few inches above the pathway where it reaches the north-western corner of the oratory. The two others, which lie higher up on the same rock face close to its end above the eastern end of the oratory, are larger incised crosses. They are both very faint and hard to see. There could well be more crosses carved on the cliffs here, as the rock faces have not yet been examined in detail.

[Left] Ill. 2.428—The location of the small pecked cross on the cliff behind the northern side of the oratory (A.R. Hayden).

[Right] Ill. 2.429—Detail of the small pecked cross (A.R. Hayden).

Ill. 2.430 (above)—The location of the two larger incised crosses on the cliff behind the north-eastern corner of the oratory (A.R. Hayden).

Ills 2.431 (above right) and 2.432 (right)—Details of the two larger incised crosses on the cliff behind the north-eastern corner of the oratory (A.R. Hayden).

Ill. 2.433—The view from the oratory terrace on a foggy day.

The shrine terrace

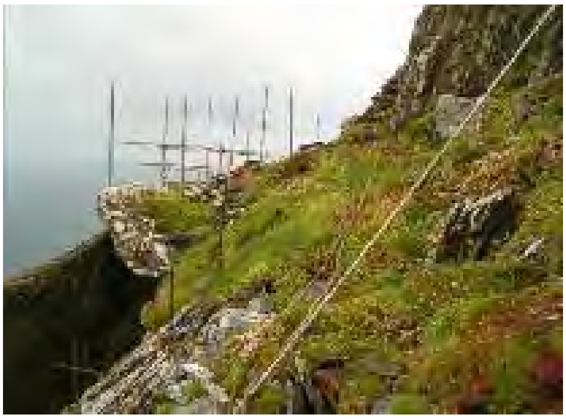
Immediately north-east of the major fault that marks the eastern end of the oratory terrace there was an almost separate long, narrow, triangular terrace—the shrine terrace. After the fault line the rock is twisted in an anticlockwise direction, so the cleavage lines run north-east/south-west; the outline of the shrine terrace follows this alignment and hence is at a slight angle to the line of the oratory terrace.

Traces of parts of its outer wall were visible in the 1980s but had either fallen away or were hidden beneath campion growth by 2005. Three large, flat stones set upright on the back of this terrace were interpreted as the remains of a shrine. The surface of this ledge, particularly at its western end, sloped down very steeply to the cliff edge and there were loose stones visible there, which were in clear danger of sliding off.

The shrine terrace was excavated in 2006.

The terrace

Access to this terrace was gained in two ways. The first route ran straight on eastwards from the northern entranceway to the oratory terrace, along a stone-flagged path above and to the north of the oratory. The second approach circumnavigated the southern side of the oratory, crossing over the large bridging stone.



[Above left] Ill. 2.434—The western end of the shrine terrace before excavation, looking west. Collapsed bridging stone beneath oratory visible at left (A.R. Hayden).

[Above right] Ill. 2.435—Looking east along the shrine terrace before excavation (A.R. Hayden).

[Left] Ill. 2.436—Looking down on the shrine terrace during excavation, from the north-east (A.R. Hayden).

[Right] Ill. 2.437—The scar left by the collapse of the outer wall of the shrine terrace, from the east. The shrine is visible at the upper right (A.R. Hayden).

Owing to the collapse caused by the movement of the large stones beneath the oratory, no stonework survived where the shrine and oratory terraces joined. Indeed, the movement of these large stones had probably also caused the collapse of much of this end of the shrine terrace itself. Water flowing down the deep fissure marking the major fault at the south-western end of the terrace probably destabilised the large stone beneath the oratory and also removed more material once the terrace wall had collapsed.

The outer face of the wall defining the edge of the shrine terrace had completely disappeared. Its inner face, however, which consisted of a straight line of small stones, survived to just a single course in height. The wall was clearly built along the top edge of the cliff, which dipped downwards to the south-west. The collapse of the terrace wall in turn caused the collapse and severe slumping of the infilled material behind it and the structures that originally stood on its surface.

Ill. 2.438—The western end of the shrine terrace during excavation, from the east. Note the steep angle of the surviving paving. The ranging rod lies at the outer edge of the wall retaining the shrine (A.R. Hayden).

After removal of the campion, the surviving surface of the terrace infill was revealed. It lay at a very steep angle and it is clear that much material had been lost. The remains of paving, consisting of flat stones lying at an angle of 45°, survived on the western half of the terrace. All the stones were loose and it is clear that they represent only the very last remnants of the surface of the terrace, the remainder having slid over the cliff. The surviving stones had to be removed after recording and planning, as they were in danger of sliding over the cliff.

The shrine

Three large, flat slabs set upright, two parallel to each other and one set transversely, were visible before excavation at the back of the centre of the terrace. These are possibly the last remnants of a partly collapsed slab shrine. Traces of a collapsed wall consisting of a line of pitched small, flat stones, a single course in height, survived to the south of the upright slabs. This wall appears to have defined the platform on which the shrine stood. There were also traces of a small length of walling at the eastern end of the slab shrine, which may have been its original eastern end.

[Left] Ill. 2.439—Looking down on the shrine after excavation. The ranging rod lies on the line of the collapsed retaining wall (A.R. Hayden).

[Below left] Ill. 2.440—The collapsed retaining wall of the shrine, from the south-east (A.R. Hayden).
[Below right] Ill. 2.441—The stones of the shrine. Note that they were held in place only by the campion, with little solid material supporting them (A.R. Hayden).

The surviving ground level around the upright slabs lay beneath their bases and they were only held in place by the campion and collapsed material. Hence it was not possible to demonstrate, as seems likely, that originally there were more upright slabs here. It is therefore difficult, if not impossible at this stage, to reconstruct the original form of the putative shrine. Its placement on a raised platform and its close proximity to the oratory are, however, typical features of the slab shrines found in other early medieval ecclesiastical sites on the Iveragh Peninsula (Marshall and Walsh 2005, 55–8, 166–71; Sheehan 2009, 198–200; Hayden 2011).

The two routes to the upper traverse

There were two routes leading from the oratory terrace up to the next terrace—the upper traverse—on the final route to the Peak. The western route is the one most used today and, while possibly less exposed and apparently safer, is in fact the more difficult.

The southern route

From the path from the 'garden' terrace on the low cliff above the north-western side of the oratory terrace a narrow rock ledge runs diagonally eastwards up the steep cliff. There are several rock-cut steps on this ledge and the ledge itself also appears to have been worked. A rock-cut step above the eastern end of the ledge leads to the end of another sloping ledge, which runs diagonally back and upwards to the west. Again there are several rock-cut steps on this ledge and the ledge is also worked. At the western end of this ledge the climb proceeds straight up the cliff to the north, where there is a series of large rock-cut steps leading straight up to a spacious flat ledge overlooking the oratory terrace. Following this ledge west leads to a point about 1.5m above the southern end of the eastern side of the upper traverse. Two small rock-cut steps lead down the rock slope to a large stone on the upper traverse (see below). This stone was placed here after the construction of the upper traverse, so it is clear that this route represents one that continued in use after the building of the upper traverse.

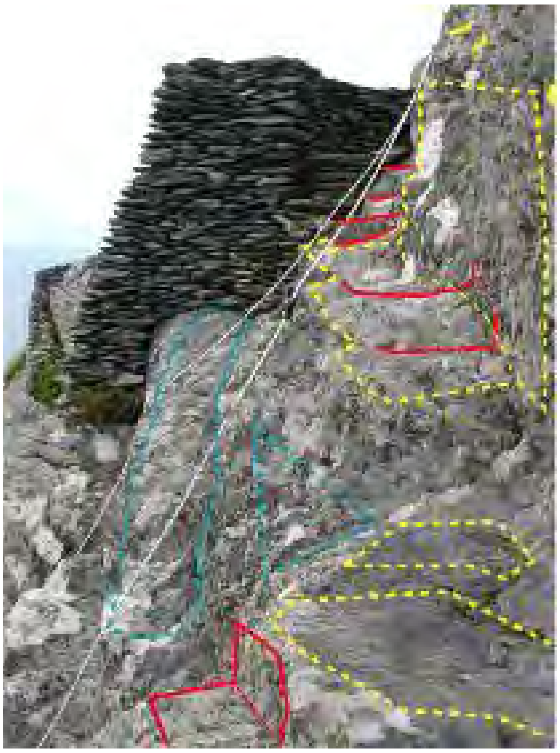
This route is very easily climbed in an upward direction but is less easy going down.

Ill. 2.442—The ledges and rock-cut steps of the lower part of the climb from the northern side of the oratory terrace to the ledge above the upper traverse (A.R. Hayden).

Ill. 2.443—The rock-cut steps of the upper part of the climb from the northern side of the oratory terrace to the ledge above the upper traverse, from the east (left) and from above (right) (A.R. Hayden).

The western route

The second route to the upper traverse requires doubling back along the ledge to the top of the climb up from the western end of the 'garden' terrace. Passing the top of the climb up from the 'garden' terrace, the route follows a narrow ledge for the short distance to the southern end of the upper traverse. Much of this ledge has been carved from the cliff and there are several rock-cut steps here. There are at least half a dozen carved handholds on the top of the rock on the right-hand side. Today this short part of the climb is quite awkward to cross, as the rock on the right protrudes at shoulder height. There is, however,



[Left] Ill. 2.444—The path to the upper traverse, looking north: red = rock-cut steps; dashed yellow = cut-back and worked areas; solid yellow = handholds; blue = possible worked ledges that could have held masonry (A.R. Hayden).

[Right] Ill. 2.445—The path to the upper traverse, looking south (A.R. Hayden).

a narrow ledge on the cliff just below the path here, and it is possible that there was once masonry anchored on it that would have provided a wider passage, as on the narrow ledges on either side of the blind corner (see above). The lower rock ledge is very narrow and uneven and there were no traces of any masonry surviving here. Perhaps the number of handholds on the rock to the right might suggest that this part of the route was always awkward to cross.

Ill. 2.446—Close-up of the carved handholds at the end of the route to the upper traverse (A.R. Hayden).

The upper traverse

In the area of this terrace the vertical cleavage planes of the bedrock run east–west, and as a result the cliffs here are fissured and uneven owing to the erosion of the weaker cleavage planes. The long axis of the terrace, which runs roughly north–south, lay at right angles to the cleavage planes. The terrace was roughly straight, but at its southern end it turned outwards and skirted around a protruding rock outcrop.

The high cliff behind the terrace was roughly vertical, but it overhung in places and was also very fissured and uneven. An eroded major fault line (the gully that the primary route follows up the Peak) marks the northern end of the terrace, and a minor one marks the opposite end.

[Left] Ill. 2.447—The upper traverse from below before excavation (A.R. Hayden).

[Right] Ill. 2.448—The remains of the poorly preserved external wall at the southern end of the upper traverse before excavation (A.R. Hayden).

[Left] Ill. 2.449—The exterior face of the wall at the northern end of the upper traverse before excavation

[Right] Ill. 2.450—The exterior face of the wall at the northern end of the upper traverse after excavation. The large stone at the base of the corner of the wall sits on a rock-cut step that was part of the original route (A.R. Hayden).

Ill. 2.451—The base of the external face of the terrace wall rose and fell considerably, as it was erected crossing deep fissures, which gave the wall a secure foundation. The ranging rod lies in the same position as that in the preceding photograph (A.R. Hayden).

Before excavation, standing on the upper traverse, it appeared almost as a natural flat ledge, as virtually no walling was visible on its surface and its top was roughly level and covered with plant growth. The outer wall was clearly visible from below, however. The outer face of the walling (although somewhat obscured by plant growth) appeared to be largely in good condition, except for its northern and southern ends. At the southern end only the very basal stones of the wall appeared to survive. The rest of the outer face there appeared as a tumble of stones covered with plant growth and it was obviously unstable. At its northern end more of the outer face was visible, but its base was hidden below plant-covered fallen debris and the top of the wall was evidently missing and marked by a steep, plant-covered slope.

The outer face of the terrace wall was cleaned of plant growth and the terrace was excavated in 2006 to determine how much of the northern and southern ends of the enclosing wall survived and to examine its condition.

Initial clearance of the thick campion cover from the face of the outer wall and from the surface of the terrace revealed the outline of only part of the inner face of the terrace wall. A short length of a partly collapsed inner facing survived along the southern central section of the terrace. This walling, however, sat on top of a loose fill of stones and clay, which in turn lay on top of the original terrace wall. It clearly evidenced a secondary partial rebuild of the inner face of the wall. This secondary wall stood to a maximum of three courses (300mm) in height and measured less than 400mm in width. It lacked a

Ills 2.452 and 2.453—The collapsed secondary facing of the inner face of the wall of the upper traverse (A.R. Hayden).

built outer face and may simply have been erected as a revetment to loose material piled against its outer side. The stones in the wall were very loose; it had collapsed inwards significantly and was very unstable. After recording, this walling was removed to allow access to the underlying original terrace walling.

The inner face of the original terrace wall survived to a maximum of 600mm in height above the finished interior surface of the terrace. It was composed of much smaller stones than were used to construct the outer face and had moved inwards and partly separated from the wall itself. The inner face survived over all but the southern end of the terrace, where it had completely collapsed. Only the collapsed core and a few of the stones of the very basal course of the outer face of the wall survived at this end of the terrace.

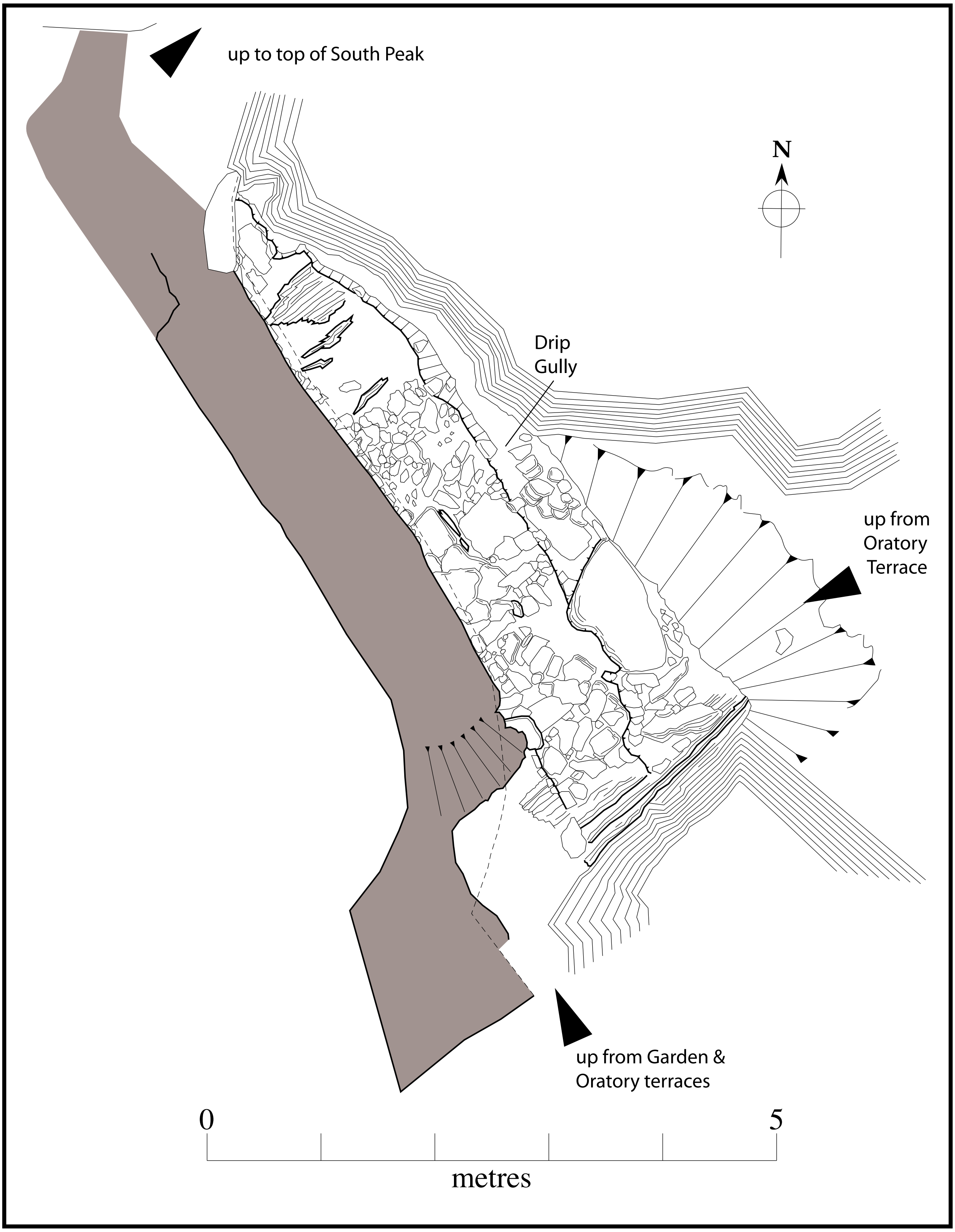
Owing to its instability, the top of the inner face of the wall over its southern half had to be removed to allow excavation of the interior of the terrace.

The interior of the terrace had been infilled with quarry waste, raising its level to the top of the surviving original wall. The secondary wall facing was built on this infill.

[Left] Ill. 2.454—The slumped and partly detached original inner face of the terrace wall (A.R. Hayden).

[Right] Ill. 2.455—The paving on the interior of the terrace. The large stone bridging the drip gully is visible at the lower right (A.R. Hayden).

The interior of the terrace was originally paved with medium-sized flat slabs. The paving slumped downwards, however, and lay at a 30° angle, sloping down towards the outer wall. Several of the paving slabs also extended partly beneath the original inner face of the wall. The leaching out of the finer material infilling the base of the terrace under the paving caused the slumpage. This erosion and the movement of the paving (which partly underlay the inner face) partly undermined and destabilised the inner face of the wall. The movement of the inner face of the wall and the paving explains why the interior of the terrace was infilled and raised, for it would no longer have been possible to cross it comfortably or safely.



Ill. 2.456—Plan of the excavated features on the upper traverse.


[Left] Ill. 2.457—The paving at the southern end of the terrace. The large stone bridging the drip gully is visible at the back left (A.R. Hayden).

[Right] Ill. 2.458—The slumped and wide northern end wall of the terrace (A.R. Hayden).

At its northern end the top of the outer face of the terrace wall proved to have collapsed extensively outwards where it turned back to meet the cliff and gully. The base of the outer face survived, however, partly hidden beneath plant growth and fallen debris. The base of the outer face of the terrace here sat on top of a clear rock-cut step that was part of the original route to the Peak (see below). The inner face of the wall at the northern end had also moved to the north and lay at an angle. The wall here was of much greater width than elsewhere, probably because its inner side included steps leading from the traverse up to the rock-cut steps in the gully. The top of these masonry steps survived against the cliff face. A large slab lying against the inner face of the wall on the interior of the terrace may be a remnant of the first of these masonry steps.


[Left] Ill. 2.459—The inner face of the wall at the northern end of the terrace (A.R. Hayden).

[Right] Ill. 2.460—The top of the masonry steps at the northern end of the upper traverse leading to the climb to the top of the Peak (A.R. Hayden).

The outer face of the wall along the length of the terrace rose and fell as it crossed the fissured bedrock. It was generally in good condition, as the uneven bedrock provided a good key for its construction. Its southern end, however, was constructed on a steep outward slope that lacked any deep fissures, and this may explain why it collapsed so extensively. The inner face of the wall at the northern end of the terrace was also prone to wind damage. Easterly winds are funnelled along the southern side of the cliff at the back of the rock ledge above and east of this end of the terrace, and descend down to the northern end of the terrace with considerable force. After the inner face was conserved and raised, its top edge was disturbed by wind over the winter of 2008/9. The top course of relatively large stones on its inner face was uprooted and flipped over by wind, and the stones lay upside down on the centre of the top of the wall.

[Left] Ill. 2.461—The external face of the wall at the southern end of the upper traverse after excavation (A.R. Hayden).

[Right] Ill. 2.462—Wind damage to the conserved inner face of south end of the terrace wall (A.R. Hayden).

A deep drip gully extended along the rear of the terrace against the base of the high cliff face. It extended downwards through the secondary fill and the primary paving. It contained flat stones pitched into it at an angle, suggesting that it was gradually opened over time. It was formed by the leaching of the terrace infill pulling loose material away from the cliff face combined with the erosion caused by water flowing down the cliff. A large boulder and several smaller stones were placed into the top of the drip gully at the southern end of the terrace. These appear to have been intended to bridge the gully and provided a step up to two rough and small rock-cut steps found on the bedrock slope above. These steps, which lead to the broad ledge that overlooks the northern side of the oratory terrace, mark the uppermost end of the route up the cliff from the northern side of the oratory terrace. The placement of the boulder

Ills 2.463 and 2.464—Cross-shaped slab found on the upper traverse (A.R. Hayden).

over the drip gully shows that it was laid down well after the terrace had been built. This suggests that the route up the cliff from the southern side of the oratory terrace continued to be used after the construction of the upper traverse and was not simply a route used during construction.

As little of the bedrock beneath the upper traverse was revealed by excavation, we do not know the extent to which this area was quarried to facilitate the construction of the traverse. The base of the traverse lies on a bedrock bedding plane whose original width and regularity is not known. Therefore we do not know whether or not it may have been possible to cross this area before the construction of the traverse.

2.3.6 The outer terrace

The outer terrace is reached from the head of the gully below the very top of the Peak and so could connect with either or both of the routes up the Peak. There is no evidence to show when the outer terrace was built relative to the other terraces, and so it is not clear on present evidence when it was built.

The route to the outer terrace

The route to the outer terrace begins at the head of the gully, just below the start of the final climb to the Peak. From this point there were a number of possible ways to reach the outer terrace. Unlike the other routes on the Peak, no rock-cut steps or handholds survived here to aid the monk or pilgrim.

The easier but more roundabout route runs north-east from the top of the gully along a level ledge and down either one of two easily climbed 45° slopes to a broad and flat ledge. This ledge runs back horizontally to the south-west. The descents of the slopes on this route are much easier and less exposed than those on the probable original route (see below). These easier routes appear, however, not to have been used. After these slopes were cleared of growth, Michael O'Sullivan (pers. comm.) suggested that they were never used, as several narrow and fragile rock spines were still present; these would have been broken off by human traffic.

[Left] Ill. 2.465—The route to the outer terrace: the flat ledge to which the easier but apparently unused climbs lead down (A.R. Hayden).

[Right] Ill. 2.466—The apparently used route extends down this awkward slope to the western (near) end of the ledge in the previous photograph (A.R. Hayden).

The more direct but more difficult route leads by a different way down to the western end of this flat ledge. This route runs south-west from the top of the gully, along the crest of the rock ridge and then down its north-western face. This involves a vertiginous and difficult clamber down a steep face adjacent to the cliff. This rock face contains several small, rough but natural ledges that aid the climber. None were improved but several appeared worn, and so could indicate that this was the route used by the monks. Some of this wear could, however, be modern. A short length of very poorly preserved drystone masonry lies at the western end of the flat ledge at the base of this rock face. These have not fallen here, as they are geologically dissimilar to the surrounding rock, and therefore appear to have been deliberately placed (Michael O'Sullivan, pers. comm.). No recognisable structure survived, but they may have formed a small platform providing the climber with a more secure footing at the base of the steeper part of the climb. An area of bedrock just above the masonry has also been worked flat.

[Above] Ill. 2.467—Masonry at the western end of the flat ledge down to which the first part of the climb leads. Worked area visible to its left (A.R. Hayden).
[Right] Ill. 2.468—Detail of worked area at western end of flat ledge (A.R. Hayden).

From this point the route is clear, as it follows the flattened top of the narrowing spine ridge stepping down to the south-eastern corner of the terrace. The western half of the spine may originally have been covered by stonework—the top of the adjacent terrace wall—as again there are delicate pieces of rock surviving on the flat top of the spine, which would not have survived if the area had been walked on extensively (Michael O'Sullivan, pers. comm.).

There is a cache of at least twelve pieces of quartz laid on a ledge on the northern side and just below the start of this final descent to the terrace. They do not form any recognisable structure.

Ill. 2.469—Cache of quartz blocks on the northern side of the climb down to the outer terrace (A.R. Hayden).

Today the final descent onto the outer terrace takes one down the face of a rock ridge to the right, where there are a number of small rock-cut notches and handholds. Originally, however, the climb down would have been on rock-cut steps and masonry steps constructed on bedrock ledges and finally on the top of the inner side of the southern wall of the terrace itself, which did not survive here. The final run of steps was on stones protruding from the inner face of the wall. Only the lowest of these steps survived.

[Left] Ill. 2.470—The final part of the climb down originally lay partly on the wall top, which no longer survives (A.R. Hayden).

[Right] Ill. 2.471—The one surviving protruding stone on the inner face of the wall that provided the last step down to the terrace (A.R. Hayden).

The outer terrace

Of all the terraces on the South Peak, the outer terrace is the most exposed (being the only one built on the northern side of the Peak), remote and difficult to access. It does not form part of either of the two routes to the Peak, but is accessible from both of them. In addition, it is the least well preserved of the upper terraces; indeed, it is not clear whether it was ever completed. Nevertheless, the interpretation of its temporal position and its function could be fundamental to the understanding of the development and meaning of the structures on the South Peak (see discussion below).

Ill. 2.472—The South Peak from the north-east. The outer terrace is visible just below the top right side of the Peak. The prominent ledge below it may have provided the stone for its construction (Con Brogan, DAHG).

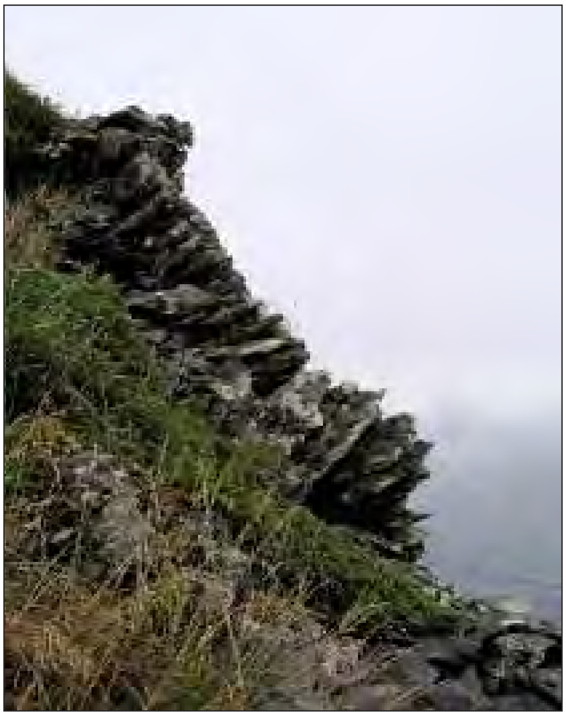
The outer terrace occupies the south-eastern end of a high and narrow spine of, in places, overhanging bedrock protruding from the south-western corner of the Peak. The vertical cleavage planes of the bedrock run north-east/south-west in this area, so there are vertical cliffs that are prone to the scaling off of large slabs on the northern and southern sides of the terrace, while the cliffs to the west are fissured and uneven owing to the erosion of the exposed ends of the cleavage planes.

Ill. 2.473—The south side of the outer terrace, viewed from the upper traverse. The climb down follows the sloping wall on the right (A.R. Hayden).

The walls of the precipitous outer terrace hug the edges of the curving cliff that defines the western end of the Peak. The uppermost part of the terrace looks down to the south over the top of the gully up which the primary route climbed. The terrace curves around to the west and descends, and at its northern side peers vertically down over the steep and exposed cliffs on the north side of the island. From its eastern side there is a clear view of the north landing and the north steps, the monastery behind them and Little Skellig in the distance. The terrace is exposed and even on the warmest days it was always cold, often bitingly so, and windy. Indeed, this terrace provided, by a long way, the toughest environment in which work was undertaken on the Peak.

The enclosed area of the terrace is composed of four east/west-aligned rock ledges of varying width, which step steeply down to the north like a flight of broad, uneven and 1m-high giant steps. There is a difference of 7m in height between the southern and northern sides of the enclosed area.

Before any works were undertaken, the walls of the outer terrace were examined in 2006. This revealed that although the walls at the southern and south-western corners of the terrace were stable they were badly cracked and slumped in and out in places. The walling along the western side of the terrace was in atrocious condition, however. It leaned inwards hugely and was close to total failure and loss.

[Left] Ill. 2.474—Examination of the walls of the outer terrace (A.R. Hayden).

[Right] Ill. 2.475—The highly collapsed and unstable centre of the western wall of the terrace (A.R. Hayden).


Ills 2.476 and 2.477—The lower surviving section of the western wall (A.R. Hayden).


Ill. 2.478 and 2.479—The *sondage* opened in the south-western corner of the outer terrace (A.R. Hayden).

A small *sondage* (measuring less than 1m by 1m across) was opened in the curved west-facing corner of the terrace in 2006 at a point that was partly cleared in the 1980s, revealing possible paving (Horn *et al*. 1990, fig. 51). The test-trench revealed a surface containing a few flat stones that could indeed have been very poor and gapped paving at the level of the base of the internal face of the enclosing wall.

Scaffolding was erected around the western side of the terrace in 2006 (an engineering feat in itself) and the terrace was excavated in 2006–7. Excavation was first undertaken on the western side of the terrace to facilitate the conservation of the highly vulnerable walling there, and then moved down to the northern side of the terrace to determine whether anything of its northern wall survived. The northern wall was of key structural importance, as it lay at the lowest part of the terrace and would have retained all the terrace infill. Rather like the situation on the 'garden' terrace, the collapse of this wall had the potential to destabilise all the other walls and whatever structures were built on the terrace itself. The interior of the terrace was next excavated to see whether any features survived there, and finally the better-preserved walling and the access route down to the terrace at its southern and upper side were excavated.

Ill. 2.480 (Left and below)—The spectacularly sited scaffolding erected at the western side of the outer terrace, which was an engineering feat in itself (A.R. Hayden).

Access walling and features

The access route runs down into the eastern end of the southern side of the terrace. A rock-cut step (no. 1) at the end of the highest part of the bedrock spine leads down to two or three steps in the eastern section of the southern wall of the terrace. The upper step may have been on the outer part of the parapet wall itself, the second was in the wall (B) and the final one was a separately built masonry step (C) erected on the flat bedrock ledge. The masonry of this step was not keyed into the outer wall.

Ill. 2.481—Looking up (east) along the access to the terrace. Steps B and C are visible above the bedrock ledge (D) near the top of the picture. Wall E is visible below at the centre right, with the internal wall visible below (A.R. Hayden).

Ills 2.482 and 2.483—(Left) Detail of steps B (top) and C (bottom), leading down to (below) a flat bedrock ledge (D) (A.R. Hayden).

The step led down to a flat bedrock ledge (D). A few large stones lay on the ledge and it could originally have been completely covered in masonry. At its south-western end there was another rock-cut step (no. 2), leading down to the top of a short length of walling (E) built against the vertical northern side of the bedrock ridge. The latter wall was composed of notably larger stones than those used in the adjacent terrace wall and appears to have stood as a completely separate section of walling, at least in its surviving (lower) part. Its upper part could have been keyed into the terrace wall where it had originally stood above the level of the bedrock ridge.

[Above] Ill. 2.484—Looking west along the bedrock ledge (D), part of step C in foreground. Stepping down off the far end of the ledge led to the top of wall E (A.R. Hayden).

[Right] Ill. 2.485—Looking west along wall E; note the projecting stone on its inner face (A.R. Hayden).

There should have been three steps in this wall originally—only the lowest step survived—to bring one down to the level of the highest bedrock ledge at the south-eastern side of the terrace. The top steps would have lain in the wall itself. The bottom step, which survived, was a flat stone projecting from the face of the wall.

Ill. 2.486—The north face of wall E, with the projecting stone step visible at centre (A.R. Hayden).

A number of clear rock-cut notches and a handhold survive in the rock inside the main terrace wall. They indicate that this was an alternative route, which could have been used at either an earlier or a later time than that described above, leading down to the terrace from the end of the high rock spine. This alternative route is the natural modern one, as the collapse and erosion of the terrace wall and wall E prevented their use as a route down to the terrace, and could therefore be of more recent origin. It is, however, possible that this was the route used by the terrace-builders themselves, before they had constructed the wall at this side of the terrace. The modern use of this route may also have contributed to the damage to the possible *leacht* described below, as it lay where one lands after jumping down onto the terrace from these rock-cut notches.

Both these routes led down to the highest-level rock ledge in the terrace, where a small *leacht* survived (see below). The finished terrace level, however, seems to have lain about 1m lower, on the next rock ledge down.

Two poorly preserved rock-cut steps (nos 5 and 6) led down the rock slope at the north-western corner of this ledge to the main level of the terrace.

[Left] Ill. 2.487—Looking down the access route at the southern side of the terrace, after conservation (A.R. Hayden).

[Right] Ill. 2.488—Wall E with reconstructed steps on its top, after conservation (A.R. Hayden).

The northern, western and south-western walls

The defining drystone walling of the terrace curves sinuously around the south-western end of the steep rock cliff. Its base rises nearly 7m from the north to the west side of the terrace. The wall is described below, running upwards from the northern side to its western and then southern sides.

A vertical rib of bedrock on the cliff edge, lying parallel to the wall line, marks the eastern end of the surviving walling on the northern side of the terrace. The original walling here had almost totally fallen away over the steep cliff and only a single course of stones survived, showing that the wall ran at least as far east as the western side of this bedrock rib. The bedrock rib actually leans slightly outwards and so the wall base lies outside it, but as the wall rose it must have become tucked behind it, which is a typical construction feature found on the Peak.

Ills 2.489 and 2.490—Looking down on the north-eastern corner of the terrace during excavation. The few surviving stones of the northern wall lie on the right (southern) side of the bedrock rib at the cliff edge. No trace of an eastern wall survived. The conserved lower end of the western wall is visible at the left (A.R. Hayden).

It was impossible to determine exactly where the north-eastern corner of the terrace lay, or indeed whether the wall here had actually been finished, as no stonework at all survives north-east of the bedrock rib. The northern wall could only have continued on for a maximum of 2m or so, as beyond this point there is nowhere to anchor the base of a wall because the cliff there is vertical to overhanging and lacks any ledges. There were no traces of stonework or notches cut in the bedrock to show where the wall would have turned south-eastwards to define the eastern end of the terrace. There would have to have been a wall here somewhere if the terrace was completed, as the fine material infilled behind the northern and western walls of the terrace had also to be contained on this side.

The wall at the northern side of the terrace, if completed, would originally have stood to at least 3m in height if it were to retain material to the level of the second rock ledge down, which appears to have formed the finished internal level of all but the southern side of the terrace, which lay at a higher level (see below).

Two small notches were noted on a protruding bedrock rib on this steep slope. They were probably worn by ropes used by the terrace-builders to haul stone up from the lower ledge on the cliffs on the northern side of the island (see below).

Ill. 2.491—Rope-worn notches on the bedrock at the northern side of the terrace (A.R. Hayden).

At the north-western corner of the terrace the wall survived to less than 0.5m in height, but it rose steadily as it extended south along the western side of the terrace, where the bedrock rose in a series of broad vertical steps. From the north-western corner of the terrace the wall turned to the south, where it met a transverse and vertical upward step in the bedrock that marked the transition to the second bedrock ledge. The base of the wall abutted against this vertical rock face but higher up it extended over it, linking it to the next section of walling to the south. The southern end of the base of this latter section of walling also ran into and abutted another transverse vertical rise in the bedrock, which marked the edge of the next rock ledge up. The top of this ledge appears to have been the finished level of the interior of the terrace. Again the upper part of the wall here continued over the bedrock rise, where it turned abruptly to the south. The presence of the bedrock rise accounts for the abrupt change in the line of the wall here. This middle section of the wall of the western side of the terrace was the most visibly deformed, as it both survived to the greatest height and had collapsed inwards the most dramatically owing to the severe erosion of the fills behind it. The stones from the top of the front face of the wall, which had collapsed inwards, stood vertically.

This central section of the western wall was the only part where it was necessary to remove stonework, and only the poorly preserved and highly collapsed stonework of its upper part was removed. The stone forming the lower part of the wall, although severely slumped, lay at a lesser angle and was jacked up and secured from the inside.

[Left] Ill. 2.492—Looking up from the north-western corner of the terrace after the removal of campion and before excavation (A.R. Hayden).

[Right] Ill. 2.493—The western wall after excavation and removal of the loose stone. Note collapsed inner facing stones lying vertically at right (A.R. Hayden).

There was no clear inner wall face surviving here owing to the high degree of collapse. If there had been a face, as seems likely, it has detached and totally collapsed. The stones in the outer face of the wall were large and flat and notably bigger than those used elsewhere, especially in the walls at the south-western corner and eastern side of the terrace. This is probably due to the much greater height to which the wall here would have stood originally. The stones in the surviving part of the western wall were all very badly decayed and fractured. Where the wall had collapsed, most of the stones were reduced to small fragments and often little more than dust, while the surviving stones in the upper part of the standing walling were all heavily cracked and fractured. The degree of deformation of the wall dramatically demonstrates the substantial quantity of infill that was washed out from behind the wall. The collapse of

Ills 2.494, 2.495, 2.496 and 2.497—Stages in the removal of the central section of the western wall of the outer terrace (A.R. Hayden).

the northern wall of the terrace allowed virtually all of this infilled material to be washed over the cliff at the northern side of the terrace. The closeness of the steps in the bedrock to the back of the wall also contributed to this erosion, as water would naturally have drained down their vertical faces, removing the finer material packed in behind the wall.

Some of the original infill survived behind the wall beneath the base of the collapsed stone. It consisted of the usual mix of small stone fragments and clay, which was the waste from the quarrying and shaping of the stone used to form the walls. The remains of a fire (red to orange ash with no apparent charcoal flecking) were clearly evident in this material directly behind the wall. Traces of a small fire or fires were uncovered at a similar level on the oratory terrace and probably represent no more than cooking episodes during the construction of the terrace. These fires were all lit on the infilled material, so were clearly not related to quarrying. The burnt material was removed for examination but consisted only of oxidised clay; it did not contain any charcoal and hence was unsuitable for radiocarbon dating.

Ill. 2.498—The condition of the stones in the centre section of the western wall of the outer terrace (A.R. Hayden).

Ills 2.499 and 2.500—Burning on bedrock beneath the surviving terrace infill at the centre west side of the terrace (A.R. Hayden).

The wall around the curving south-western corner of the terrace survived to a much greater extent. There, as noted above, it was composed of much smaller stones. There were, however, several major vertical cracks in the outer face of the wall, and a large hole had opened at its base at one point. The base of the outer and inner faces of the wall had also slumped inwards in places and the stones in the wall there were loose. The inner face of the wall in the tight corner was roughly corbelled inwards at its top.

Ill. 2.501—The slumped outer face of the wall north of the south-western corner of the terrace (A.R. Hayden).

While the oversailing was uneven, it appears to be original. The unevenness of the face and the small size of the stones used suggest that it could never have formed an actual corbelled roof over the inner side of the corner.

None of the stones of this area of walling had to be removed, and it proved possible to stabilise the wall by inserting stones in its faces to fill the holes and cracks and to tighten and secure the structure.

Ill. 2.502—Large hole in the base of the wall at the south-western corner of the terrace (A.R. Hayden).

[Left] Ill. 2.503—Vertical crack in the wall south of the south-western corner (A.R. Hayden).

[Right] Ill. 2.504—Eastern end of the walling at the south-western corner tucked behind a bedrock rib (A.R. Hayden).

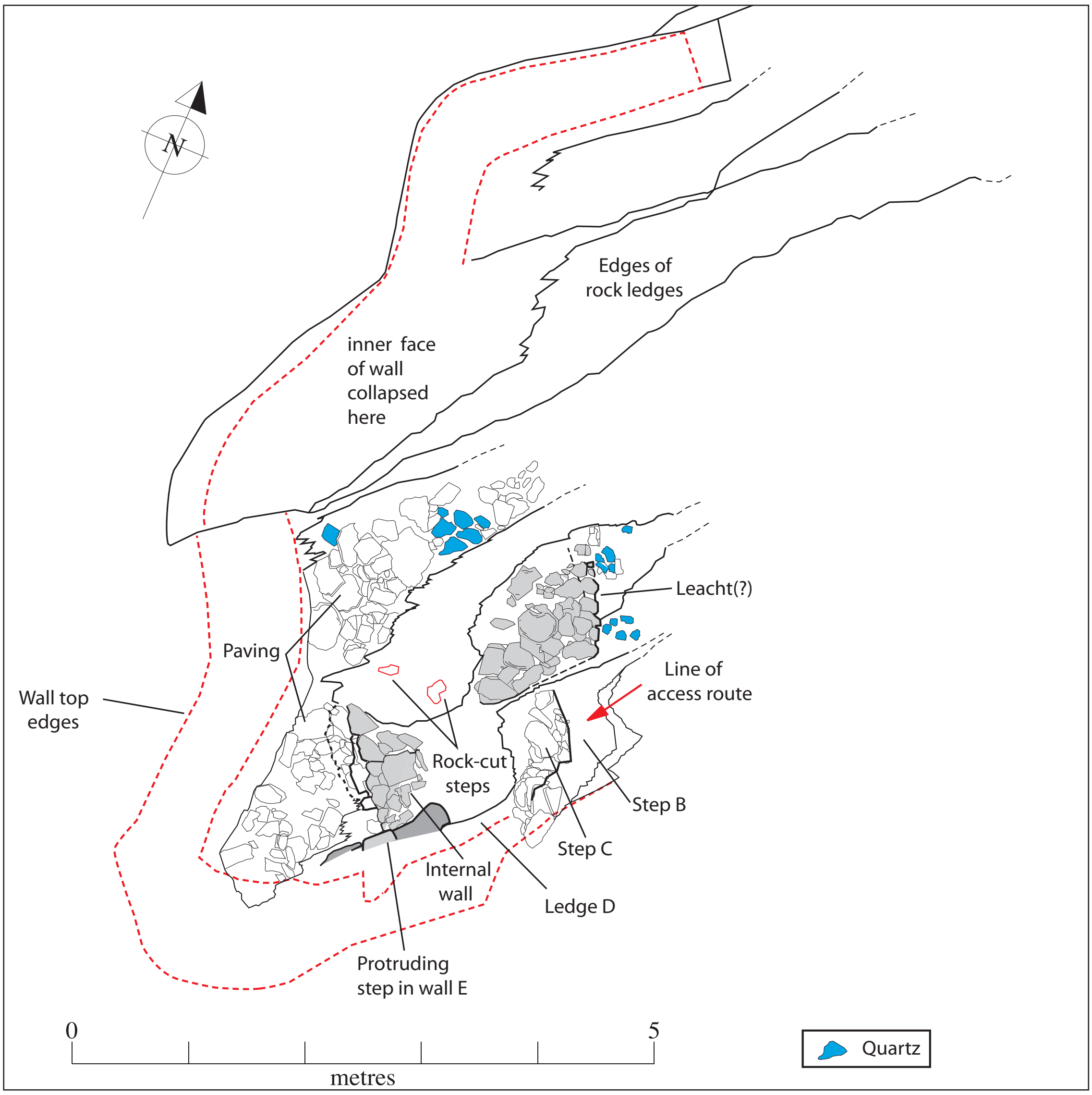
The base of the wall at the south-eastern side of the tight southern corner was butted inside the end of a high and narrow ridge of bedrock that ran almost parallel to the line of the wall. The upper part of the wall did not survive here but would have run partly over this ridge.

The bedrock rib mentioned above separated the walling at the south-eastern corner from that delimiting the eastern end of the southern side of the terrace. This last section of wall survived well but to only a low height. It was in reality largely just a thin skin of walling lying against the outer face of the rising bedrock rib. As the bedrock rib narrowed as it rose, the wall would originally have widened as it extended upwards. The inner face of the wall below the highest bedrock ridge was curved and notably battered. This appears not to be original. The inner face is composed of very small stones (the outer face is composed of larger ones) and has slipped and moved considerably, as the stones were fractured and lay at an odd angle. The surviving outer face here, however, was vertical.

Ill. 2.505—The south-western corner of the terrace during excavation. The *leacht* is at the lower right, the internal wall is at the centre and the oversailing south-western corner of the outer wall is at the top left of the picture (A.R. Hayden).

Internal features

The excavations revealed a number of new features on the southern side of the terrace—a *leacht*, a short length of internal drystone walling and paving.



Ill. 2.506—Preliminary plan of the excavated features on the outer terrace.

The leacht

The remains of a possible *leacht* survived on the highest bedrock ledge on the southern side of the terrace, flanking one side of the final part of the route (steps 5 and 6) down to the terrace. There was a limited and sharply defined pile of two to three layers of very fine-grained and flat slate stones (quite different in nature to the stones forming the terrace and other walls in the immediate area). The corner of the bedrock ledge would have defined the north-western and south-western sides of the possible structure, but there the stone heap was most disturbed. The south-eastern side of the stone pile was delimited by a low and straight rise in the bedrock. The north-eastern side of the heap had a possible disturbed face. Although the stone here was only one to two layers in thickness, the pile appeared to have a roughly straight edge, which appears to have moved to the north-east somewhat. The stone heap also ended abruptly along this line. The most convincing evidence of its original face here was the presence of a number of pieces of quartz, which ran on a line outside the face as if they had fallen off the structure.

A number of quartz blocks, which had probably fallen off the structure, landed on the paving on the ledge below and north-west of the *leacht*. Amongst the quartz were a number of flat stones pitched on edge, which had clearly fallen from the higher ledge.

The small size and seemingly rectangular shape of the stone pile, coupled with the presence of the quartz, suggest that the structure may have been a small *leacht*. A small stone cross which was previously found on the lower, northern side of the terrace could conceivably also have fallen relatively recently from the possible structure, as its find-spot lay at the base of the natural slope to the north of it.

[Above] Ill. 2.507—The possible *leacht* viewed from the south-east; note the quartz blocks rolled off its top on the right (A.R. Hayden).

[Right] Ill. 2.508—Quartz blocks fallen from the *leacht* lying on the paving on the ledge below and north-west of the possible *leacht* (A.R. Hayden).

Internal wall

A short length of walling survived lining the steeply sloping western end of the highest bedrock ledge, on which steps 5 and 6 were cut, at the south-western side of the terrace. The wall survived very poorly, as its base had been constructed on a narrow (100–150mm wide), irregular flat ledge on the slope. The base of the wall may have been footed on stones hammered vertically down into the south-west/north-east-aligned clefts in the bedrock, as there was nothing else to support it. Only the top two courses of the wall survived in any way intact. The base had collapsed outwards and down to the south-west, and its northern end had slumped down to the north. The wall could conceivably also have been used to support some form of cover that roofed the narrow south-western corner of the terrace, where there may have been a rough, narrow shelter.

Ills 2.509 and 2.510—The short length of internal walling lining the western end of the highest ledge at the south-western corner of the terrace (A.R. Hayden).

Paving

The interior of the south-western corner of the terrace was roughly paved with flat stones. There was no paving, or it did not survive, where the bedrock ledge ran back to the north. This was the finished level of the terrace here and logically would seem to have been the finished level of the northern end of the terrace also, if it was to have been a usable space.

The largest of the paving stones extended into the delimiting wall of the terrace and were the only

[Left] Ill. 2.511—The possible paved shelter at the south-western corner of the terrace, looking east; internal wall at right (A. R. Hayden).

[Right] Ill. 2.512—The possible paved shelter at the south-western corner of the terrace, looking south-west; internal wall at left. Note paving at lower right extending into the face of the outer walling (A. R. Hayden).

parts of the paving to do so. In this and in its general nature the paving is strongly reminiscent of that revealed on the traverse.

The paved area was covered by a thick layer of stone that had collapsed off the surrounding walls, mixed with heavily rooted topsoil. No occupation debris or recognisable deposits survived on the paving.

Shelter

The top of the curving inner face of the wall at the south-western corner of the terrace oversailed significantly. The wall was in excellent condition here and this appears to have been a deliberately built feature as opposed to later slumpage. The terrace wall here also stood about 1.5m above the finished level of the terrace and so is, by a large margin, the highest surviving walling relative to finished terrace level anywhere on the South Peak. The presence of the small internal wall lining the rock slope just back from this corner and the fact that the base of this corner was paved could suggest that this area might have been some form of small shelter. There is sufficient room in the small space created for an individual to squat or lie down, well sheltered from the prevailing winds. It is not clear whether this area could have been roofed over originally. The poor quality of the internal wall may suggest that, if so, it was not with a stone corbelled vault.

Cross

An upright cross-shaped slab was found at the northern corner of the terrace in the 1908s (Horn *et al*. 1990, 63).

Beyond the outer terrace

To the east of the lower part of the outer terrace there is another broad, flat, natural ledge, which is accessible down a 2m-high and easily climbed cliff. The fault line that marks the western end of the ledge continues down the external cliff face below as a narrow gully. A short length of possible drystone masonry survived in and near the top of this gully at the cliff edge. It may have been erected to aid the climb up or down the top of the gully, which leads down to the ledges below the outer terrace (see below).

No excavation, survey or any other work has been undertaken on this ledge.

[Above] Ill. 2.513—Location of ledge and gully east of the outer terrace (Con Brogan, DAHG).

[Right] Ill. 2.514—Possible masonry in gully below ledge east of the outer terrace (A.R. Hayden).

2.3.7 Areas where stone was quarried and won

Two areas where stone was quarried or won and hauled up the cliff to build structures above were excavated and illustrate some of the methods used by the monks to acquire building materials. The ledges beneath the oratory terrace were the first of these areas excavated. Later a parallel situation was observed on the ledges below the outer terrace and so they were also excavated.

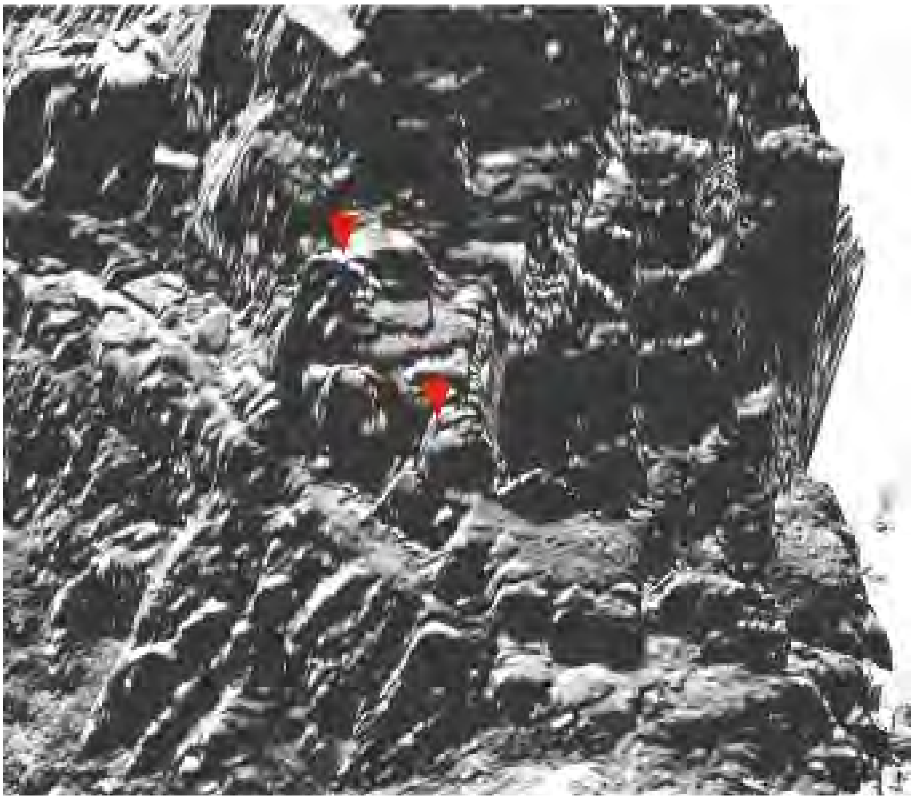
The area beneath the oratory terrace

There are a number of sloping ledges on the steep cliffs directly beneath the southern side of the oratory terrace. Small flat stones lying on the ledges could be seen protruding from the grass cover. Some of these had clearly fallen from the oratory terrace when its walls collapsed and had lodged on the ledges. In other parts, stones protruded from the campion cover at the edges of the ledges. To determine whether the latter represented structures, and in order to reuse the fallen stones for conservation work on the oratory terrace, these ledges were explored and selected areas were excavated in 2006 and 2007. The small drystone platform noted below the southern side of the oratory terrace probably aided the lifting of stone from these ledges up to this terrace.

Ill. 2.515—The south face of the South Peak, showing the features beneath the oratory terrace: the access route up the gully from the broad ledge (white dashed line), the south platform (lower red arrow), the north platform (upper red arrow) and the hauling platform (yellow arrow). The ledges excavated lay below the latter (A.R. Hayden).

Two stone platforms (the south platform and the north platform), composed of flat stones bridging the tops of gullies, were visible to the west and below these ledges. They were probably also used in the movement of stone up this part of the Peak. They have not been surveyed, recorded or excavated in any way.

These ledges were accessed from below up the vertical gully at the north-eastern corner of the broad ledge. This route remains to be fully recorded and surveyed.

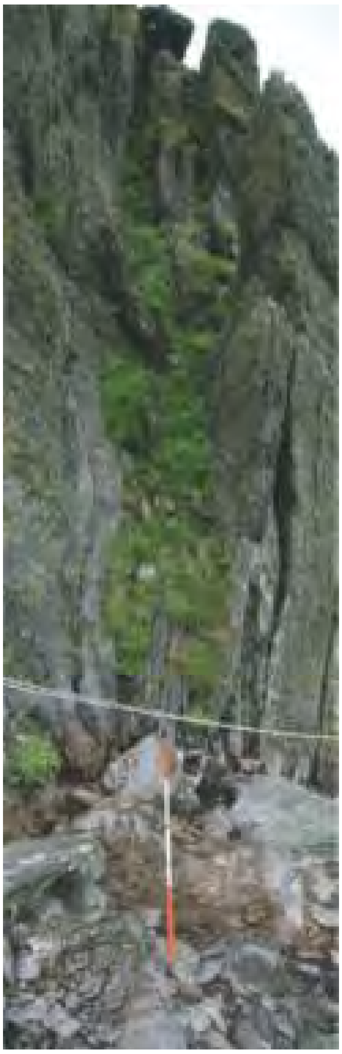


Ill. 2.516—LiDAR image of the area below the oratory and 'garden' terraces, with the locations of the north platform (upper arrow) and the south platform (lower arrow) marked. These substantial structures do not appear to be visible on the LiDAR (DAHG).

The access route

The access route from below to this area of the Peak extended up the gully at the north-eastern corner of the broad ledge. The rock in the lower part of this gully was very fractured and covered in much plant growth, which was not removed. A number of small rock-cut steps survived on a spine of rock protruding from the centre of the gully close to its top. There were additional steps and handholds on the left-hand side of the gully. These have not yet been recorded or surveyed. The climb up this gully is an awkward one, especially where it exits at the top.

Ill. 2.517—Aerial view of the features beneath the oratory terrace after excavation of the rock ledges: the south platform (lower red arrow), the north platform (upper red arrow) and the hauling platform below the oratory terrace (yellow arrow) (Con Brogan, DAHG).



[Left] Ill. 2.518—The gully at the north-eastern corner of the broad ledge, which provided access from below to the ledges (A.R. Hayden).
[Above Ill. 2.519—Some of the rock-cut steps near the top of the gully. This area has not yet been fully recorded, and there are more steps and handholds here than are shown in the photograph (A.R. Hayden).

The south platform

A huge, long stone lies on the ledge at the top of the gully and protrudes out over its centre. Three large, flat stones were deliberately laid down as bridging between this stone and the northern side of the top of the gully. They formed a flat platform (the south platform) protruding out over the gully. It was probably used as a place from which to raise or lower stone between the broad ledge and the rock ledges above.

[Left] Ill. 2.520a—The south platform from below, looking up the gully (A.R. Hayden).

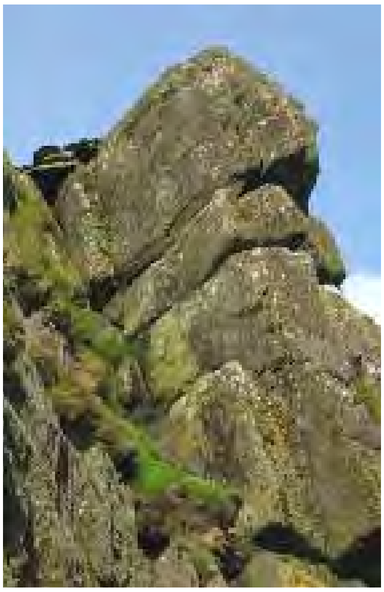
[Right] Ill. 2.520b—The south platform from above, looking east (A.R. Hayden).

The north platform

A second platform (the north platform), constructed in a similar way, lay at the head of a gully on the cliff edge higher up. It was much larger and was constructed of several layers of stones laid bridging the top of the gully. A stone stands upright, trapped between a huge fallen rock and the cliff edge at the western side of the platform. It is not clear whether human hands placed this here or whether it was a natural feature. If it was deliberately set erect, it could have aided in the raising of stone to this point, or alternatively may have been a marker on the route to the Peak; it is clearly visible from many points on the route. The gully beneath this platform has not yet been climbed or investigated to determine whether it contained any features.

[Left] Ill. 2.521—The north platform from below and south-west (A.R. Hayden).

[Right] Ill. 2.522—The north platform from above (A.R. Hayden).



[Left] Ill. 2.523—The upright stone beside the north platform viewed from the south steps to the monastery (A.R. Hayden).

[Right] Ill. 2.524—The upright stone beside the north platform viewed from the southern traverse of the north-west passage (A.R. Hayden).

The ledges beneath the oratory terrace

The ledges directly under the southern side of the oratory terrace were first examined to see whether any of the stonework was structural. The first and only find uncovered on these ledges lay on the surface of the grass directly beneath the oratory terrace and so had only recently fallen. This was a small and very fine cross-shaped slab, which the first person down discovered immediately on reaching the ledge. The cross is very similar in form to that which possibly marked the very start of the route on Christ's Saddle, and is also very like one in the monks' graveyard in the monastery.

Beneath the grass cover the ledges were devoid of large, naturally fallen stones. Only small stones survived on the ledges and there was no evidence of any man-made structures. These small stones had evidently fallen here from the oratory terrace when its southern wall and the oratory collapsed. The stones were hauled back up again to the oratory terrace for use in the conservation works. The scaffolding used to haul the stones up to the oratory terrace was footed on the same flat ledge on which the small drystone platform noted beneath the oratory terrace was built. This small structure could, then, also have functioned to aid the transport of stone up the almost vertical cliff.

[Left] Ill. 2.525—Mike Shea, the first man down to the ledges beneath the oratory terrace, finds a fine cross-shaped slab lying on the grass (A.R. Hayden).

[Right] Ill. 2.526—The cross found is similar to the left-hand one shown here in the monks' graveyard in the monastery (A.R. Hayden).

[Left] Ill. 2.527—The ledges below the oratory terrace before excavation, from below (A.R. Hayden).

[Right] Ill. 2.528—The ledges below the oratory terrace before excavation, from above (A.R. Hayden).

[Left] Ill. 2.529—Looking down the cliff from the oratory terrace. The hauling platform is at the right, the excavated ledges below, and the north platform is visible in the background (A.R. Hayden).

[Right] Ill. 2.530—Clearing and raising stone from the ledges (A.R. Hayden).

Ill. 2.531—Even when the winch broke down, the OPW crew still managed to haul, by hand, a substantial quantity of stone up to the oratory terrace from the ledges below (A.R. Hayden).

Gully

With modern equipment it is only a simple abseil from the oratory terrace down to the ledges below, although the climb back up is much harder! The fault line that defines the western side of the oratory terrace descends down the cliff beneath it as a deep and narrow gully. In two places near the top of the gully there were stones jammed into it. It is possible that these may have been deliberately placed there to aid the climb up or down this gully, which formed the most obvious route between the oratory terrace and the ledges below.

Ill. 2.532—The gully descending the cliff beneath the oratory terrace (A.R. Hayden).

Ills 2.533 and 2.534—Stones possibly deliberately jammed into the gully may have aided the climb up or down it (A.R. Hayden).

The ledges below the outer terrace

As noted above, the northern wall of the outer terrace was the least well preserved, and almost all of it had collapsed and fallen over the cliff. If the terrace had been finished, a substantial quantity of stone must have fallen, as the original wall would have been around 3m in height.

Some clearly fallen small stones were visible on a number of ledges on the steep cliff about 30–50m below the northern side of the outer terrace. Two of these ledges were excavated in 2007 to determine whether the monks had cleared them of stone and to retrieve fallen stone for the conservation of the outer terrace walls.

[Left] Ill. 2.535—The South Peak from the north-east, showing the excavated ledges (arrowed) and the rough line of the route up from the cliff ledges beyond the north-west passage (Con Brogan, DAHG).

[Below] Ill. 2.536—The steep climb up to the ledges (A.R. Hayden).

Ill. 2.537—The uppermost of the ledges below the outer terrace before excavation (A.R. Hayden).

Ill. 2.538—The uppermost of the ledges below the outer terrace after excavation (A.R. Hayden

Ill. 2.539—Hauling stone up to the outer terrace from the ledges below. The cliff is vertical to overhanging here, which made this activity relatively easy (A.R. Hayden).

The ledges can be reached by abseiling down the cliff below the outer terrace or down the gully east of the outer terrace. Alternatively, there was probably a route ascending the steep slope east and north from the excavated cliff ledges across the gully from the end of the northern traverse of the north-west passage. The use of this route to access the ledges below the outer terrace could explain the presence of the rock-cut features noted on the first of the ledges excavated on the northern cliff. This route is awkward, as the exposed cleavage planes of the bedrock mean that the rock is very fractured and easily broken. There was no immediate routeway across this area, but it has not been explored in any detail. If there are further rock-cut features here, they will probably be poorly preserved and hard to find owing to the eroded state of the bedrock. In any case, if this was a route used only for quarrying there may never have been many such features there.

The largest and uppermost ledge below the outer terrace was stripped of soil cover and trowelled down. This revealed a considerable quantity of small stones fallen from above. Virtually no larger stones survived beneath the small stones, apart from a few along the outer edge of the ledge. The ledge is broad and flat and should have caught a substantial quantity of large stones fracturing off the cliffs above, which over time would have accumulated to several metres in thickness. This clearly suggests that these ledges were stripped of the naturally fallen stone to provide material for the building of the outer terrace.

Stone for conservation works was also retrieved from a ledge about 30m further down and further to the east. This ledge was stripped of soil cover and then trowelled down. Like the upper ledge, it retained little fallen bedrock and also appears to have been stripped by the monks.

The removal of stone for building from ledges far below this terrace is paralleled by the findings from the oratory terrace and the ledges below it. There was no need on the outer terrace for a platform to aid in raising the stone, as was built on the oratory terrace, as the cliffs below the northern side of the outer terrace were vertical to overhanging. The lowest rock ledge forming the base of the northern side of the outer terrace also provided a natural platform for hauling stone up the cliff. The two rope-cut notches noted on the outer terrace close to its northern side (see above) might be evidence of this activity.

2.4 NEWLY DISCOVERED STEPS AND ACCESS ROUTES

Alan R. Hayden

2.4.1 New features on the east steps

The cleaning of campion growth from the east steps (which is part of the ongoing maintenance programme) appeared to reveal some previously unnoticed features. What appear to be previously unrecorded rock-cut steps were uncovered on the western side of the lower section of the masonry steps. Along with the run of rock-cut steps previously recorded, they form part of two rock-cut stairways that pre-date the masonry east steps.

Ill. 2.540 and 2.541—Newly discovered early rock-cut steps on the western side of the east steps (A.R. Hayden).

Ill. 2.542—Newly discovered early rock-cut steps on the western side of the east steps (A.R. Hayden).

The second-lowest surviving length of rock-cut steps (which lie to the east of the structure described in Section 2.2.9) was also cleaned of campion growth. The clearance of the vegetation revealed that there were actually two superimposed sets of steps there, both of which pre-dated the masonry steps; they actually extend under the masonry stairs. The westernmost of the two lines appears to be the earliest and was the most eroded. Several of these steps have disappeared owing to the breaking away of chunks of

Ill. 2.543—Looking down on the two flights of rock-cut steps to the east of the platform at the base of the east steps (A.R. Hayden).

bedrock. The steps in the eastern line were both larger and better preserved and appear to be partly cut through the remains of the other set.

These steps have not yet been surveyed in detail.

Rock-cut cross

Part of a large cross, still attached to the bedrock, was also noted on the eastern side of the steps close to their base. A large, free-standing, upright and thin slab of rock has a clear notch cut in its side. The notch is too far away from the masonry steps to have been cut to accommodate them and is also carefully carved around three faces of the stone, which would have been unnecessary if it had been simply cut for allowing access. The opposite edge of the stone is heavily weathered and no working survives on it. It is possible that the working signifies that an attempt was made to form a cross from the bedrock.

Ill. 2.544—Cross cut from bedrock near base of east steps (A.R. Hayden).

Terrace at base of east steps

Some drystone masonry was also noted on the cliff edge at the surviving base of the east steps. It would have formed part of the outer wall of the small terrace on which the 'boathouse' structure was erected. The masonry lies in a precarious position on the cliff edge, which is much fractured owing to having been partly blasted away by the construction of the lighthouse road. The masonry that is visible appears to be very loose, is in very poor condition and is highly vulnerable. There could be quite a lot of additional masonry surviving, as there is abundant vegetation covering this area.

Ill. 2.545—Remains of masonry terrace on cliff edge (bottom left), with masonry base of east steps above, viewed from the east landing (A.R. Hayden).

2.4.2 The steps to the south-east landing

The opportunity was taken to re-examine the south-east steps in September 2010, as they had not been visited and photographed for quite a while. Most of this area was heavily blasted and radically altered by the lighthouse men on at least two occasions.

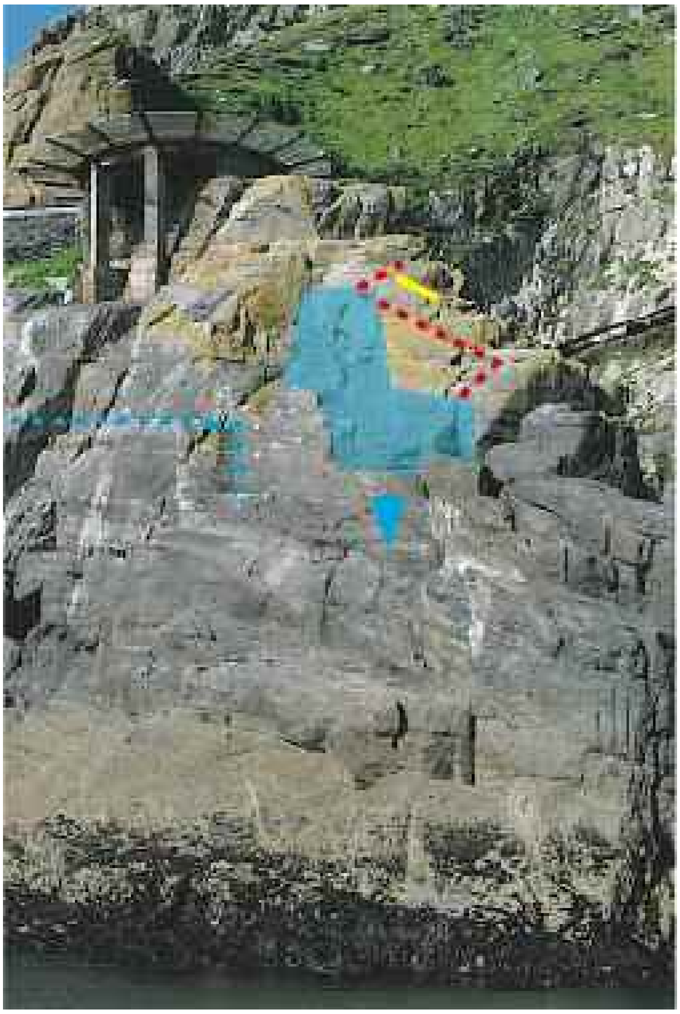
There are three sets of steps in this area; two are clearly of lighthouse date while the third is likely to be of monastic origin.

The later lighthouse steps

The westernmost line of steps leading to the south-east landing is the latest in date. This route starts a short distance down the south steps below the lighthouse road. A line of worked squares and other features extend along a heavily worked and altered rock ledge running east from the south steps. This ledge was severed by a partial collapse of the bedrock or by more recent blasting associated with the construction of the helipad, and the steps further along it are no longer accessible from it. Earlier blast holes that were drilled to make this ledge accessible are also clearly visible.

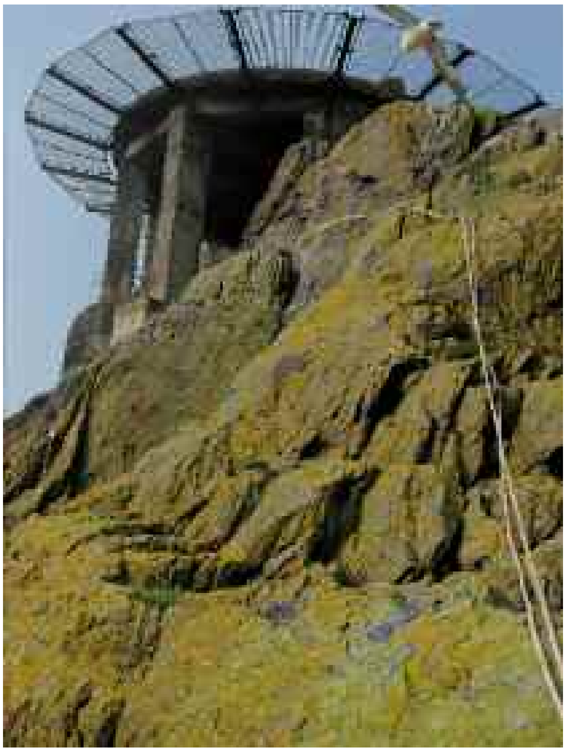
At the eastern end of the ledge the route runs downslope, where there is a very finely carved rock-cut staircase. There are also several blast holes here, which visibly pre-date the steps. The lowest section of the steps is very finely wrought and displays the fine chisel-pecked dressing that is typical of lighthouse work (it is also clearly visible on the earlier set of lighthouse steps to the south-east landing and on the lighthouse steps to the south landing). Of course, this would not survive if the steps were of much earlier date because of the aggressive nature of the environment in which they are located. At the base of the

Ill. 2.546—The steps (indicated by lines) to the south-east landing, from a photograph taken in 2007: yellow = monastic steps, red = earlier lighthouse steps, and blue = later lighthouse steps. The blue shading indicates the area blown away when the latest steps were constructed. The flat storage area created at the base of the steps is indicated by a blue arrow (A.R. Hayden).



[Below left] Ill. 2.547—The worked ledge leading east from the south steps to the latest lighthouse steps to the south-east landing (A.R. Hayden).

[Below right] Ill. 2.548—The base of the latest lighthouse steps to the south-east landing (A.R. Hayden).



Ill. 2.549—Detail of tooling on latest lighthouse steps (A.R. Hayden).

steps here is also a clearly worked linear area extending eastwards, showing that the route led to the cliff at the west side of Cross Cove.

When these steps were constructed, the earlier line of lighthouse steps (which lie on top of a ridge to the east) were partly blown away, and there are many blast holes visible that clearly evidence this work. This blasting was undertaken to create a large, flat area at the base of the new steps. This is similar to several flat rock ledges at the base of the south steps, which were enclosed with iron railings. These flat areas were clearly intended as temporary storage areas for material offloaded from, or for loading onto, ships.

The earlier lighthouse steps

The earlier (easternmost) set of lighthouse steps take a different route but run to the same destination. The topmost section was removed, probably during the construction of the helipad. The three or four uppermost surviving steps survive to the east of and a few metres below the helipad. They run down to the south for a short distance to the cliff at the eastern edge of the area blasted away when the large, flat-based storage area was created. The steps then turned to the east, but the corner of their line is completely gone. They reappear heading east a few metres lower down. These steps are quite rough and almost square

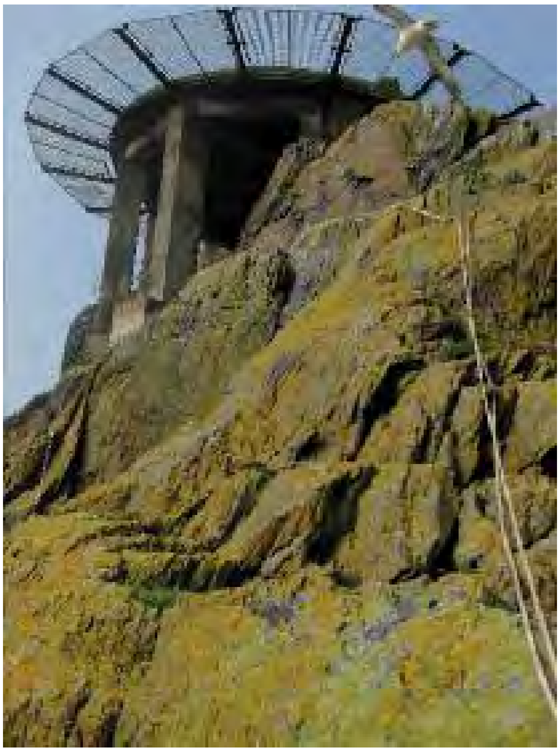
[Left] Ill. 2.550—The middle section of the earlier lighthouse steps. The top of this line was later blown away (A.R. Hayden).

[Right] Ill. 2.551—The finely carved lower end of the earlier lighthouse steps. These steps retain tooling identical to that on the later lighthouse steps (photo: A.R. Hayden).

in shape, and they extend down the south-western side of the narrow and sloping rock spine that forms the western side of Cross Cove. The steps then turn to the south once again, and the final south-running flight is wider and of much better quality. They are carved as a single staircase, as opposed to individual steps. They also display the chisel-pecking that is typical of lighthouse construction.

The monastic steps

The construction of the middle section of the surviving part of the earlier line of lighthouse steps cut through an earlier flight of steps, of which only a short length lie at the top edge of the rock ridge. The stumps of the inner side of the six or seven uppermost steps and the full width of the lowest step are all that remain of the early line, and they run downwards to the east along the south-western side of the rock ridge close to its top. The narrow width of the lowest surviving step and the high degree of erosion evident on all these steps suggests that they are of early and probably monastic origin. They clearly led down to the same point as the later steps, however.



[Left] Ill. 2.552—The middle section of the earlier lighthouse steps lie at the bottom left of the photograph, with the monastic steps above them to the right (A.R. Hayden).

[Right] Ill. 2.553—Close-up of the surviving monastic steps (A.R. Hayden).

The south-east landing

The cliff at the base of these three flights of steps frames the western side of Cross Cove. The cove is one of the most sheltered anchorages on the island, and today the Skellig ferries often tie up there when waiting for their clients to return. At low tide a large, flat rock ledge is exposed at the base of the cliff on the western side of the cove, immediately beneath the area to which the steps lead. It seems possible that materials could have

Ill. 2.554—The western side of Cross Cove viewed from the east at mid-tide. Note the large, flat rock near the end of the peninsula. The south-east steps lead down to the wide notch in the cliff above the rock (A.R. Hayden).

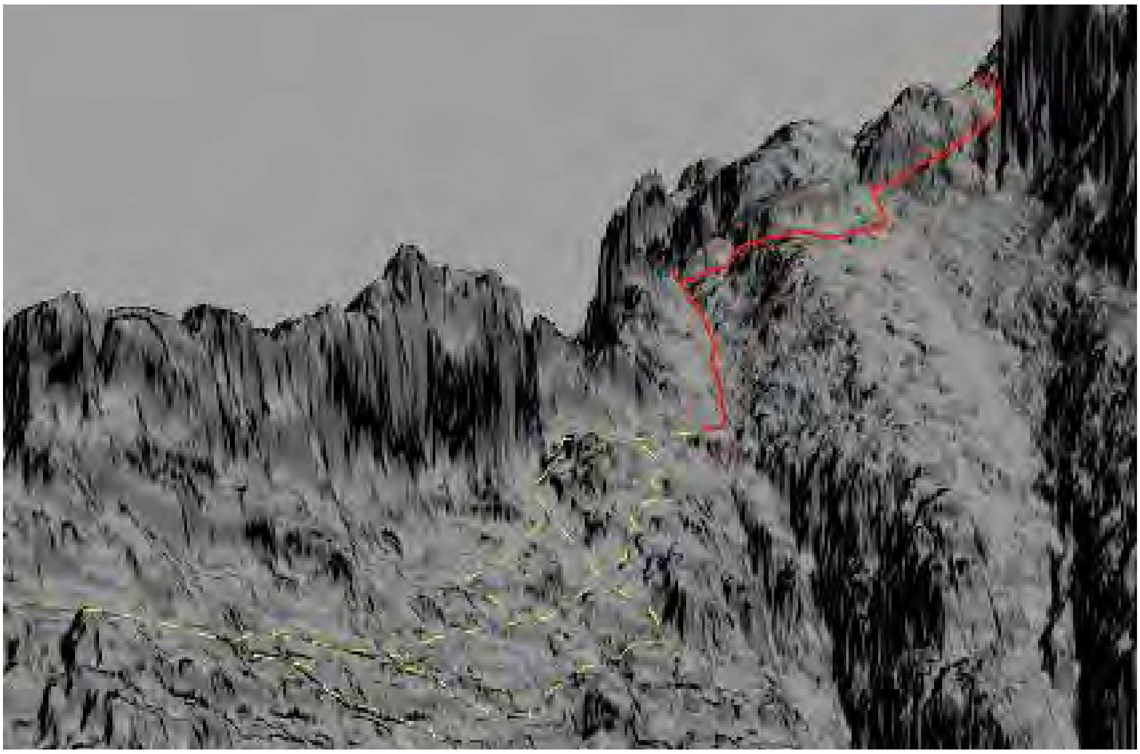
been unloaded from boats onto this ledge, or at high tide could have been unloaded directly off boats, and hauled up the cliff. The cargo could have been temporarily stored in the large flat area created when the latest set of steps were made. It was probably the need for such a temporary storage area that prompted the lighthouse men to realign their steps to this landing place, as the earlier flight did not appear to have provided access to such a facility.

The construction of the helipad also necessitated the removal and blasting of rock from the upper part of this area. Clear blast holes are visible all around the base of the helipad.

2.4.3 A new route to the monastery

In June 2010, when checking above the east landing for loose rocks, the Irish Rope Access supervisor, Colin McGorlick, discovered some previously unknown steps on the south-eastern side of the island. The features discovered appear to constitute part of a new route from the sea up to the monastery. Judging by the line the route is taking (it appears to lead towards one of the early entrances in the eastern wall of the monastery), it is potentially the earliest set of steps built on the island and is therefore of considerable importance.

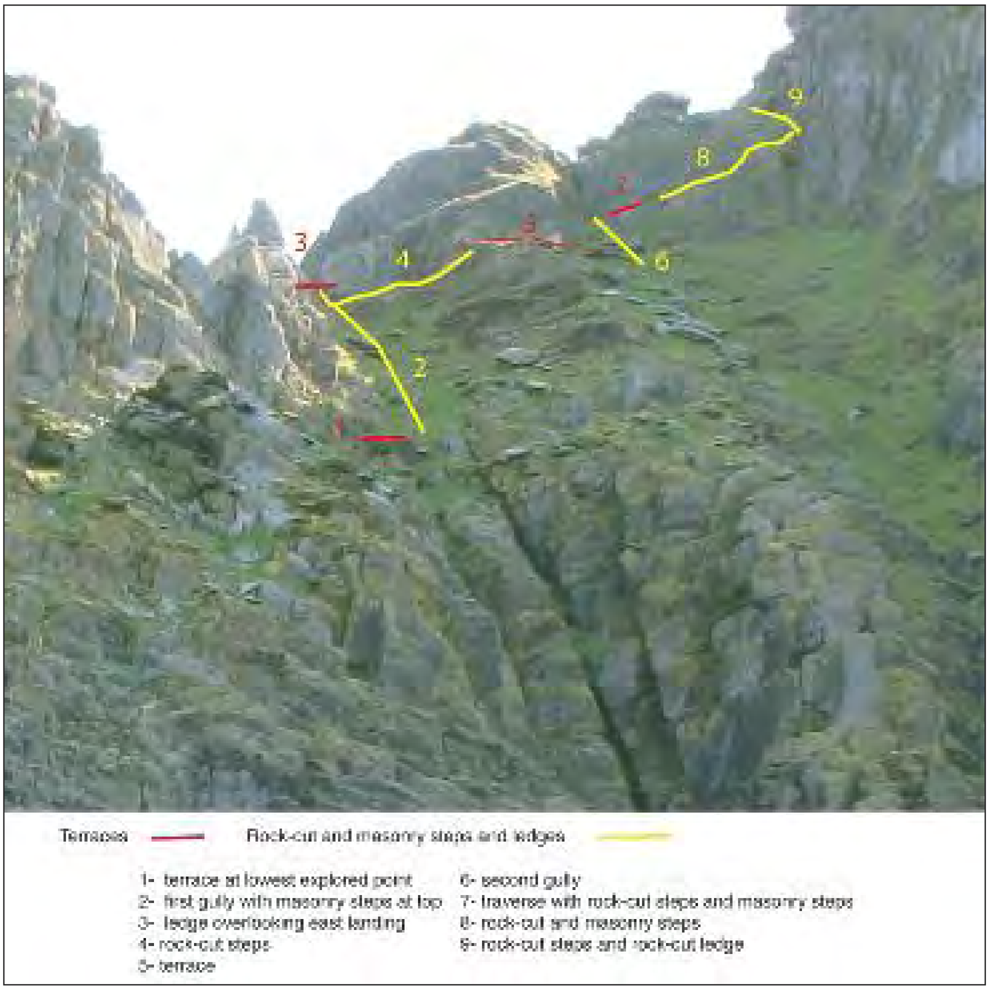
Time constraints have meant that the entire route has not yet been examined; the lower part, where it descends to the sea, and the upper part, where it runs to the monastery, remain to be explored.



Ill. 2.555—LiDAR image showing the lowest explored part of the new route to the monastery (red line) at the eastern side of the island. The yellow lines indicate the possible lines of the as-yet-unexplored lower part of the route (DAHG and A.R. Hayden).

The new route has been traced down to the head of a gully, which descends almost vertically to a small cove. It seems unlikely that the steps descend into this cove owing to the steepness of the cliffs here. It would appear more probable that the lower part of the route ran to the south-east and met the sea somewhere at the south-eastern corner of the island, where there is low-lying and relatively flat rock where the island meets the sea. A prominent natural ledge, visible from the sea, extends along the slope there. It descends gradually down towards the sea and may be part of the lower line of the route.

Ill. 2.556—Photograph taken from sea level to the east, showing the features of the lowest explored part of the new route to the monastery (A.R. Hayden).



Ill. 2.557—Details of the lowest explored part of the new route to the monastery (A.R. Hayden).

At the lowest traced point of the route there appears to be a short length of poorly preserved terracing (1) extending on a north–south line. The outer side of the possible terrace has a clear straight edge. From this point the route ascends a steep and wet gully (2), which is choked with debris and covered with thick vegetation. Several clear lengths of drystone walling extend across the gully and there are many slipped flat slabs that could have been stair treads.

[Left] Ill. 2.558—The lowest point of the route reached, the head of a steep gully (A.R. Hayden).

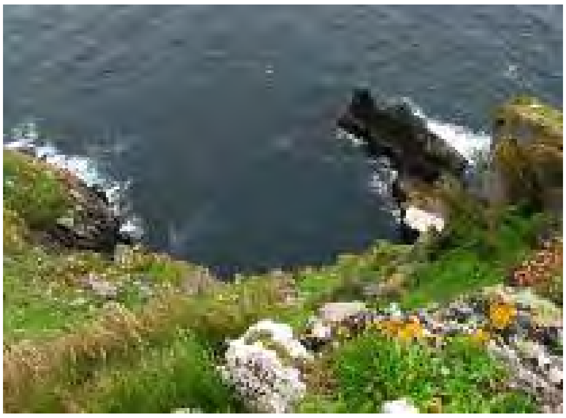
[Right] Ill. 2.559—The possible terrace (1) at the lowest part of the route reached (A.R. Hayden).

Ill. 2.560 and 2.561—The first gully (2); note the displaced flat stones, which may be slipped stair treads (A.R. Hayden).

At the head of the gully, where bedrock is exposed, there is a short flight of extremely well-preserved and well-built masonry steps leading up to a broad, sloping ledge (3), which overlooks the east landing. A worked stone, possibly part of a small cross, was found lying on these steps. Several large stones lying on the ledge above the steps appear to have fallen there in relatively recent times. While there is no clear walling visible on the outer side of the ledge, there are many smaller stones there and hence a wall could originally have defined the outer side of the terrace.

[Left] Ill. 2.562—The well-preserved masonry steps at the top of the gully (2), leading to the ledge (3) above the east landing (A.R. Hayden).

[Below] Ill. 2.563—The ledge (3) overlooking the east landing, with possible masonry visible at cliff edge (A.R. Hayden).



[Left] Ill. 2.564—Looking down on the east landing from the ledge (3) (A.R. Hayden).

[Right] Ill. 2.565—Cross-shaped slab on steps at top of gully (2) (A.R. Hayden).

From the base of the well-preserved steps the route turns at a right angle to the north and follows natural rock ledges which may have been worked and where there are some possible rock-cut steps (4) which lead upwards for a short distance to a large terrace (5). Here a natural rock ledge appears to have been cleared of fallen rock and augmented with walling.

From the northern end of this terrace the route ascends another steep, wet and vegetation-filled gully (6). Here again there are several short lengths of walling and many flat rock slabs, which could be slipped stair treads. At the top of the vegetated part of the gully the route turns to the north again, and here there is a clearly evident drystone-walled terrace (7).

[Above] Ill. 2.566—Terrace (5) from the north (A.R. Hayden).

[Right] Ill. 2.567—Slipped stair treads in gully (6), with terrace (7) above (A.R. Hayden).

[Left] Ill. 2.568—Looking up towards terrace (7) and the top of the eastern side of the route (8) (A.R. Hayden).

[Right] Ill. 2.569—Rock-cut step and terrace leading up to the masonry steps at the top of the eastern side of the route (8) (A.R. Hayden).

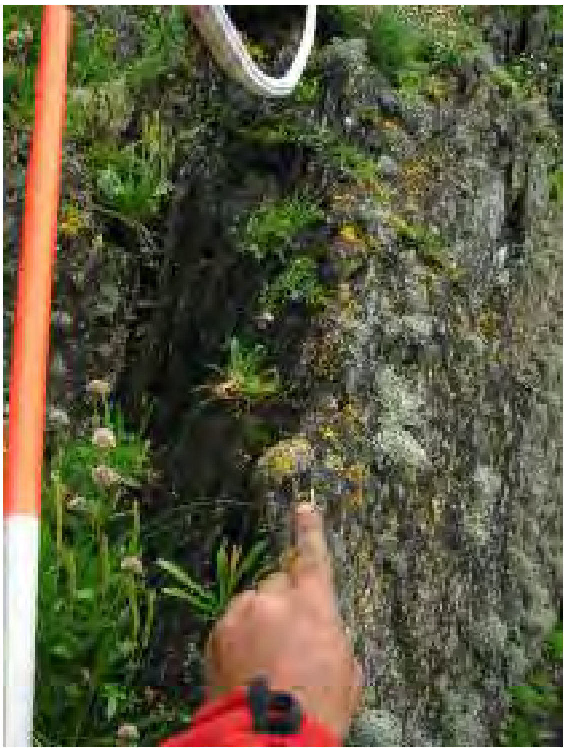
From the northern end of this terrace the route ascends straight along a very narrow rock ledge at the side of the cliff (8). There are many rock-cut steps on the ledge. On a slightly lower ledge outside it there is clear drystone masonry, which extends up and partly covers the inner ledge in places. Several masonry steps survive and clearly there was once a long flight of drystone steps here. It is not clear whether the rock-cut steps represent the first access here, which was later improved by the construction of the masonry steps, or whether they were simply cut to secure the inner edge of the masonry steps.

The construction here, utilising a lower ledge to found the base of the stairway/path, has very close similarities with some of the work on the South Peak.

There is a fine handhold on the rock cliff on the inner side of these steps about two-thirds of the way up.

[Left] Ill. 2.570—Close-up of rock-cut steps (8) above terrace (7) (A.R. Hayden).

[Right] Ill. 2.571—Masonry on ledge outside rock-cut steps (8) (A.R. Hayden).



[Left] Ill. 2.572—Surviving masonry on top of rock-cut steps (8) (A.R. Hayden).

[Right] Ill. 2.573—Carved handhold on cliff near top of steps (8) (A.R. Hayden).

At the top of this stairway there are a number of exceptionally well-preserved masonry steps, which stand on top of fine drystone walling where the route enters a narrow cleft in the cliff.

From this point the route turns west at a right angle and ascends a roughly 2m-high cliff (9). Here there are clear but very heavily eroded rock-cut steps and possible handholds. The steps lead up onto an artificial ledge, which has been cut from the cliff face.

[Left] Ill. 2.574—Masonry steps above terrace and steps (8) (A.R. Hayden).

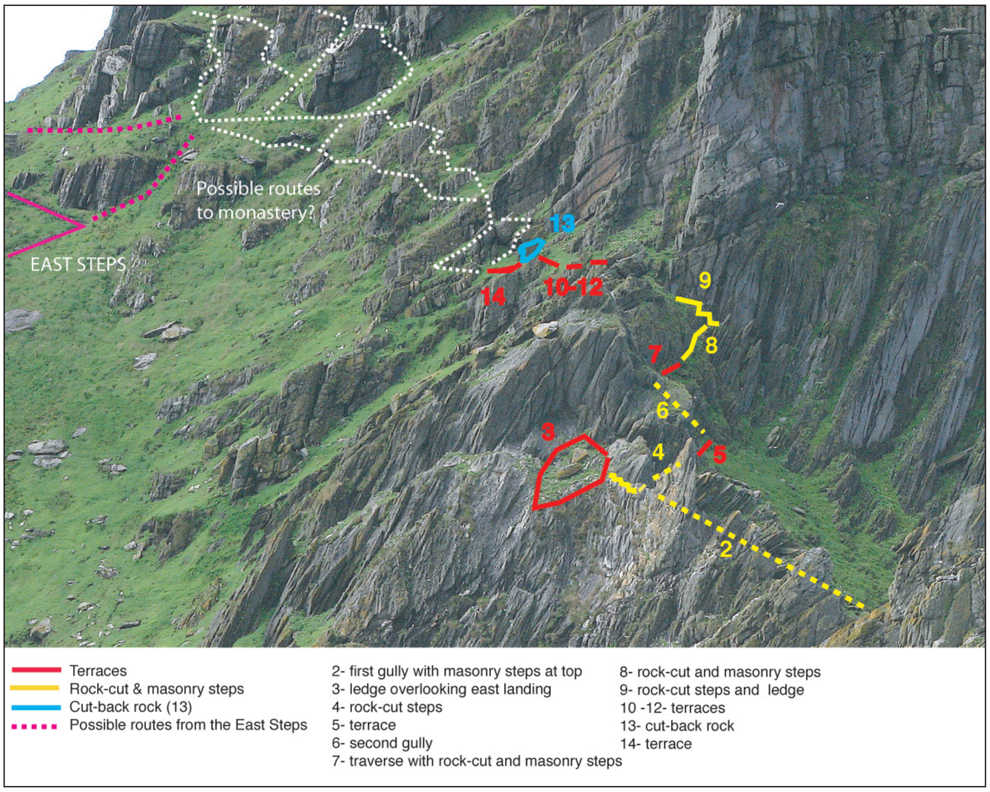
[Right] Ill. 2.575—Close-up of masonry steps at top of climb (8) (A.R. Hayden).

[Left] Ill. 2.576—Looking down along the rock-cut steps and masonry (8) to terrace (7) and gully (6) (A.R. Hayden).

[Right] Ill. 2.577—Colin standing on rock-cut ledge (9), with masonry steps of top of (8) visible below (A.R. Hayden).

From this point the route is not clear for a short distance. There are a number of possible lines that it could have taken to extend over the rounded top of a rock ridge. The going here is easy, and so very little alteration of the natural landscape may have been necessary to facilitate transit.

The route shortly reappears and there are three flat, vegetation-covered ledges (10–12), which look as if they have been cleared of fallen rocks and which have possible drystone walling defining their outer



Ill. 2.578—The features of the upper explored part of the route and possible routes to the monastery above (A.R. Hayden).

[Above] Ill. 2.579—Looking north towards the cut-back rock (13) (at left) and terraces (10–12) (A.R. Hayden).

[Right] Ill. 2.580—Terrace (12) leading to the cut-back rock (13) from the east (A.R. Hayden).

edges. Towards the western end of the third terrace there is a large protruding spine of bedrock, which originally must have blocked the route. Its lower end has been clearly cut back to allow passage (13). Beyond the rock there is a small possible length of terracing (14) crossing a vegetation-covered gully.

The route from this point onwards has not been examined, but from here it appears to have ascended towards the earliest entrance into the monastery, which lies at its eastern end. It is very unlikely that the route ran to meet the east steps, as owing to the topography it would have to descend several times before again rising to meet the east steps. None of the other routes to the monastery do this.

There appear to be several possible relatively easy approaches from the explored end of the route up to the large ledge beneath the eastern end of the monastery.

[Left] Ill. 2.581—Close-up of the western side of the cut-back rock (13) (A.R. Hayden).

[Right] Ill. 2.582—Terraces (12 and 14) and the cut-back rock (13) from the east (A.R. Hayden).

Discussion

The newly discovered route is clearly of early date, as not only are the steps very ruinous and have clearly been abandoned for a considerable period but also they appear to lead to the earliest entrance into the monastery. They could, then, be the earliest route built by the monks on Skellig Michael.

The route leads up from the sea somewhere at the north-eastern corner of the island. There the bedrock slopes down to the sea at a relatively gentle angle and, perhaps unlike any other part of the island, there are no high cliffs where the land meets the sea. This, then, was probably the easiest place to climb onto the island from a boat. This location provided little shelter for boats, however, and hence would have been accessible only at limited times. The other landing places on the island (the east, south, south-east and north landings) were much more sheltered but all required considerable effort and expertise to render them usable, as they were only accessible down very steep cliffs.

When these other routes were opened to the more sheltered harbours on the island, there would have been little point in retaining the newly discovered route, and hence it may have been abandoned quite early in the history of the monastery.

It is possible that the east steps also originally led up to the earliest entrance in the monastery. There is a very prominent right-angled corner at the top of the wide gully that they ascend about three-quarters of the way up their route. The angled corner is different from any of the other corners on the east steps, which are all more sinuous. It is possible that the east steps may originally have run straight on upwards instead of turning this corner. From this point they could also have led up to the earliest entrance into the monastery.

This could further suggest that the east steps, which led to a sheltered anchorage, replaced the newly discovered route. The lowest part of the east steps represents one of the greatest engineering and construction achievements of the monks, as they were built up an almost vertical cliff face. They do, however, lead down to one of the most sheltered landing places on the island, which is still in use today.

If the east steps did originally run to the early eastern entrance in the monastery, the realignment of their upper part would have happened after the entrance was moved to the southern side of the monastery. These southern entrances are not accessible from the newly discovered route and this would provide another reason for its abandonment.

3. THE FINDS

3.1 INTRODUCTION

The finds assemblage from all phases of excavation on Skellig Michael is comprised of approximately 380 artefacts, including the fragments of stone crosses. With the exception of seven stone crosses found on the South Peak, all artefacts were recovered from the monastery and associated access steps. Approximately 30% of the artefacts belong to the early medieval or monastic period, with the remainder dating primarily from the nineteenth/twentieth centuries, the period of occupation by the lighthouse-builders. During the supervision of works by Paddy O'Leary in 1988 in the lower monks' garden and in 1990 by Claire Cotter in the upper monks' garden a number of nineteenth/twentieth-century artefacts were found. These comprised pottery, clay pipe fragments and pieces of iron, and are described in the site records. As these particular objects cannot be located at present, they are not included in the finds catalogue (Appendix I) but are described in the relevant section of the excavation report.

The artefacts recovered during the 1986–7 excavations were numbered using the National Museum of Ireland prefix E338. The registration number changed, however, in 1990, when the excavation licence number and finds registration numbers were combined, with the result that artefacts recovered in subsequent years were registered using the prefix 93E195.

Individual specialists have analysed specific groups of artefacts, e.g. medieval pottery, post-medieval pottery etc., and Julie Franklin of Headland Archaeology Ltd compiled the general section on small finds, which was subsequently edited by Ann Lynch. Analysis was carried out using a hand-lens and stereomicroscope (magnification up to x 40) where necessary. Relevant parameters have been recorded on a find-by-find basis. The most interesting finds have been presented as an in-text catalogue while others are described as a group. A complete catalogue of all the finds is included in Appendix I. For items of stone and skeletal material the identification of the materials used is noted after the description, and, where appropriate, the likely source. The geological identifications are by Michael O'Sullivan, Skellig Michael project geologist. Measurements have been recorded and these are consistently in millimetres (mm), with the following abbreviations used: length (L), height (H), width (W), thickness (T), diameter (Dia). Context notes are given at the end of each catalogue entry. The report has been ordered under the following headings: medieval pottery; post-medieval pottery; clay pipes; crucifixes; coins; copper alloy; lead alloy; iron; ironworking waste; bone and antler objects; stone; glass; leather and miscellaneous. Within certain groups the finds are divided by period: monastic period (seventh–thirteenth centuries); lighthouse period and later (1820–present).

3.2 THE MEDIEVAL POTTERY (Ills 3.1, 3.2)

Clare McCutcheon

Introduction

A total of 21 sherds of medieval pottery was recovered during the excavations. Following identification and some reassembly this was reduced to nineteen sherds.

Methodology

The pottery was identified visually and the information has been entered onto an Access database table, as per the requirements of the National Museum of Ireland. The pottery identification presented in Table 3 shows the quantity of sherds in each fabric type and the minimum number of vessels (MNV), an objective number based on the presence of rim/handle sherds in the assemblage. The more subjective minimum number of vessels represented (MVR) is also listed and is based on the numbers of diagnostic pieces, such as differently shaped rims, quantity of handles etc. The most likely form of the vessels represented by the sherds and the known date of distribution of the fabric type are included in the table.

Table 3—Medieval pottery identification, Skellig Michael (93E195).

Fabric type	Sherds	MNV	MVR	Form	Date
Ham Green A ware	1	–	1	Jug	1120–1160
Ham Green A/B ware	4	–	1	Jug	1160–1180
Ham Green B ware	2	–	1	Jug	L12th–M13th
Orléans-type ware	2	–	1	Jug	L12th–E13th
Saintonge green-glazed	3	–	1	Jug	13th–14th
Saintonge sgraffito	1	–	1	Jug	L13th–E14th
Local medieval ware	6	–	2	Jug	13th–14th
Total medieval	**19**	**–**	**8**		

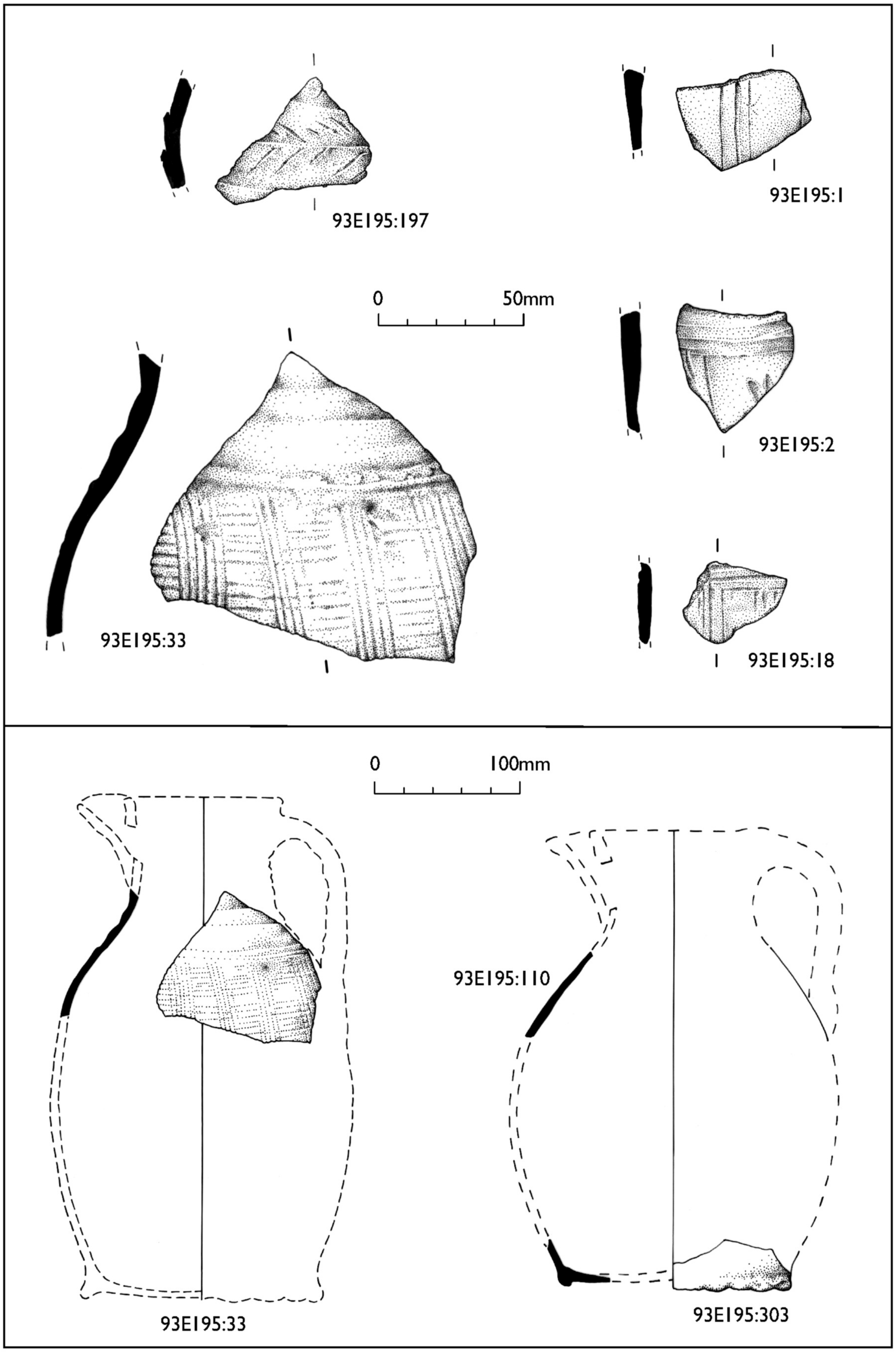
Ham Green wares (Ill. 3.1)
The kiln at Ham Green outside Bristol, and the ware produced there, has been extensively described (Barton 1963; Ponsford 1991). Two hand-built glazed wares were produced, i.e. Ham Green A, dating from *c.* 1120–1160, and Ham Green B, dating from *c.* 1175–1250, as well as a cooking ware that appears to have been contemporary with both glazed wares (Ponsford 1991, 98).

Ham Green A ware
A single body sherd (93E195:197) has horizontal ridging with the addition of diagonal slashes in a herringbone pattern. Damaged in hut fire, probably from lower monks' garden, F1019.

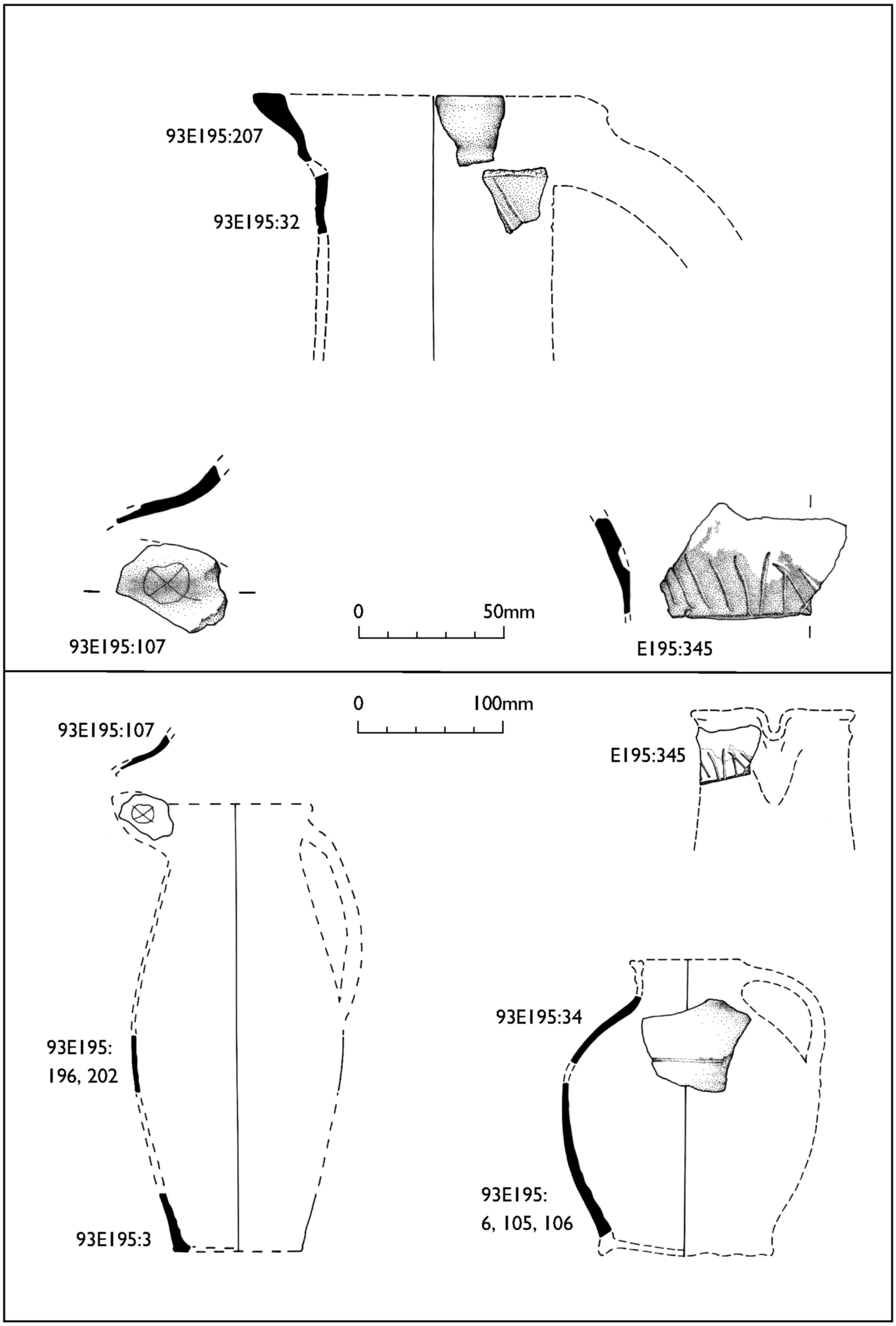
Ham Green A/B transitional ware
Three body sherds (93E195:1, 93E195:2, 93E195:18) are decorated with a combination of vertical and horizontal lines, lightly incised. The fourth sherd (93E195:33) is a large, well-glazed sherd with three horizontal ridges at the neck and a pattern of horizontal combing around the body, interspersed by at least four bands of vertical lines. Two sherds were found in deposit F633(5) and one (:33) was found in wall F637 in the lower monks' garden, while one sherd (:18) was recovered from the fill (F615) of Cistern 3, which is a mixed/modern deposit.

Ham Green B ware
Two sherds, consisting of a body (93E195:110) and a base (93E195:303). The clay matrix of the body can be differentiated from the other Ham Green bodies although the body itself is undecorated. The base has the thumbing typical of Ham Green B ware. One sherd (:110) was found in a spoil heap derived from the lower monks' garden and the other (:303) was found in the lighthouse period wall (F500) above the east entrance.

'Orléans-type' (Ill. 3.2)
This ware has been recovered consistently in Cork (Gahan *et al.* 1997, 122–3, fig. 51.6; McCutcheon 2003, 210), Waterford (Gahan and McCutcheon 1997, 306, fig. 11.10.10, 11) and Dublin (McCutcheon 2006, 99–101, pl. xxii, fig. 42), although to date no exact provenance has been found in France. The name 'Orléans-type' was attributed following the recovery of a jug at Exeter that was compared to similar jugs



Ill. 3.1—Ham Green wares.



Ill. 3.2—'Orleans', Saintonge and local wares.

found in Orléans by Chapelot (Allan 1984, 108). A similar jug, undatable, has been found at Tours (Husi 2003, fig. 6, pichet 9), but there are no recent finds from Orléans and thus the exact source is still unknown.

The jugs are small and flat-based with a rounded belly, straight neck and no lip or spout. The hollow rod handle is attached by being plugged into the body of the vase, with the typical French rolled-over edge on the handle. The fabric is a distinctive white clay with deep grooving and stabbing on the exterior, primarily on the rounded belly of the jug. The bright green glaze covers the belly and handle, extending up to the flat-topped rim but not down to the base.

Two sherds were recovered at Skellig, a rim and a body sherd. The rim (93E195:200) is typical of the vessel type, with a flat, thickened top. The body sherd (93E195:32) is decorated with two parallel incised lines, very diagnostic of the vessel type, although the clay is not the most typical bright white clay. One sherd (:32) was found unstratified in the garden soil of the lower monks' garden and the other (:200) was damaged in the hut fire but probably came from the lower monks' garden, F1019.

Saintonge green-glazed (Ill. 3.2)

The term 'Saintonge' has been used as something of a catch-all in Irish ceramic studies. It is becoming increasingly apparent, however, that a number of production centres in the wider Bordeaux area shared similar clay and forms, thus making it difficult to distinguish on the basis of chemical analysis. It may be that certain vessels will be recognised in the future by their individual decorative motifs as coming from a particular area.

The mainstay of the Saintonge wares are tall standard jugs with minimal decoration, flat splayed bases, strap handles and applied spouts. As with the majority of the French wares, the clay is off-white, micaceous and containing quartz and haematite. The application of a lead glaze containing copper filings leads to the mottled effect that constitutes the primary decoration. Vertically applied thumbed strips (usually only three) or lightly incised horizontal lines are the only other decoration.

Sherd 93E195:107, from the left side of a spout, has an incised mark on the interior. This consists of a quartered circle that was cut after firing. While such marks have been called makers' marks (Dunning 1968; Brown 2002, 27), there is stronger evidence for calling them owners' marks (McCutcheon 2006, 114–18). Since the purpose of an owner's mark is to distinguish one jug from a number of similar vessels, in the case of the assemblage at Skellig Michael this would seem to make no sense. As the glazed jugs were most probably gifts rather than purchases, however, it is likely that this jug had already been in the possession of one careful owner on the mainland.

A body sherd (93E195:196+:202) is very typical of Saintonge ware, with no decoration other than the glaze. The final sherd (93E195:3) is an unglazed portion of a base, not splayed.

Two of the Saintonge sherds (93E195:196, 93E195:202) were damaged in the hut fire and probably came from the lower monks' garden, F1019. Sherd 93E195:107 was found during cleaning of the east steps, and sherd 93E195:3 was retrieved from redeposited soils (F650(5)) in the lower monks' garden.

Saintonge sgraffito (Ill. 3.2)

A portion of spout (93E195:345) from a sgraffito decorated jug was recovered. These vessels date from the later thirteenth century to the early fourteenth century. This sherd most closely resembles several sherds from the Guernsey wreck, where 'an overall red slip, undefined by carving at the edges, has been scratched through in a variety of linear motifs including chevrons and cross-hatching' (Thomson and Brown 1991, 68, fig. 11). A similar sherd was recovered at Wood Quay, Dublin, and examples have also been recovered in Waterford, Cork and Galway (McCutcheon 2006, 124–5, fig. 50.9).

This sherd was found in a layer of collapse and stones (F638(1E)) in the lower monks' garden.

Local medieval ware (Ill. 3.2)

No specific locally made medieval pottery type has to date been recognised from Kerry. It is possible that the Skellig assemblage was sourced in the Limerick area but there is nothing very diagnostic about the sherds recovered.

Four sherds (93E195:6, :34, :35, :105+:106), all found in the lower monks' garden, appear to be from the same vessel. Sherd 93E195:6 was recovered from the top of steps in Cutting 6, and sherds 93E195:34, :35 and :105+:106 came from redeposited soils F635. They have a pink clay with a beige interior. Some organic nodules were burnt out, leaving grey void surrounds on both surfaces, with shell, stone and iron visible in the clay. One sherd (93E195:34) has a green glaze, possibly just by the shoulder of the jug, with a narrow, double incised line decoration.

The other two sherds (93E195:7, 93E195:199) have been included with local medieval ware by default as they are neither French nor English. Sherd 93E195:7 was a surface find from the east steps and sherd 93E195:199 was damaged in the hut fire but probably came from the lower monks' garden, F1019.

Discussion

The assemblage is remarkable, given the nature of the site—an isolated island community of monks living an austere life in beehive huts. Given the wide date range of the material, from the mid-twelfth to the early fourteenth century, this suggests a long-term if occasional import of jugs into the community. If the single sherd of Saintonge sgraffito is excluded, then the date range of the assemblage could be reduced to a possible 50-year period from the later twelfth to the early thirteenth century, still representing several generations. It may be that visitors on pilgrimage to the island brought the new jugs as gifts to the community. Did the material come as a group directly from the most likely urban centres, such as Cork or Limerick, with other supplies, or were these special items of value to individuals and so offered up to the holy men on the island? In spite of the relative inaccessibility of the island of Skellig, there appears to have been no bar to the use of these items in such a community. Similar contemporary material was recovered at the Celtic hermitage on St Helens, on the Isles of Scilly (Dunning 1964).

3.3 THE POST-MEDIEVAL POTTERY (not illustrated)

Rosanne Meenan

An assemblage of 178 sherds of post-medieval pottery from Skellig Michael was examined. The minimum vessel number (MVN) is estimated on the number of rims present in the assemblage unless otherwise stated. The sherds were recovered primarily from the nineteenth/twentieth-century levels in the lower monks' garden, including in and around Cell G, and from the surface campion layer. Additional sherds were recovered from the east steps, south entrance 2 (inner enclosure) and from the floor surface within the large oratory. Three sherds were recovered within the peat adjacent to the 'latrine' on the small oratory terrace. The assemblage has been treated as a single unit for discussion purposes.

Late seventeenth-century pottery

Two sherds of North Devon gravel-free ware represent the earliest material in the post-medieval assemblage. They came from a thin-walled vessel such as a jug, which was presumably brought onto the island by visitors/pilgrims at the time when it was most commonly in use, i.e. in the late seventeenth/early eighteenth century.

Nineteenth-century pottery

The assemblage is predominantly nineteenth-century in date. A small number of coarseware sherds are

Table 4—Post-medieval pottery identifications.

Ware	Sherd count	MVN	Forms
19th-century stoneware	10	2	2 bottles
Banded ware	12	4	Bowls (identified by base)
Black-glazed ware	3		
Earthenware (Staffordshire)	3	1	Small food storage jar
Glazed red earthenware	5	1	Bowl/jar
Hand-painted fine ware	4	1	Bowl
Mocha ware	1	1	Bowl
North Devon gravel-free	2		
Pearlware	3	3	3 saucers (identified by base)
Porcelain ?	1		
Shell-edge ware	30	11	11 plates
Transfer-printed ware	25	8	2 saucer bowls, 2 cups, 1 bowl, 2 saucers, 1 plate
Unidentified	4		
White earthenware	75	17	12 plates, small storage jar, saucer, 2 bowls(?), jug
TOTAL	178	50	

present but the assemblage is predominantly made up of fine tablewares, i.e. cups, saucers, jugs and plates, in wares that were probably made in Staffordshire potteries.

Stoneware
Two bottles were recognised in the stoneware assemblage by their rim/necks (93E195:20, 93E195:55). These are unusual vessels in that they resemble in form squat wine bottles of the mid-eighteenth century. One of them (:20) features a cordon below the rim, while the other (:55) features a cordon around the edge of the rim. Neither was glazed on the interior and the fabrics appear to be quite different.

Body sherds of storage vessels were also present.

Black-glazed ware
One (93E195:103) of the three sherds of black-glazed ware probably derives from a storage vessel. These sherds, with matt glazes, do not resemble the black-glazed wares that were imported from west England and from Wales and may have been manufactured more locally in Ireland.

Glazed earthenware
One sherd (93E195:48) of glazed red earthenware is the rolled-over rim from a possible bowl or jar; another piece (93E195:204) appears to have been worked into a gaming piece. These were probably of Irish manufacture. There was also a rim (93E195:15) from a small food storage jar, which featured a groove under the rim into which a piece of string to tie the lid would have fitted. This piece was factory-produced, possibly in Britain.

Fine earthenwares
White earthenwares. The largest single group comprised white earthenwares. These were tablewares, with plates being the commonest form. Bowls, saucers, jugs and a small food jar were also present. A small number were decorated with raised ridges or moulded patterns and there were also a small number of sherds decorated with very sparse amounts of paint, e.g. single lines of colour around the rim. It should be pointed out that some of the undecorated sherds may have come from vessels that were decorated on other parts of the vessel.

Shell-edge ware. There is a large group of shell-edge ware sherds. These were all from plates with green or blue paint applied over the moulded decoration on the rims. Two of the rims (93E195:64, 93E195:65) can be dated to the first three decades of the nineteenth century, while others (93E195:63, E338:1) featured embossed decoration along the rim under blue paint and have been dated to the years 1820–30 in America, where Orser has noted that shell-edge wares were the cheapest forms of decorated tableware by the 1820s (Diagnostic Artifacts in Maryland, www.jefpat.org/diagnostic). Rim sherds from another plate (E388:2) may date from as late as the 1860s.

Transfer-printed wares. These wares are also well represented. The vessel forms are mixed but again comprise tablewares. The patterns are mixed and blue is the predominant colour. Three sherds from one saucer bowl were examined by Audrey Whitty (National Museum of Ireland), who identified them as dating from approximately 1820. While she could not identify the pattern exactly, the closest parallel was Broseley Pattern A, dating from approximately 1820–30 and manufactured by the Don pottery of Swinton, Yorkshire (A. Whitty, pers. comm.). This is a variation of the Willow pattern and was also known as the 'Two Temples pattern'. It was also used on a porcelain body made by Spode.

The patterns used on the other sherds were not identifiable.

Other finewares. The remaining finewares are much less numerous. Banded wares were factory-made, using different colours of slip on the exterior, which were worked by various methods to produce different decorative motifs. One such variation was mocha ware. These wares were produced from the later decades of the eighteenth century through the nineteenth century and again filled the lower end of the market with mass-produced table goods. They were in full circulation in the first decades of the nineteenth century.

Pearlware. Three sherds of pearlware represented three different saucers and were hand-painted in combinations of blue, brown and yellow. The sherds of hand-painted fineware were also painted in this palette. One sherd was identified as being possibly porcelain, albeit very coarse.

Discussion

Two sherds of North Devon ware indicate some activity on the island in the late seventeenth/early eighteenth century, but otherwise the assemblage dates predominantly from the first decades of the nineteenth century. Those sherds that could be dated by type of ware or by the decorative techniques slotted into the years 1800–40, with just one plate dating from *c.* 1860.

The pottery was recovered from the excavations within the monastery. It is known that the builders of the lighthouses used some of the buildings within the monastery as dwellings during construction of the lighthouses, which took place *c.* 1820–60. It is probable, therefore, that the pottery assemblage was associated with the construction workers.

The wares that are present in the assemblage are relatively fine and therefore fragile and perhaps would not have been expected to be used by a group of construction workers in such difficult conditions, particularly as breakages would not have been easily replaced. It is, however, becoming clear from archaeological evidence in Britain and further afield that mass-produced plain white earthenware, transfer-printed wares and shell-edge wares were coming into common usage even in the most remote locations. They have been found on South Uist in the Hebrides (Parker Pearson *et al.* 2004, 181) in early nineteenth-century contexts. They have also been found on St Kilda, in Tasmania and the Falkland Islands in contexts dating from the 1820s and onwards (Alasdair Brooks, pers. comm.). Shell-edge wares in particular were inexpensive and breakages would not have been costly to replace.

The construction workers might have brought with them wooden or enamel vessels that would have been more durable than ceramic examples. When describing island households on Great Blasket

Island during his childhood in the 1850s and 1860s, Tomás Ó Criomhthain (Ó Crohan 1979, 31) wrote that they used bowls and plates and wooden mugs. Unfortunately he does not record what the bowls and plates were made of, but it is interesting to note the use of wooden mugs at this late date. It is tempting to suggest that wooden vessels may have been used by some of the lighthouse-builders, but mugs and plates in wood would not have survived well in the archaeological record and therefore it is not possible to determine whether they were brought onto the island at the time in question.

Ó Criomhthain (*ibid.*, 32) also wrote that tea was not known on nearby Great Blasket when he was growing up in the 1850s–1870s. This begs the question of how much tea was drunk on Skellig Michael in the 1820s, although it is clear that the construction workers would have come from the mainland, where tea had probably appeared at an earlier date than on Great Blasket. There is evidence for some cups in the assemblage, although the other table forms are proportionately more numerous.

The question of provisioning the construction workers is interesting, as all their foodstuffs had to be imported from the mainland; possibly wooden barrels containing preserved meat etc. were brought onto the island. The low proportion of black-glazed ware suggests that there was little use of ceramics for food-processing or storage. The black-glazed ware and the stonewares represent the only storage vessels present in the assemblage.

3.4 THE CLAY PIPES (not illustrated)

Joseph Norton

The number of clay pipe items recovered totalled eight stems and four bowl fragments, a surprisingly small assemblage given that the lighthouse-builders resided in the monastery in the nineteenth century. The stems comprised eight plain pieces and four mouthpiece fragments. All the stem material dated from the nineteenth century. The stem pieces are all very short lengths and have no diagnostic features. One mouthpiece (93E195:124) has traces of a red substance on it, possibly the remnant of a protective slip, sometimes applied to this part of the stem to prevent burning when smoking.

There are four incomplete bowl fragments, two of which (93E195:37b and c) join to make a partial bowl of early nineteenth-century date, i.e. *c.* 1800–30.

There is one almost complete spurred bowl (93E195:90), which has a very small spur and dates from the first half of the nineteenth century, probably *c.* 1800–30. There is another incomplete bowl (93E195:340) with a slightly larger spur; it too dates from *c.* 1800–30.

The clay pipe fragments were recovered primarily from the upper levels in the lower monks' garden (particularly from around Cell G) and from a nineteenth-century layer in the south entrance 2, inner enclosure, cutting.

3.5 CRUCIFIXES

Two crucifixes were recovered during the excavations and both date from the nineteenth/twentieth centuries.

E338:38 (Ill. 3.3)

A wooden crucifix on a stepped base (H 420mm). The figure is unusually corpulent and crudely carved, with the head slightly inclined to Christ's right and arms outstretched. The body is painted in a skin tone, the hair is dark brown (no crown of thorns evident), the loincloth is white, and splashes of red paint along Christ's left side represent blood from the wound under the right breast. The cross and base are

[Left] Ill. 3.3—Wooden crucifix E338:38. (Con Brogan, DAHG).

[Right] Ill. 3.4—The altar in the large oratory in the 1950s. The lintel of the east window is just visible in the background (DAHG archive).

Ill. 3.5—Wood and bronze crucifix 93E195:206 (Con Brogan, DAHG).

painted black, and the individual pieces are nailed together with small iron nails or tacks. The big and badly modelled loincloth (flowing to Christ's right, which is unusual) is typical of figures as early as the seventeenth century but the suppedaneum and superscription are more probably eighteenth/nineteenth-century in date (C. Hourihane, pers. comm.). An altar or devotional use is indicated by the base.

An example of folk art, possibly carved by one of the lighthouse personnel, found in a fragmentary state within the make-up of the altar inside the large oratory. It is similar to (but not identical to) a cross visible on the altar in a photograph dating from the mid-twentieth century (Ill. 3.4).

93E195:206 (Ill. 3.5)
A wood and bronze crucifix (H 205mm). The nimbus and superscription and the style of the figure indicate a date of *c.* 1900–50 (C. Hourihane, pers. comm.). Found in sea campion layer in the lower monks' garden (F631), directly below the large oratory, from which it probably emanated.

3.6 COINS (not illustrated)

Michael Kenny

E338:23. Silver long-cross penny

English, Henry III (1216–72)

The long-cross penny was introduced in 1247 and was initially struck at numerous mints throughout England. After 1250 production was limited to London, Canterbury, Durham and Bury St Edmonds. This coin is extremely worn and pitted but there are some features discernible, including the outline of Henry's facing bust. Some letters are still readable, particularly on the reverse, which suggest that the coin was struck at Bristol. The full legend is ELIS ON BRVSTO, 'Elis (the moneyer) of Bristol'. Since the obverse is so worn, it is difficult to work out the subgroup or class to which this coin belongs. According to the numismatic publications and essays on this period, the provincial mints, such as Bristol, did not work after 1250. This, if the basic identification is correct, gives a fairly precise minting date of 1247–50.

Large oratory, south-east quadrant, F302, disturbed floor surface.

E338:22K. Penny

Irish, 1971

Large oratory, south-east quadrant, F302, topsoil.

E338:22L. Penny

English, 1971?

Worn and corroded. Large oratory, south-east quadrant, F302, topsoil.

E338:22M. Twopence

Irish?

Very worn and corroded. Large oratory, south-east quadrant, F302, topsoil.

3.7 THE SMALL FINDS

Julie Franklin

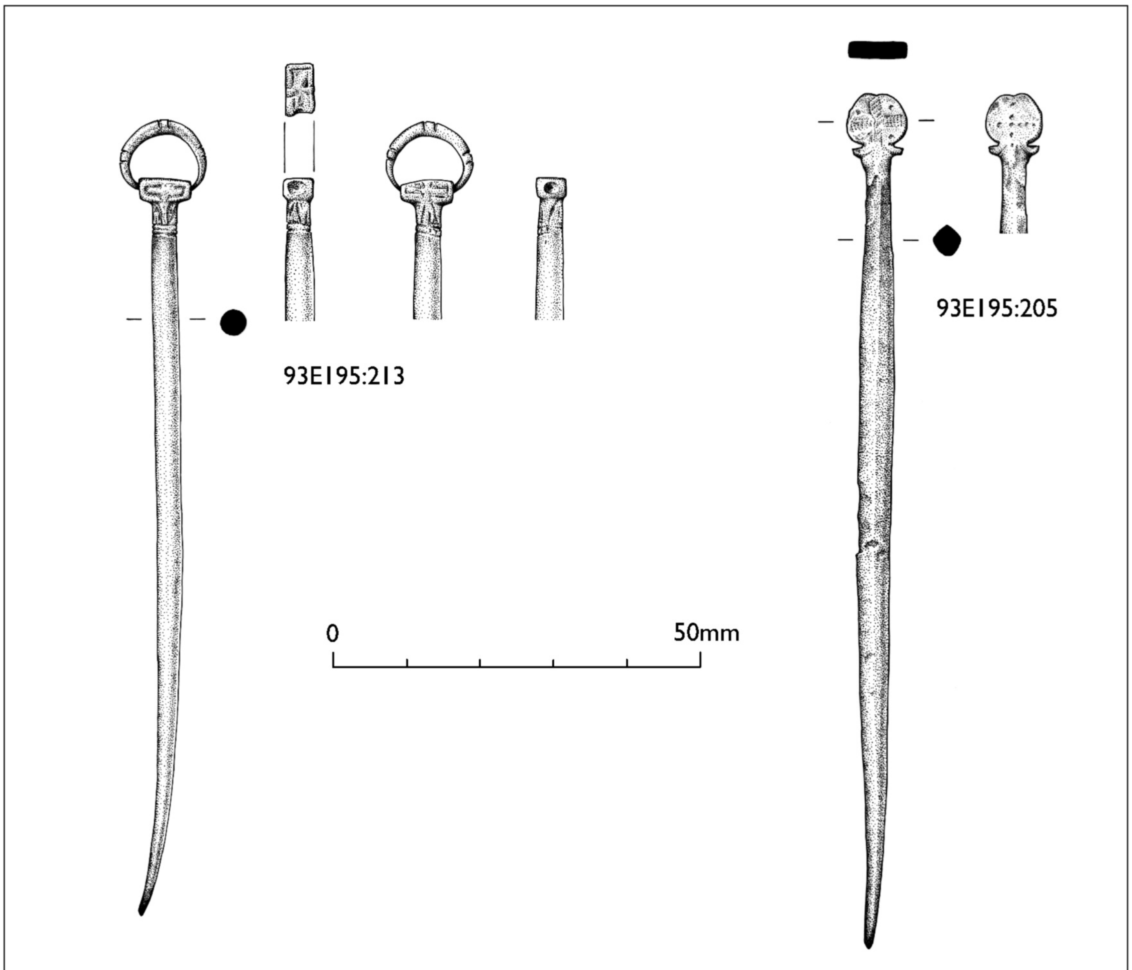
3.7.1 Copper alloy

Monastic period (seventh–thirteenth centuries)

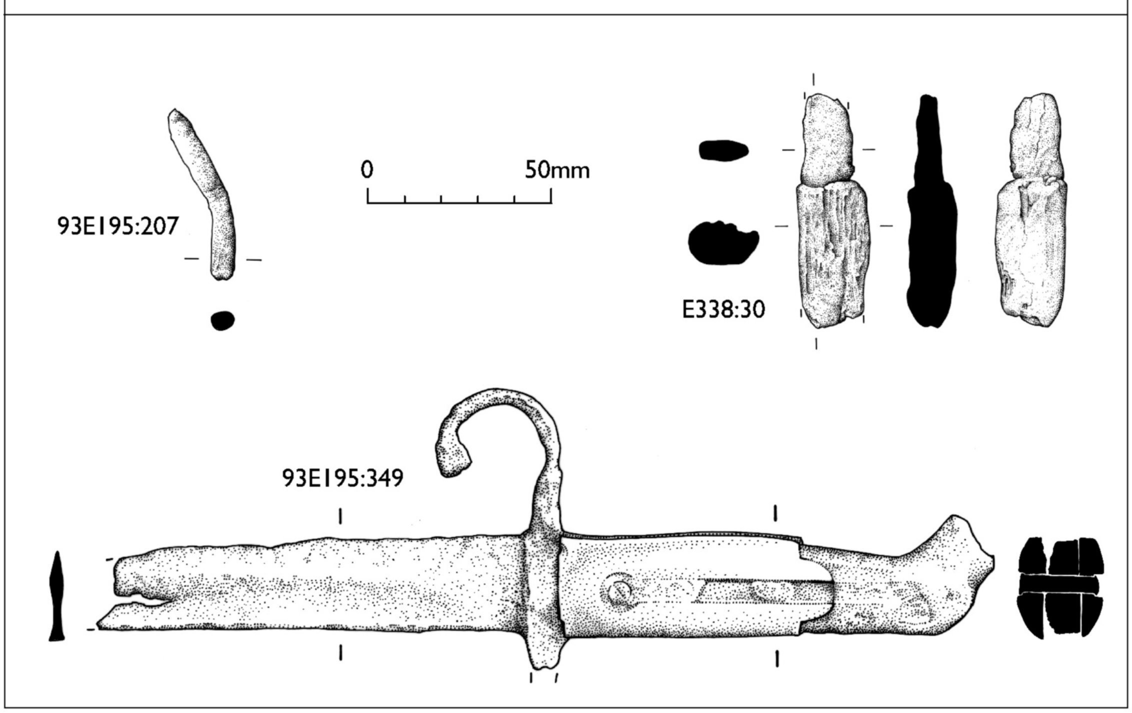
Pins

The two copper-alloy pins recovered are arguably the most decorative items in the assemblage. Significantly, the head of each is decorated with crosses on both sides. The pins would have secured outer clothing such as a cloak and would have belonged to individuals of some status, possibly abbots or wealthy visitors.

Crutch-headed pins such as 93E195:213 are almost exclusively found with stirrup rings (Fanning 1994, 11). Stirrup rings are easily parted from their heads and are often found separately, as could easily have happened here (*ibid.*, 9). They are a common type; a quarter of the Dublin pins in Fanning's study were of this type (*ibid.*, 10). The moulded cross decoration is unusual. Ring-and-dot is the more common technique used on this type of pin. In Dublin this type of pin was found in deposits dating from the eleventh and early twelfth centuries, with a floruit between *c.* 1000 and *c.* 1070. Later examples may in fact be residual or heirlooms (*ibid.*, 41–6). Finds from elsewhere in Ireland are more thinly scattered but



Ill. 3.6—Metal artefacts.



support the Dublin dating. A similar pin was found at nearby Church Island (O'Kelly 1959, 105, fig. 11.2).

The rounded spatulate head of stick-pin 93E195:205 places it in O'Rahilly's class 13 (O'Rahilly 1998, 29). The evidence from Dublin dates this type of pin to the late twelfth to mid-thirteenth century. In Waterford, however, they appeared to have a slightly earlier range, and were found in deposits dating from between *c.* 1130 and *c.* 1200. The pin, then, is most likely to date from between the mid-twelfth and mid-thirteenth centuries, although of course it may already have been of some age when deposited. It is of a relatively unusual form; only three of the 232 stick-pins found in Waterford were of rounded spatulate form. Stick-pin decoration takes many forms but is generally quite simple. Crosses often appear on the tops of rounded pin heads, but the spatulate form here allows decoration on the side which would have been more easily visible when the pin was in use.

93E195:213. Ringed pin (Ill. 3.6). Stirrup-ringed, crutch-headed pin. Tapering ring ends narrowing to points, held within perforation running length of head. Ring with oval section, now a little loose, possibly through distortion or corrosion, and can be removed from head. Panelled decoration, featuring moulded cross motifs. On top of the head this fills the available rectangle. On the front and back of the head the horizontal arm of the cross fills the rectangular field, while the shaft extends from the top of the head down the upper part of the pin shaft, ending at a double incised line around the shaft. Ring divided into four panels by three sets of double incised lines. Shaft undecorated, straight-sided, tapering towards tip, which is slightly bent. Pin L 101, ring Dia 12. Found in void in the west jamb of south entrance 1 (inner enclosure), prior to excavation.

93E195:205. Stick-pin (Ill. 3.6). Rounded spatulate head. Curved, pointed projections on either side at join with shaft, with central leaf-shaped moulding extending down shaft on one side. Incised decoration on head. On one side, cross formed from dots: central dot and three dots for each arm. On reverse, cross formed from two bands filled with cross-hatching, crossing in middle (though partially obscured by large corrosion blister). Lozenge-sectioned shaft towards head, bulging and changing to rounder section in middle before narrowing to completely round tip. Very slight S-bend towards tip, probably from use. L 117, shaft max. W 4.3, head L 7, head W 8 by 2. Found in wall collapse (F636(3)) in lower monks' garden.

Lighthouse period and later (1820–present)

Wire (not illustrated)
The wire is undiagnostic and of uncertain function. It is, however, in very good condition and was found associated with bottle glass, and thus is more likely to date from the lighthouse period or later.

93E195:208. Wire. Length of wire bent into hairpin shape with L-bend at one end. L (straightened) 126, T 1.3. Redeposited soils (F633(5E)) in lower monks' garden.

3.7.2 Lead

Monastic period (seventh–thirteenth centuries)

Writing lead
The single lead object (93E195:207) was probably a writing implement of some type. Styli were used

for writing on wax tablets, while writing leads were for parchment or paper. Styli were often of iron or copper and could be well formed and decorated. One end was pointed, the other spatulate for erasing and smoothing down the wax. Writing leads were generally more simply made. On paper they produced a light grey impermanent mark, similar to modern graphite pencils. Early writing leads, such as the ninth- to eleventh-century examples found at Winchester, are simple rods, tapering to a point at one end. Later examples often had a flattened end for ruling lines (Biddle and Brown 1990; Egan 1998, 270–1). The Skellig artefact was blunted but was clearly tapering to a point at one end. The lack of a spatulate head implies that it was intended for parchment rather than wax, but it is possible that the top end is broken. A number of similar leads, though typically with flattened ends, were found in thirteenth-century contexts at Tintern Abbey, Co. Wexford (Lynch 2010, 167), and Jerpoint Abbey, Co. Kilkenny (Scully 2007, 391).

93E195:207. Writing lead (Ill. 3.6). Round-sectioned thick rod, bent in middle. One end tapering to a rounded point, probably broken at tip. Other end blunt, possibly broken. L 49, W 6. *Leacht* area, topsoil, F561.

3.7.3 Iron

Monastic period (seventh–thirteenth centuries)

Knife

An iron knife with the remains of a wooden handle (E338:30) was found in a clay deposit possibly associated with the construction of the large oratory, or at the very least with the early phases of its use. Unfortunately it is broken and very worn and provides little useful dating information. It is a whittle-tang knife, the form in use during the period of the monastery's occupation. Though scale-tang knives were introduced in the late medieval period and became the more common type by the fifteenth century (Cowgill *et al*. 1987, 25), whittle-tang knives continue to be made to this day. The relatively short tang indicates that it was not a particularly large knife. The dishing visible on the back of the blade may be the result of using it as a strike-a-light.

E338:30. Knife (Ill. 3.6). Whittle-tang iron knife blade, single-sided, broken, very worn and blunted. Back of blade also slightly concave, possibly through wear. Partially mineralised remains of wooden handle survive along length of tang. Short pointed tang visible in X-ray; top level with back of blade, bottom stepped in slightly from blade edge, tapers straight to point. L 63, tang L 36, W 20. Large oratory, south-east quadrant, in a pocket of F306, in top of deposit (F315) relating to construction of oratory.

Building material?

The only other iron finds of potential medieval date are building-related. These include a possible door stud (E338:22J). Door studs were nails with large, domed, lozenge-shaped heads serving a dual function: they secured two thicknesses of wood together in the construction of the door, and the domed head provided a certain amount of protection from edged weapons during an attack. Though from a disturbed deposit associated with modern finds, this may once have been part of the door to the large oratory. Finally, a piece of strap (93E195:223) may be part of a large strap hinge. These finds are potentially of medieval date.

E338:22J. Door stud? Nail with large, domed, lozenge-shaped head, broken at one end. Short stump of shaft. Head L 35+ (estimated 38), head W 28, shaft L 17. Large oratory, south-east quadrant, F302, disturbed floor surface.

93E195:211. Nail. Nail with oval head and short stump of shaft. Head L 29, head W 24, shaft L 17. *Leacht* area, F577, possibly contemporary with Burials 1 and 2.

93E195:223. Hinge strap? Fragment of thick strap. Fused to stone. W *c.* 32. Redeposited soil (F635(7)) in lower monks' garden.

Lighthouse period and later (1820–present)

93E195:349. Bayonet (Ill. 3.6)
Handle and part of blade of bayonet. Single-edged fullered blade, broken at end. Cross-piece with swept-forward quillon ending in a rounded finial, muzzle ring missing. Handle of thick cast iron, cast in one piece with blade. Thick cast-iron pommel, thinning towards blade to allow for attachment of grips of black, hard rubber-type substance held by two iron rivets, with a long leaf spring attached by means of the rivet closest to the blade. Overall L 243+. Unstratified.

This bayonet is something of a mystery. The distinctive lobed shape of the end of the grip as well as the long leaf spring and fullered blade identify it as an Italian weapon, a Sciabola-Baionetta M70, model no. BE7017. These were adopted by the Italian army in 1870, remaining unchanged until 1887. Despite various improvements, some of these bayonets were still in service in World War I, when the blades were shortened from the original 518mm to around 235mm (Carter 1974, 69–71, illus. 139, 142). The blade of this example only survives to 116mm and thus it is unclear whether it has been cut down or not.

How a late nineteenth-century Italian weapon came to be on Skellig Michael is a matter of conjecture. The fact that it is specifically an anti-personnel weapon—as opposed to, for example, a rifle, which could be used to shoot wildlife—makes it even stranger. The shaped grip does make it a useful hand-held weapon when detached from a rifle, but the blade, even in its cut-down version, would have been a little unwieldy for hunting purposes. There was a large wave of emigration in the late nineteenth century from Italy to more prosperous countries, though it is difficult to see how such a journey would end at the Skelligs. It may have been in the possession of one of the lighthouse-keepers, possibly an ex-navy or military man who may have brought it back from his travels or who may have fought on the side of the Allies during World War I.

93E195:336. Cauldron (not illustrated)
Cast-iron body sherd. Thick-walled sherd, curving in two planes. Large bump on exterior, possibly blister, decorative feature or repair. L 55, W 47, T 6. Surface campion layer (F631(3)) in lower monks' garden.

As the cauldron sherd is of cast iron it is unlikely to pre-date the eighteenth century (Butler *et al.* 2009, 1). It was presumably in use during the occupation of the site in the 1820s by the lighthouse-builders.

Miscellaneous
Other iron finds are less easy to identify. There appear to be some fragments of thin-walled round containers, probably food cans (93E195:219, 93E195:224). Canning was developed at the beginning of the nineteenth century and by the 1820s canned food was beginning to be used on long sea voyages. It is possible that the lighthouse-builders would have made use of this innovation during their stay. A T-shaped piece of iron (E338:19) is probably part of a strap hinge. A large rod (93E195:209) is of uncertain function. Other finds are too fragmentary for identification. Some of these finds are clearly of modern

date, and some are assumed to be so by association with modern bottle glass and other finds.

Ironworking waste (monastic period)

(with identifications by Kath Crooks)

There were five small lumps of ironworking waste (totalling 255g). Four of the pieces are of slag (93E195:214–217), three of which were recovered from redeposited soils in the lower monks' garden while the fourth (:215) came from the surface campion layer (F1011) at the east end of the same area. One piece, also recovered from redeposited soils (F635(6)), with possible hammerscale embedded in the surface (93E195:221) is a clear indication of smithing. The other piece is a fragment of ceramic furnace lining (93E195:311) found in a mixed deposit (F1020) adjacent to Cell G. These all appear to suggest medieval smithing taking place within the monastery. There is no evidence, however, of the kind of metalworking workshop that was in evidence at Illaunloughan (Marshall and Walsh 2005, 202–7). Indeed, if there was a forge in use on the island for any period of time, more waste would be expected. It may be that this waste is from a temporary workshop to provide fixtures and fittings for monastic building works.

3.7.4 Bone and antler

(identification of skeletal materials by Claudia Tommasino Suárez)

Monastic period (seventh–thirteenth centuries)

Comb

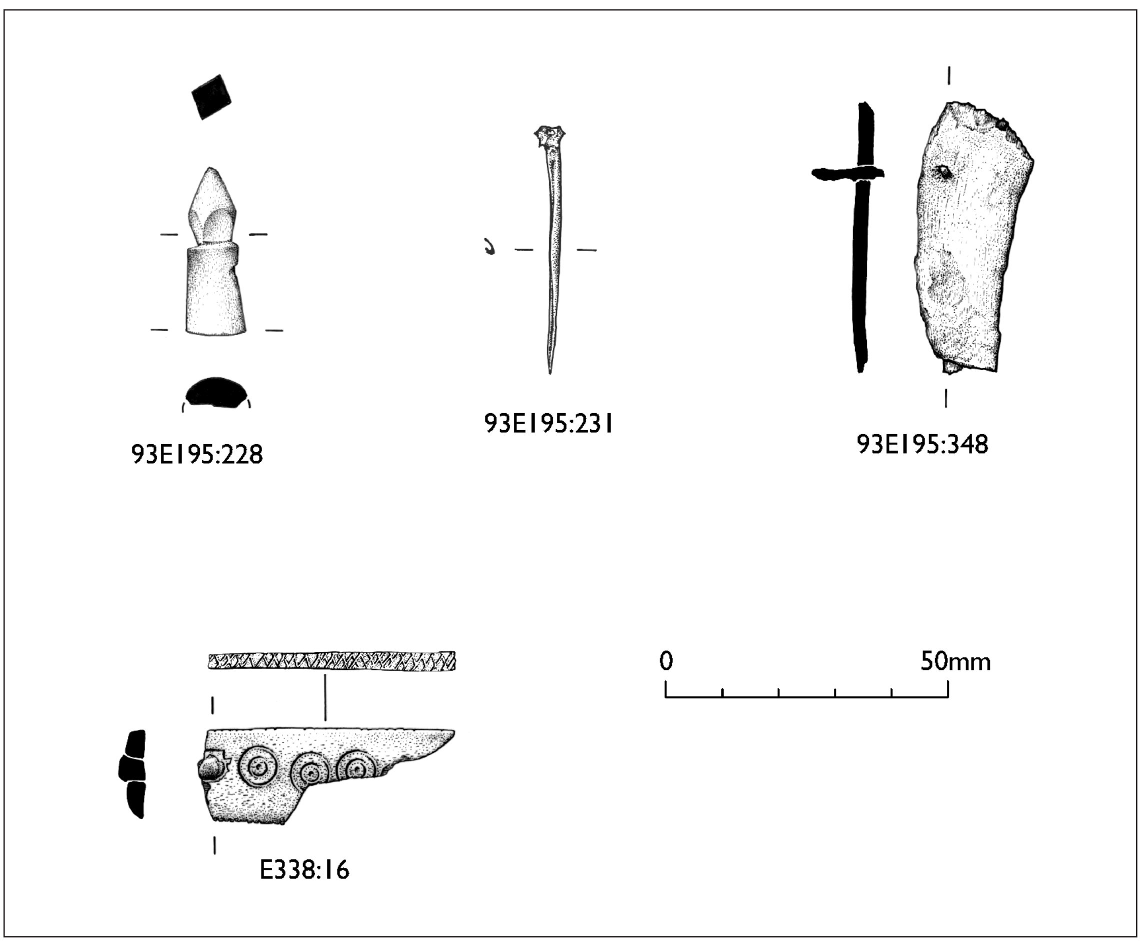
A single comb sideplate (E338:16) was recovered as a surface find and is described according to the terminology outlined in Dunlevy's (1988) typology. It is from a single-sided composite comb of type F or G. The distinction between the two types comes chiefly from the shape of the spine, arched for type F, straight-backed for type G. The fragment has a slight curve but the piece is too small to place it in type F on this basis alone. Instead, the relatively flat section of the plate and the fineness of the teeth evident from the tooth-cutting marks on the plate are more characteristic of type G combs. Tooth-cutting marks on the sideplates are also a common feature of type G combs. Decorated examples (termed type G ornate) also commonly feature well-decorated spines, an otherwise quite unusual feature. Two examples from Dublin feature very similar decoration (E71:2538, E81:5685; Dunlevy 1988, 406). Type G ornate combs are dated to between the eleventh and thirteenth centuries. Finds of combs from twelfth- and thirteenth-century contexts in Cork and Waterford show the predominance of type G combs in the south of Ireland in the twelfth and, particularly, thirteenth centuries (Hurley 1997a, 654–6; 1997b). The change to straighter combs is thought to be due to the decreased supply of antler and hence the increased use of bone, a material which lends itself better to long straight shapes (Hurley 1997a, 654).

E338:16. Comb (Ills 3.7, 3.8). Sideplate from single-sided composite comb, probably of Dunlevy's type G ornate. High, flat section. Broken at both ends at rivet holes. Remains of iron rivets 32mm apart, one present, one represented by staining. Slight curve to back of plate, teeth-cutting marks visible on opposing side, fine teeth (ten per cm). Incised decoration of row of dot and double circle along front of plate, with criss-cross along spine. Post-cranial long bone, probably a tibia from a large animal, probably cattle, horse or red deer. L 46, W 17, T 4. St Michael's Church, surface find.

93E195:348. Part of handle? (Ill. 3.8)

Fragment of worked bone (possible rib) with the remains of two iron rivets still in place. Slightly curved,

Ill. 3.7—Bone comb fragment E338:16 (Con Brogan, DAHG).



Ill. 3.8—Bone and antler artefacts.

with saw marks visible on the flat (back) surface. This could be the sideplate of a handle or similar composite artefact. L 45, W 19 (max.), T 1–2. Lower monks' garden, lower collapse (F638(1E)).

Gaming piece

A carved antler gaming piece (93E195:228) was recovered from the lower monks' garden. It is of unusual form compared to typical gaming piece assemblages of the period (cf. Hurley 1997a, 666–9). It appears to have been flat-bottomed but the split base may hide the remains of a peg hole or possibly an integral peg (cf. MacGregor 1985, fig. 71t–u; Turner and Orton 1979). Indeed, the forming of such a feature may have caused the split. Arguably, without a peg the piece is a little too light and unstable to make an effective gaming piece. Pegged pieces were for use with perforated gaming boards such as that found at Ballinderry, Co. Meath (Murray 1951, 59), and would have been particularly useful while travelling.

It is most likely to be either a *hnefatafl* piece or a stylised chess piece. The former was the favoured game during the Viking period (MacGregor, 1985, 135); the latter reached northern Europe in the later tenth century and rose in popularity through the medieval period (Chapman 2005, 1). In the context of chess the piece might represent a stylised knight. The top of the piece, with a conical tip above a faceted section, resembles a helmeted head. As well as the more realistically carved chess pieces, most famously represented by the thirteenth-century Lewis Chessmen from the Western Isles of Scotland (Caldwell *et al*. 2009), there was a strong tradition of simple stylised pieces produced for the lower end of the market (Chapman 2005). Though the horse is often an integral part of the knight (*ibid*., figs 2.7, 2.11), several examples from Lewis show just an armed and helmeted figure (Caldwell *et al*. 2009, fig. 6).

Ill. 3.9—Antler gaming piece 93E195:228 (Con Brogan, DAHG).

93E195:228. Gaming piece (Ills 3.8, 3.9). Small, upstanding artefact carved in one piece, with cylindrical lower part and pointed upper part. Top part takes form of a cone, tapering below to a narrow, square-sectioned centre, formed by four facets cut into sides. This sits on top of a wider cylinder with a flat base, which has split down the middle. Antler. H 30, Dia 12. Redeposited soil (F634(5)) in lower monks' garden.

Pin

A fish bone possibly utilised as a pin was recovered from the lower monks' garden (93E195:231). The degree of polish on the shaft suggests that it was in use for some time. Similar-shaped objects have been identified as pin beaters (small pointed tools used to manipulate threads during weaving), but typically these are sturdier and over twice as long (Hurley 1997a, 670–4). It is possible that this example was used for very delicate weaving work or may have been used to secure a shroud or light clothing.

93E195:231. Pin (Ill. 3.8). Length of fish bone, little altered from its natural form. Tip polished from use as a pin. Caudal vertebra from neural spine of large fish. L 43, W 4. Redeposited soil (F636(5)) in lower monks' garden.

3.7.5 STONE

Monastic period (seventh–thirteenth centuries)

Stone dish/plate

The concavo-convex profile of this stone object suggests that it is part of a small plate or dish, and though the shape is slightly irregular the diameter is estimated at just 135mm. It would thus not have made a practical dish from which to eat. Dining vessels at this date would have been chiefly wooden bowls and trenchers. The fine workmanship, polish and delicacy of the artefact, which is only 3mm thick (possibly thinner in the centre), suggest a more refined use.

Its function is unclear and further research will be needed in order to find comparanda for it. It has been suggested that it could have been used to grind pigment for ink-making, although no comparanda have been discovered so far. The stone bowls from Nendrum are far cruder and thicker (Lawlor 1925, 136–7, pl. X) and would have been used for heavy grinding. So are the illustrated objects from excavations on the Inishkeas in the 1950s, where dye/pigment-making seems to have been carried out (Henry 1952, 172–3).

A second suggestion that it could have been used as a paten seems unlikely. There was a progressive move towards the use of only precious materials in a Communion context throughout the early medieval period. Pope Zephyrinus, who died *c.* AD 217, ordered that wine should be consecrated not, as heretofore, in a wooden vessel but in a glass vessel (Cronin 1963, 238). The use of wood and horn was banned by the Council of Cealinth, and Pope Leo IV banned the use of wood, lead or glass (Smith and Cheetham 1827–1908, vol. 1, 337). Patens of the period tended to be larger, as they normally used a Communion cake/loaf rather than the wafers which are made expressly for Communion today, and while stone was used it tended to be of an exotic nature such as onyx or semi-precious stones (*ibid.*, vol. 2 1570–3). Nevertheless, stone paten fragments have been found in Merovingian contexts in Bordeaux. They are not of precious stone, but do carry religious symbols (M.F. Ryan, pers. comm.).

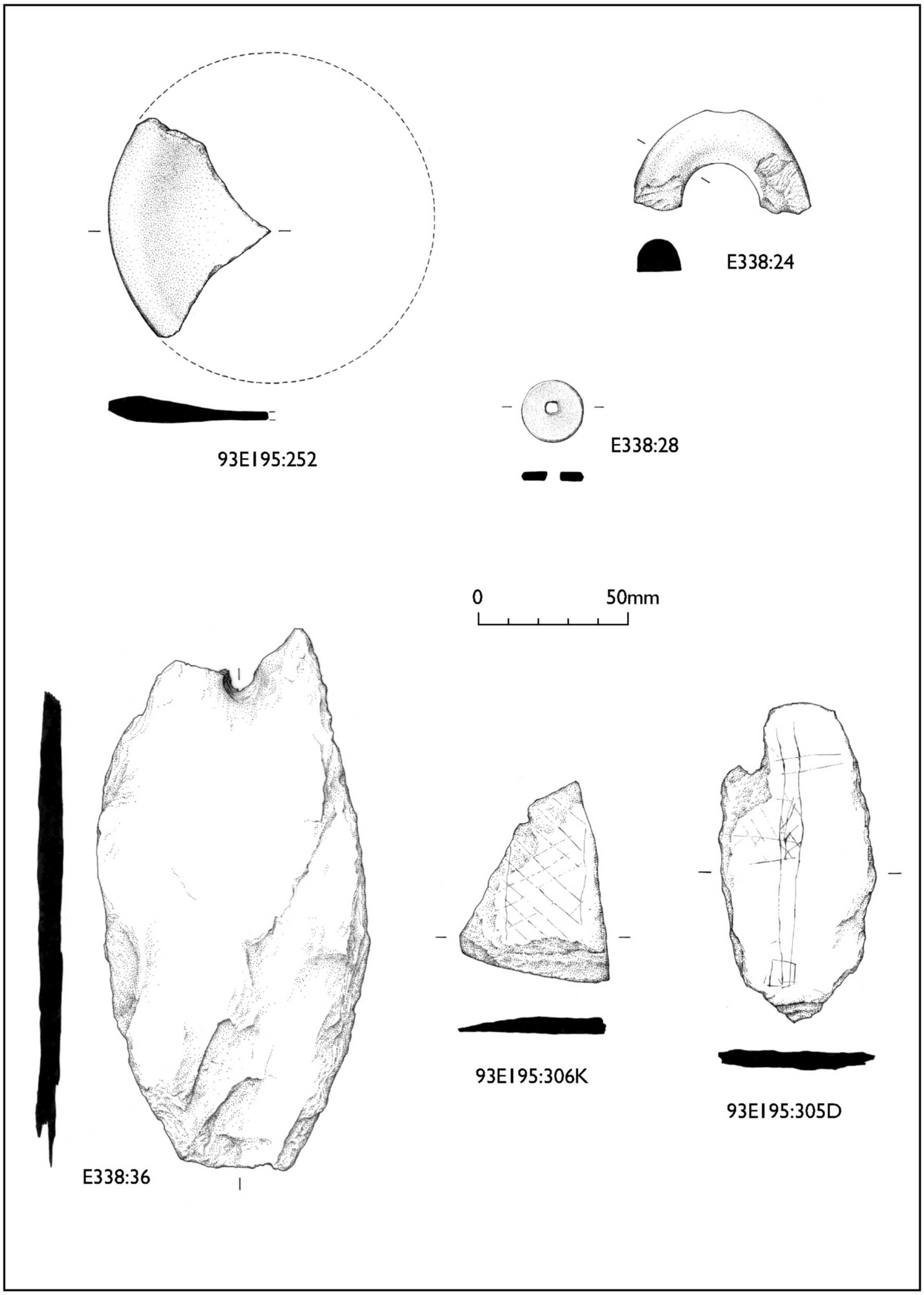
While there was a conservatism about Irish monasticism, which is shown by St Gall refusing to abandon the use of bronze chalices in favour of silver, his excuse being that St Columbanus used bronze on the grounds that our Saviour was affixed to the Cross with brazen nails (*ibid.*, vol. 2, 339), the general principle of using precious materials seems to have applied (Bourke 1994, 174–5).

93E195:252. Dish/plate fragment (Ills 3.10, 3.11). Part of thin, concavo-convex disc with largely flat base, curving up at sides. Gently bulging rounded rim that forms a flat border before curving downwards to a gently dished interior. Surfaces smoothed to a fine polish. Fine, light purple siltstone, Skellig. Dia 135, T 3–8. Lower monks' garden, lower collapse, F638(1&3).

Crosses (Ill. 3.12)

Approximately eighteen stone crosses and many fragments of worked stone that may have belonged to crosses were recovered from the excavations.

The stones have been classified according to terminology outlined by Fisher (2001, 11–18). Two of the crosses were incised on slabs of stone of similar shape and size, with sides tapering towards a domed top, which were probably grave-markers. Both are linear crosses, though 93E195:291 is made with considerably more care and attention than 93E195:289. This type of cross is common in the west of Ireland, and also in the Isle of Man, Wales and western Scotland. Such simple crosses are particularly associated with monastic sites and burial grounds and are generally dated to between the seventh and ninth centuries, although they have been carved at many different periods (Fisher 2001, 12, 28–31). Similar simple crosses have been found at Inishmurray (O'Sullivan and Ó Carragáin 2008, fig. 24,



Ill. 3.10—Stone artefacts.

Ill. 3.11—Stone dish? fragment 93E195:252 (Con Brogan, DAHG).

Ill. 3.12—Selection of stone crosses and cross fragments (Con Brogan, DAHG).

001.50A), High Island (Marshall and Rourke 2000, 156) and Church Island (O'Kelly 1959, fig. 8:1–2) and are still standing in the Skellig graveyard.

Other crosses are typically very simple, falling under the heading of cruciform stones. These are all simple cross shapes cut out of the stone, with typically straight, square-cut arms and no adornment (Fisher 2001, 17, 56–7). This type of cross has been found at Scottish sites such as Iona but is generally limited to the more ascetic sites of the west coast of Ireland (*ibid.*, 16, 56). They have been found at Illaunloughan (Marshall and Walsh 2005, 9), Church Island (O'Kelly 1959, 103–4, fig. 10J) and High Island (Marshall and Rourke 2000, 157, fig. 118–19). Other sites may have had simple crosses made of wood and it may have been merely the lack of wood at these island sites that led to the tradition in stone. Of all these island sites, the avoidance of decoratively carved stone seems particularly severe at Skellig, in this assemblage in particular but also in other stones found and still standing on the island (Horn *et al*. 1990).

The larger examples of these cruciform stones may have been monumental standing crosses, while smaller examples would have served as grave-markers and processional crosses. The very smallest would have been hand-held versions and may also have been interred within graves to accompany the dead (Thomas 1971, 112–23; Marshall and Rourke 2000, 139).

The crosses were recovered from different excavated areas—the lower monks' garden, the *leacht* area to the east of St Michael's Church, the small oratory terrace, and from beneath the threshold of the structure at the base of the east steps. On the South Peak they were recovered from the oratory terrace and the various terraces and traverses. They no doubt all had individual life stories. Some may have broken during manufacture; cross-slab 93E195:291, for example, appears to be a grave-marker but shows no trace of weathering consistent with being erected above ground. Others may have broken during use or have been disturbed from earlier burials.

93E195:291. Linear incised cross (Ill. 3.12). Linear incised cross with barred terminals, pecked into surface on front face; wide arms, curving in section. Thick stone slab, surface levelled on front, left roughly hewn on back. Both edges straight, tapering slightly towards top, which may have been rounded, though one corner broken. Broken at lower edge. No trace of weathering on surfaces. Purple, flaggy fine sandstone, possibly imported. L 119, W 106, T 24. Lower monks' garden, unstratified.

93E195:289. Linear incised cross. Simple, linear, equal-armed cross, roughly scratched into surface with deep incised lines. Thin slate with tapering sides towards rounded top. Broken at lower edge. Fine purple slate, Skellig. L 161, W 124, T 11. *Leacht* area, F577, possibly contemporary with Burials 1 and 2.

E338:27. Cruciform stone. Fragment of a stone cross. Circular hollow at the crossing of arms, forming one large expanded arm and one short arm, probably the shaft and side respectively. Rough, uneven surfaces. Rhyolite, Skellig. L 289, W 146, T 45. Small oratory terrace, Cutting 2, F219, nineteenth/twentieth-century deposit overlying paving on terrace.

E338:41. Cruciform stone (Ill. 3.12). Head of a stone cross with broken shaft. Short arms, one rounded, the other squared, and a wide, slightly curving top. Pale grey, fine micaceous sandstone, Skellig. L 313, W 280, T 25. Small oratory terrace, in bottom of clay/rubble layer F219.

93E195:308. Cruciform stone (Ill. 3.12). Fragment of stone cross. Simple squared arms, one wider than the other, probably the top and a side arm. Surfaces very rough, stained brown around break. Rhyolite, Skellig. L 238, W 230, T 45. Under threshold of structure (F694) at base of east steps.

93E195:287. Cruciform stone. Fragment of stone cross. Simple squared arms, two opposing arms represented and stump of a third. Roughly worked. Hackley fine sandstone, Skellig. L 201, W 96, T 39. Lower monks' garden, unstratified.

93E195:307. Cruciform stone (Ill. 3.12). Fragment of stone cross. Simple squared arms. Two perpendicular arms of similar size. Interbedded silt/fine sandstone, Skellig. L 195, W 184, T 29. Lower monks garden, F631, in campion.

93E195:285. Cruciform stone. Fragment of stone cross. Possibly part of two perpendicular arms. Grey sandstone, Skellig. L 193, W 108, T 28. Lower monks' garden, unstratified.

93E195:305B. Cruciform stone. Fragment of stone cross. Simple squared arms. Two perpendicular arms, one a little wider and longer than the other. Fine grey siltstone, Skellig. L 123, W 117. *Leacht* area, in campion layer (F561).

93E195:288. Cruciform stone. Fragment of stone cross. Rounded expanding arms. Remains of two perpendicular arms. Flaggy fine sandstone, reddish hue, possible import. L 102, W 83, T 17. Lower monks' garden, unstratified.

93E195:282. Cruciform stone (Ill. 3.12). Fragment of stone cross. Simple squared arms. Part of two perpendicular arms. Siltstone, Skellig. L 90, W 90, T 8. Redeposited soil (635(7)) in lower monks' garden.

Slates

A large number of slate fragments were recovered. These are small fragments that are either featureless or ambiguous in terms of function. Several have notches in one or more edges which could be the remains of broken suspension holes. There are no fragments that can be positively identified as roof slates. The most likely example is E338:36 from the small oratory terrace, which is ovoid in shape with a notch at one end (Ill. 3.10). The notch is more than likely the remains of a broken perforation that served as a suspension hole. As argued above (Section 2.2.1 above), however, its recovery from the fill of the drain underlying the north wall of the small oratory, a context that pre-dates St Michael's Church, would seem to preclude its use as a roofing slate and its precise function remains obscure.

E338:36. Ovoid slate with perforation (Ill. 3.10). Slate, roughly oval in shape with one straight end and the other broken, with the remains of a peg hole or perforation. Purple slate, Skellig. L 1780, W 890 (max.), T 7, Dia of perforation 10. Small oratory terrace, fill of drain F224, coeval with construction of oratory.

Incised slates

There are two slate fragments on which patterns have been incised. These appear to be fragments of waste slate. The first (93E195:306K), with its wide cross-hatched pattern, appears to be a practice piece. It is reminiscent of several finds from the Scottish island monastery site of Inchmarnock in the Firth of Clyde. Slate was readily available there and it seems to have been widely used for everything from gaming boards to writing practice, children's drawings and practice pieces (Lowe 2008, 114–75).

The second slate (93E195:305D) is harder to decipher. It may be a casual doodle or part of a larger pattern. The linear design is reminiscent of a sketch-map and the lines may represent some of the island's many paths and steps, though it does not contain enough detail to match it to any specific location. It is probable that both pieces are of medieval date.

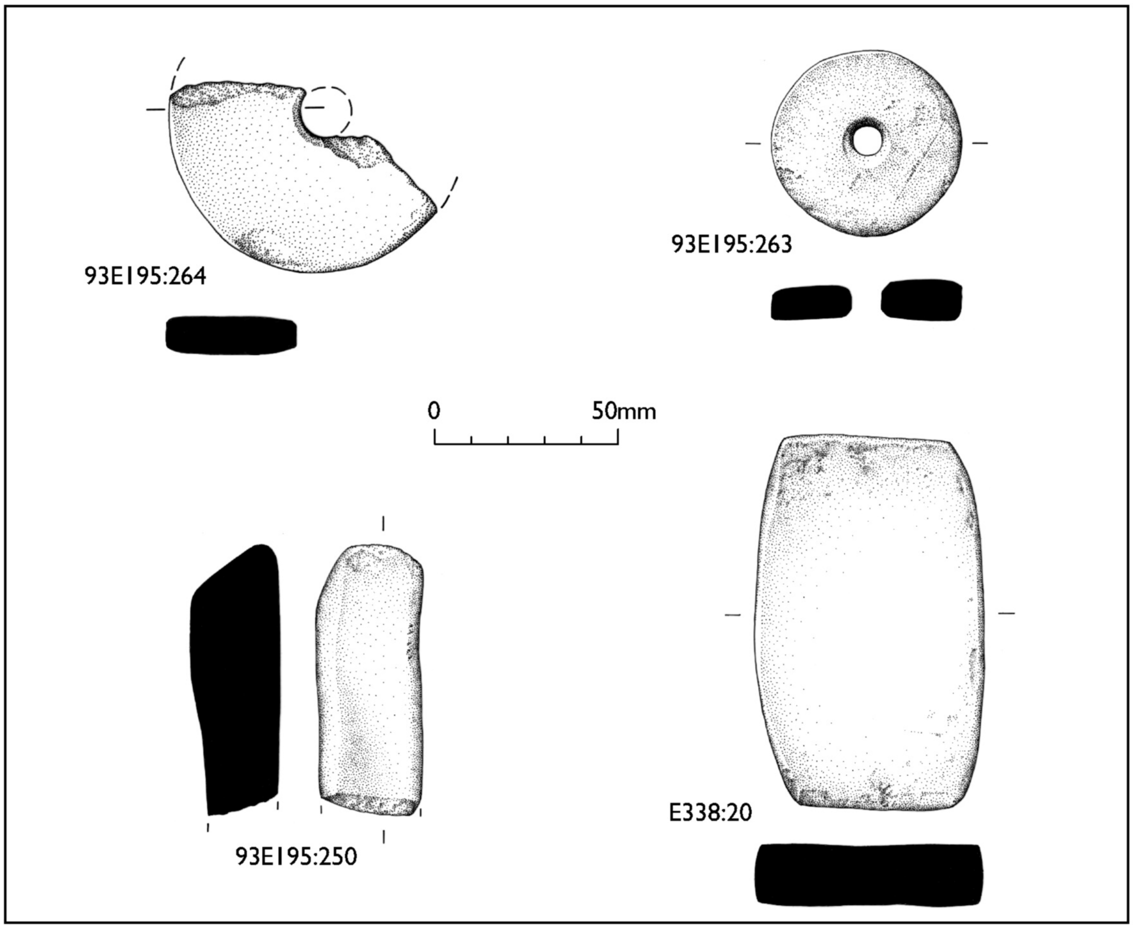
93E195:306K. Incised slate (Ill. 3.10). Small slate fragment, lightly incised with a wide, cross-hatched band. Grey slate, Skellig. L 68, W 48. *Leacht* area, F577, possibly contemporary with Burials 1 and 2.

93E195:305D. Incised slate (Ill. 3.10). Small slate fragment; lightly incised linear band with two perpendicular bands, area of cross-hatching and square at end. Grey slate, Skellig. L 107, W 52, T 4. *Leacht* area, in campion, F561.

Lignite

Two lignite artefacts were found in the large oratory. The ring is very thick but with an internal diameter

Ill. 3.13—Stone artefacts.



of just 26mm. It is too large for a finger-ring but too small for a bracelet, even for a small child. When rings of this size are found, use as hair ornaments or amulets is suggested, but there is no direct evidence for how they were utilised (Johns 1996, 123; Hencken 1950, 150). The polished inner curved surface suggests wear through use, perhaps by the drawing through of fabric. This could suggest use as a tie for the mouth of a cloth or leather bag (J. Sheehan, pers. comm.) or for a heavy woollen garment. The early medieval ivory rings found in Britain (which average 15cm or more in diameter) are described as 'bag rings' and it is suggested that they were attached to the mouth of a leather or cloth pouch (MacGregor 1985, 110–12). The small size of the Skellig lignite ring, however, would preclude its use in such a manner.

The bead is also unusual. An assemblage of stone disc beads was found in a late tenth- to mid-eleventh-century context in York (Mainman and Rogers 2000, 2598), though these were typically much smaller, the largest being 18mm. Beads could be strung together to make necklaces or rosaries, but the size and shape of this bead suggest that this is unlikely. They could also have been used singly to adorn small objects (*ibid.*).

Given their context, it is possible that rather than being personal adornments these were somehow used to decorate the oratory or objects within it. No other lignite artefacts or fragments were found elsewhere on the island.

E338:24. Ring (Ills 3.10, 3.14). Half of ring, deep D-shaped section but damage to flat surface masks original profile. Well polished on curved side, particularly on interior, implying wear through use. Lignite, imported. External Dia 59, internal Dia 26, T 13. Large oratory, south-east quadrant, F302, disturbed floor deposit, just south of F305.

Ill. 3.14—Lignite ring, E338:24 and lignite bead, E338:28 (Con Brogan, DAHG).

E338:28. Bead (Ills 3.10, 3.14). Disc bead. Slightly irregular round shape, off-centre perforation cut from one side. Flat polished sides. Edge smoothed and polished to ridge. Lignite, imported. Dia 20, T 3.1. Large oratory, south-east quadrant, F306, undisturbed floor deposit (probably early medieval), close to east wall.

Querns

The fragments of two rotary flat querns (93E195:290; 93E195:312) are both of fine conglomerate from Valentia Island. Traces of wear indicate that both have been used. This type of quern was used principally for grinding grain for flour, but also malt for brewing, mustard and other spices, and raw materials for pottery and metal production. Irish querns of the early medieval period are typically flat, particularly in the latter part of the period (Watts 2006). During the later medieval period, towards the end of the monastery occupation, the use of querns was widely prohibited in favour of the manorial mIll. It seems likely, however, that the Skellig monks would have continued to mill their own flour, at least from the cereals they were able to grow on the island.

93E195:290. Quern (Ill. 3.15). Rotary flat disc quern, upper stone fragment. Slightly domed top and flat underside, thickening towards middle. Slight traces of wear on top, particularly towards thicker centre, suggesting a change of use. Two concentric bands, *c.* 15mm wide, pecked into surface, one 50mm from edge forming a raised border, the other towards centre, 155mm from outer edge. Flat underside worn smooth. No remains of central hole or handle hole. Fine green conglomerate, Reenadrolaun, Valentia Island. Dia 565, T 35–40. Lower monks' garden, surface find.

93E195:312. Quern (Ill. 3.15). Rotary flat disc quern, half upper stone. Domed top and concave underside, thickening slightly towards middle. Tapering handle hole, widened at top from use, at which

Ill. 3.15—Quernstones (Con Brogan, DAHG).

point quern is broken. Decorated with radial line between central hole and handle hole, flanked by two further radial lines on either side. Pecked recessed border around central hole. Central hole of hourglass section. Some traces of wear around middle of underside. Fine red conglomerate, Reenadrolaun, Valentia Island. Dia 475, central hole Dia 87, handle hole Dia 28–42, T 55–73. Incorporated in paving outside Cell B; removed for safekeeping.

Spindle-whorls

Neither of the two spindle-whorls recovered is from a secure context but it seems likely that both are of medieval date. Whorls were used to weight the end of a hand-spindle to preserve its momentum when in use. Both are simply made and, at 46g and possibly as much as 180g, very heavy. Whorls over 40g are exceptional and may have been used for plying two or more yarns together (Oakley and Hall 1979). The assemblage of whorls from medieval Waterford includes similar examples but all fall within the range 8–34g (McCutcheon 1997, 404–7). A group of whorls from London, however, included a lead example of 78g and a giant stone whorl of 150+g (Egan 1998, 255–61). The monks were presumably spinning coarse fibres for their own clothing.

93E195:263. Spindle-whorl (Ill. 3.13). Complete discoid whorl. Simply made with flat faces and rectangular section. Hourglass-shaped perforation, slightly off-centre, with some traces of wear. Light purple fine sandstone, Skellig. Dia 52, hole Dia 8, T 8–11, weight 46g. Found in spoil heap by lighthouse toilet; originally from lower monks' garden.

93E195:264. Spindle-whorl (Ill. 3.13). Segment from large stone disc, representing about a third of the whole. Flat faces, rectangular section. Central hole with rounded section, wider at one end. Light purple fine sandstone, Skellig. Dia 83, hole Dia 12, T 10, weight 61g, estimated complete weight 180g. East entrance, nineteenth-century pit (F503).

Cobble tool (rubber/hammer stone)

The cobble tool (93E195:335) could have served a number of functions, e.g. smoothing, polishing, grinding, hammering etc.

93E195:335. Rubber/hammer stone. Large cobble tool, broken along one side. Well worn to smooth concave surface on one side. Traces of smoothing wear also on one end of opposing side. Pitting on both ends consistent with hammering. Small area of pitting also on main smoothed concave face. Multi-use cobble tool, probably for grinding and hammering. Light purple fine sandstone, probably sourced from mainland beach. L 163, W 78, T 55. Lower monks' garden, nineteenth-century redeposited soil (F632(1A)).

Whetstones

A small number of stone fragments, including beach pebbles, show signs of smoothed surfaces possibly resulting from use as whetstones. Two examples (E338:20; 93E195:250) were more specifically used for sharpening metal blades and tools. The complete example (E338:20) is well shaped and is very flat with unusual bowed edges. It is of unusual shape compared to other medieval whetstones (cf. O'Connor 1991; Marshall and Walsh 2005, 200; Fanning 1981, 131), which might suggest a more recent date. It is simply made, however, and there is no particular reason why it should not be medieval. It was found in rubble on the small oratory terrace ledge and may belong to the time of construction of the terrace retaining wall. It does not appear to have been particularly well used and was probably lost before the end of its natural life.

E338:20. Whetstone (Ill. 3.13). Flat stone shaped into rough rectangle; long sides convex. Traces of wear on both long sides, particularly on one, which appears to have been worn flatter than the opposing side. Also slight traces of wear on both flat faces. Fits well into hand, particularly for edge use. Deep purple fine-grained micaceous sandstone, probably from mainland. L 102, W 64, T 18. The small oratory ledge, Trial-pit 1, bottom of rubble F104, probably monastic.

93E195:250. Whetstone (Ill. 3.13). Fragment of whetstone, representing part of one face and edge. Split along middle, and broken at both ends. Face worn smooth from use. Edge also a little worn, with two separate areas of dishing. Fine micaceous sandstone, Skellig. L 70+, W 19+, T 8+. Redeposited soil (F635(5)) in lower monks' garden.

Chipped stone (flint)

Nine small pieces of flint were recovered from the large oratory, the small oratory terrace and ledge, and south entrance 2, inner enclosure. They include part of a nodule with cortex still adhering, tiny waste flakes and pebbles. Two retouched pieces (E338:10; E338:25) could have been used as scrapers but are not sufficiently diagnostic to be assigned to any particular period. The flint, which ranges from dark grey to honey-coloured, had to have been brought to the island, and was probably sourced from mainland beaches. Small assemblages of flint and chert have been recorded at several early medieval ecclesiastical sites, including Illaunloughan (Marshall and Walsh 2005, 210), Reask (Fanning 1981, 136) and Inishmurray (O'Sullivan and Ó Carragáin 2008, 310).

E338:25. Worked flint. Flake of dark grey flint retouched along two sides to create a rounded 'point'. Could have functioned as a scraper. L 31, W 30. Large oratory, disturbed floor deposit F302.

E338:10. Worked flint. Small trapezoidal flake of dark grey flint with cortex still adhering to one side. Retouch along two sides, could have been used as a scraper. L 13, W 18 (max.). South entrance 2 (inner enclosure), nineteenth-century dump deposit F12.

3.7.6 Glass (not illustrated)

Lighthouse period and later (1820–present)

Bottle glass

Fifty sherds of bottle glass were found during the excavations, representing a minimum of eight bottles. The majority were of green wine bottles, represented by 45 sherds from a minimum of six bottles. These were all of cylindrical form, mostly handmade, though at least one bottle was mould-blown. Moulded bottles replaced handmade forms during the 1820s (Dumbrell 1983, 115) and thus this decade is the most likely date for the deposition of this assemblage. This ties in exactly with the period of occupation by the lighthouse-builders.

The largest concentration of sherds came from the area just to the east of St Michael's Church. The 25 sherds represent at least three bottles, two of which (93E195:153; 93E195:176) appear to have been quite old when deposited. They are base sherds of a form that is unlikely to have been made after *c.* 1800. They are, however, associated with a neck from a bottle that dates from after *c.* 1820 (93E195:152). The area is relatively sheltered and hidden from the rest of the settlement and thus might have been a good spot for illicit drinking. Alternatively, it may simply have been a convenient area for the dumping of rubbish.

Most of the rest of the glass was found in the lower monks' garden, particularly around Cell G. There were fewer sherds (only eleven) but again representing a minimum of three bottles. The wider scattering suggests redeposition and rubbish disposal rather than *in situ* drinking.

One sherd (93E195:338) has had letters scratched into its surface using a sharp tool such as a nail or the tip of a knife. The exterior of the sherd has a clear if slightly wobbly 'A', which overlies an upside-down and fainter possible 'T'. The interior has a faint and elongated 'V', possibly a first attempt at an 'A'. The scratches on the interior indicate that the marks were made on the sherd rather than on the original bottle. They may represent practice at letters using materials to hand, or the casual scratching of a person's initials.

The remains of a clear polygonal bottle were found in the upper levels within Cell G. This appears to be of twentieth-century date and was probably left by a recent visitor. Another clear, colourless bottle was found in the campion at the east end of the lower monks' garden. This is of unusual form and may date from the lighthouse-building period or from more recent activity. Some sherds recovered from the archaeologists' hut following the fire were unidentifiable.

93E195:338. Incised wine bottle sherd. Green wine bottle sherd with scratched initials on surface. On exterior, a clear if slightly wobbly 'A', with a fainter and smaller, possibly earlier 'T', upside down in relation to A. On interior is a very elongated and wobbly 'V', possibly a first attempt at an 'A'. Lines scratched with a sharp point, possibly a knife tip. L 49, W 39. Lower monks' garden, campion layer F631(3)

Vessel glass

Two sherds from the same glass vessel were found in the campion layer in the lower monks' garden, F631(1) (93E195:343; 93E195:344). It is a modern glass tumbler and was probably left by recent visitors picnicking in this spot.

Bead

Plain, round glass beads are difficult to date. Turquoise beads would have been in use for the entire period of the island's occupation, but the even roundness, symmetry and straight-bored perforation of this bead suggest that it is more likely to be a modern machine-made bead rather than one of medieval date. It was found in the campion layer of the lower monks' garden (F631(3)), associated with several sherds of nineteenth-century pottery and bottle glass.

93E195:341. Bead. Translucent turquoise bead with faint pale encircling streaks. Rounded profile. Dia 11, W 8, perforation 2.5. Lower monks' garden, campion layer F631(3).

3.7.7 LEATHER (not illustrated)

Mairéad Dunlevy and Julie Franklin

Lighthouse period and later (1820–present)

Shoes

Pieces of two shoes were found. The first (E338:29) was found in the modern revetment wall at south entrance 2 (inner enclosure) and is represented by part of the insole and upper. The heavy leather stitching in the welting, as well as the substantial tacks, suggests that it was locally made. The piercing from the stitching around the back, because of its slight irregularity, suggests the same, but it is pierced in a manner that emulates machine sewing. The heavy stitching across the waist of the shoe is surprising, particularly as it does not seem to suggest the joining of two pieces of leather. It appears to be a man's shoe, sewn by a local shoemaker, and because of the machine-sewing influence could be late nineteenth- or early twentieth-century.

The second (93E195:245), from a modern context in the lower monks' garden, comprises two fragments, possibly from the upper of a shoe. Both fragments have stitch holes along the edges and one piece has three short slashes that have fully penetrated the leather.

Glove fragment?

A single leather (pigskin) artefact (93E195:238) was recovered from the fill of the cistern. It is an oval piece folded along its length (L 145), with stitch holes around the edge. Cistern fill (F615), mixed deposit, mostly modern.

3.7.8 MISCELLANEOUS (not illustrated)

Cordage

Two lengths of strapping knotted together (E338:37) were found on the small oratory ledge in a deposit of material dumped over the terrace wall. It was a plain woven braid of coarse fibre. One part was knotted into a loop, of approximate wrist size (circumference *c*. 220mm), and its presence on the ledge suggests some kind of basic safety equipment. It may date from the lighthouse-building period or later.

Plastic

There was a surface find of a clear plastic inset fitting, inscribed with the message 'Remember the Mission' around a heart topped with a cross. It had presumably been dropped by a recent pilgrim.

4. THE RADIOCARBON DATES

4.1 INTRODUCTION

One of the primary research questions governing all aspects of work on Skellig Michael was the establishment of a chronological framework for the development of the monastic settlement. The general lack of stratified deposits, owing to periodic collapses of drystone structures (together with their associated deposits), the redeposition of soils to backfill and cover areas of collapse and the disturbance caused by burrowing birds and rabbits, has meant that a greater reliance has had to be placed on radiocarbon dating in an effort to establish chronological sequences. This too was not without its problems, however, as samples suitable for such dating, particularly from meaningful contexts, were in short supply. Only one sample from the entire South Peak excavations, for example, was considered to be potential dating material. On analysis, however, this black soil from underneath the *leacht* on the oratory terrace did not contain any organic material and therefore could not be dated. Every sample from the monastery excavations that was deemed suitable was submitted for radiocarbon dating. Each of the human burials has been dated, in addition to any animal bone and charcoal from a secure context. A sample of limpet shells used to block one of the enclosure entrances was also dated, taking into account the marine reservoir effect. The charcoal selected was from short-lived species, although two samples of yew (*Taxus*) wood, a slow-growing softwood, have been included. The latter were identified as coming from young branches.

All samples were processed at the ^{14}CHRONO Centre, Queen's University, Belfast. (See tables overleaf.)

Table 5—Radiocarbon dates from the lower monks' garden. All dates were calibrated using radiocarbon calibration program CALIB REV6.0.0 (Stuiver and Reimer 1993).

Sample	Material	Location	Radiocarbon age BP	Cal. age range, 68.3% confidence	Cal. age range, 95.4% confidence	Associated artefacts	Combined date range	Context
UBA-16034	Sheep vertebra	LMG F633	962±24	AD 1024–1149	AD 1020–1154	Ham Green B, late 12th to mid-13th century	11th–mid-13th century	**F633:** Uppermost layer of redeposited medieval soil in LMG. This context was from above the walls in the LMG.
UBA-15963	Wood, *Taxus*	LMG F634	1207± 21	AD 777–866	AD 726–887		8th–9th century	**F634:** Layer of redeposited medieval soil underlying F633. This layer has no pottery associated with it but it has ^{14}C dates ranging from the 7th to the 10th century (see UBA-15964 and UBA-16035 below).
UBA-15964	Wood, *Taxus*	LMG F634	1182 ± 27	AD 782–886	AD 773–946		8th–10th century	**F634:** Layer of redeposited medieval soil underlying F633. See UBA-15963 above.
UBA-16035	Sheep mandible	LMG F634	1237 ± 21	AD 694–852	AD 689–870		7th–9th century	**F634:** Layer of redeposited medieval soil underlying F633. See UBA-15963 above.
UBA-15965	Charcoal, *Corylus*	LMG F635	915 ± 19	AD 1046–1159	AD 1037–1167	Local medieval pot, 13th/14th century; Orléans-type ware, late 12th/13th century	11th–14th century	**F635:** Layer of redeposited medieval soil underlying F634. Here the dates for the pottery closely match the date for the soil, suggesting a *terminus post quem* of the 13th/14th century for the deposit.
UBA-16031	Sheep vertebra	LMG F642	1189 ± 29	AD 781–882	AD 723–943		8th–10th century	**F642:** Layer of redeposited medieval soil, transition between F635 and F636, in LMG. The date from this layer is earlier than the layer above, but also earlier than the layer (F636) below.
UBA-15966	Charcoal, *Corylus*	LMG F636	964 ± 19	AD 1024–1147	AD 1021–1153		11th–12th century	**F636:** Layer of redeposited medieval soil underlying F642/F635.

Table 6—Radiocarbon dates from the *leacht* area, the east entrance and the small oratory terrace. All dates were calibrated using radiocarbon calibration program CALIB REV6.0.0 (Stuiver and Reimer 1993). The date of the limpet shells (UBA-16033) was calibrated with reference to the marine reservoir correction database (Reimer et al. 2009; Ascough et al. 2009). LMG = lower monks' garden; SOT = small oratory terrace.

Sample	Material	Location	Radiocarbon Age BP	Cal. age range, 68.3% confidence	Cal. age range, 95.4% confidence	Date range	Context
UB-4710	Human bone	Skeleton 1	955 ± 44	AD 1024–1153	AD 995–1180	Late 10th–12th century	Burial aligned E–W south of *leacht* and east of St Michael's Church. Juvenile, 9–11. Slight grave-cut.
UB-4711	Human bone	Skeleton 2	826 ± 54	AD 1169–1261	AD 1045–1280	Mid-11th–13th century	Burial aligned E–W south of *leacht*, east of St Michael's Church. Probable male, 25–30. No visible grave-cut.
UB-4712	Human bone	Skeleton 3	968 ± 44	AD 1020–1152	AD 990–1165	Late 10th–12th century	Burial aligned N–S against east wall of St Michael's Church. Male, 50–60. No visible grave-cut.
UBA-15968	Charcoal, *Betula*	*Leacht* area F581	1181 ± 25	AD 782–887	AD 775–941	8th–mid-10th century	Layer south and east of *leacht*, overlay F583, earlier than Burials 1 and 2.
UBA-15969	Charcoal, *Corylus*	*Leacht* area F583	1170 ± 20	AD 782–893	AD 778–942	Late 8th–mid-10th century	Layer to south and east of *leacht*, underlay F581. This was the basal deposit above secondary steps of south entrance.
UBA-15970	Charcoal, *Betula*	*Leacht* area F588	1156 ± 27	AD 783–949	AD 779–970	Late 8th–10th century	South-west of *leacht*. Layer of charcoal-rich clay abutting a stone setting. Contained a fragment of a human skull and a concentration of water-rolled pebbles.
UBA-15967	Charcoal, *Corylus*	*Leacht* area F590	941 ± 19	AD 1035–1151	AD 1030–1155	11th–mid-12th century	Upper layer in drain beneath *leacht*. This may be disturbed as storm petrels had got into the drain. This is most likely, as the other layers above have produced completely consistent dating to the 8th–10th century.
UBA-16032	Sheep vertebra	E. entrance, F508	1232 ± 22	AD 713–859	AD 691–876	Late 7th–9th century	Material from elsewhere in the monastery used to backfill the entrance. Obviously mixed and does not date the backfilling.
UBA-16037	Limpet shells	E. entrance, F508	1515 ± 24	AD 702–800	AD 675–871	Late 7th–9th century	Lens of limpet shells in backfill F508. Obviously mixed and does not date the backfilling.
UBA-16033	Cattle tibia	E. entrance, F509	1167 ± 21	AD 782–932	AD 778–948	Late 8th–mid-10th century	Layer of backfill in entrance, directly beneath F508. Date later than the layer above, indicating presence of material redeposited from elsewhere in the monastery.
UBA-16036	Cattle horn core	SOT F229	1255 ± 35	AD 685–778	AD 672–869	Late 7th–9th century	F229 is primary construction layer of terrace. Horn core may, however, be residual. Date could relate to construction of terrace or be a *terminus post quem*.

5. THE HUMAN REMAINS

Linda G. Lynch

5.1 INTRODUCTION

The human skeletal remains recovered from Skellig Michael comprise both articulated burials and disarticulated bones. This study examines all of the human skeletal remains. The project had a number of aims:

- to provide a detailed catalogue of all of the human skeletal remains recovered from the island to date;
- to examine the condition of the bones and therefore the level of preservation of human remains on the island;
- to establish a minimum number of individuals (MNI) represented by those remains;
- to provide a detailed osteoarchaeological assessment of the bones.

5.2 THE REMAINS

The skeletal remains recovered on Skellig Michael consist of three articulated skeletons and a quantity of disarticulated remains. The bones were retrieved from four discrete areas within the monastery (Table 7). Most of the bones came from the area to the east of St Michael's Church. Disarticulated remains were also recovered from the monks' graveyard, from the small oratory terrace and from the lower monks' garden. Plans and *in situ* photographs were made available to the writer for the compilation of this report. Most of the bones were processed by the writer, following the established standards (see Buckley *et al.* 1999). The exceptions were some of the bones recovered when the writer was not on site. When preservation allowed, these had been cleaned following the recognised standards.

Table 7—Distribution of human skeletal remains by area.

Area	Articulated skeletal remains	Disarticulated skeletal remains
East of St Michael's Church	SK1, SK2, SK3	ID nos 1–155
Monks' graveyard		ID nos 173–178
Small oratory terrace		ID nos 156–172
Lower monks' garden		ID no. 179

In general, the bones recovered from the area to the east of St Michael's Church and to the south of the large oratory (all the *in situ* burials and most of the disarticulated bone) were well preserved, with some fragmentation. None of the burials was complete, particularly Skeletons 1 and 2, and all had some level of taphonomic disturbance. Skeletons 1 and 2 had been significantly disturbed by the digging of a pit in modern times (E. Bourke, pers. comm.). In addition, many bones had collapsed into a puffin burrow, which ran underneath the burials. These remains were excavated by E. Bourke in the seasons between 1997 and 2000. The remains of a *leacht*, which appeared to have been rebuilt in the nineteenth century (E. Bourke, pers. comm.), were also present in the immediate vicinity. The writer was employed on Skellig Michael in the 2000 season to supervise the recording and lifting of human skeletal remains from the area to the east of St Michael's Church. During this latter season, a small quantity of disarticulated human remains were recovered, as well as Skeleton 3. The relatively good preservation of most of the skeletal remains recovered from this area ensured that they could be washed with soft brushes and allowed to dry naturally. More delicate fragments were allowed to dry naturally and were then dry-brushed with soft brushes.

A small quantity of disarticulated human bone (ID 156–172) was excavated by Ann Lynch in 1986 from underneath a small slab on the small oratory terrace. These bones and teeth were in a very poor state of preservation, with extensive erosion of the bone and severe fragmentation of the dental remains, including the enamel, the hardest substance in the human body. In addition, the bone was flaking, as if it had been exposed to the elements, although some of this may have occurred as a result of post-excavation deterioration. The bones were received by the writer in an already-dry state, and there were no residual earth fragments adhering to the remains. Further dry-brushing was deemed unnecessary and, in any case, the bones were too delicate.

A very small quantity of disarticulated bone (ID 173–178) was retrieved from the monks' graveyard by E. Bourke in the summer of 2001 during conservation works. Although the bone initially appeared to be in a good state of preservation, on further analysis significant post-mortem damage was apparent. Portions of the internal structures of the bones had completely eroded away, leaving only a very thin, paper-like, outer layer of bone. There were also breaks evident on the bones, particularly on the femur (ID 174). The distal posterior metaphysis of the latter had breaks that probably occurred when the bone was still relatively fresh, but not at the time of death. This suggests that the burial was truncated some time relatively soon after burial, when the bones were still quite organically fresh.

Finally, a single bone was recovered from the lower monks' garden by E. Bourke (ID 179). This was the lower portion of a femur (thigh bone) and was relatively well preserved. The bone was disarticulated. Indeed, no evidence of *in situ* burials has been identified in the lower monks' garden.

5.3 METHODOLOGY

The age, sex and stature of an individual may be estimated through the examination of a variety of skeletal elements. The age determination of adult individuals is based on the rates of degeneration of the skeleton. These include morphological changes in the pubic symphysis, using the Suchey–Brooks method, and changes in the auricular surface of the ilium (Lovejoy *et al.* 1985). In addition, the rates of dental attrition (Brothwell 1981, 71–2) may be utilised (although only in skeletal remains that pre-date the post-medieval period). Archaeological adult skeletons cannot be aged very accurately and are usually assigned into broad age categories. These are 'young adult' (17–24 years), 'middle adult' (25–44 years) and 'old adult' (45+ years). The age of an infant or juvenile may be determined with more accuracy, using the known rates of growth and development of various parts of the skeleton. Primarily, the methods used are the calcification and eruption of the teeth (Moorrees *et al.* 1963a; 1963b; Ubelaker 1989, 64). In addition, the rates of fusion of the epiphyseal plates (Schwartz 1995) and the diaphyseal lengths of the long bones (Ubelaker 1989, 70–1; Scheuer *et al.* 1980) may be examined. The teeth are generally considered to be more reliable indicators of age at death in juveniles as, unlike other skeletal indicators, they are not so susceptible to such factors as poor diet and disease processes.

The sex of adults is determined by assessing morphological differences in the skeleton between females and males, particularly using the pelvis and skull. In general, females tend to be slender and small, with marked particular traits in the pelvis for the birthing process. Males tend to be larger and more robust (Ubelaker 1989, 52–4; Buikstra and Ubelaker 1994, 16–20). The sex of infants and juveniles cannot, as yet, be accurately determined using macroscopic methods.

The stature of the adult individuals is estimated from complete long bones (Trotter and Glesier 1952). Priority is given to the use of the lower limb bones, as these are considered more reliable in the calculation of stature, but upper limb bones are used where necessary. The actual bones used in the calculation of the living statures of the individuals in this population are noted in the catalogue (Section 5.6). The final calculations are rounded off to one decimal place. The standard deviation figures are presented to two decimal places, as these are the figures provided by Trotter and Glesier (1952).

The permanent teeth are recorded using the standard chart below:

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
right															left

The upper row represents the maxilla and the lower row represents the mandible. These are further subdivided into left and right quadrants. Each permanent tooth (1–8) is prefixed by the number of the quadrant to which it belongs (1–4). A different chart is generally used for deciduous teeth, but no *in situ* deciduous teeth were recovered from Skellig Michael. A single deciduous tooth was recovered in the disarticulated sample (ID 78).

The following symbols are used to record the teeth:

P = *tooth present*	B = *tooth broken post-mortem*
E = *tooth erupting*	PM = *tooth lost post-mortem*
U = *tooth unerupted*	AM = *tooth lost ante-mortem*
CA = *tooth congenitally absent*	R = *root only*
~~12~~ = *socket absent*	

All incidences of calculus, carious lesions, hypoplastic defects and abscesses are recorded.

In addition, a limited number of pathological conditions are present and these are recorded below (see Section 5.4.4).

A small quantity of disarticulated human skeletal material was recovered from the site. A catalogue of all the examined disarticulated human remains is provided in Appendix III. The 'code' of the actual portion of bone surviving is after Chamberlain and Witkin 2000. In the following report, Skeleton 1 will be referred to as SK1, Skeleton 2 as SK2 and Skeleton 3 as SK3. A term such as 'ID 1' will refer to a bone in the catalogue of disarticulated bone.

5.4 ANALYSIS

5.4.1 DEMOGRAPHY

Minimum number of individuals

The human remains recovered from Skellig Michael represent three articulated individuals and a quantity of disarticulated remains. The disarticulated remains were analysed in detail, with emphasis placed on identifying specific skeletal elements in order to determine the minimum number of individuals (MNI) represented in the sample. The calculation of this figure is based on the fact that each individual skeleton has only one of each element—for example, each individual will only have one right proximal humeral joint—and therefore a minimum number of individuals may be determined by counting the numbers of each specific skeletal element in an assemblage. The results from the examination of the disarticulated remains were compared with visual drawings of the three articulated burials from the writer's osteological recording sheets. In addition, all securely identifiable dental remains (that is, for example, 'an upper right first permanent molar' as opposed to an 'upper first/second? permanent molar') from both articulated and disarticulated remains were counted. The above information was further analysed on the basis of differing contexts/areas, and on the age at death and the sex profiles.

The results of the above analysis indicate a minimum number of nine individuals in the total assemblage: five adults and four juveniles (Table 8).

Table 8—Minimum number of individuals.

Area	Articulated burials	Disarticulated remains
East of St Michael's Church	2 adults (SK2, SK3); 1 juvenile (SK1)	1 adult; 2 juveniles
Monks' graveyard		1 adult
Small oratory terrace		1 juvenile
Lower monks' garden		1 adult

Two of the adults were articulated burials (SK2 and SK3, both east of St Michael's Church), while at least one other adult was represented in the disarticulated remains, again recovered from the area to the east of St Michael's Church. This was evidenced by the remains of an additional proximal radius head (ID 129) and an additional distal right humerus (ID 126, 127) (that is, 'additional' to the bones already recovered in the articulated SK2 and SK3). It was also noted that fragments of five right temporals (from the cranium) were recovered to the east of St Michael's Church. While this may indicate an MNI of five adults from this area (including articulated burials and disarticulated material), in reality it is likely that at least some of the temporal bones were from the juvenile individuals (see below). It can often be difficult to separate older juvenile temporal bones from adult remains. Therefore the MNI for the adults in the area to the east of St Michael's Church remains at two adult burials, with the remains of another adult in the disarticulated material. The remains of the fourth adult were identified in the disarticulated adult remains (ID 173–178) in the area of the monks' graveyard. This fourth adult was confirmed by the presence of four distal right humeri in the articulated and disarticulated assemblage. Finally, a fifth adult was identified by a single disarticulated bone (ID 179) from the lower monks' garden.

There were also the remains of at least four juveniles, all of approximately the same age (9–12 years). There was one articulated juvenile burial (SK1), while the remains of two other juveniles were recovered from the disarticulated bones, all in the area to the east of St Michael's Church. The bones clearly indicated the presence of a second juvenile in this area; for example, additional to the bones of SK1 there was a right scapula (ID 133), a proximal right ulna (ID 131, 132), and a right femur (ID 110, 111, 112). Analysis of the teeth, however, indicated the remains of a third juvenile in this area: there were three lower left first and second permanent molars from juveniles of the same age. The remains of a fourth juvenile were recovered in a quantity of disarticulated remains (ID 156–172) retrieved from the small oratory terrace.

Sex

As mentioned earlier, there are as yet no reliable macroscopic methods for determining the sex of juvenile individuals. The sex of both of the articulated adult individuals was assessed. SK2 was determined to be probably male, although the bones were noticeably quite slender. The skeleton of the second adult (SK3) was more clearly a male.

The disarticulated remains revealed the presence of at least three other adults. With regard to the remains of the disarticulated adult to the east of St Michael's Church, the overall size of an additional third right distal humerus (ID 126, 127; see above) suggested that this was a male individual. In addition, a disarticulated and unsided proximal femoral head was recovered (ID 151). SK3 had both of its proximal femoral heads, while SK2 only had the right proximal femoral head. Technically the disarticulated femoral head could have belonged to the latter skeleton, but its diameter (51.2mm) contrasted sharply with that of the femoral head of SK2 (42.8mm) and it was deemed unlikely to belong to SK2. Therefore the diameter of the disarticulated femoral head again indicated that the disarticulated adult to the east of St Michael's Church was a male individual (after Bass 1995).

The remains of the fourth adult from the monks' graveyard and the fifth adult from the lower monks' garden were too incomplete to allow determination of sex.

Therefore three of the five adults recovered from Skellig Michael were male individuals, while it was not possible to determine the sex of the other two adults.

Age

It was possible to determine the age of both of the articulated adult individuals. SK2 (male) was aged between 25 and 35 years, while SK3 (male) was aged between 50 and 60 years at the time of death. The dental remains of the third disarticulated adult from the area to the east of St Michael's Church (ID 12, 13, 17, 18, additional to the articulated dentitions) indicated the presence of a young adult aged 17–25 years at the time of death. It was not possible to determine an accurate age for the remains of the fourth adult from the monks' graveyard or the fifth adult from the lower monks' garden.

The juvenile burial (SK1) was aged 9–11 years at the time of death. As mentioned earlier, the remains of at least three other juveniles were recovered from the disarticulated remains. The two additional juveniles recovered from the area to the east of St Michael's Church were recognised through the dental remains, which therefore also allowed the ages at death to be determined. One was aged approximately 10–11 years (ID 4, 5), while the other was aged 10.5–11.5 years (ID 7, 8). In addition, the overall size of the bones and some of the dental remains recovered from the small oratory terrace (ID 156–172) indicate that the fourth juvenile was again the same age as those already described. Therefore all four juveniles represented in the assemblage were aged between approximately nine and twelve years at the time of death.

5.4.2 Stature

It was possible to determine the living statures of both of the *in situ* adult individuals. The stature of SK2 (middle adult male) was estimated as approximately 169.4cm, while the stature of SK3 (old adult male) was calculated as 171.7cm, giving an average stature of 170.6cm. Table 9 provides a comparison of this average stature with other contemporary male statures.

The statures of the Skellig males were comparable with some of their contemporaries in Cork and Waterford, but were considerable smaller in stature than others in Cork and Limerick. They were taller than the noticeably small medieval male adults buried in St Mary's Cathedral in Tuam.

Table 9—Comparison of average male stature from Skellig Michael with contemporary populations.

Medieval site	Average male stature (cm)
Skellig Michael, Co. Kerry	170.6
St Mary's Cathedral, Limerick (Power 1994)	180.0
Cove Street, Cork (Power 1994)	175.7
St Mary's of the Isle, Cork (Power 1994)	170.0
St Peter's Church, Waterford (Power 1994)	170.2
St Mary's Cathedral, Tuam, Galway (Lynch 2005)	166.1

5.4.3 Dental analysis

The dental remains recovered from Skellig Michael represent both articulated and disarticulated remains. 'Articulated teeth' refers to the dental remains from the three articulated burials, while 'disarticulated teeth' refers to teeth retrieved with other randomly recovered human remains. A total of 82 teeth were recovered—46 articulated and 36 disarticulated—and all but one of these were permanent. One upper left second deciduous molar (ID 78) was found associated with SK1 and is likely to have been part of the dentition of this individual. The remains of at least eleven disarticulated, probably permanent, teeth were recovered from the small oratory terrace (ID 160, 162–172). These were excluded from the dental analysis below, however, because they had suffered extensive post-mortem damage, with only fragments of enamel preserved in most cases. Any evidence of dental diseases has therefore been lost and the inclusion of these teeth would distort the analysis. Only 44 of the articulated teeth were counted in the analysis, as two of the teeth of SK1 were unerupted and the enamel was only partially formed. The typical dental diseases could not have begun to form and the enamel was also too incomplete to observe dental hypoplastic defects. Only 24 disarticulated teeth were included in the dental analysis, as one tooth was a deciduous tooth and eleven were unidentified (see above). Dental diseases such as calculus, caries and dental enamel hypoplastic defects were observed on a number of teeth (summarised in Table 10), and these are examined in more detail below. It is noted that the numbers of teeth recovered and available for analysis overall are very low and are not statistically viable. In addition, the poor dental health of the old adult male (SK3; see Ill. 5.1) will have introduced bias to the percentages given below (Table 10).

Table 10—Prevalence of observed dental diseases in all observable human teeth.

	Calculus	**Caries**	**Hypoplastic defects**
Articulated teeth	68.2% (30/44)	0% (0/44)	22.7% (10/44)
Disarticulated teeth	50% (12/24)	4.2% (1/24)	8.3% (2/24)
All teeth	61.8% (42/68)	1.5% (1/68)	17.6% (12/68)

Ill. 5.1—Mandible, anterior and superior view, SK3 (male, old adult). Ante-mortem loss of left second molar, moderate to severe calculus and heavy attrition rates.

Calculus

Dental plaque can become mineralised as calculus, a hard, somewhat gritty substance that adheres to the enamel and/or root of a tooth. It may be partially removed in the living individual through even the most basic dental hygiene, using, for example, a small brush or stick. The deposits may also be inadvertently removed through the consumption of grittier foods. Calculus deposits in a population may suggest both poor oral hygiene and the consumption of a soft and sucrose-based diet (Roberts and Manchester 1995, 55). The deposits are very common in archaeological populations.

Calculus was present on 61.8% of all teeth recovered from Skellig Michael—68.2% articulated, 50% disarticulated. In general the deposits varied from slight to moderate in severity, although severe deposits were present in the dental remains of SK3 (male old adult) and on one disarticulated tooth (ID 98).

Dental caries

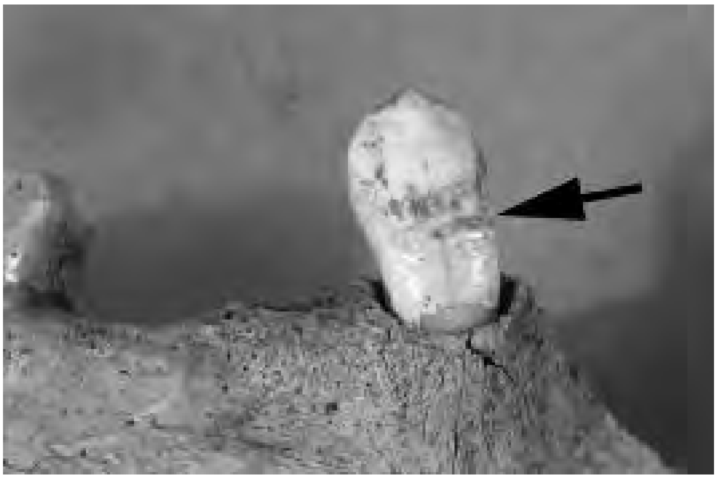
Carious lesions, or erosive lesions in the enamel of the teeth, usually occur as a result of a high carbohydrate intake. Bacteria contained in plaque can metabolise certain carbohydrates into an acidic waste that can dissolve the enamel of teeth (Mays 1998, 148). The pulp cavity can subsequently become infected and this may lead to the formation of a dental abscess (Roberts and Manchester 1995, 50). Sugar is highly cariogenic.

Only one tooth recovered from Skellig Michael bore evidence of caries. This was a single disarticulated tooth (ID 99) that had a large carious lesion on the mesial aspect of the tooth at the cemento-enamel junction. This represents 4.2% of disarticulated teeth or 1.5% of all teeth. In her study of calculus in medieval Munster, Power (1994, 101) recorded a caries prevalence rate of 4.2% of all teeth. These low rates typically reflect the unrefined medieval diet.

As mentioned above, carious lesions may lead to the formation of dental abscesses. No dental abscesses were present in this population. This may be due to a combination of factors, such as the small size of the sample, incomplete preservation, the age profile and the medieval date of the skeletons. Dental abscesses may also occur as a result of severe attrition or trauma.

Dental enamel hypoplastic defects

These defects appear as a depressed line or series of lines or pits in the enamel of the tooth. They occur as a result of a disturbance to the growth of the organic matrix, which is later mineralised to form enamel and thus the defect is preserved in the enamel (Mays 1998, 156; Hillson 1986). The defects can occur as a result of a number of diseases and/or nutritional deficiencies, including diarrhoea, parasitic infestations of the gut, scurvy, rickets, allergic reactions, vitamin deficiencies and general malnutrition (Mays 1998, 158). As the calcification of teeth is confined to the years of childhood, the defects are a general reflection of stresses suffered by an individual in childhood.



Ill. 5.2—Right mandibular canine of SK1 (9–11 years) with hypoplastic defect (L. Lynch).

Hypoplastic defects were observed on a number of teeth, affecting 22.7% of the articulated teeth and 8.3% of the disarticulated teeth (or 17.6% of the total). All of the teeth affected by hypoplastic defects in the articulated remains came from a single individual (SK1, 9–11 years; see Ill. 5.2), indicating that this juvenile had already endured a series of physiological stresses to the body in the years preceding her/his death. It is unknown what these stresses were, but the defects suggest that this individual may have been in poor health for much of her/his short life and the apparent general state of ill health may have contributed to an early death. The locations of the lesions on the teeth indicated that the physiological stresses occurred between 3–4.5 years and 5.5–6.5 years. Interestingly, this individual also had indications of iron deficiency (see below), which may have been linked with the hypoplastic defects. The dental enamel hypoplastic defects observed in the disarticulated remains were on two teeth (ID 21, 23), both from adult dentitions.

5.4.4 Pathological conditions

Observed pathological conditions were classified and examined using the following headings: metabolic disorders, degenerative joint disease, trauma and non-specific infections.

Metabolic disorders

Certain porotic lesions of the eye orbits (cribra orbitalia) and skull vault (porotic hyperostosis) are readily identifiable as specific pathological lesions owing to the process of their formation. They are indicative of a metabolic disorder relating to iron deficiency. This condition occurs when, as a result of a deficiency of iron, the body's marrow increases its output of iron (Mays 1998, 142). The middle layer of the bone expands and there is a corresponding thinning of the outer surface of the bone. This can result in the diagnostic appearance of small holes or foramina on the outer surface of the bone. Although it is frequently assumed that these lesions are indicative of iron-deficiency anaemia, studies have indicated

Ill. 5.3—Cribra orbitalia in right orbit of SK1 (9–11 years) (L. Lynch).

that when a body is under stress from an invading organism (such as a parasitic infestation of the gut) the system increases its output of iron in order to counteract the stress. Thus this pathological process may actually be a sign of a healthy defence system (Stuart-Macadam 1991, 105; Roberts and Manchester 1995, 166–7).

Evidence of this condition was observed on the skeletal remains of one individual recovered from Skellig Michael. Traces of both porotic hyperostosis and cribra orbitalia (Ill. 5.3) were present on the remains of SK1 (9–11 years). The lesions were healing at the time of death. It is probable that the child had suffered from some physiological insult/s that affected the metabolic system sometime prior to her/his death. As noted above, the dentition also indicated that this child had suffered a series of stresses in early childhood, all of which may have contributed to a shortened lifespan.

There was no evidence of metabolic disorders in the two articulated adult burials (SK2, SK3), nor in the disarticulated remains.

Degenerative joint disease

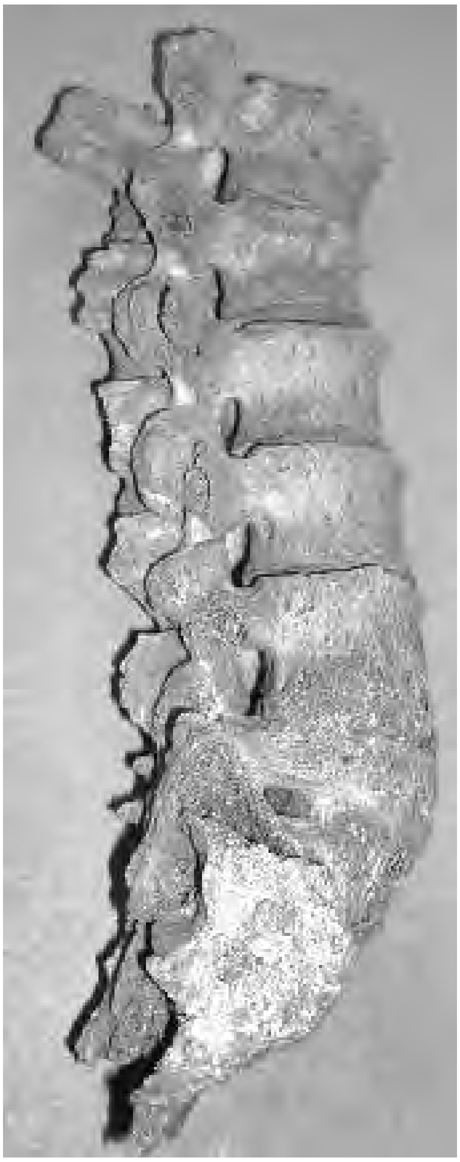
Degenerative joint disease (DJD) is one of the most commonly observed pathological processes on the human skeleton. The onset of the disease is typically age-related, as it appears to occur primarily as a result of repeated 'wear and tear' on the joints, with resultant degeneration of the articular cartilage (Ortner and Putschar 1981, 419–20). The disease can be accelerated by occupational activities and can be brought on by trauma. The evidence of joint degeneration is manifested in the form of porosity or pitting of the joint surface and/or additional bone growths known as osteophytes. In more advanced cases, eburnation or polishing of the bone can occur as the bones of the joint rub against each other.

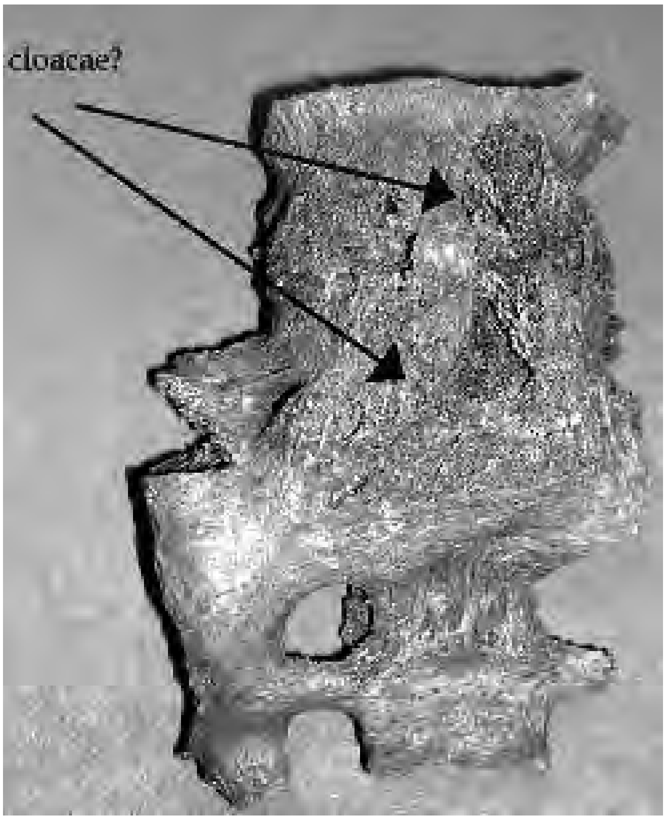
Perhaps not surprisingly, no joint disease was present on the remains of the juvenile individual (SK1). Mild degeneration in the form of osteophytic growths and porosity was present on a limited number of some of the vertebral or spinal joints of SK2 (male middle adult). In addition, a single Schmorl's node was observed on a lumbar vertebra of this individual. These depressions in the disc of the vertebra can occur when the nucleus pulpous—the pulpous gelatinous core of the intervertebral disc—expands or bursts into the adjacent vertebral body as a result of pressure (Mann and Murphy 1990, 52; Ortner and Putschar 1981, 323). The pressure may be caused by a fall or by carrying heavy objects, and the lesions are believed to occur during childhood when the bone is still relatively soft. More severe evidence of degeneration was observed on the skeletal remains of the older male adult, SK3. Mild degeneration was present on the right elbow, the shoulders and the knees, while mild to moderate degeneration was present in the spinal column in the form of porosity, osteophytes and Schmorl's nodes (Ill. 5.4). In addition, there was compression of the body of the first lumbar vertebra (Ill. 5.5). This level of joint disease is not unusual, given the estimated age at death of this individual.

Serious joint disease was observed in the lower spinal column of SK3 (male old adult). There was complete fusion of the fourth and fifth lumbar vertebrae and of the first sacral vertebra at both the bodies and the apophyseal joints (Ills 5.5, 5.6). As discussed above (SK3), the lesions were suggestive of a number of disease processes, but it was not possible to determine a more conclusive diagnosis. The cause of the fusion remains speculative.

Further evidence of DJD was observed in a small number of fragments recovered from the disarticulated remains. Schmorl's nodes and osteophytes were present on a single thoracic/lumbar body fragment (ID 59). Slight degeneration was also observed in a small number of lumbar vertebral fragments associated with SK1 (ID 147, 148).

Ill. 5.4—T12, superior view, anterior to top, SK3 (male, old adult). Schmorl's node with slight osteophytic growth at edge of vertebral body (L. Lynch).





[Left] Ill. 5.5—T12 to S2, right lateral view, superior to top, SK3 (male, old adult). Note compression of body of L1 and total fusion of L4, L5 and S1 (L. Lynch).

[Right] Ill. 5.6—L4 to S2, anterior view, superior to top, SK3 (male, old adult). Fusion of fourth and fifth lumbar vertebrae with first sacral vertebrae. Possible cloacae arrowed (L. Lynch).

Trauma

The diaphysis of the right fifth proximal foot phalanx of SK3 (male old adult) is abnormally shaped (Ill. 5.7). This is indicative of a fracture, which had healed a considerable time before death. The overall shape of the healed fracture suggests that it occurred as a result of a twisting stress rather than, for example, through compression or through tension stress (after Ortner and Putschar 1981, 56). The joint of the phalanx appears to have altered to accommodate the different stress that would have been put on the joint through incomplete healing of the fracture.

Ill. 5.7—Fifth right proximal foot phalanx, dorsal view, distal to top, SK3 (male, old adult). Healed twisted fracture with alteration of distal joint (L. Lynch)

Non-specific infections

Infection is an inflammatory process and is classically observed on the dry skeleton in the form of osteomyelitis and/or periostitis. Osteomyelitis involves infection of the actual bone marrow and can be quite distinct. Periostitis involves inflammation of the periosteum, the fibrous covering on the surface of the bone. When the periosteum becomes inflamed, it rises owing to the accumulation of pus. A new layer of grey striated or fibre bone (periostitis) may form underneath. With time, the lesion may heal and become almost completely remodelled into lamellar bone.

Evidence of infectious lesions was observed in one disarticulated fragment. Healed periostitis was present on a disarticulated juvenile right tibia (ID 156), of an individual aged 9–12 years at the time of death.

As noted earlier, serious pathological lesions were observed in the lower spine of SK3 (old adult male). The lower lumbar vertebrae had completely fused together and the fifth lumbar had also fused to the first sacral vertebra. In addition to the joint disease noted above, there were lesions on the sacrum of this individual that were suggestive of an infectious process. There is evidence of two possible sinuses in the anterior of the lumbar bodies (Ill. 5.6). These are similar to lesions known as cloacae associated with an infectious disease called osteomyelitis. As mentioned above, osteomyelitis occurs when the marrow of a bone becomes infected, which can happen through a variety of incidents, either direct or indirect. Cloacae or sinuses form, allowing the infectious pus and dead fragments of bone from the interior of the bone to be extruded. These eventually work their way up to the surface of the skin (Ortner and Putschar 1981; Roberts and Manchester 1995). The holes observed in the vertebrae of this individual bear a resemblance to the cloacae associated with the infectious process of osteomyelitis. The lumbar vertebrae do not show any other indication of infection, however, and so the oval lesions cannot definitively be attributed to osteomyelitis. In addition, the actual preservation of the spinal elements was quite poor, which significantly hindered the assessment.

5.5 SUMMARY

The human skeletal remains excavated from Skellig Michael represent three articulated burials. The presence of six other individuals was established through analysis of the disarticulated human skeletal remains.

Two of the articulated burials were male adults. One was aged 25–35 years, while the other was aged 50–60 years at the time of death. Analysis also indicates that a third adult (from east of St Michael's Church) was also a male, and was possibly aged 17–25 years at the time of death. The age and sex of the fourth and fifth adults (from the monks' graveyard and the lower monks' garden) could not be determined.

The third articulated burial was that of a juvenile, aged approximately 9–11 years at the time of death. Two other juveniles were also represented in the disarticulated dental remains from the area to the east of St Michael's Church. The age at death of both of these juveniles was estimated as being 10–12 years. The remains of a fourth juvenile of approximately the same age were recovered from the small oratory terrace.

The stature of two of the adult burials could be determined and averaged 170.6cm, which is comparable with contemporary males.

Analysis of the dental remains indicated the presence of calculus in particular. The rate of carious lesions was very low, while no dental abscesses were observed. Dental enamel hypoplastic defects, while observed in a limited number of disarticulated teeth, were primarily observed in the remains of the articulated child burial. The latter also bore indications of other physiological stresses.

A limited number of pathological conditions were observed on the skeletal remains of this population. Evidence of iron deficiency is present on the skeletal remains of the articulated child burial. The lesions were healing at the time of death.

Evidence of degenerative joint disease was observed on the remains of both of the articulated adult burials. The lesions are much more extensive on the remains of the older adult. On the younger adult the lesions are confined to the axial skeleton, while in the older adult the appendicular skeleton is also affected. In addition, ankylosis (fusion) of the lower spine is present in the older adult, although the causative factors are unknown. Further traces of joint degeneration were observed in a limited number of disarticulated spinal fragments.

One incident of possible trauma was observed in the form of a healed fracture of one of the bones of the right fifth toe of the old adult male burial.

Evidence of healed infectious lesions was observed on the disarticulated tibia of a child. The lower spine of the older articulated adult also had traces of possible osteomyelitis, although this cannot be confirmed owing to post-mortem damage.

5.6 CATALOGUE OF ARTICULATED SKELETONS

The numbers of the skeletons below were assigned during the current analysis. When the articulated burials were initially discovered they were given alternative numbers/identifications. SK1 below was originally labelled 'skeleton 2' (as in ID 109–155) or 'Meara'. SK2 was originally labelled 'CJ'. SK3 was uncovered while the author was on site and was not assigned any other label.

SK1

Age: Juvenile, 9–11 years (dentition and epiphyseal fusion).
Sex: Not determined.
Stature: Not determined.

Skeletal preservation: Poor. Incomplete and fragmented.
Skeletal position: Supine.
Skeletal attitude: Extended.
Orientation: South-west/north-east, head to south-west.
Associated skeleton/s: Directly underlay SK2.
Associated finds: None.

Bones present

Cranium and mandible. Scapulae, clavicles, humeri (minus the distal ends), ulnae, radii (distal half of left radius absent). Manubrium, cervical and upper thoracic vertebrae. Proximal end of the right femur, distal half of the left femur, proximal half of the left tibia.

Dental inventory

PM	P	P	P	PM	E	P	P	P	P	E	P	P		P	P	U
18	17	16	15	14	13	12	11	21	22	23	24	25		26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	75	36	37	38
	P	P	PM	PM	E	P			P	P	P	U	PM	P	P	U

Dental pathology
Calculus—9/22 erupted/erupting teeth (16, 15, 26, 46, 43, 42, 32, 33, 36), slight to moderate in severity.

Hypoplastic defects—13, 12, 22, 23, 47, 43, 33 (at least two distinct periods of stress, 3.5–4.5 years and 5.5–6.5 years).

Other—the lower left second premolar is unerupted. This may be due to the late retention of the lower left second deciduous molar (lost post-mortem), the sockets of which are still visible in the mandibular bone.

Skeletal pathology
Metabolic—bilateral healing cribra orbitalia and porotic hyperostosis of parietals and occipital.

Comments
The epiphyses suggest an age at death of approximately 12–14 years. This individual was radiocarbon-dated to AD 995–1174.

SK2
Age: Young middle adult, 25–35 years.
Sex: Male.
Stature: 169.4 ± 4.32cm (right radius).

Skeletal preservation: Good. Partially incomplete, bones are well preserved.
Skeletal position: Supine.
Skeletal attitude: Extended.
Orientation: South-west/north-east, head to south-west.
Associated skeleton/s: SK2 directly overlay SK1.
Associated finds: None.

Bones present
Fragments of the mandible. Right scapula, right clavicle, distal right humerus, right ulna (minus the distal epiphysis), right radius, fragment of distal epiphysis of left humerus, proximal end of diaphysis of left radius. Incomplete left and right carpals, left metacarpals, incomplete hand phalanges. Vertebrae include C2, C6, C7, T1, T7–12, L1–L4, fragments of S1 and S2, right ilia, ischia and pubis, left pubis. Proximal half of right femur, shaft of left femur.

Dental inventory

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
PM	P	P	P	P	P	P	P		P	P	P	P	P	P	P

Dental pathology
Calculus—14/14, slight to moderate.

Other—more pronounced attrition on teeth on right side of mandible than on those on the left, probably owing to individual chewing traits.

Skeletal pathology

Joint disease—mild DJD of spine, mild to moderate porosity on the bodies of C6, C7 and T10, and mild to moderate osteophytic growths on the bodies of L3 and L4. Single Schmorl's node on the superior body of L3.

Comments

This individual was radiocarbon-dated to AD 1040–1280.

SK3

Age: Old adult, 50–60 years (pelvis).
Sex: Male (pelvis).
Stature: 171.7 ± 2.99cm (right femur and tibia).

Skeletal preservation: Poor. Incomplete and fragmented. The burial comprised articulated lower body parts and disarticulated upper body parts. The bones are believed to be those of a single individual on the basis of the colour and size of the bones and on the non-duplication of skeletal elements. The upper body (from approximately T12 upwards) had been disturbed and redeposited, apparently owing to the building of a wall in later times. The skull—but not the mandible—appears to have been removed at this point and may have been redeposited elsewhere. The rest of the disturbed bone was redeposited in a pile over the original location of the abdomen and lower chest. The lower right ribs, the lower vertebrae, the pelvis and the legs were all recovered in an articulated position.
Skeletal position: Supine.
Skeletal attitude: Extended. It is suggested that the arms and hands may originally have been crossed over the abdomen or chest as opposed to being extended down either side of the body. None of the hand bones were recovered in articulation, despite the fact that the lower back and pelvis were undisturbed by the truncation, and this would suggest that they were originally over the chest area. The femora were at an angle of approximately 45° to the pelvis so that the tibiae and feet lay at a higher level than the rest of the body. This indicates that the body was not buried in a coffin. In addition, the legs and feet were noticeably splayed, which indicates that if the body was buried in a shroud the wrapping was quite loose. The right leg of the skeleton was recovered lying directly against the plinth of St Michael's Church.
Orientation: South-east/north-west, head to south-east. Directly aligned with eastern gable of St Michael's Church.
Associated skeleton/s: None.
Associated finds: None.

Bones present

The bones present are the mandible, the scapulae, the clavicles and fragments of the sternum. The upper limbs are represented by the humeri, radii and ulnae, and the hands are almost complete. The spine is complete from C1 to S2, with the remaining sacrum being incomplete. The pelvis is complete. The lower limbs are represented by the femora, tibiae and fibulae, and the feet are complete except for some of the phalanges.

Dental inventory

P															
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
CA	PM	P	PM	PM	P	PM	PM	PM	P	P	PM	P	P	AM	CA

Dental pathology
Calculus—7/7, slight to severe.

Skeletal pathology
Joint disease—mild DJD in right elbow (proximal ulna), left and right shoulders (glenoid cavities and lateral end of right clavicle), and left and right knees (distal femora and proximal tibiae). Mild to moderate DJD on most of the vertebrae. Moderate DJD on the articular dens of C1 and C2. Almost all of the vertebrae from C5 to T9 are affected by DJD to some degree. Primarily the apophyseal joints are affected, and the joint disease varies between mild and moderate in severity. Osteophytic growths present on the bodies of T5 to T8, T10 to T12, and L3 and L4. There is also noticeable anterior compression of the first lumbar vertebra (Ill. 5.5). Schmorl's nodes are present on the bodies of T11 and T12 (Ill. 5.4).

Trauma—shaft of the fifth proximal right foot phalanx is abnormally twisted (Ill. 5.7), indicative of a well-healed twisted fracture. The distal articular facet of this phalanx has been altered with slight flattening. The articular facet is aligned more towards the dorsal surface. This suggests that the fracturing of the phalanx and subsequent incorrect healing of the alignment led to a different mechanical stress being put on the joint; the joint appears to have altered slightly to accommodate this.

Other—a more serious pathological condition was observed in the vertebrae of the lower spine. The fourth and fifth lumbar vertebrae and the first sacral vertebra are fused at the bodies and the apophyseal joints (Ills 5.5, 5.6). The inferior body and apophyseal joints of L4 are fused to the opposing joints of L5, and the inferior body and apophyseal joints of L5 are fused to the opposing joints of S1. It is clear from the remains that neither the centrum nor the arch of the third lumbar was involved in the process of fusion. There is some post-mortem damage to the anterior of the bodies, but there is certainly no excessive osteophytic growth associated with the fused bodies and the fusion is smooth and vertical. The joints—both in the centra and the apophyseal joints—appear to be fused throughout the surface of the joint area. In addition, despite the post-mortem damage, there is noticeable thinning of the cortical bone of the anterior bones, with some exposure of the trabecular bone. There appear to be at least two small, smooth openings, one in the anterior of the fourth lumbar and another on the left lateral side of the anterior body of the fifth lumbar (near the inferior edge). These were particularly noticeable during excavation. Close-up photographs were taken during excavation but these were unavailable at the time of writing. Both holes have smooth oval openings with average dimensions of *c.* 7.7mm superior–inferior and *c.* 3.1mm medial–lateral.

There are a number of conditions that can cause fusion or ankylosis of elements of the vertebrae. A brief synopsis of some of those conditions is given below. It is noted that the pathological lesions observed in the lower spine of this individual are unlikely to have occurred as a result of the following diseases.

Ankylosing spondylitis is a progressive inflammatory disease of unknown aetiology. It results in fusion of both the bodies and the apophyseal joints of the spine. It typically progresses upwards through the spine from the lumbar vertebrae, and is more frequent in males than in females. In addition, the fusion of the bodies tends to result in a 'squaring off' of the body—that is, there is no excessive osteophytic growth. All of the above is similar to the findings from SK3. Ankylosing spondylitis also affects the sacro-iliac joint, however (Ortner and Putschar 1981, 411; Roberts and Manchester 1995, 119; Rogers and Waldron 2000, 175–6; Schwartz 1995, 249). In fact, the involvement of the sacro-iliac joint is considered to be 'the hallmark of ankylosing spondylitis' (Roberts and Manchester 1995, 119, after Resnick and Niwayama 1988, 1112), and is never absent if the lumbar vertebrae are involved (Ortner and Putschar 1981, 411). No pathological lesion was observed in the sacro-iliac joint of this individual. Thus, despite initial appearances, the fusion observed in the spine of this individual is unlikely to have occurred as a result of ankylosing spondylitis.

Diffuse idiopathic skeletal hyperostosis, or DISH, can also classically involve ankylosis of the spine and typically affects the older male. The condition is believed to be associated with obesity and diabetes. The vertebral bodies, in particular, can become fused by the growth of osteophytes, which take on the appearance of 'flowing wax' (Mays 1998, 127; Roberts and Manchester 1995, 120; Rogers 2000, 170–1; Schwartz 1995, 243). In DISH, however, the apophyseal joints are typically unaffected; it is usually the thoracic vertebrae that are involved, and the fusion tends to occur on the right side of the bodies. In addition, other parts of the skeletal structure would also be affected by enthesopathies or small bony growths (Rogers 2000, 170–1; Schwartz 1995, 243). The lack of the 'candle-wax' osteophytic growths on the fused vertebral bodies of SK3, the involvement of the apophyseal joints and the lack of enthesopathies on the remainder of the skeleton militate against a diagnosis of DISH.

Calcium pyrophosphate deposition disease, or CPDD, which results from both mechanical problems and inflammation, can also cause ankylosis of the vertebrae. This condition usually affects individuals over the age of 30. Again, however, it does not involve ankylosis of the apophyseal joints (Schwartz 1995, 243).

Spondylosis deformans or spinal osteophytosis can also result in fusion in the spine and is relatively commonly observed in older individuals (Ortner and Putschar 1981, 421; Rogers and Waldron 1995). The fusion is caused by the outgrowth of osteophytes along the edges of the vertebral bodies. The osteophytes, however, tend to form at almost right angles to the body itself, as 'shelf-like bony protrusions' (Ortner and Putschar 1981, 421), and, indeed, can resemble DISH. In addition, there is no involvement of the apophyseal joints (Schwartz 1995, 239).

Other diseases that can lead to fusion of the spine include tuberculosis and osteoarthritis, but the lesions observed in the lower spine of this individual bear no resemblance to skeletal manifestations of those diseases. Therefore it is not possible to suggest what disease process may have caused the fusion of these vertebral bodies.

As mentioned above, despite the post-mortem damage, there are at least two holes (ante-mortem) in the anterior of the fourth and fifth lumbar vertebrae. These are similar to lesions known as cloacae (or sinuses) associated with an infectious disease called osteomyelitis. Osteomyelitis occurs when the marrow of a bone becomes infected, which can happen through a variety of means. The process involves both bone destruction and bone formation. As the ordinary bone is destroyed by the infection, new layers of bone are also built up, which, particularly in long bones, can lead to a very distinct thickening of the bone. In addition, cloacae or sinuses form, allowing the infectious pus and dead fragments of bone from the interior of the bone to be extruded; these eventually work their way up to the surface of the skin (Ortner and Putschar 1981; Roberts and Manchester 1995). The holes described in the vertebrae of this individual bear a resemblance to the cloacae associated with the infectious process of osteomyelitis. The lumbar vertebrae do not show any other indication of infection, however, and so the oval lesions cannot accurately be attributed to osteomyelitis and may in fact be a natural occurrence.

Comments

The bones of this adult are very noticeably robust, even for a male individual, with strong muscle markings where the various muscles attach to the bones. Most of the bones from the upper body were disarticulated (see below). This individual was radiocarbon-dated to AD 989–1167.

5.7 OSTEOLOGICAL MEASUREMENTS

5.7.1 Adult skeletal measurements

A limited number of osteological measurements could be taken on the adult human bones retrieved from Skellig Michael. The measurements from the articulated burials are presented below and are divided

Table 11—Adult cranial measurements.

Adult cranial measurements	SK2	SK3
Maximum length	–	–
Maximum breadth	–	–
Basion-bregma height	–	–
Porion-bregma height	–	–
Basion-porion height	–	–
Auricular height	–	–
Minimum frontal breadth	–	–
Total facial height	–	–
Upper facial height	–	–
Facial width	–	–
Nasal height	–	–
Nasal breadth	–	–
Orbital height	–	–
Orbital breadth	–	–
Maxillo-alveolar height	–	–
Maxillo-alveolar breath	–	–
Palatal length	–	–
Palatal breadth	–	–
Bicondylar breadth	–	–
Bigonial breadth	–	–
Height of ascending ramus	–	62.7mm
Min. breadth of ascending ramus	–	34.6mm
Symphysis height	–	–
Mandibular length	–	9.59mm

Table 12—Adult post-cranial measurements.

Adult post-cranial measurements	SK2 (mm)		SK3 (mm)	
	Left	*Right*	*Left*	*Right*
GlL	–	–	41.4	43.1
GlB	–	–	–	33.2
ClL1	–	–	–	–
HuL1	–	–	–	–
HHD	–	–	47.5	–
HuBI.EPI.	–	61.15	61.8	–
HuART.	–	44.2	44.5	–
RaL1	–	23.9	25.8	25.4
UlL1	–	–	–	–
FeL1	–	–	–	456
FeHD1	–	42.8	47.3	47.9
FeD1	–	–	32.2	31.8
FeD2	–	–	30	27.8
FeE1	–	–	87.9	–
TiL1	–	–	–	37.8
TiD1	–	–	–	37
TiD2	–	–	–	27.3
TiE1	–	–	76.9	81.4
FiL1	–	–	–	–

into cranial and non-cranial measurements (after Bass 1995). Only a very limited selection of measurements could be taken on the cranial remains—only on a mandible—owing to the incomplete nature of the remains. The post-cranial measurements are equally scant. Any measurements that could be taken on disarticulated adult bones are provided in the database (Appendix III).

5.7.2 Juvenile skeletal measurements

The remains of the articulated child burial (SK1) are incomplete, with significant fragmentation. The cranial remains were too fragmentary to allow any measurements. It was not possible to measure the length of any of the long bones. It was possible to measure the mid-shafts of a limited number of bones and these are presented below. Any measurements that could be taken on disarticulated subadult remains are presented in the relevant database fields in Appendix III.

Table 13—Juvenile skeletal measurements.

Bone	**Mid-shaft measurement (mm)**	
	Left	*Right*
Clavicle	–	10.2
Humerus	16.8	18.2
Radius	12.2	12.2
Ulna	12.3	12.8

6. PALAEOENVIRONMENTAL ANALYSES

6.1 INTRODUCTION

Throughout all phases of excavation, sampling for bioarchaeological analysis was undertaken from all meaningful contexts. In some instances (e.g. wood) samples were hand-picked but, given the lack of facilities for processing on site, in general bulk soil samples were taken; these were submitted in two batches (in 2001 and 2008) to Margaret Gowen and Co. Ltd for preliminary analysis. This identified those samples that had potential for further analysis for plant macrofossils, wood, charcoal and insects (Johnston 2001; Allen *et al*. 2008). Following consultation with the archaeological directors, those samples deemed worthy of full analysis were proceeded with in 2009 by independent environmental archaeologists Ryan Allen, Lorna O'Donnell and Eileen Reilly.

This report details the results of plant macrofossil, wood/charcoal and insect analysis and assesses the results in the context of contemporary findings from other monastic sites, where available. Integration of the results, where appropriate, is also attempted, to give an overview of the environment and economy of the settlement at Skellig Michael during the early medieval period. Further biogeographical implications of the insect assemblages, in particular, are also discussed.

6.2 PLANT MACROFOSSILS

Ryan Allen

6.2.1 Introduction

Plant remains were sorted and analysed from eight samples from Skellig Michael. These were from three different areas: the lower monks' garden, the cistern and the *leacht* area. While few plant remains were recovered, they did give a picture of the general plant economy present on site.

6.2.2 Methodology

Processing

The samples were processed using either bucket flotation or wet sieving, depending on the state of preservation of the deposit. Bucket flotation, used for carbonised remains, is carried out by placing a five-litre subsample into a container and then adding water. After gentle agitation any carbonised remains float to the top. Excess water is poured through a 250μm mesh, and the resulting remains (called the 'flot') are dried and bagged for analysis. Anything left in the bucket (called the 'retent') is washed through a 2mm mesh, and is then dried and bagged as well. Wet sieving is used for waterlogged samples and involves washing a five-litre subsample through a stack of nesting sieves, in this instance with meshes of 1mm and 250μm.

Identification

Both the waterlogged and carbonised samples were sorted using a low-powered binocular microscope (7x–45x magnification). Any remains found were identified using seed atlases (Berggren 1981; Cappers *et. al.* 2006) and a modern reference collection when possible. In the case of fragmentary grains or seeds, only the embryo was counted in the final results. This is because the embryo is the most diagnostic part of these remains; it also eliminates the problem of possibly counting multiple pieces of the same seed/grain. Identified plant remains were stored in labelled specimen tubes. To facilitate reading, the plants' common names are used (with the scientific name in parenthesis after the first instance) in this report.

6.2.3 Results

Seven samples from Skellig Michael contained plant remains: ID2, ID7, ID12, ID13, ID14, S77 and S88. These were all from the lower monks' garden, except ID2, which was from the *leacht* area east of St Michael's Church, and ID14 from Cistern 3. Sample S77 was a single barley grain attached to mortar found in the lower monks' garden. Full results can be found in Table 14.

Table 14—Plant remains recorded from Skellig Michael.

Sample ID	77	14	14	13	13	12	12	7	7	2	2	88	88
Fraction (mm)		1	0.25	1	0.25	1	0.25	1	0.25	1	0.25	1	0.25
mL		600	100	150	100	300	150	300	100	100	100	50	50
mL picked		600	100	150	100	300	150	300	100	100	100	50	50
% picked		100	100	100	100	100	100	100	100	100	100	100	100
Silene dioica		1											
cf. *Alnus glutinosa*		1											
Chenopodium album				13		1		2		1			1
Hordeum vulgare	1							2		1		1	
Avena sp.								7					
Poaceae								1		1			

Leacht area, east of St Michael's Church

Three seeds/grains were recovered and identified from sample ID2 (F594), which came from a drain fill pre-dating the construction of the *leacht* and therefore is of secure early medieval date. These were from barley (*Hordeum vulgare*), goosefoot (*Chenopodium album*) and an indeterminate grass seed (Poaceae).

Cistern 3

Two seeds were identified from the single cistern sample (ID14), one of campion (*Silene dioica*) and one of alder (cf. *Alnus glutinosa*). This is a mixed, disturbed context with modern material.

Lower monks' garden

Six samples from the lower monk's garden yielded plant remains. These contained a range of taxa, including barley, oats (*Avena* sp.), goosefoot and indeterminate grass. The oats could not be identified as the domesticated type owing to a lack of diagnostic plant parts, but it is likely that they were purposely grown for consumption. Likewise, the type of barley (naked/hulled, two-row/six-row) could not be identified owing to its poor state of preservation.

(Following completion of the above report, a single charred seed from the lower monks' garden (labelled 93E0195:229) was presented for analysis to Meriel McClatchie and was identified as a grain fragment of *Avena* sp. (oat).)

6.2.4 Discussion

While the plant remains from Skellig Michael were sparse, they still shed some light on the agricultural economy. The only 'environmental' plant remains present were those of alder and campion, which are likely to be of modern origin given their recovery from the disturbed/mixed fill (F615) of the cistern (E. Bourke, pers. comm.).

Both barley and oats were found in layers from the lower monks' garden, although the low numbers make it impossible to determine with any statistical relevance which cereal was utilised in greater abundance. Five barley grains were identified in four samples, while seven oat grains were identified in one. Both were important economic plants during the early medieval period for both human and animal consumption. Unlike wheat, both barley and oats are tolerant of cooler and wetter climates (Feehan 1997). This is especially true of oats, which were a readily available and cheap crop used for making flat oatcakes, porridges and gruels (Sexton 1998), as well as being useful as animal fodder (Monk *et al*. 1998). Barley was also used for making porridges and gruels, along with malt for beer production, although the latter doesn't appear to have been the case on this site as there was no indication of germination on any of the grains found.

The presence of oat and barley, along with the lack of wheat or rye, is in line with other findings from early medieval sites in Ireland (Monk 1991; Monk *et al*. 1998; Fredengren *et al*. 2004). More importantly, the same held true for both High Island, Co. Galway, and Illaunloughan, Co. Kerry, both contemporary island sites (McClatchie 2008; Murray *et al*. 2004).

Goosefoot, found in six of the eight samples analysed, is a common invasive species generally associated with plant cultivation. Its relative abundance in the Skellig Michael samples is suggestive of cultivation taking place on the island, as opposed to the oats and barley being imported as grain. There were likely other 'weed species' present, but their small seed size and thin coats make them liable to early destruction in the carbonisation process as well as through taphonomic processes (Boardman and Jones 1990). This may also explain the lack of plant species that could be used as general environmental indicators.

6.2.5 Summary

While very few plant remains were recovered from Skellig Michael, they did suggest a plant economy based on barley and oats. These findings fit in with the agricultural models found on monastic sites throughout Ireland during the early medieval period, including those of High Island, Co. Galway, and Illaunloughan, Co. Kerry. Goosefoot, present in six of the eight samples analysed, is a possible indicator that the crops were grown on site.

6.3 CHARCOAL AND WOOD

Lorna O'Donnell

6.3.1 Introduction

Charcoal and wood remains were identified from two main areas at Skellig Michael, the lower monks' garden and the *leacht* area. The aim of the charcoal and wood analysis was to assess the use of fuel on the island and to examine possible habitats from which the wood may have been derived. It also served to identify suitable material for radiocarbon dating.

6.3.2 Methodology

Processing

The samples examined from Skellig Michael were a mixture of bulk soil and hand-picked material. The method of processing the bulk soil samples depended upon the nature and degree of preservation of the deposit.

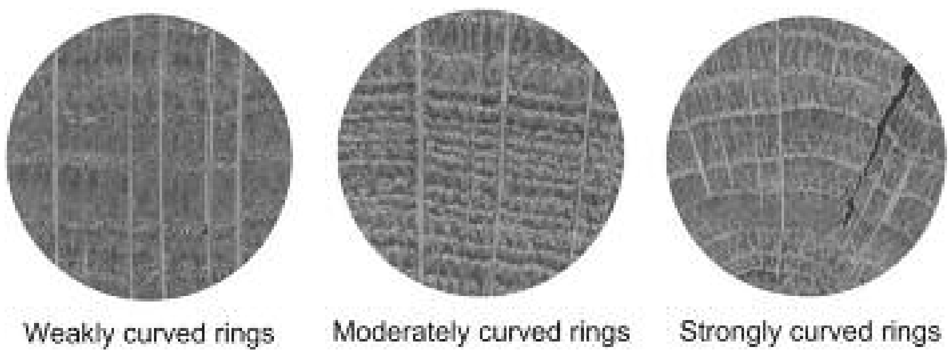
Waterlogged soil samples were processed using wet sieving. This involves washing a two-litre subsample through a stack of meshed sieves, measuring 2mm, 1mm and 250μm. The remains (called 'retent') in each mesh are then stored separately in airtight, waterlogged conditions. Carbonised samples were processed using a method called bucket flotation. A five-litre subsample is put into a bucket, water is added, and the sample is agitated, allowing any carbonised remains to float to the top of the water. This is then carefully poured over a 250μm sieve. The remains (called the 'flot') are dried and bagged. Anything left in the bucket (called 'residue') is washed over a 2mm mesh, dried and bagged.

Wood and charcoal identification

Each wood and charcoal piece was identified by a first selection under a stereomicroscope, with low magnification, varying from 30x to 75x. The transverse, tangential longitudinal and radial longitudinal surfaces of each wood and charcoal piece were revealed. In the case of the wood fragments, this was achieved by taking a section from each plane of wood (see Hather 2000) using a razor-blade and mounting the section (typically only a few millimetres across and 50–75μm thick) onto a glass slide. Analysis of thin sections of wood took place under a transmitted light microscope with magnifications of 40x to 400x. Each charcoal piece was broken to reveal the necessary sections for identification. A microscope with incident-light optics (40x–400x) was used to identify the charcoal. The identifications were carried out using manuals (Hather 2000; Schweingruber 1978; Wheeler *et al.* 1989) and a modern-day reference collection. It was aimed to identify 100 fragments of charcoal per sample, following Keepax 1988. If 100 identifiable fragments were not present in a sample, as many as possible were identified. Fragments were both weighed and counted.

Details of charcoal recording

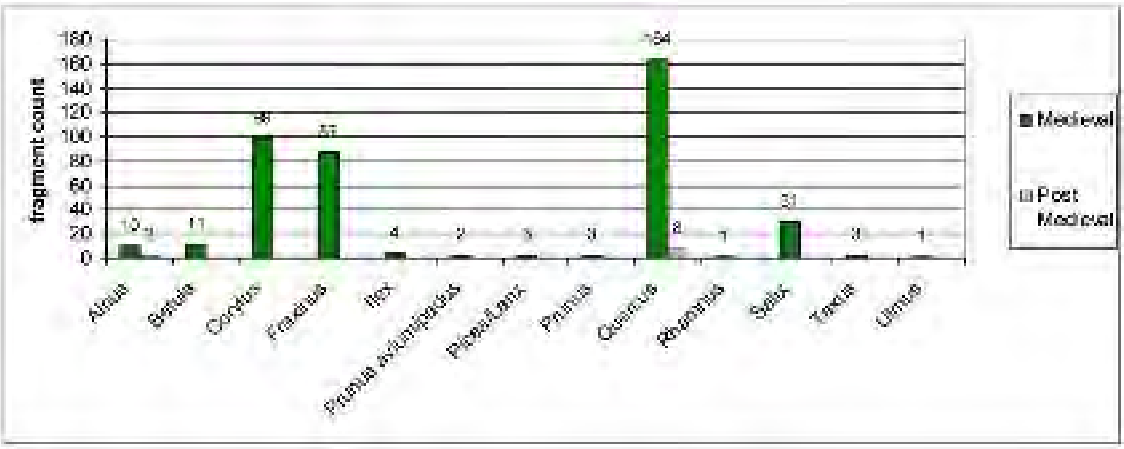
The general age group of each taxon per sample was recorded, and the growth rates were classified as slow, medium, fast or mixed. Ring curvature of the pieces was also noted—for example, weakly curved annual rings suggest the use of trunks or larger branches, while strongly curved annual rings indicate the burning of smaller branches or trees (Ill. 6.1). Tyloses in vessels in species such as oak can denote the presence of heartwood. These occur when adjacent parenchyma cells penetrate the vessel walls (via the pitting), effectively blocking the vessels (Gale 2003). Insect infestation is usually recognised as round holes. Their presence normally suggests the use of decayed degraded wood, which may have been gathered from woodland floors or may have been stockpiled.



Ill. 6.1—Ring curvature. Weakly curved rings indicate the use of trunks or large branches (Marguerite and Hunot 2007, fig. 3).

6.3.3 RESULTS

Twenty-six charcoal and eleven wood samples were examined from Skellig Michael. The majority of the samples were hand-picked. Thirteen wood taxa were identified (Table 18; Ill. 6.2), including alder (*Alnus*), birch (*Betula*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), wild/bird cherry (*Prunus avium/padus*), spruce/larch (*Picea abies/Larix*), *Prunus* sp., oak (*Quercus*), purging buckthorn (*Rhamnus catharticus*), willow (*Salix*), yew (*Taxus baccata*) and elm (*Ulmus*). The results are dominated by oak. Four pieces of uncarbonised yew wood were also identified from the site. Oak is present in nineteen of the samples, hazel in twelve and ash in eleven. Willow was identified in five samples, alder and birch in four. Yew is present in two samples, while buckthorn, holly, spruce, cherry, *Prunus* sp. and elm were all only identified in one sample.



Ill. 6.2—Total charcoal identifications from Skellig Michael.

Ring curvature and growth details

General growth rates, the type of curvature of the annual rings, size, the range of annual rings, presence of heartwood and any insect holes were noted on all the charcoal pieces (per taxon, per sample). This can determine whether the material represents wood from mature woodlands, what sort of ground conditions the parent trees were growing in and what condition the wood was in prior to burning (e.g. decayed, wet, dry). The most frequent trees identified will be discussed in detail.

The alder fragments range in size from 5mm to 10mm, with two to nine growth rings remaining. The growth rate is medium. Strongly curved annual rings and roundwoods present indicate the burning of small branches, while weakly curved annual rings from F507 suggest the burning of larger pieces of wood. Insect holes were noted in material from Sample 125 (F572), indicating that decayed branches were burnt. The hazel pieces range in size from 4mm to 10mm, and overall growth is medium; all of the pieces appear to be derived from small branches or rods, given the strongly curved nature of their annual rings. The ring counts range from two to ten and no insect holes were noted.

In contrast to the alder and hazel fragments, growth within the ash fragments is quite mixed, ranging from slow, through medium to fast. Ring curvature is predominantly strongly curved, indicating branches, although it is weakly curved from Sample 16 (F581), Sample 17 (F583) and Sample 84 (F634(4)), indicating larger branches or trunkwood. Tyloses were recorded in Sample 84, suggesting that heartwood was burnt. The sizes range from 4mm to 20mm, while the ring counts range from two to 35.

The oak fragments range in size from 4mm to 12mm, while the ring counts range from two to fifteen. In comparison to the ash, the oak growth is mixed, with evidence for slow, medium and fast growth. The growth rings are predominantly weakly curved, with tyloses (indicating heartwood) in eight of the samples (81, 131, 16, 17, 18, 83 and from F505). The presence of some strongly curved annual rings suggests that, along with larger branches and trunkwood, small branches must also have been burnt.

Growth of the yew and spruce fragments would have been slow, as would be expected from softwoods. The pieces range in size from 5mm to 10mm, and have between five and nine annual rings remaining. The strongly curved nature of their annual rings indicates that they are all derived from branches. The uncarbonised yew roundwoods are tightly grouped in size, ranging in width from 3mm to 5mm. Their annual rings are strongly curved, indicating that they are derived from young branches; between three and four annual rings remain.

6.3.4 Contextual results

Charcoal and wood samples were mainly derived from contexts relating to the lower monks' garden and the *leacht* area (see Table 18).

Lower monks' garden

Charcoal and wood was examined from F634(4) (Samples 66–76, 81 and 84), F635(4) (Sample 83), F636(4) (Sample 85), F634(5) (Samples 15–16 and 54), F635(5) (Samples 18–20) and F636(5) (Sample 17) of the lower monk's garden. These layers were deposited/redeposited between the twelfth and fourteenth centuries but contain material ranging in date from the seventh to the fourteenth century (see section on radiocarbon dating above). Yew wood and oak, ash, hazel and birch charcoal were identified from Cutting 4. Oak, ash, yew, hazel, alder, holly and willow charcoal was identified from Cutting 5. Oak was the main wood identified.

***Leacht* area**

Charcoal was identified from different contexts relating to activity around the *leacht*. Alder and oak charcoal was identified from F572 (Sample 125), which dates from the post-medieval period. Oak only was noted in a sample from an ash layer within the south-east corner of the *leacht*, east of St Michael's Church (Sample 131).

Hazel, willow and yew were identified from F579 (Sample 14), located against the base of the *leacht*, although it had suffered some petrel/puffin disturbance. Hazel charcoal was noted from F580 (Sample 15), against the base of the *leacht*. Birch, ash and oak were noted in F581 (Sample 16), located underneath F579. Birch, hazel, ash, spruce, oak and willow were identified from F583 (Sample 17), located to the south-east of the *leacht*, overlying one of the steps relating to the secondary use of the east entrance. From F588 and F589, located south-west of the *leacht*, alder, birch, oak and purging buckthorn were identified (Samples 18 and 19). South of the *leacht*, oak charcoal only was identified from F590 (Sample 20). All of the samples retrieved from the *leacht* area (just described), with the exception of Sample 14, are of secure early medieval date. The charcoal from contexts associated with the *leacht* is dominated by oak, in comparison to those from the lower monks' garden.

It was not possible to identify a wood piece from F509 (Sample 41), which came from an early medieval backfill layer in the east entrance. Neither was it possible to identify the charcoal from F685 (Sample 141), which came from a hearth in the structure at the base of the east steps.

East and south entrances

Three samples were examined from early medieval deposits relating to both the east entrance and south entrance 1, inner enclosure. Hazel, ash and oak were identified from the three contexts F505, F507 and F545. Willow was identified from the first two contexts, while *Prunus* sp. and elm were noted within F505 and alder and cherry within F507.

6.3.5 Discussion

One of the main principles of charcoal analysis is the assumption that people will gather fuel as close to a site as possible and that the charcoal can reflect the local woody flora of the area. Abandoned structural timbers or wood brought to the site for use in construction or other activities are also often reused as firewood.

One of the fundamental questions to consider when interpreting the Skellig Michael charcoal is where the wood came from. Was it gathered and burned on the island, or does the charcoal represent wood brought in from different locations and transported to Skellig Michael as fuel or as structural wood that was later burned for fuel?

Pollen was examined from F318, an old ground surface, probably contemporary with the construction of the large oratory in the monastery (see pollen analysis below). Oak, hazel and birch pollen was identified, although in such small quantities that it is interpreted as representing long-distance transport from the mainland. The main pollen type representing wood is *Sorbus* (rowan/mountain ash). The pollen data also indicate a completely open landscape. Skellig Michael is a craggy rock in the Atlantic, exposed to extreme weather conditions and with a patchy, thin soil cover, and is therefore unlikely to have supported any significant tree cover. The steep, rocky shoreline of the island also makes it improbable that driftwood would have been gathered there for burning.

All of the trees identified within the wood and charcoal are native Irish species, with the exception of spruce/larch. The results indicate that fuel was being gathered from different environments, including tall canopy woodlands (oak, elm and ash), possible scrub (hazel, *Prunus* sp., cherry) and wetland (alder and willow).

The wood from Skellig Michael, therefore, was most likely gathered from different types of woodlands on the mainland. The oak present could be native pedunculate (*Quercus robur*), which prefers wetter, heavier clays than sessile oak (*Quercus petraea*) (Beckett 1979). Ash is common on shallow, often skeletal soils over limestone and chalk, though the moisture levels must not reach extremes of dryness in summer. It is also common beside streams on soils of only moderate base status. Ash appears to be able to obtain its nutrient requirements when moving eutrophic water is available (Cousens 1974). Elm trees will grow well on rich, alluvial soils and prefer riverine habitats (Gale and Cutler 2000, 264).

Hazel is a very tolerant tree. It can grow in wet or dry conditions but not in waterlogged ones (Orme and Coles 1985). It was once very common in Ireland; indeed, McCracken (1971) notes that it was once widespread to an extent that is hard to imagine today. It can grow as a tree (frequently associated with oak as an understorey) or can form hazel scrub. Other possible scrub trees identified within the charcoal include *Prunus* sp.

Wild cherry (*Prunus avium*) needs light to grow, on or near woodland margins and on light, well-drained soils (Orme and Coles 1985, 11). Bird cherry (*Prunus padus*) occurs particularly in marginal forests and is generally solitary (Stuijts 2005, 142). Blackthorn (*Prunus spinosa*) grows in woodland where the canopy has been opened, on woodland margins, in scrub and along streams, where it may be found with alder. It does not survive under heavy shade (Orme and Coles 1985, 11).

Alder is a wetland tree and can often be seen growing alongside rivers, lakes, on marshes or in fens. It can form alder carr when its roots are in water. It is able to survive on these wet sites (which generally lack the nitrates needed for growth) as its roots have nodules that contain nitrogen-fixing bacteria, which extract nitrogen from the air (Lipscombe and Stokes 2008). Ireland's native tree is the black or grey alder (*Alnus glutinosa*). Willow will also grow in wet areas. The main Irish native willows are grey willow (*Salix cinerea*), goat willow (*Salix caprea*) and eared willow (*Salix aurita*). Birches such as silver birch (*Betula pendula*) and downy birch (*Betula pubescens*) are often found on the margins of bogs, lakes and rivers. They are very good at colonising disturbed ground (Hickie 2002).

Yew is an evergreen conifer that grows up to 20m. Older trees often divide into several distinct trunks. It prefers well-drained and sheltered sites (Hickie 2002). Norway spruce likes moist soils and can grow in cold, wet and shallow soils (Lipscombe and Stokes 2008). Spruce is not a native Irish tree. McCracken (1971) writes that by the eighteenth century it was being imported into Ireland. The spruce/larch identified from Skellig Michael may indicate post-medieval contamination of the sample.

Two shade-tolerant trees within the assemblage are buckthorn and holly. Purging buckthorn is a shrub or small tree growing to 6–8m tall, with grey-brown bark and spiny branches. Holly is a hardy tree and can be found on higher, exposed ground or growing underneath taller forest trees, forming understorey (Hickie 2002, 59).

It is possible that other monastic settlements, such as the one tentatively identified on Bray Head, Valentia Island, were supplying smaller monasteries such as Skellig Michael and Illaunloughan with fuel. Hazel, alder, oak, yew and blackthorn were identified from Illaunloughan (O'Carroll 2005). This is very similar to the results from Skellig Michael.

Skellig Michael was inhabited from approximately the seventh to the thirteenth century AD (see interim conclusions below). The value of woodlands was recognised in the eighth-century *Bretha Comaithchesa* or 'laws of the neighbourhood'. Trees were classified into four groups, depending on the economic value of the wood. This value could be calculated by its use as a structural timber, such as ash or oak, or because of its dietary contributions, such as hazelnuts or apples. The classifications were 'nobles of the wood', 'commoners of the wood', 'lower divisions of the wood' and 'bushes of the wood'. Trees like oak, holly and hazel were considered 'nobles of the wood', while the lowest classification (bushes of the wood) included bracken, bog myrtle and gorse or furze. Fines were imposed on people caught cutting branches or cutting at the base of the trees. These varied according to the classification of the tree, and included confiscation of heifers and sheep (Kelly 1976).

A considerable amount of charcoal was identified from High Island, an early medieval monastic settlement in County Galway, approximately 3km off the north-west coast of Connemara (Gale, forthcoming). The main activity on the site is from the eighth to the thirteenth century AD. Similar to Skellig Michael, oak and hazel were important fuels on the site. Other trees that were being burned on the two islands include alder, birch, ash, holly, willow and yew. In contrast to Skellig Michael, juniper charcoal was identified from High Island (Gale, forthcoming).

Excavations at the early medieval site of Kilgobbin, Co. Dublin, provided evidence for crop-processing and metalworking. Fourteen trees were identified. Oak, hazel and alder dominated the charcoal results. Most of the trees identified from Skellig Michael are present, with the exception of spruce and purging buckthorn (O'Donnell 2005). Scrub trees such as hazel, elder and cherry dominated the charcoal remains recovered from the early medieval cemetery (Site M) at Knowth, Co. Meath (Johnston and O'Donnell 2008).

Charcoal results from Skellig Michael indicate that most of the fuel was being gathered from oak and hazel woodlands, presumably located on the mainland. This has to be approached with caution, however, as the charcoal from the site represents mainly hand-picked fragments and the overall counts are relatively low.

The presence of some wood-borer species in the beetle remains from the lower monks' garden could indicate the stockpiling of wood or the burning of degraded wood (see insect remains, below). Insect holes were, however, recorded infrequently in the charcoal.

6.3.6 Radiocarbon dating

It is best to select short-lived wood species with strongly curved annual rings, such as hazel or willow, for radiocarbon dating. Although yew can be a long-lived species, the strongly curved nature of the annual rings of the yew wood identified indicated that they were derived from small branches and would be suitable for radiocarbon dating. Table 18 includes a column with recommended material for dating.

6.3.7 SUMMARY

Charcoal and wood were analysed from 37 mainly hand-picked samples from the excavations on Skellig Michael. Thirteen trees were identified, dominated by oak and hazel. It is likely that the wood was gathered from different types of woodlands on the mainland, including oak, scrub and wet or carr woodlands. Charcoal identifications are similar to those from the early medieval monastic island settlements at Illaunloughan, Co. Kerry, and High Island, Co. Galway.

6.4 THE INSECT REMAINS

Eileen Reilly

6.4.1 METHODOLOGY

Table 15 lists the samples that were analysed for insect remains from among the samples scanned in 2001 and 2008.

Table 15—Samples analysed for insect remains.

Sample/ID no.	Context	Description
S88	F634(4), lower monks' garden	Blackish organic silty soil with frequent wood inclusions
S87	F634(4), lower monks' garden	Blackish organic silty soil with frequent charred and uncharred wood
ID 2	F594, *leacht* area	Grey-black silty soil with frequent charcoal
ID 3/4	F593, from beneath *leacht*	Silty deposit with high pebble content and abundant feathers
ID 5	F505, east entrance	Grey-black silty soil with high inorganic fraction and charcoal
ID 8	F596, *leacht* area	Silty deposit with high pebble content and abundant feathers
ID 11	Lower monks' garden, Cutting 5, east end	Inorganic silty layer with charcoal and burnt shell
ID 12	F638, lower monks' garden	Blackish organic silty soil
ID 13	F638, lower monks' garden	Blackish organic silty soil
ID 14	F615, Cistern 3	Moderately organic silty soil with frequent undiagnostic plant remains

Table 16—Basic habitat statistics: MNI counts and percentage presence of each habitat group (% of total MNI excluding 'varied').

Sample/ID no.	**S88 (LMG)**	**S87 (LMG)**	**12 (LMG)**	**13 (LMG)**	**14**	**3/4**	**8**
Context	**F634(4)**	**F634(4)**	**F638**	**F638**	**F615, cistern**	**F593, *leacht* area**	**F596, *leacht* area**
Total no. of individuals	71	219	105	68	20	181	155
Total no. of individuals exc. varied	61	188	88	64	18	166	145
Total no. of species	29	41	35	31	9	21	16
Index of diversity	19	15	19	23	7	7	5
Ground vegetation	0	1	1	2	4	2	2
Damp ground/mosses	8	23	7	8	0	12	5
Coastal/bare ground	0	0	0	0	0	1	0
Disturbed/cultivated ground	0	4	0	1	0	1	4
Generalist decomposers	16	44	32	19	5	7	1
Foul/decaying vegetation	10	22	10	15	3	3	4
Synanthropic ('house') fauna	15	29	12	9	0	2	0
Wood litter/woodland associates	5	8	8	1	1	2	0
Wood-borers	3	12	8	3	0	4	1
Carrion/birds' nests	5	45	10	6	5	132	128
Varied biotopes	10	31	17	4	2	15	10
Percentage presence of habitats							
Ground vegetation	0.0	0.5	1.1	3.1	22.2	1.2	1.4
Damp ground/mosses	13.1	12.2	8.0	12.5	0.0	7.2	3.4
Coastal/bare ground	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Disturbed/cultivated ground	0.0	2.1	0.0	1.6	0.0	0.6	2.8
Generalist decomposers	26.2	23.4	36.4	29.7	27.8	4.2	0.7
Foul/decaying vegetation	16.4	11.7	11.4	23.4	16.7	1.8	2.8
Synanthropic ('house') fauna	24.6	15.4	13.6	14.1	0.0	1.2	0.0
Wood litter/woodland associates	8.2	4.3	9.1	1.6	5.6	1.2	0.0
Wood-borers	4.9	6.4	9.1	4.7	0.0	2.4	0.7
Carrion/birds' nests	8.2	23.9	11.4	9.4	27.8	79.5	88.3

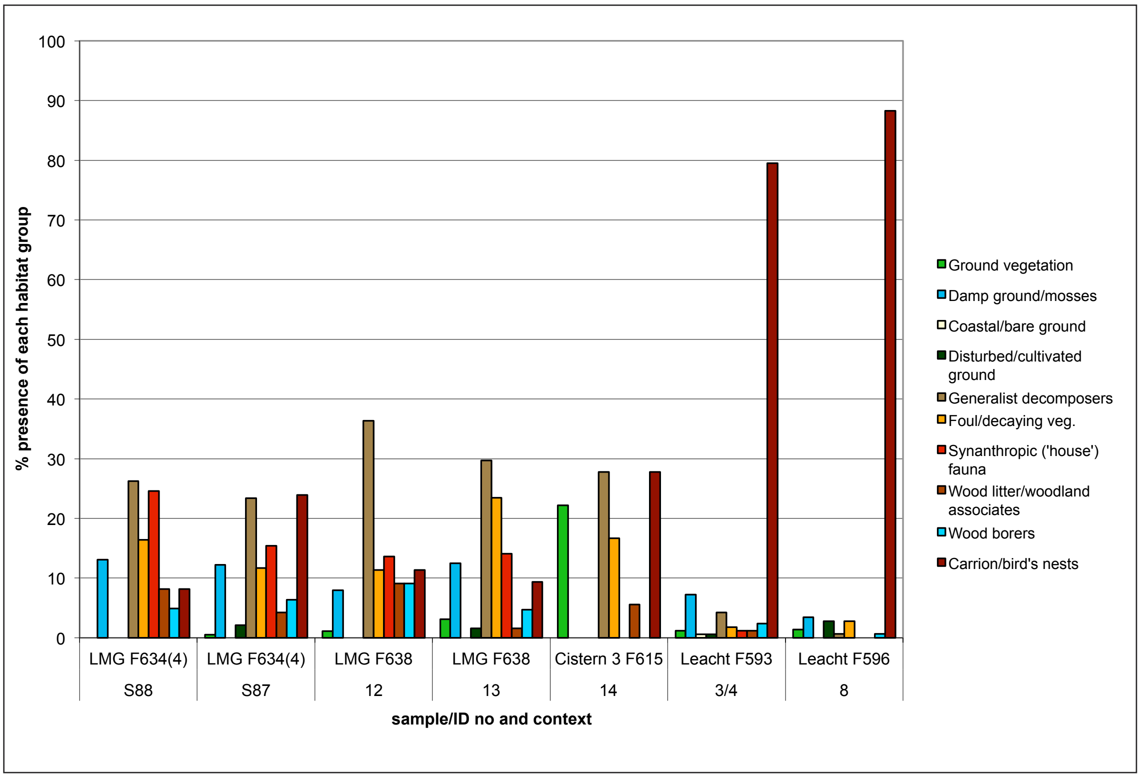
As the samples were processed in 2001 and 2008 using the wash-over method, the two or three resulting flots per sample were recombined and subjected to paraffin flotation, the standard method used by archaeo/palaeoentomologists for the extraction of insect remains from soil samples (Coope and Osborne 1967; Kenward 1980; Kenward *et al.* 1986). The samples were disaggregated using water and washed over a 300μm sieve. The retent in the sieve was then treated with paraffin and cold water added. The paraffin concentrates the insects by adhering to the waxy cuticle of the insect exoskeleton. The flot was then poured through a 300μm sieve, washed with detergent in hot water to remove the excess paraffin and stored in 70% ethanol. All residues were kept. Processing took place at the laboratory of Dr Bettina Stefanini. Insects were sorted under low-powered binocular magnification and all sclerites were extracted onto wet filter paper.

Of the ten samples listed in Table 15, three had less than twenty insect fragments after full sorting (ID 2, 5 and 11). These are excluded from any further analysis.

Identification of the insect remains was carried out using published keys, the writer's own collection of comparative material and the comparative collections of British Coleoptera housed in the Oxford University Museum of Natural History (with thanks to Darren Mann). Habitat data were gleaned from various published sources and the BUGS database, the coleopteran ecology package designed and updated by Dr Phillip Buckland and Dr Paul Buckland (Buckland 2007; Buckland and Buckland 2006). A full species list is presented in Table 19, with taxonomy following Böhme 2005.

Analysis of samples involved summing the individual insect taxa into ecologically related habitat groups (Table 16; Ill. 6.3). The purpose of analysing the data in this way is to generate a general picture of change in the relative proportion of each habitat group within each deposit, group of deposits and site as a whole, in order to elucidate the character of the local site environment. Fisher's alpha (a measure of species diversity) was also calculated for each sample where N > 20 (N = number of individuals) (see Table 16) (Fisher *et al.* 1943).

Ordination of samples from the lower monks' garden was also carried out to assess the source of the insects in those assemblages (see below). Ordination is the arrangement of items along a scale (axis) or



Ill. 6.3—Insect habitat data for main deposits from Skellig Michael. LMG=lower monks' garden.

multiple axes. It is used to summarise complex relationships, extracting one or a number of dominant patterns from an infinite number of possible patterns (McClune and Grace 2002). It is used here to examine underlying variance/similarities in the lower monks' garden assemblages and assemblages from a selection of other sites in Ireland and one from Russia (Table 17; Ill. 6.4). Non-metric multidimensional scaling (NMS) was used for this purpose, as it is well suited to data that are non-normal or on arbitrary, discontinuous or otherwise questionable scales, particularly data sets that have upwards of 70% zeroes. Ordinations were calculated using the PC-ORD programme (McClune and Mefford 1999).

6.4.2 Analysis

Lower monks' garden deposits

Four samples came from the lower monks' garden, from two layers dated to the twelfth–fourteenth centuries (F638 and F634(4)) which also contained material dated to the early medieval period (seventh–tenth centuries) that was clearly redeposited (see Sections 2.27 and 4).

Sample ID 13, F638

The assemblage from this sample was moderately numerically rich, with 68 individuals representing 31 taxa. This produced a species diversity index of 23, which is quite high, suggesting mixed origins for the insects in the assemblage (Tables 15 and 19). The habitat groups represented in the assemblage are illustrated in Ill. 6.3. One notable aspect of the assemblage is the relatively low number of what might be called 'native' island fauna with any degree of certainty. This is in comparison to the relatively high number of species more than likely brought to the island by its human inhabitants.

'Generalist decomposer' and 'foul/decaying vegetation' species dominate the assemblage. These groups represent species found in vegetation in various stages of decay, fungoid wood and dung. The commonest species in these categories from this deposit are *Xantholinus* spp, *Pteridium* spp, *Cercyon atricapillus* and *Megasterum obscurum*. These species are all found regularly on human habitation sites, particularly in the medieval period. They favour the accumulated rubbish and dung in both occupation layers and pit fills (Kenward and Hall 1995). Nevertheless, all are found in nature too, particularly in accumulating leaf litter, forest floors, birds' nests, rotting seaweed and animal dung (Hansen 1987; Koch 1989).

The proportion of synanthropic fauna (i.e. species that favour human occupation sites) is surprisingly high for an island site like Skellig Michael, and is a common feature of all the lower monks' garden assemblages. Many such species are now extremely rare in nature, such was their dependence on the artificial niches created by human occupation sites, particularly during the medieval period (Kenward 1997). Species such as *Aglenus brunneus* and *Mycetaea subterranaea*, in particular, are strongly associated with human habitation and are highly unlikely to have been part of the native island fauna (Kenward and Hall 1995).

Two other notable habitat groups represented in this assemblage are 'carrion/birds' nests' and 'wood-borer' species. The former may represent some native elements of the fauna, as the island is famous for its bird colonies. It is likely that a range of carrion/detritus-feeding beetles became established on the island over time, given the plentiful availability of suitable habitats. While this is certainly true of *Sciodrepoides watsoni* (see Samples 3/4 and 8 below for further discussion), however, it is possible that *Omosita colon* and *Hister impressus* are incorporated into the assemblage though the presence of food waste in the soil matrix (Halstead 1963; Hinton 1945). It is likely, given the synanthropic element of the assemblage, that general household waste from the cells—bedding material, stored foodstuffs, discarded bones, possibly even human faeces—were used to manure and build up the garden soil. *O. colon* and *H. impressus* may have been imported intermittently with carcasses and animal products and this may be the reason for their presence in the deposit. Equally, they may have established temporary populations feeding on butchered bird bones, with *O. colon* possibly also occurring on decaying seaweed being used as a fertiliser (Backlund 1945). It is notable that only one true dung-beetle (*Aphodius* sp.) was found in any of the deposits from Skellig Michael, suggesting that live animals were not kept on the island and that dung was not used as a fertiliser. Given the constant supply of birds as a meat source, it was probably deemed an unnecessary drain on food resources to husband live animals on the island.

The wood-boring insects are another surprising element in the fauna. As it is very unlikely that trees of any significance existed on the island at the time of the monastery, all the wood-associated species must have been imported to the island in wood or wood products. The two most significant species are *Rhopalomesites tardyi* and *Pseudophloeophagus aeneopiceus*. Both are found in dead wood of a variety of tree species, generally in woodlands, old parkland trees and occasionally from driftwood (Morris 2002). *P. aeneopiceus* has been found very occasionally in structural wood in southern England but no such association is known from Ireland, where it is generally very rare (*ibid*.). Both have a markedly southerly and westerly coastal distribution in Britain, though *R. tardyi* is more widespread in Ireland and is known from inland woodland situations (Alexander 2002; Reilly 2008). Their presence on Skellig in the lower monks' garden soils is intriguing and may be due to the stockpiling of collected driftwood or forest-floor wood from the mainland, brought out to the island for various uses. These species can emerge from drying driftwood many months after they enter it (Darren Mann, pers. comm.).

Of the possible native island elements in the assemblage, a small number of damp ground, disturbed ground and plant-feeding species are present, such as *Agriotes* sp. (general foliage, grassland), *Lathrobium* spp, *Stenus* spp (both generally found in damp situations) and *Trechus quadristriatus* (a subterranean ground-beetle, found in disturbed ground, under rocks and stones and fairly ubiquitous in Ireland).

In summary, the insect assemblage appears to indicate two main sources for the species recorded: a likely imported element of decomposer species (including synanthropes), wood-borers and possible carrion species from bedding and foodstuffs used on the site and subsequently used to build up the garden soil, and a small native element of decomposer, vegetation and wet-ground species. The former element, however, forms the bulk of the assemblage.

Sample ID 12, F638

This sample was numerically richer than ID 13 (which was derived from the same context), with 105 individuals representing 31 taxa. The index of diversity was lower, however, at 19, suggesting a slightly more restricted range of source habitats (Tables 15 and 19). While this sample came from the same layer as ID 13, it displays some independent trends within the insect assemblage, suggesting that the garden soil is not a homogeneous deposit.

Ill. 6.3 indicates that 'generalist decomposers' are again proportionally the largest habitat group represented. Once again, species common in fungoid wood and decaying vegetation, as well as decaying seaweed, are more frequently represented in this group. Some of these species may well be native to the island but it is likely that a proportion have been imported with bedding, fertilising material and foodstuffs. The synanthropic fauna is again well represented, with eight examples of *Mycetaea subterranaea*, amongst others, present. Decaying animal matter was also incorporated into the soil here, as *Omosita colon*, *Sciodrepoides watsoni* and *Hister impressus* are once again recorded.

Compared to sample ID 13, this assemblage has proportionally higher wood litter associates (Ill. 6.3) and numerically more wood-boring beetles present, although the latter habitat group is mostly represented by the same species as sample ID 13. It suggests that part of the matrix of the soil in this location is derived from wood debris. This may have been wood used for other purposes on site and then discarded, or wood litter gathered on the mainland and used directly to build up the soil layer. *Anobium punctatum*, the well-known wood-borer generally referred to as the 'woodworm' beetle, is present here and is generally a pest of structural wood (Alexander 2002). *A. punctatum* is still found in natural woodland situations, however, especially in the Killarney woods (Reilly 2008). Its presence, therefore, does not necessarily confirm that the wood debris in Layer G had a structural source.

Background or 'natural' elements in the fauna from this sample are quite low, with a small number of damp ground/moss-feeding species occurring but a very low representation of plant-feeding species (Table 15).

In summary, even excluding the generalist decomposer element of this assemblage as possibly native to the island (and not all can be excluded on this basis), almost half of the assemblage is associated with human habitation or woodland environments and originated in imported material.

Sample 87, F634(4)

This sample is from a layer which contained material dated from the seventh to the ninth century but which was redeposited some time around the fourteenth century. It is numerically the richest assemblage of all the samples, with 219 individuals representing 41 species. The index of diversity is quite low at 15, suggesting that a small number of species are dominant.

In many respects, the assemblage from Sample 87 mirrors those from F638 described above. Generalist decomposers, synanthropic species and 'carrion/bird's nest' species are the three dominant habitat groups, with particular taxa being quite numerous. *Omosita colon*, represented by 44 individuals, suggests the presence of dead birds, other carcasses, bones or decaying seaweed in the soil matrix. The small rove-beetle *Metopsia clypeata* is very numerous and is generally indicative of decaying vegetation and leaf litter (Koch 1989). The synanthrope *Mycetaea subterranea*, represented by seventeen individuals, suggests the presence of straw, hay or other bedding material (*ibid*.). At the fouler end of the decomposing spectrum, *Megasternum obscurum* and *Cercyon littoralis* occur, indicating the possible presence of dung and decaying seaweed respectively (Hansen 1987). The synanthropic group is somewhat more species-diverse than the earlier layer, which may be indicative of developing *in situ* breeding populations. This is an observed phenomenon on long-lived human habitation sites elsewhere and occurs as long as suitable habitats remain available (Kenward 1997; Kenward and Allison 1994a).

Wood litter and wood-boring insects again are well represented, suggesting a continued presence of gathered or stockpiled wood and perhaps wood litter on site. Interestingly, there are also proportionally higher numbers of moss-dwelling/damp ground insects, which may come from the surrounding natural landscape. Some, however, may be casualties brought on site in wet, fungoid or moss-covered wood or with moss used for bedding and toilet purposes.

Two ground-dwelling beetles are also represented. *Trechus quadristriatus*, mentioned above, occurs in disturbed ground and under stones, while *Calathus fuscipes* is common in cultivated, arable and garden soils (Luff 2007). Both were probably living within the soil matrix itself and may be native to the island.

The assemblage clearly indicates that F634, as well as F638, was a deliberately built-up soil layer largely comprised of gathered/imported material.

Sample 88, F634(4)

This assemblage is very similar to the foregoing but is somewhat numerically poor, 71 individuals representing 29 species. The index of diversity is slightly higher than Sample 87 at 19.

The assemblage overall has a very similar profile to Sample 87, with generalist decomposers and synanthropes both strongly represented but a slightly lower representation of carrion beetles. Wood-boring and wood litter species are also proportionally well represented and there is negligible ground vegetation, bare/coastal or disturbed ground species presence. The wet ground/moss species may, however, have been derived locally (Table 15; Ill. 6.3). This indicates that there is very little incorporation of natural elements of the local environment in the soil matrix.

Leacht area, east of St Michael's Church

Two samples from material excavated beneath the *leacht*, east of St Michael's Church, were examined for insect remains—ID 3/4 (combined flots of samples ID 3 and 4) from F593 and ID 8 from F596. These deposits were remarkable as they were largely made up of decaying bird's feathers. It appears that storm petrels and puffins built nests under the *leacht* at a later date, which contaminated these otherwise early medieval deposits (Ed Bourke, pers. comm.). For this reason little of archaeological value can be derived from the assemblages. Nevertheless, a short summary below outlines the main findings and some parallels that can be drawn between these deposits and those from the lower monks' garden.

F593, F596; Samples ID 3/4 and 8

Both assemblages were numerically rich, with 188 and 155 individuals respectively. Both samples were species-poor, however, with 21 and 16 species each, giving diversity indices of 7 and 5 respectively. This was mainly due to the total dominance of both samples by one species, *Sciodrepoides watsoni* (132 and 128 individuals each).

This small catopid beetle is almost exclusively tied to birds' nests, animal burrows and the carcasses of animals/birds in general (Harde 1984; Johnson 1965). It is found in association with bird colonies along the western and northern coasts of Scotland and as far north as the Faroe Islands (Bengston 1981; Berry 1985; Moore 1997; Waterston 1981). Its presence on Skelligs is therefore unsurprising. Nevertheless, although included on the current Irish list of Coleoptera, there are no recent records of this species for Ireland (Anderson *et al*. 1997). The insect sclerites were recently disarticulated and included many immature species, clearly indicating an *in situ* breeding population. It is likely that they are wholly representative of the later nest-building of the petrels/puffins at this location.

Of the remaining insects of both samples, some overlap with the lower monks' garden deposits and may be part of the original deposit's insect death assemblage. In particular, both samples have a small number of *Rhopalomesites tardyi* and *Pseudophloeophagus aeneopiceus*, which are likely to be contemporary with the lower monks' garden soils.

A very small number of beetles are unique to these samples and are probably indicative of local island habitats. *Trechus fulvus* is known from coastal cliffs, bare, rocky terrain and coastlines (Luff 2007). *Otiorhynchus arcticus* is generally found on low vegetation in uplands, while *Rhinoncus ?castor* is found on weeds in fallow fields and disturbed ground (Bullock 1993). The latter may have been living on the disturbed ground generated by construction of the monastery or in the garden area after it was abandoned.

Unfortunately, owing to the mixed nature of the assemblage and the contamination by modern insects, little more can be derived archaeologically from these assemblages. They do, however, give some interesting insights into aspects of the biogeography of the island and these will be revisited later (Section 6.4.3).

Cistern 3

A small assemblage of beetles was recovered from the fill (F615) of the cistern—twenty individuals representing nine species. Unfortunately, it is unlikely that this material is of archaeological significance as the cistern contained material dumped in the nineteenth and twentieth centuries. Indeed, the assemblage is dominated by fly puparia, in particular the species *Coproica ?vagans*, which breeds primarily in animal dung and human excrement (Smith 1989).

The beetle assemblage is quite mixed and has a small number of ground vegetation-dwelling species, likely to be locally derived accidental inclusions, and some generalist/foul decomposers. Interestingly, there are no synanthropic species represented in the assemblage, suggesting that the cistern was probably not used for dumping organic waste or that there was little organic waste (other than human excreta) present on the island in the nineteenth century. It also suggests that any synanthropic fauna present on the site during the monks' occupation probably died out once suitable habitats were no longer maintained (for further discussion see Section 6.4.3).

A note about fly and ant species from the Skellig samples

All samples had a moderate representation of ants and fly puparia. They have not been included in any of the statistics or calculations as fly puparia, in particular, are not systematically extracted from samples in the same way as beetle sclerites.

They are, however, a useful complementary or additional indication of the range of habitats represented in the beetle assemblages. The four lower monks' garden samples contain similar numbers of the ant species *Tetramorium caespitum* and *Stenamma westwoodi*. The former is likely to be a native inhabitant of the Skelligs, as its natural habitat is heath, upland coastal cliffs and sand (Bolton and Collingwood 1975). The origin of the latter is less certain. *S. westwoodi* is more often found in woodland, hedgerows and the humus layer of soils (*ibid.*). It was recovered in forest hollows in Killarney and has, along with *T. caespitum*, a generally southerly and westerly distribution in Ireland (Reilly 2008). It is possible that *S. westwoodi* was brought to the Skelligs with dead wood or other wood debris and established a breeding population in the garden soil of the lower monks' garden during the period of monastic occupation. It is notable that, apart from one example in one of the *leacht* samples (ID 8), it does not occur in the other largely 'modern' assemblages. *T. caespitum* is represented in every deposit, however.

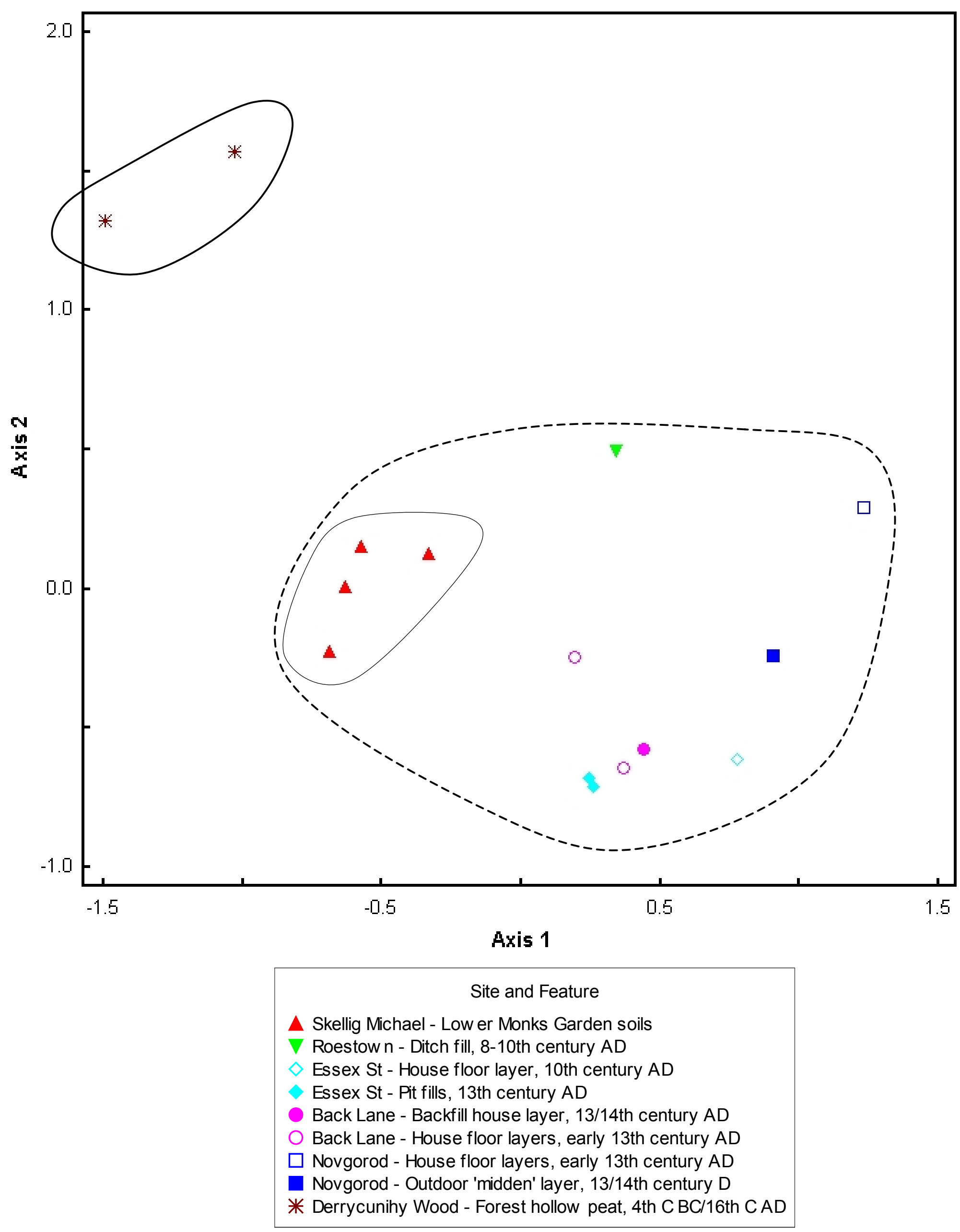
The range of fly puparia recorded is interesting but perhaps a little less informative. As flies are highly mobile, they can establish temporary populations for short periods when favourable habitats are present, and re-establish those populations again at later times. This is perhaps best illustrated by *Coproica ?vagans*, which was recorded in the lower monks' garden soils but also in the cistern and *leacht* deposits. This fly is fairly ubiquitous, given its habitat preferences (cow dung and human excreta, in particular), so its presence on Skellig is not surprising (Smith 1989). It does, however, tentatively suggest that human excreta was being used to fertilise the monks' garden, as there are no other true dung-beetles present. Dung-beetles are also highly mobile, though heavier than flies, but could possibly have made it to the Skelligs from the mainland, especially if dung was being stockpiled or used in large amounts on the island. Notwithstanding that, if large quantities of cow dung were being transported out to the island to fertilise the gardens, dung-beetles should have been incorporated in the material prior to transportation and subsequently deposited in the monastic garden soils.

All other fly species are represented by only one or two puparia each. *Calliphora vicina/vomitoria* (the 'bluebottle') is a blowfly that occurs on recently dead animals and humans and could have been present on dead birds (Smith 1989). *Fannia* sp. and *Musca* sp. (neither identified to species) both occur in the cistern deposit. Members of the genus *Fannia* occur in rotting vegetables and fruit but, most notably, also in latrines, being attracted to the smell of human urine (*ibid.*). The *Musca* genus contains the well-known 'house fly' and are general scavengers and decomposers, being especially found in dung and other foul habitats. One example of *Lonchaea* sp. occurs in one of the lower monks' garden deposits. Members of this genus are generally found under bark and in dead wood of various tree species (*ibid.*). Again, it is highly unlikely that this was a member of the native island fauna and it was probably brought to the site in dead or structural wood.

Ordination of the lower monks' garden assemblages

In order to tease out fully the nature of the lower monks' garden insect assemblages and their possible origins, an ordination of these four assemblages along with assemblages from a number of sites around Ireland and further afield was carried out. The aim of ordination is to examine any underlying variance/similarities in the data and to identify any possible patterns.

Two aspects of the lower monks' garden assemblages were particularly surprising and interesting, given Skellig Michael's size, isolation and early medieval date—the relatively high proportion of synanthropic and wood-dependent beetles. A continuously occupied, mainland, medieval-dated site surrounded by farmland, woodlands and many potential source habitats might be expected to produce such assemblages. Therefore a number of assemblages from sites of early to later medieval date with moderately rich synanthropic and/or wood-dependent elements were selected for comparative purposes (Table 17). To explore the woodland element of the assemblage further, two samples from a woodland hollow in Derrycunihy Wood, Killarney, were selected. These samples also represent the geographically closest 'natural' insect assemblages that could be sourced.



Ill. 6.4—Ordination of insect assemblages from lower monks' garden and a range of other assemblages from Ireland and Russia.

Table 17—List of sites used in ordination, showing total MNI, percentage synanthropes and percentage wood-associated beetles.

Site/sample no.	MNI	Synanthropic fauna[1]	Wood-associated fauna[1, 2]	Feature type
SK88	72	21.1	11.3	Skellig Michael: LMG
SK87	219	13.2	9.1	Skellig Michael: LMG
SK12	105	11.4	15.2	Skellig Michael: LMG
SK13	68	13.2	5.9	Skellig Michael: LMG
RS194	168	20.1	3.0	Roestown, Co. Meath: ditch fill, rural medieval settlement, 8th–10th century AD[3]
TB613	68	17.6	1.5	Essex St., Dublin: house floor layer, urban settlement, 10th century AD[4]
TB479	87	34.5	14.9	Essex St., Dublin: pit fill, urban settlement, 13th century AD[4]
TB480	84	40.5	13.1	Essex St., Dublin: pit fill, urban settlement, 13th century AD[4]
BL8	77	41.6	7.8	Back Lane, Dublin: backfill 'house' floor, urban settlement, 13th/14th century AD[4]
BL56	72	20.8	5.6	Back Lane, Dublin: house floor layer, urban settlement, early 13th century AD[4]
BL58	103	52.4	21.4	Back Lane, Dublin: house floor layer, urban settlement, early 13th century AD[4]
ND49	130	20.8	5.4	Novgorod, Russia: house floor layer, urban settlement, early 13th century AD[5]
ND48	100	19.0	10.0	Novgorod, Russia: outdoor deposit beside property boundary, urban settlement, late 13th/early 14th century AD[5]
DC10	53	0.0	39.6	Derrycunihy Wood, Co. Kerry: forest hollow peat deposit, 16th century AD[6]
DC54	63	0.0	17.5	Derrycunihy Wood, Co. Kerry: forest hollow peat deposit, approx. 4th century BC[6]

1 As percentage of overall MNI, included 'varied' or 'various biotopes' categories.
2 May include species counted in the 'synanthropic' group, e.g. *Anobium punctatum*.
3 Reilly 2006.
4 Reilly 2003.
5 Reilly, forthcoming.
6 Reilly 2008.

This left a distance matrix of fifteen samples and 217 species. Four successive runs of NMS were performed, producing similar and stable two-dimensional solutions with consistent stress levels of 9.04 (less than 10 is considered a 'good' solution). A Sorenson (Bray-Curtis) city block distance measure was used for all calculations, since Euclidian distance measures are deemed unsuitable for data sets that contain many empty cells (McClune and Grace 2002).

In ordination space the most similar samples are grouped closest together and the axes describe the gradients of highest variance. Ill. 6.4 shows the ordination of all the samples listed in Table 17. A number of obvious patterns emerge. The two Derrycunihy samples group away from all the others, suggesting that there is little underlying similarity between these assemblages and all the others. The lower monks' garden samples also form a discrete group, which is unsurprising given the essential similarity between these four assemblages.

Axis 1 appears to describe the greatest variance within the assemblages as a whole, as it is along this axis that samples are most spread out. Interestingly, some affinity exists between the Derrcunihy samples, particularly DC54, and the lower monks' garden samples. This may have to do with woodland species similarity. On Axis 2, the majority of samples are more or less grouped together, with only the Derrycunihy samples forming a discrete group. Roestown displays some independence, which may be related to the higher 'outdoor' and 'aquatic' element of this assemblage compared to all but the Derrycunihy samples. This sample came from the ditch fill of a rural enclosed settlement site, but the ditch was clearly a repository for 'household' waste (Reilly 2006). Therefore the graph would appear to confirm that the Skellig samples have more in common with all the assemblages from continuously occupied, mainland medieval sites, particularly the 'urban' settlement locations of Back Lane and Essex Street West, Dublin. As the graph shows, geography does not necessarily play a role in assemblage differentiation, as the Novgorod samples also show affinity to the Back Lane/Essex Street samples. The 'independent' trend in the two Russian assemblages is undoubtedly due to the unique elements of the fauna, primarily the wood-dependent beetles, which do not occur in any of the Irish assemblages. Synanthropic fauna, particularly during the medieval period, was common to all settlement sites, regardless of isolation, but clearly depended on particular human behaviours, which will be discussed further in Section 6.4.3.

6.4.3 DISCUSSION

Comparisons with other contemporary monastic sites

The analysis of insect remains from Skellig Michael is one of the unique elements of the post-excavation analysis. As far as the author is aware, there are no published examples of insect analysis carried out on any other early monastic site in Ireland or Britain. Such work may exist in unpublished 'grey' literature or otherwise inaccessible archives. Nevertheless, evidence from other biological analyses may give insights into the origins of the Skellig Michael insect assemblages.

A small number of monastic sites around Ireland have had animal/fish/bird bone, wood/charcoal and plant macrofossil analyses completed. Close by, and particularly relevant to Skellig Michael, is the island monastic site of Illaunloughan (Marshall and Walsh 2005). The monastery lies on a tiny island in the Portmagee Channel, between Portmagee and Valentia Island, and was occupied between the seventh and ninth centuries, contemporary with the early phase of occupation at Skellig Michael. Analysis of the bioarchaeological remains showed a mixture of locally sourced foodstuffs, mainly in the form of birds, fish and molluscs, and foodstuffs clearly sourced from further afield (Murray and McCormick 2005). The island was too small to sustain arable farming, so the arable food crops identified, including oats and barley, must have come from the mainland or possibly from Valentia Island (*ibid.*; Murray *et al.* 2004).

There is a suggestion that the extensive medieval settlement on Bray Head, Valentia Island, acted as a 'mother-house' to Illaunloughan, and perhaps also to Skellig Michael (Hayden 1998). Excavations and field survey have identified multiple house sites, two extant grain kilns and an extensive early medieval field system. Plant remains from Skellig Michael were sparse and poorly preserved, with barley being the main cultivated crop, similar to Illaunloughan (see plant remains, above). No chaff was recovered but goosefoot, a common arable weed plant, was found in F638, one of the early medieval garden soils. Overland, in her analysis of pollen from the possible original ground surface on Skellig at the time of construction of the large oratory, tentatively suggests arable cultivation on the island (see pollen analysis, below), but there is nothing in the insect evidence to corroborate this. There are very few phytophagous beetles and none specifically indicative of arable cultivation. No grain pests were recovered either, but this is less surprising as it is unlikely that these non-native beetles arrived in Ireland before the late Viking or early Anglo-Norman period and may not have been present in the local area prior to the late thirteenth century (Reilly 2003). It is possible that goosefoot seeds, and indeed pollen of arable plants, were caught up in hay and other bedding material brought out to the island and subsequently used for fertilising the garden soil.

Most of the wood taxa identified in the charcoal remains at Illaunloughan were also identified on Skellig Michael (O'Carroll 2005; O'Donnell, this report). The overlap in terms of species is notable, especially the dominance of oak and hazel but also the presence of yew. Extensive yew- and oak-dominated woodlands exist at Derrycunihy and Reenadinna near Killarney, and would have been even more extensive in early medieval times (Mitchell 1988). Indeed, given the underlying geology of the immediate area, acidic Old Red Sandstone, it is unlikely that the yew wood was sourced from nearby and may very well have come from Reenadinna. It is likely, however, that most of the other wood gathered for use as fuel was sourced much closer to home, perhaps in sheltered copses or small woodlands on the Iveragh peninsula. The wood-boring insects would suggest a 'natural' rather than a structural origin for much of the fuel wood, which generally agrees with the range of wood taxa found at Skellig and Illaunloughan.

Animal bone from Illaunloughan consisted mainly of cattle and sheep/goat, with a high incidence of very young animals. This could indicate culling strategies owing to grazing pressure or, possibly, support from the local lay population in the form of dues or tithes of the first-born calf, lamb etc. (McCormick 1998; Murray and McCormick 2005). Insects from the lower monks' garden layers in particular suggest that animal butchery waste—possibly discarded bone or skins—were incorporated into the soil matrix. This is not surprising, since the mammal remains recovered indicate that the meat of goat, sheep, pig and cattle was consumed by the monks, in addition to birds (predominantly Manx shearwater and puffin) and locally caught fish such as sea bream.

The 'midden' layer on Illaunloughan, from which much of the bioarchaeological material was recovered, showed a deliberate attempt to build up a garden soil, possibly for growing vegetables and medicinal plants, but was much less extensive than the monks' gardens on Skellig (Murray *et al.* 2004). It is unfortunate that insects were not analysed from this deposit, but in other respects the midden mirrors the 'made-up' nature of the monks' garden soil layers. Indeed, excess waste material from this settlement may have been brought out to Skellig for use in the garden there and may be one source of the synanthropic fauna. The settlement at Bray Head, Valentia, may have been another source, given the more extensive, and possibly intensive, nature of the settlement there.

At High Island, Co. Galway, an early medieval monastic site occupied around the same time as Skellig Michael, charcoal, animal bone and plant remains were analysed (Scally, forthcoming). As O'Donnell notes in this report, oak and hazel again appear to be the main fuel woods (Gale, forthcoming). Large quantities of grain were also recovered, along with somewhat more concrete evidence for crop-processing and perhaps arable cultivation on site (McClatchie 2008). Animal bone included cattle, sheep and pig, while fish and bird bone were also present (Scally 1999). While High Island is a larger, flatter island than Skellig and could support some animal husbandry and crop production, it is likely that certain food produce, bedding and other organic material was physically brought to the island from supporting monastic or lay communities on the mainland. In the absence of insect remains, however, it is difficult to get a picture of the nature of the occupation layers and the signatures that such activities would have left behind.

A thick, humus-rich 'midden' beside the monastic settlement on Iona, off the western Scottish coast, was extensively sampled for animal, fish and bird bone (Murray *et al*. 2004). Unfortunately, no archaeobotanical analysis was carried out but a pollen core was taken from the vallum ditch (Bohncke 1981). The combined evidence suggested a mixed food base of animal products and cereal cultivation, with evidence for the growing of crops on the island (Murray *et al*. 2004). Interestingly, despite the somewhat larger size of this island and the possibility of supporting animal husbandry, the animal bone evidence suggested importation of much of the meat consumed on the island. Again, as with Skellig Michael and Illaunloughan, it indicates the degree to which these settlements were supported by 'outside' communities and gives some insights into the sources of the imported elements of the insect fauna on Skellig Michael.

Comparisons with other contemporary 'isolated' medieval sites

While no comparative insect studies of monastic sites exist for Ireland and Britain, there is a small corpus of work from early medieval 'isolated' settlement sites. The term 'isolated' is taken here to mean a small-scale settlement delimited by ditch or water and/or separated by some distance from neighbouring settlements. This distinction is important, as it helps to illustrate the remarkable nature of the insect assemblages from Skellig Michael, in particular the synanthropic and wood-associated elements.

Theoretically, any human habitation site that is occupied continuously over many decades or centuries will accrete a rich insect fauna. In general, the synanthropic species are associated with decaying plant, wood and animal matter. The gathering of plants for food, floor coverings, bedding and animal fodder, the processing of animal products, the cleaning of skins and woodworking all have signature insect associations, which, over time, become closely associated with human habitation sites. The mechanisms by which species end up on habitation sites are manifold but undoubtedly human transport has a large role to play (Kenward and Allison 1994b). Direct invasion from surrounding habitats to 'artificial' ones that mimic their natural requirements is also important but obviously requires direct access.

'Mainland' sites, such as Deer Park Farms, Co. Antrim, or Roestown, Co. Meath, probably attained their synanthropic fauna via both pathways (Kenward and Allison 1994a; Reilly 2006). At Deer Park Farms, the remarkably rich synanthropic insect fauna led Kenward to speculate that wholesale importation of some elements of the fauna from other existing centres of occupation must have occurred at different times, and/or that the site was continuously occupied for many centuries (Kenward 1997). The richness of the fauna was really only comparable, despite obvious limitations, to long-lived Anglo-Scandinavian and medieval deposits at Coppergate, York (*ibid*.). While the sampling contexts at Skellig Michael differ from Deer Park Farms (garden soils vs house floor layers) and the richness of the faunas are not directly comparable, there are clear parallels. Wholesale elements of the synanthropic fauna were probably imported onto the Deer Park Farm site in its earliest phase, as it is perhaps too 'complete' or rich to have accreted naturally. The nature of the lower monks' garden soils would also suggest initial importation of the synanthropic element with a gradually developing *in situ* breeding population over time, probably from the addition of bedding and other material from the cells on the island (see Section 6.4.2).

Roestown had a much more modest synanthropic fauna, as the insects were recovered in a secondary deposit, e.g. a ditch fill. Admixture of different habitat elements, most notably naturally occurring species living within the wet ditch and on plants growing there, were dominant (Reilly 2006). Nevertheless, it suggests that living conditions within the habitation zone of the site were similar to what one might expect to see in Hiberno-Norse or medieval Dublin (Reilly 2003). The key difference between the Roestown and Skellig Michael assemblages is the rich dung and 'stable manure' fauna evident in the former (Reilly 2006). This illustrates the more extreme isolation of the Skellig Michael community compared to Roestown, which was clearly surrounded by pastureland and may even have had animals present within the enclosure.

Crannogs might be considered a better analogue for Skellig Michael, although these island settlements were much more accessible from the mainland and potential habitat sources for the insects recorded in excavated deposits. Unfortunately few insect studies from crannogs exist, despite the obvious potential they present. A midden feature excavated on Coolure Demesne, Co. Westmeath, was sampled for insects and plant macrofossils (Johnston and Reilly 2007). The plant remains were well preserved and plentiful, indicating a background wetland element and possible anthropogenic activity. The presence of carbonised cereal grains and fruit stones suggested the dumping of organic domestic waste. The insect remains, however, were poorly preserved, fragmentary and mainly indicative of foul conditions, possibly human faeces and animal dung. Despite its location within the occupation zone of the crannog, no true synanthropic fauna were present. This suggests that the midden was more akin to a cesspit deposit than a dump of household waste. Buiston crannog, in Ayrshire, Scotland, produced a similar picture, with a minor synanthropic element within the occupation zone (Kenward *et al.* 2000). It was suggested there that the poor nature of this aspect of the fauna was due to a number of factors, including intermittent or discontinuous occupation, the use of 'fresh' wood and the waste disposal habits of the occupants, which meant that household waste was not dumped within the occupation zone (*ibid.*). The first of these is considered the most important, however, and the key difference perhaps between crannog sites like Buiston or Coolure and continuously occupied sites like Deer Park Farms, Roestown or even Skellig Michael.

Biogeographical implications of the insect assemblages

The insect assemblages from Skellig Michael raise some interesting biogeographical issues in relation to small islands and their native flora and fauna. A large element of the recorded assemblages from all contexts on Skellig Michael is probably imported. This is surmised on the basis that the habitats required to maintain many of the recorded species, most notably the wood-associated, synanthropic and some generalist decomposer species, do not exist in the present day on the island. The latter two groups, in particular, require the continuous presence of large amounts of decaying plant matter, e.g. leaf litter, mouldy hay etc., and other decomposing material.

Sadler (1999) notes that islands are 'bounded ecosystems', with their flora and fauna largely representing a microcosm of the 'mainland' and mostly derived through chance dispersal. Species generally arrive over a long period of time via wind, precipitation, ice/soil/wood-rafting and carriage by birds. In general, research shows that contact with humans often has a detrimental effect on the local biodiversity of islands, causing extinctions of plant and animal species, most notably birds (Vitousek 1988). Palaeoecological studies, however, particularly in the north Atlantic region, have also shown little or no impact in terms of extinctions but a dramatic increase in new arrivals of plants, animals and insects into otherwise relatively impoverished ecosystems (Buckland *et al.* 1991; McGovern *et al.* 1983; Sadler 1990).

Changes in land management practices since the first Norse settlements on these islands have resulted in local extirpation of some species (Sadler 1999). Over half of the present fauna of Iceland and the Faroe Islands, however, is thought to be a direct result of human importation. These species are most commonly associated with farm site habitats—stored hay, stored foodstuffs, waste disposal of faeces, dung and carrion. Continued human occupation of islands like Iceland and Faroe has maintained these populations, while the abandonment of European settlements on Greenland, for example, led to the extinction of elements of this imported synanthropic fauna before recolonisation of the island in the mid-eighteenth century (*ibid.*).

The pre-*Landnam* and post-*Landnam* insect fauna is well understood on these islands because of the extensive palaeoecological work that has been carried out there. The situation on Skellig Michael is of course not so clearly understood. We have no baseline understanding of the present island insect fauna; indeed, no systematic baseline survey of the beetle fauna of any of our coastal islands exists. No long-term palaeoecological study of the insect fauna from this or any other island exists either. Both lines of enquiry would be highly beneficial to the future management of the island and would also place in clearer context the remarkable nature of the settlement-phase insect fauna. It would more clearly disentangle the 'native' from the 'imported' elements and would establish whether any of the imported elements have subsequently found a foothold on the island, in the absence of direct human occupation.

6.4.4 Summary

Seven samples from the monastic settlement at Skellig Michael produced large insect assemblages. Three were largely modern—two from under the *leacht*, contaminated by petrel/puffin nests, and one from the cistern. The four samples from the lower monks' garden soil layers, dated to the early medieval period but in part redeposited in the twelfth–fourteenth centuries, produced remarkable assemblages, however, giving insights into the local site environment and economy. They suggest that much of the deposited material was made up of discarded 'household' waste, probably from the cells on the island but supplemented or originally supplied from imported organic material from the mainland. The assemblages also produced two wood-boring beetles, one of which, *Pseudophloeophagus aeneopiceus*, is very rare in Ireland today. Neither species could be native to the island and together they suggest the gathering of either mainland-sourced driftwood, kindling from local forest floors or possibly even secondary-use wood from mainland occupation sites.

The building up and maintaining of the garden area was clearly a very important element of monastic life and has clear parallels on other contemporary early medieval sites, such as Illaunloughan, Co. Kerry, High Island, Co. Galway, and Iona in Scotland. The insects do not indicate that animal dung was used as a fertiliser but seaweed may have been a contributor, as well as human excrement and animal/bird bones. Unfortunately, no clear evidence from the insect assemblages emerges about what might have been grown in the garden soils.

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Table 18—Charcoal and wood identification details from Skellig Michael.

Year	Sample	Sample description	Context no.	Context description	Cutting	Level	Layer	Identification	Fragment count	Weight (g)	Radio-carbon dating	Growth	Ring curvature	Dimensions (mm)	Ring count
1995	S54	Charcoal	F634(5)	Lower monks' garden	5	6		*Quercus* sp. (oak)	15	2.45		Medium	Strongly curved	8–10	4–5
1995	S54	Charcoal	F634(5)	Lower monks' garden	5	6		*Salix* sp. (willow)	1	1.68	Yes	Medium	Strongly curved	10	20
1995	S66	Wood sample, tiny #1	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S67	Wood sample, tiny #2	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S68	Wood sample, tiny #3	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S69	Wood sample, tiny #4	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S70	Wood sample, tiny #5	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S71	Wood sample, tiny #6	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S72	Wood sample, tiny #7	F634(4)	Lower monks' garden	4		D	Unidentified							
1995	S73	Wood sample, tiny #8	F634(4)	Lower monks' garden	4		D	*Taxus baccata* (yew)			Yes	Slow	Strongly curved	42 x 15 x 3	3–4
1995	S74	Wood sample, tiny #9	F634(4)	Lower monks' garden	4		D	*Taxus baccata* (yew)			Yes	Slow	Strongly curved	11 x 9	3
1995	S75	Wood sample, tiny #10	F634(4)	Lower monks' garden	4		D	*Taxus baccata* (yew)			Yes	Slow	Strongly curved	102 x 10 x 7	3–4
1995	S76	Wood sample, tiny #11	F634(4)	Lower monks' garden	4		D	*Taxus baccata* (yew)			Yes	Slow	Strongly curved	70 x 15 x 5	3–4
1995	S81	Charcoal #4	F634(4)	Lower monks' garden	4		D	*Corylus avellana* (hazel)	2	0.71	Yes	Medium	Strongly curved	8	3
1995	S83	Charcoal #2	F635(4)	Lower monks' garden	4		E	*Betula* sp. (birch)	3	0.57		Medium		7–8	2–3
1995	S83	Charcoal #2	F635(4)	Lower monks' garden	4		E	*Corylus avellana* (hazel)	1	0.53	Yes		Roundwood	5	8
1995	S83	Charcoal #2	F635(4)	Lower monks' garden	4		E	*Quercus* sp. (oak)	9	1.46		Slow	Mixture	10	5–7
1995	S84	Charcoal #3	F634(4)	Lower monks' garden	4		D	*Fraxinus* sp. (ash)	10	3.27		Slow	Weakly curved	18–20	35
1995	S85	Charcoal #1	F636(4)	Lower monks' garden	4		F	*Corylus avellana* (hazel)	4	0.5	Yes	Medium	Strongly curved	7–8	10
1995	S85	Charcoal #1	F635(4)	Lower monks' garden	4		F	*Quercus* sp. (oak)	3	0.99		Medium	Weakly curved	5–9	6
1996	S15	Charcoal	F634(5)	Lower monks' garden	5	3	D	*Corylus avellana* (hazel)	1	0.03	Yes		Strongly curved	4–5	2
1996	S15	Charcoal	F634(5)	Lower monks' garden	5	3	D	*Fraxinus* sp. (ash)	1	0.01			Strongly curved	4–5	2–3
1996	S15	Charcoal	F634(5)	Lower monks' garden	5	3	D	*Quercus* sp. (oak)	6	0.1			Strongly curved	4–5	2–3
1996	S16	Charcoal	F634(5)	Lower monks' garden	5	1	D	*Fraxinus* sp. (ash)	3	0.68		Medium	Strongly curved	8	7–8
1996	S16	Charcoal	F634(5)	Lower monks' garden	5	1	D	*Quercus* sp. (oak)	13	0.7		Medium		10	7–8
1996	S16	Charcoal	F634(5)	Lower monks' garden	5	1	D	*Taxus baccata* (yew)	1	0.11		Slow	Strongly curved	8	9
1996	S17	Charcoal	F636(5)	Lower monks' garden	5	3	F	*Fraxinus* sp. (ash)	1	0.01		Medium	Strongly curved	4–5	3
1996	S17	Charcoal	F636(5)	Lower monks' garden	5	3	F	*Quercus* sp. (oak)	9	0.31		Slow	Weakly curved	7–8	8
1996	S18	Charcoal	F635(5)	Lower monks' garden	5	5	E	*Alnus* sp. (alder)	4	0.3		Medium	Strongly curved	10	4
1996	S18	Charcoal	F635(5)	Lower monks' garden	5	5	E	*Corylus avellana* (hazel)	1	0.02	Yes	Medium	Strongly curved	10	4–5
1996	S18	Charcoal	F635(5)	Lower monks' garden	5	5	E	*Fraxinus* sp. (ash)	6	0.73		Medium	Strongly curved	10	4–5
1996	S18	Charcoal	F635(5)	Lower monks' garden	5	5	E	*Ilex aquifolium* (holly)	4	0.25		Medium	Strongly curved	10	4–5
1996	S18	Charcoal	F635(5)	Lower monks' garden	5	5	E	*Quercus* sp. (oak)	11	0.97		Medium	Weakly curved	10	5–6
1996	S19	Charcoal	F635(5)	Lower monks' garden	5	3	E	*Quercus* sp. (oak)	3	1.65		Medium	Strongly curved	10	5
1996	S20	Charcoal	F635(5)	Lower monks' garden	5	1	E	*Corylus avellana* (hazel)	2	0.52	Yes	Medium	Strongly curved	7	4

1996	S20	Charcoal	F635(5)	Lower monks' garden	5	1	E	*Quercus* sp. (oak)	5	0.53		Medium	Strongly curved	8	2–3
1999		Charcoal	F505	Behind east entrance				*Corylus avellana* (hazel)	13	0.6	Yes	Medium	Strongly curved	5–10	2–8
1999		Charcoal	F505	Behind east entrance				*Fraxinus* sp. (ash)	3	0.4		Medium	Strongly curved	5–10	2–10
1999		Charcoal	F505	Behind east entrance				*Prunus* sp.	3	0.29		Medium	Strongly curved	5–10	5
1999		Charcoal	F505	Behind east entrance				*Quercus* sp. (oak)	2	0.14		Medium	Weakly curved	5–10	5
1999		Charcoal	F505	Behind east entrance				*Salix* sp. (willow)	7	0.44		Medium	Strongly curved	5–10	1–5
1999		Charcoal	F505	Behind east entrance				*Ulmus* sp. (elm)	1	0.02		Medium	Strongly curved	5–10	5
1999		Charcoal	F507	Low level behind east entrance				*Alnus* sp. (alder)	2	0.48		Medium	Weakly curved	5–10	5
1999		Charcoal	F507	Low level behind east entrance				*Corylus avellana* (hazel)	16	1.05	Yes	Medium	Strongly curved	5–10	2–10
1999		Charcoal	F507	Low level behind east entrance				*Fraxinus* sp. (ash)	44	2.29		Medium	Strongly curved	5–10	5–16
1999		Charcoal	F507	Low level behind east entrance				*Prunus avium/padus* (wild/bird cherry)	2	0.24		Medium	Strongly curved	5–10	2–8
1999		Charcoal	F507	Low level behind east entrance				*Quercus* sp. (oak)	20	0.91		Medium	Weakly curved	5–10	2–15
1999		Charcoal	F507	Low level behind east entrance				*Salix* sp. (willow)	16	1.38		Medium	Strongly curved	5–10	2–8
1999		Charcoal	F545	Sample from south entrance, lower blocking. In ash and brown organic material.				*Corylus avellana* (hazel)	49	5.35	Yes	Medium	Strongly curved	5–10	2–9
1999		Charcoal	F545	Sample from south entrance, lower blocking. In ash and brown organic material.				*Fraxinus* sp. (ash)	6	1.27		Medium	Strongly curved	5–10	5–10
1999		Charcoal	F545	Sample from south entrance, lower blocking. In ash and brown organic material.				*Quercus* sp. (oak)	45	6.66		Medium	Weakly curved	5–10	5–15
2000	S125	Charcoal	F572	From *leacht* in west end of lower monks' garden from loose mid-brown sandy silt				*Alnus* sp. (alder)	2	0.68	Yes	Medium	Strongly curved	9	4–9
2000	S125	Charcoal	F572	From *leacht* in west end of lower monks' garden from loose mid-brown sandy silt				*Quercus* sp. (oak)	8	0.75		Medium	Strongly curved	6–8	3
2000	S131	Charcoal	F561	Area to east of St Michael's Church from ash layer in SE corner of *leacht*				*Quercus* sp. (oak)	1	3.33			Weakly curved		
2000	S14	Charcoal	F579	Base of *leacht*, disturbed by puffins				*Corylus avellana* (hazel)	4	0.39	Yes	Medium	Strongly curved	9	3–4
2000	S14	Charcoal	F579	Base of *leacht*, disturbed by puffins				*Salix* sp. (willow)	5	0.21		Medium		5	3–5
2000	S14	Charcoal	F579	Base of *leacht*, disturbed by puffins				*Taxus baccata* (yew)	2	0.69		Slow	Strongly curved	15	5
2000	S15	Charcoal	F580	Base of *leacht*				*Corylus avellana* (hazel)	3	0.1	Yes	Medium	Strongly curved	7	3
2000	S16	Charcoal	F581	Base of *leacht*, under C00:09				*Betula* sp. (birch)	6	0.48	Yes	Slow		9	3
2000	S16	Charcoal	F581	Base of *leacht*, under C00:09				*Fraxinus* sp. (ash)	6	1.27		Fast	Weakly curved	15	16
2000	S16	Charcoal	F581	Base of *leacht*, under C00:09				*Quercus* sp. (oak)	6	0.42		Slow	Weakly curved	6	4
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Betula* sp. (birch)	1	0.2					
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Corylus avellana* (hazel)	3	0.17	Yes	Medium	Strongly curved	5–8	5–6
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Fraxinus* sp. (ash)	4	0.2		Slow	Weakly curved	10	10
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Picea/Larix* (spruce/larch)	3	0.23		Slow	Strongly curved	5–10	8
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Quercus* sp. (oak)	10	1.48		Mixed (slow and fast)	Weakly curved	7–12	2–7

Table 18 (cont.)—Charcoal and wood identification details from Skellig Michael.

Year	Sample	Sample description	Context no.	Context description	Cutting	Level	Layer	Identification	Fragment count	Weight (g)	Radio-carbon dating	Growth	Ring curvature	Dimensions (mm)	Ring count
2000	S17	Charcoal	F583	SE of *leacht*, overlying large step				*Salix* sp. (willow)	2	0.36		Fast	Strongly curved	6	2
2000	S18	Charcoal	F588	SW of *leacht*				*Alnus* sp. (alder)	4	0.13		Medium		5	2–3
2000	S18	Charcoal	F588	SW of *leacht*				*Betula* sp. (birch)	1	0.05	Yes	Medium		5	2–3
2000	S18	Charcoal	F588	SW of *leacht*				*Quercus* sp. (oak)	2	0.07		Medium		5	3–4
2000	S19	Charcoal	F589	SW of *leacht*				*Rhamnus catharticus* (purging buckthorn)	1	0.9	Yes				
2000	S20	Charcoal	F590	S of *leacht*				*Quercus* sp. (oak)	1	0.19			Weakly curved		
2000	S41	Piece of timber	F509	East entrance above stones collapsed onto steps				Unidentified							
2002	S141	Charcoal	F684	Bulk sample from 3b hearth				Unidentified							
	S81	Charcoal #4	F634(4)	Lower monks' garden	4		D	*Fraxinus* sp. (ash)	3	0.28		Slow	Strongly curved	8	4
	S81	Charcoal #4	F634(4)	Lower monks' garden	4		D	*Quercus* sp. (oak)	3	0.31		Medium	Weakly curved	10	3

Table 19—Species list (nomenclature after Böhme 2005). LMG = lower monks' garden.

Sample/ID no.	S88	S87	12	13	14	3/4	8	Habitat	Distribution
Context	F634(4), LMG	F634(4), LMG	F638, LMG	F638, LMG	F615, cistern	F593, *leacht* area	F596, *leacht* area		
Genus/species									
Carabidae									
Nebria brevicollis (F.)	–	–	1	–	–	–	–	Woods, woodland edges, gardens	Widespread
Notiophilus biguttatus (F.)	–	–	–	–	–	–	1	Woods, gardens, in decaying vegetation	Widespread
Trechus fulvus Dej.	–	–	–	–	–	1	–	Coastal sites, rocky cliffs, shorelines	Widespread but mainly coastal around Ireland
T. quadristriatus (Schrank)	–	2	–	1	–	–	2	Disturbed ground, litter, under stones	Widespread
Trechus sp.	1	–	1	–	–	–	–	Varied biotopes	Varied distribution
?*Bembidion* (*Ocys*) *harpaloides* Serv.	–	–	–	–	–	1	–	In leaf litter, under bark, in damp wood	Widespread
Pterostichus strenuus (Panz.)	–	–	–	–	–	1	–	In damp woodland, marshes	Widespread
P. nigrita (Payk.)	1	2	–	–	–	1	–	Grassland, marshes, wet woodland	Widespread
Pterostichus spp	–	–	–	1	–	1	–	Varied biotopes	Varied distribution
Calathus fuscipes (Goeze)	–	2	–	–	–	1	1	Disturbed ground, arable and cultivated soils	Widespread
Agonum fuliginosum (Panz.)			1					In bogs, marshes, wet woodland	Widespread
Hydraenidae									
Ochthebius sp.						1	1	Aquatic habitats	Varied distribution
Hydrophilidae									
Cercyon littoralis (Gyll.)		3		1				In tidal refuse and seaweed	Widespread, around the coasts
Cercyon lateralis (Marsh.)				1	3		1		
Cercyon atricapillus (Marsh.)		2		5				In damp compost, litter, dung	Widspread but localised
Cercyon analis (Payk.)	2	2		1				Dung, decaying vegetation	Widespread
Cercyon sp.			3					Varied biotopes but mainly foul	Varied distribution
Megasternum obscurum (Marsh.)	6	10	6	5		3	2	Dung, decaying vegetation	Widespread
Cryptopleurum minutum							1	Compost and dung	Widespread
Histeridae									
Hister impressus F.	2	1	1	1				Carrion and dung, mainly	Varied distribution
Catopidae									
Sciodrepoides watsoni (Spence)			2	2	5	132	128	In dead birds, animals, birds' nests	Westerly distribution in Ireland and UK (esp. Scottish islands)
Clambidae									
Clambus sp.		1						Decaying wood, vegetation on mould/ fungi	Varied distribuion
Scydmaenidae									
Neuraphes sp.	2		4					Wood litter mainly	Varied distribution
Stenichus sp.		5	1					Under bark, in moss, in woodlands	Varied distribution
Ptilidae									
Ptenidium spp	5	7	5	3	4			In rotting vegetation, seaweed and wood	Varied distribution
Acrotrichus spp	1	3	4	2				In dung and decaying vegetation mainly	Varied distribution

Table 19 (cont.)—Species list (nomenclature after Böhme 2005). LMG = lower monks' garden.

Sample/ID no.	S88	S87	12	13	14	3/4	8	Habitat	Distribution
Context	F634(4), LMG	F634(4), LMG	F638, LMG	F638, LMG	F615, cistern	F593, *leacht* area	F596, *leacht* area		
Genus/species									
Staphylinidae									
Micropeplus staphylinoides (Marsham)	2	4	3	2				Fungoid decaying vegetation	Widespread but local
Metopsia clypeata (Mull.)		12	4	2				In moss, leaves, decaying vegetation	Widespread but local
Phyllodrepa sp.	1							Varied biotopes	Varied distribution
Omalium sp.		2	4	2				Varied biotopes but often in decaying seaweed, fungi, carrion	Varied distribution
Lesteva spp	2					2		Varied biotopes but generally wet	Varied distribution
Syntomium aeneum (Mull.)	2	1	1	1				In wood debris, decaying vegetation	Widespread but not generally abundant
Carpelimus spp	1	3	2	3				Varied biotopes but generally in decaying vegetation	Varied distribution
Anotylus tetracarinatus Block		2						In rotting vegetation and carrion	Widespread
Stenus spp	2	8	3	3				Varied biotopes but generally wet	Varied distribution
Euaesthetus sp.	1		1					In damp places, wet moss, litter	Widespread but local
Lathrobium spp		2		2		7	4	Varied biotopes but generally wet	Varied distribution
Leptacinus sp.	4							In compost, dung, nests of ants	Varied distribution
Xantholinus spp	2	9	7	4		2		Varied biotopes	Varied distribution
Othius spp	1		1					Varied biotopes but generally in decaying vegetation	Varied distribution
Gabrius spp						4		Varied biotopes but often in decaying seaweed, fungi, carrion	Varied distribution
Ocypus olens Mull.				1		1		Decaying vegetation, generally foul habitats	Widespread
Tasgius ater Grav.			1			2		Damp litter, near the sea (can be synanthropic)	Mainly coastal distribution
Quedius spp	3	3			1	4	4	Varied biotopes	Varied distribution
Philonthus/Quedius spp		6	5	3	1	8	5	Varied biotopes	Varied distribution
Sepedophilus sp.	1	6	6	2	1		1	Decaying wood/vegetation, mould, fungi	
Crataraea suturalis (Mann.)		2						In decaying vegetation (often synanthropic)	Varied distribution
Aleocharinae sp. indet.	5	20	7					Varied biotopes	Varied distribution
Pselaphidae									
Euplectus sp.	2		2					In moss, decaying vegetation and under bark	Varied distribution
Bryaxis bulbifer (Reich.)		10		2				In damp moss, in fens, alder carr	Widespread but local
Pselaphus heisei (Hbst.)		1		1				In damp moss, meadows, marshes	Widespread

Sample/ID no. Context	S88 F634(4), LMG	S87 F634(4), LMG	12 F638, LMG	13 F638, LMG	14 F615, cistern	3/4 F593, *leacht* area	8 F596, *leacht* area	Habitat	Distribution
Genus/species									
Elateridae									
Dalopius marginatus (L.)		1			1			Dead wood, humus layer in woodlands	Widespread but local
Agriotes sp.				1				On bushes, foliage, grassy places	Varied distribution
Athous ?haemorrhoidalis (F.)				1	1			On shrubs, trees, herbs and flowers	Widespread
Athous sp.		2	1			2	1	Varied biotopes	Varied distribution
Nitidulidae									
Meligethes sp.		1						On various flowering herbs and shrubs	Varied distribution
Omosita colon (L.)	3	44	7	3				Carrion, other animal remains, rotting	Widespread
Cryptophagidae									
Cryptophagus dentatus grp.	2	1						In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Cryptophagus sp.		2						In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Atomaria spp		3		2				In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Lathridiidae									
Lathridius minutus grp.		1						In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Dienerella sp.			1					In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Corticaria sp.	2	3	2					In varied biotopes but generally mould-feeders (often synanthropic)	Varied distribution
Colydidae									
Aglenus brunneus (Gyll.)				1				In mould on decaying plant and animal matter (often synanthropic)	Very local
Cerylon sp.		1						In dead wood, under bark	Varied distribution
Endomychidae									
Mycetaea subterranea (Marsh.)	11	17	8	6				In plant and animal debris, rotting hay, foodstuffs (often synanthropic)	Widespread
Anobiidae									
Anobium punctatum (Deg.)		2	2					Wood-borer in structural and natural wood (often synanthropic)	Widespread, especially indoors
Scarabaeidae									
Aphodius sp.	1							Generally in animal dung	Varied distribution
Curculionidae									
Otiorhynchus arcticus (O. Fab.)					1	1	1	Ground-living, low vegetation, upland	Widespread but more generally coastal than montane in Ireland
Apion sp.			1		2			On various herbs and ground vegetation	Varied distribution
Pseudophloephagus aeneopiceus (Bohe.)	2	3	2	2		2	1	Damp rotting timber of deciduous tree species in coastal woodlands, driftwood, rare in buildings	Rare in Ireland
Rhopalomesites tardyi (Curtis)	1	7	4	1		2		In dead wood of wide range of deciduous trees, not assoc. with buildings	Marked western/coastal distrib. in Britain, slightly more widespread in Ireland

Table 19 (cont.)—Species list (nomenclature after Böhme 2005). LMG = lower monks' garden.

Sample/ID no. **Context**	**S88** **F634(4), LMG**	**S87** **F634(4), LMG**	**12** **F638, LMG**	**13** **F638, LMG**	**14** **F615, cistern**	**3/4** **F593, *leacht* area**	**8** **F596, *leacht* area**	**Habitat**	**Distribution**
Genus/species									
Rhinoncus ?castor (F.)						1	1	On *Rumex*, fallow fields, banks etc.	Widespread
Rhynchaenus sp.			1					Leaf-miner on various deciduous tree species	Varied distribution
?*Rhamphus* sp.						1			
Non-Coleoptera									
Hymenoptera (ants)									
Tetramorium caespitum (L.)	6	17	5	4	8	2	3	Coastal sand or cliffs, heaths	Mainly southerly distribution in Ireland
Stenamma westwoodi Westwood	3	16	3	3			1	Under large stones in woodland or hedgerows	Mainly southerly distribution in Ireland
Diptera (true flies)									
Coproica ?vagans (Haliday)	6	6		13	103		39	Mainly in cow dung but also human excrement	-
Lonchaea sp.	1							Under bark in dead wood	-
Calliphora ?vomitoria (L.)				1		1		Freshly dead animals inc. humans	-
?*Fannia* sp. (larvae)					1			Wood debris, rotting vegetables/fruit, latrines (urine)	-
?*Musca* sp.					2			Dung of animals, humans, other foul conditions	-

6.5 PAST ENVIRONMENT AND LAND USE ON SKELLIG MICHAEL IN THE MONASTIC PERIOD—THE POLLEN ANALYTICAL EVIDENCE

Anette Overland and Michael O'Connell

6.5.1 Introduction and methods

A minerogenic soil (F318, coarse and fine samples combined) from the large oratory was subsampled and prepared for pollen analysis. The context from which it derived was an old ground surface that was probably contemporary with the construction of the large oratory in the monastery (A. Lynch, pers. comm.). The sample (2cm^3) was prepared for pollen analysis using standard procedures. *Lycopodium* spores, in tablet form, were added to facilitate estimation of pollen concentration. After KOH treatment, sieving, HF treatment and acetolysis, a fine sieve (mesh size 5µm), together with ultrasonic treatment, was used to remove fine debris. The sample was mounted in glycerol and counted under phase contrast using a Leica DM LB2 microscope fitted with a Planapo 63/1.4 objective and oculars that gave an overall magnification of x788. Pollen and spore identification mainly followed Fægri and Iversen 1989. Other authorities consulted include Moore *et al*. 1991 and Beug 2004. Cereal-type pollen was distinguished following the criteria in Beug 2004. It should be noted, however, that grains of grass pollen less than 40µm in maximum length have been placed in Poaceae, irrespective of annulus characteristics. Microscopic charcoal (>30µm) was also counted. In calculating percentage pollen values a total terrestrial pollen sum (TTP) was used. Crumpled, corroded and unknown pollen grains (categorised as Unidentified) and micro-charcoal were calculated relative to the TTP + Unidentified and micro-charcoal counts respectively.

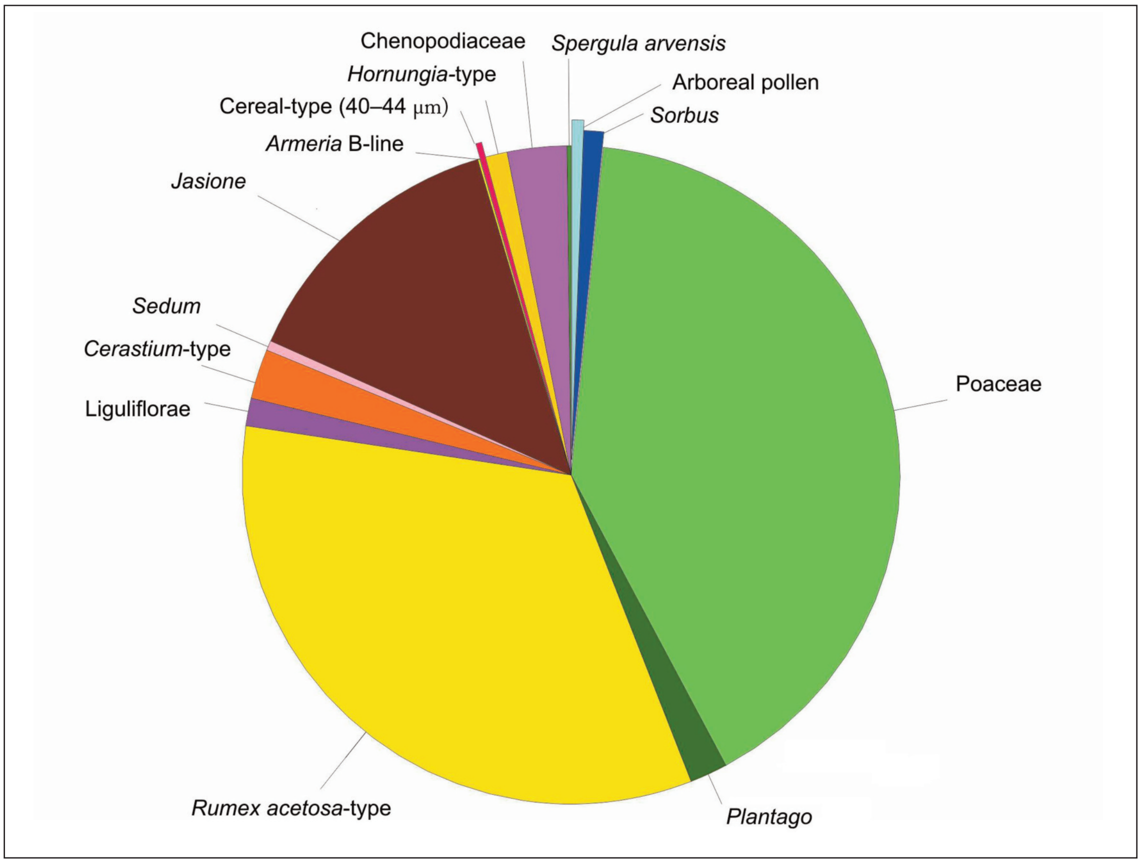
The material retained in the 100µm-mesh sieve during pollen preparation, i.e. after KOH treatment, was checked for macrofossils (none noted) and macro-charcoal (a few small fragments were recorded).

6.5.2 Results and interpretation

Pollen was exceptionally abundant (4.4 x 10^6 grains per cm^3) and well preserved, though somewhat crumpled, which made certain identification difficult in some instances. The number of such grains, however, is not so high as to compromise the data set (see Unidentified in Table 20; this category consists mainly of crumbled grains). Crumpling also made it difficult to determine the size of Poaceae pollen, which is important for distinguishing the pollen of cereals from that of non-cultivated grasses. Since only Poaceae pollen grains that were at least 40µm long and with substantial annulus and pore were classified as cereal-type, cereal-type pollen has probably been underestimated.

The results are presented graphically in Ill. 6.5. Arboreal pollen (AP) accounted for only 0.6% and consisted of *Quercus*, *Corylus* and *Betula*. Given the extremely low representation, it is assumed that these represent long-distance transport from the mainland, where oak, hazel and birch were presumably common at this time. Interestingly, pine, which produces pollen that is well dispersed, was not recorded. This indicates that the pollen is no older than *c.* 1000 BC (after this date *Pinus* pollen values are invariably low in south-west Ireland) nor younger than *c.* AD 1750, after which date *Pinus* pollen again appears in Irish pollen records as a result of the widespread planting of Scots pine (cf. Overland and O'Connell 2008).

The main woody taxon is *Sorbus*. This attains 1%, which is substantial given that *Sorbus* is underrepresented in pollen records. On ecological grounds, it is assumed that this is the pollen of *S. aucuparia* (rowan/mountain ash) rather than the rarer, broad-leaved whitebeam (*Sorbus*) species (ecological



Ill. 6.5—Pie-chart showing percentage pollen representation, Skellig Michael.

preferences, etc., are based largely on personal observations; see also Webb *et al*. 1996; Uí Chonchubhair 1998). The relatively strong representation suggests local presence within, or at least near, the monastic settlement.

The pollen data, in general, suggest a completely open landscape with grassy swards that supported a wide variety of herbaceous species. Poaceae (grasses) and *Rumex* (dock) constitute 74% of the pollen. Such high values are only possible if there is local presence even, as in this instance, where grasses and dock are involved, which are high pollen-producers with good dispersal properties. Rather surprisingly, *Plantago* has only modest representation (Ill. 6.5). Apart from a single *Plantago* grain that could not be identified with confidence to species level, this pollen taxon consists exclusively of *P. lanceolata* (ribwort plantain). The main forb is *Jasione* (sheep's-bit scabious; the pollen values are exceptionally high), which was probably favoured by the marine-influenced conditions. Chickweed (*Cerastium*-type), dandelion and hawkweed (Liguliflorae) were also common.

While the taxa referred to above are mainly indicative of grassland, including possibly pasture, there was probably also arable activity. The uncertainties associated with interpreting cereal-type pollen are compounded here by the difficulties in measuring the pollen (see above). As already indicated, the values for cereal-type probably underestimate cereal-type representation. In view of this and also the underrepresentation of most cereals (apart from *Secale*, which was not recorded) in pollen records, the overall evidence points to cereal-growing at the monastic settlement. This is not unexpected, given the increasing importance of cereal cultivation at about this time in medieval Ireland (Overland and O'Connell 2011). *Hornungia*-type (this includes many small weedy species of the Brassicaceae (cabbage) family), Chenopodiaceae (goosefoot family) and *Spergula* (corn spurrey) represent ruderal and arable-weed species. Chenopodiaceae include also species of salt-influenced habitats and so, in this situation, the pollen probably does not derive exclusively from plants growing in arable/ruderal contexts. Overall, however, these pollen taxa support the idea of arable farming during the monastic period.

The records for *Sedum* are of interest in that this pollen is seldom recorded in pollen diagrams. *S. anglicum* (English stonecrop) and/or *S. acre* (yellow stonecrop) are probably represented. Both species occur on cliffs and rock outcrops, especially near the sea; local presence at/near the monastic site, as well as elsewhere on the island, is assumed. *Armeria maritima* (sea pink) is also associated with salt-influenced habitats and was probably common but apparently not abundant in the immediate vicinity of the monastery (a single pollen grain only was recorded).

The high representation of micro-charcoal (also macro-charcoal) suggests fires. Fires were presumably required for cooking and heating, though it is difficult to envisage the source of fuel for such fires, given the paucity of woody species. Firing of herbaceous vegetation, with a view to burning off old growth and stimulating new growth in the spring, may also have been a source. Given the biologically indestructible properties of charcoal, it may derive from a time when the island was not as devoid of woody vegetation as suggested by the pollen preserved in this sample; i.e. the charcoal fragments may be older than the pollen. We do not know whether the island was ever wooded. Small islands with little soil cover such as Inis Oírr (Inisheer) had substantial woodland cover for most of the Holocene (Molloy and O'Connell 2007); on the other hand, the island of St Kilda carried little tall woody vegetation (Walker 1984). Skellig Michael is much more remote and the local north Atlantic environment much harsher.

Table 20—Pollen analytical data: counts and percentage values.

Taxa	Counts	% values
Betula	1	0.1
Quercus	3	0.3
Corylus	2	0.2
Sorbus	10	1.0
Poaceae	417	40.6
Plantago lanceolata	18	1.8
Plantago p.p.	1	0.1
Rumex acetosa-type	342	33.3
Liguliflorae	14	1.4
Cerastium-type	25	2.4
Sedum	5	0.5
Jasione	141	13.7
Armeria (B-line)	1	0.1
Cereal-type (40–44μm)	3	0.3
Hornungia-type	11	1.1
Chenopodiaceae	30	2.9
Spergula arvensis	2	0.2
Pollen sum	1026	
Unidentified	33	3.1
Charcoal (>30μm)	521	33.7
Volume (cm^3):	2	
Lycopodium added:	74000	
Lycopodium counted:	8	

7. THE FAUNAL REMAINS

7.1 THE MAMMAL BONES

Emily Murray

7.1.1 Provenance of the faunal material

A small assemblage of animal bones, comprising mammal, bird and fish bones (the latter two are discussed separately by Sheila Hamilton-Dyer) and marine molluscs (see Murray, below), was recovered from excavations at the monastery on Skellig Michael, Co. Kerry, between 1986 and 2000. The phasing of the majority of the contexts from which the bones derive is poor, as many of the layers excavated were found to be redeposited. Additional disturbance was also caused by the burrowing activities of puffins and storm petrels, and to a lesser extent by rabbits (Bourke 2005, 134–5).

The largest assemblage was recovered from the lower monks' garden (layers F633, F634, F635, F636 and F638), with faunal material also found in and around the *leacht*, the eastern and southern entrances and Cell G. Animal bones from the lower monks' garden returned radiocarbon dates ranging from the seventh to the twelfth century AD but were found with twelfth- to fourteenth-century pottery. This indicates that the excavated faunal material had been redeposited from older garden or midden contexts elsewhere on the island. A similar problem was also encountered at the east entrance, where material returned radiocarbon dates ranging from the seventh to the tenth century but was found with later medieval pottery. In the absence of any nineteenth-century material in either of these assemblages, material from the garden layers and east entrance have been broadly phased as 'early medieval' (seventh–fourteenth centuries). Faunal material was also found associated with medieval burials (tenth–thirteenth centuries) located in and around the *leacht*. Much of the material recovered from the *leacht* area and in the vicinity of St Michael's Church was, however, badly disturbed by burrowing. Material from these deposits, along with bone recovered from the upper levels of the lower monks' garden and material from Cell G, have all been designated as 'post-medieval' in date. The assemblage can therefore essentially be divided into 'medieval' and 'post-medieval' material and it is discussed in these terms (Table 27).

7.1.2 Methodology

The mammal bones were quantified by the number of 'countable' identifiable specimens (NISP) present (see McCormick and Murray 2007, 9–11). The differentiation of bones of sheep and goat was attempted on distal metapodials, distal tibiae, distal humeri, astragali, calcanei and deciduous fourth premolars (dP_4), using the criteria of Boessneck (1969), Kratochvil (1969) and Payne (1969; 1985). Sheep and goat horn cores were also differentiated to species, and sex, where possible. Evidence for age at death was determined by the epiphyseal fusion data and stage of dentition. Tooth eruption and tooth wear stages for cattle and pigs were recorded after Grant (1982) and Payne (1973; 1987) for sheep and goat. Measurements were made on fused (adult) bones following, for the most part, the criteria of von den Driesch (1976; see also McCormick and Murray 2007, table A1:4.1).

7.1.3 Condition of the bones

The assemblage was generally well preserved though the majority of bones were in a fragmentary state, with just six 'countable' specimens being complete (all small lower limb bones of sheep/goat and pig). No evidence for gnawing or chewing by rodents and/or carnivores was noted. There were just ten 'countable' burnt bones; all were heavily calcined, of sheep and goat and derived from the same context in the lower monks' garden (S050 from F635(6)). These calcined bones were represented by a range of cranial and post-cranial elements and it seems probable that the material may originally have derived from a hearth or cooking area. One other burnt ('blackened') bone, a piece of cattle scapula ('non-countable'; F579), was also recovered from an area of burning east of the *leacht*.

7.1.4 Range of species

The range of mammal species recorded comprises cattle, sheep, goat, pig, horse, seal and whale, while two neonate bones recovered from the *leacht* are most probably of rabbit. The identified specimens are represented by a total of 160 'countable' elements and an MNI of 26, with the majority (71% NISP) deriving from early medieval deposits (Tables 21 and 22).

The rabbit is a recent introduction to Skellig Michael (OPW 2008, 15); grey seal, rabbit and house mouse comprise the current list of mammals recorded for the island (*ibid*., 110). Rabbit burrows were noted during the course of the excavation and conservation works at the monastery (Bourke 2005, 125, 130). The relative absence of rabbit bones (NISP 2) in the excavated faunal assemblage would suggest, however, that rabbit burrowing has caused limited disturbance of the excavated layers, as many more rabbit bones would otherwise be expected.

No bones of any terrestrial carnivores were found (e.g. cat, dog or fox) and their absence is also supported by negative indirect evidence, as there were no signs of any gnawed or chewed bones. The avifaunal evidence (see Hamilton-Dyer, below) indicates that sea birds were exploited in medieval times, suggesting that birds must also have burrowed and nested on the island in earlier centuries. The introduction of cats and/or dogs to the island could only have been as pets, as no herding or rodent-catching was required, and would potentially have put this valuable resource under threat. The absence of these animals is therefore not surprising.

Horse was represented by a single bone fragment—the distal end of an adult metapodial from the lower monks' garden (S031 from F633(5E)). Given the steep slopes of Skellig Michael, it is not likely that horses ever lived on the island. As at the nearby medieval island settlements on Illaunloughan and Church Island, where horse bones were also found (Murray and McCormick 2005, 73), the obvious explanation is that the bones made their way to the island in joints of meat. Despite the prohibition of the eating of horsemeat by the early medieval church (Kelly 1997, 353), it was clearly something that was nevertheless undertaken on occasion.

7.1.5 Stock animals: cattle, sheep, goat and pig

Stock or farm animals were represented by bones and teeth of cattle, sheep, goat and pig, and the available metrical and ageing data for the assemblage were limited (Tables 25 and 26). Sheep and goat dominated, accounting for 71% of the total site NISP and half of the MNIs (Tables 21 and 22). A relatively small proportion of the caprine assemblage (25% medieval; 10% post-medieval) could be identified to species and of these the majority were of goat (Table 23).

Goats would have been an important source of fresh produce (milk, and meat on occasion) and the most practical animals to keep on the vertiginous island. In the early twentieth century it was noted that the lighthouse-keepers kept goats on the island and that they were 'generally located in some almost inaccessible position at milking time. With bated breath I have watched the men retrieve these perverse animals . . . there is no place in the scheme of nature for a giddy goat . . .' (Thomas Mason, quoted in Lavelle 1993, 61–2).

Both male and female goat horn cores were represented in the early medieval assemblage, with MNIs of two and three respectively, along with one of each in the post-medieval assemblage. The presence of pregnant ewes/nanny goats in both phases is also indicated by the occurrence of a minimum of two neo- or perinatal caprines (NISP 7; 1-Ext. and S032 from F584). The tooth eruption and wear data for caprines (Table 26) suggest that animals were killed in two age brackets: in their second year (probably for meat) and then more mature or older animals.

Three of the goat horn cores, two male and one female, had multiple chop-marks at their bases, at the core/skull juncture, clearly indicating that they had been deliberately chopped from the skull. They were probably removed to retrieve the keratinous horn that sheaths the core. Two cervical vertebrae (an atlas and axis) from medieval deposits in the lower monks' garden (S032 from F633(5E)) had medio-lateral chop-marks on their ventral side, which would have been caused by the decapitation of the carcass. One metatarsal (S123 from F572) had been split longitudinally, presumably to access the marrow, and another had cut-marks across the distal condoyles (1-Ext.), probably caused by the skinning of the animal's foot. The butchery evidence therefore indicates that the animals were fully exploited for their horn, skin, meat, marrow and probably offal. The few estimated withers heights, all from the early medieval phase (Table 25), fall within the range recorded for the early medieval period (McCormick and Murray 2007, 185).

Pig was represented by a small assemblage, mainly skull/mandibular and lower limb bones, along with the distal half of a humerus (S049 from F634(6)) that had been split longitudinally. The low frequency of pig at Atlantic coastal sites has been noted elsewhere (Murray and McCormick 2005, 68–71), which it has been suggested is due to the lack of suitable fodder and grounds for grazing. One proximal phalange (1-Ext.) was relatively large (GL 38.7mm; Bp 20.2mm) and may have derived from a wild animal. Ageing data were limited to one mandible (S089 from F635(5)) with its third molar in eruption, indicating an age of death at around 17–21 months (after Higham 1967, 105).

Cattle bones were also uncommon, with a total NISP of just sixteen. The low occurrence of these animals is not unexpected, given the steep landscape of the Skelligs, though that did not necessarily deter all inhabitants from attempting to keep cattle on the island; Lavelle (1993, 61) recounts that an assistant lighthouse-keeper on Skellig Michael, Michael Wishart, died in October 1821 when he fell over the cliff while cutting grass for his cow! Loose teeth, horn cores and upper and lower limb bones were all represented in the excavated assemblage, suggesting that complete cattle carcasses were butchered on the island, but whether or not they were also kept there is impossible to say. No ageing data were available and only a couple of bones were suitable to measure (Table 25).

7.1.6 Whale

Marine mammals were represented by bones of seals and fragments of the bone of a large cetacean. The latter was recovered near Cell G, within wall collapse dated to the nineteenth century (Ill. 7.1). It has been identified (J. Herman, pers. comm.) as part of the skull of either a sperm whale, the largest of the odontoceti or toothed whales, or of a baleen whale (e.g. humpback, minke, right, fin and blue whales). The largest fragment is a flattish piece of bone with a slight curve; it is smooth on the exterior with a shallow ridge on the opposing side, and measures approximately 0.18m by 0.12m by 0.01m thick.

The two lighthouses on Skellig Michael were built in the 1820s and, according to Lavelle (1993, 62), the Argand oil-lamps used 'sperm oil', which was later replaced, in the 1840s, by rape-seed oil. The term 'sperm oil' used by Lavelle may specifically refer to sperm whale oil or be a shorthand term for 'whale oil' (also commonly known as 'train oil'). Whale oil could be extracted from the liver or blubber of whales (Fairley 1981, 100), while 'spermaceti' is oil obtained exclusively from the head of sperm whales (it was originally thought that the spermaceti was the seminal fluid of these whales, thus the origin of their name). Whale oil was primarily used as a fuel for lamps, in making candles and as a lubricant in engineering (Sharkey 1985, 34), and Customs Documents from 1697 to 1829, examined by Fairley (1981, 100), indicated that Ireland both exported and imported whale oil. It could be speculated that the whale skull fragment recovered from nineteenth-century deposits on Skellig Michael is of a sperm whale from which spermaceti was extracted and potentially used on the island, though it seems unlikely. The Blakes of County Galway (Whelan 1995, 91) refer to the stranding of a sperm whale at Roundstone, and they wrote that, as the whale had teeth as opposed to whalebone (i.e. baleen), the only thing of use was the oil, although 'The value of this, which was £1200, would have been much greater, but for the ignorance of the people who suffered a considerable quantity to escape before they were aware of its value'. Other accounts by Thompson (1856, 40–60) of strandings, both natural and deliberate, refer primarily to the exploitation of the animals for their blubber in order to extract oil.

It is also possible that the bone is residual and derives from earlier medieval layers. Professional whaling enterprises only emerged in the early twentieth century; before that whales were generally exploited on an infrequent, ad hoc basis. Whale bones and whale teeth have been found on a number of early medieval sites, including the nearby island monastery of Illaunloughan off Valentia Island (McCormick and Murray 2007, 78).

7.1.7 Seals

Seal was represented by eighteen 'countable' specimens (NISP), representing a minimum of four immature animals and one adult. The element distribution (Table 24) indicates that parts of the head, torso and limbs are represented.

The majority of the seal bones from Skellig Michael were of immature specimens and several displayed evidence for butchery. This included two mandibles, one mature (S121 from F634(5)) and one immature (S115 from F635(5)), both of which had very fine knife cuts on the lingual (internal) side of the mandible ramus. The latter had also been chopped across the hinge and on the buccal (external, 'cheek') side of the ramus (Ill. 7.2). An ulna (S129 from F576) also displayed evidence of butchery: it had been chopped, medio-laterally proximal to the olecranon process (Ill. 7.3). This probably occurred during an attempt to remove the forelimb from the carcass. An immature pelvis also displayed cut-marks across the ischium (S032 from F633(5E)).

This butchery evidence provides confirmation of the deliberate exploitation of these animals. The mature specimens, specifically an ulna, humerus and mandible, were all of grey seal (*Halichoerus grypus*) and, although it was not possible to identify the immature specimens to species with certainty, it seems probable that these too are of grey seal. Grey seals are present in large numbers along the exposed western coast of Ireland, especially uninhabited rocky islands, sand bars, caves and beaches (see Lockley 1966, 142). Grey seals haul out on rocky ledges around Skellig Michael, in particular in the summer months, on Washerwoman Rock and Little Skellig, which has some low-lying flat ledges typical of grey seal summer habitat (O. Ó Cadhla, pers. comm.). The recorded numbers of grey seals for the Skelligs are not significant, however (OPW 2008, 15; Cronin *et al.* 2004, 38), with a count of 50 in 1989 being the greatest number noted by Lavelle (1993, 87).

The frequency of immature specimens in the excavated assemblage would suggest that a rookery was targeted at pupping time. A national breeding population assessment in 2005 did not find evidence of breeding or pupping on the Skelligs (Ó Cadhla *et al.* 2008), but one of the most important grey seal colonies in Ireland is *c.* 30km north, on and around the Great Blasket Island (*ibid.*, 35), where the peak in pupping occurs from late September to early October (*ibid.*, 29, and tables IV and V). It is possible, therefore, that the Blaskets, including the islands of Beginish and Inishvickillane, were targeted on occasion in the autumn by the inhabitants of the Skelligs.

Grey seals were historically hunted, and accounts of seal-hunting are recorded by natives of the Blasket Islands—Thomas O'Crohan and Maurice O'Sullivan—at the turn of the century. To hunt for seals, according to O'Crohan (1978, 97), you needed calm weather and a good spring tide. The hunters on the Blasket Islands would head to the sea caves and bring with them 'Ropes to drag them [the seals] out of the cave when they should be dead, and a big stout club with a thick end to it—we should want that right enough to lay them low' (*ibid.*). On reaching the cave by boat, the swimmer would go in 'carrying the end of the rope in his mouth, the slaughtering stick under his oxter, a candle and matches in his cap and the cap on his head'. The seals would then be dragged out of the caves with the ropes and thrown into the boats in between swells (*ibid.*, 98–9). O'Sullivan (1983, 233) also mentions the use of a stick to hunt a young seal in a cove on the Blaskets, while Smith (1756, 85) gave the following account of the methods used to capture seals in County Cork in the eighteenth century:

> 'They [seals] are sometimes taken in the caverns among the rocks and particularly the young seals. This is done in the moon-light nights; but the old ones fight and bite most furiously in defence of their young; and it has been affirmed that they never let go their hold until they hear whatever they fasten on crunch between their teeth; and for this reason seal catchers have bags, with quilted charcoal in them fixed on their arms by way of defence.'

The majority of the seal bones from Skellig Michael were recovered from redeposited horizons in the lower monks' garden, suggesting that they all derive from the early medieval monastic occupation of the island. Little is known about pre-1960s grey seal habitat and distribution (O. Ó Cadhla, pers. comm.), but seal bones have been recorded at other contemporary early medieval monastic sites, including Illaunloughan and Church Island, Co. Kerry, and Inishkea North, Co. Mayo (McCormick and Murray 2007, 78). Contemporary medieval references to the hunting of seal are given in Adamnán's *Life of Columba* and the *Life of St Brigid*, and it has been suggested that seal meat may have been a food permitted for consumption by monks during periods of fasting on the grounds that seals were considered more fish than mammal (Murray and McCormick 2005, 78).

7.1.8 Summary and conclusion

Excavations at Skellig Michael have recovered a small but informative assemblage of mammal bones. Unfortunately, the medieval terracing and gardening, together with periodic collapses and later interference by birds and other building work, has caused a mixing of deposits that has compromised the stratigraphic integrity of the faunal material. Nevertheless, the range of species present gives some insight into the diet, farming and hunting practices of the early medieval monks.

The range of species identified comprises cattle, sheep, goat, pig, horse, rabbit, seal and whale, with the greater proportion (73% NISP) dating from early medieval horizons and the remainder assigned to post-medieval/nineteenth-century activity. Sheep and goat were the principal animals exploited (71%

NISP) and were probably kept on the island, while it is suggested that horse, pig and cattle bones were most likely imported as joints of meat or with complete carcasses. The seal bone assemblage included both immature animals (MNI 4) and mature animals and several butchered elements. This presents strong evidence for the deliberate hunting of these sea mammals, possibly at pupping time in autumn in and around the Blasket Islands, where there is one of the largest grey seal colonies in Ireland. Whale was represented by a single skull fragment of a large whale, possibly sperm whale or a large baleen whale, while intrusive rabbit bones were limited to a small number of immature specimens recovered from the *leacht*. There is no evidence for any pets, rodents or other commensal animals on the island.

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Table 21—Distribution of species (NISP) by phase. The sheep/goat total includes those identified as sheep and goat. * = represented by a 'non-countable' specimen.

Species/phase	**Early medieval**		**Post-medieval**		**Total**	*%*
	NISP	*%*	**NISP**	*%*	**NISP**	***NISP***
Cattle	11	*10*	5	*11*	16	*10*
Sheep/goat	84	*74*	29	*62*	113	*71*
Sheep	*4*	–	–	–	4	–
Goat	*17*	–	*3*	–	20	–
Pig	9	*8*	1	*2*	10	*6*
Horse	1	*1*	–	–	1	*1*
Seal	12	*11*	6	*13*	18	*11*
Whale	–	–	*	–	0	–
Rabbit	–	–	2	*4*	2	*1*
Total NISP	**117**		**43**		**160**	
% NISP	***73***		***27***			

Table 22—Distribution of species (MNI) by phase.

Species/phase	**Early medieval**		**Post-medieval**		**Total**	*%*
	MNI	*%*	**MNI**	*%*	**MNI**	*MNI*
Cattle	1	*7*	2	*18*	3	*12*
Sheep/goat	11	*73*	3	*27*	14	*54*
Pig	1	*7*	1	*9*	2	*8*
Horse	1	*7*	–	–	1	*4*
Seal	3	*20*	2	*18*	5	*19*
Whale	–	–	1	*9*	1	*4*
Rabbit	–	–	1	*9*	1	*4*
Total MNI	**17**		**10**		**27**	
% MNI	**65**		**38**			

Table 23—Distribution of sheep/goat and goat elements by phase. MNI values for each element (taking sides into consideration) are given in parentheses.

Element	Early medieval Sheep & sheep/goat	Early medieval Goat	Post-medieval Sheep & sheep/goat	Post-medieval Goat
Horn core	–	8 (4)	1	2 (1)
Skull	7 (4)	–	1	–
LXT	12	–	1	–
LMT	2	–	2	–
Mandible	12 (7)	2 (2)	3 (2)	–
VT1	2	–	–	–
VT2	2	–	–	–
Scapula	3 (2)	–	1	–
Humerus	4 (3)	3 (3)	2 (2)	–
Radius	2 (2)	1	4 (2)	–
Ulna	1	–	1	–
Metacarpal	1	1	–	–
Pelvis	2 (2)	–	–	–
Femur	7 (3)	–	1	–
Tibia	4 (2)	–	2 (1)	–
Patella	1	–	–	–
Astragalus	–	–	1	–
Calcaneum	–	–	–	–
Metatarsal	4 (2)	2 (1)	1	1
Metapodial	–	–	1	–
Tarsal/carpal	–	–	2	–
Phalanges	1	–	2	–
	NISP: 84, MNI: 11 (incl. 4 goat)		**NISP: 29, MNI: 3 (incl. 1 goat)**	

Table 24—Element distribution for seal bones from the Skellig Michael excavations. * = represented by a 'non-countable' specimen.

Seal	**Lower monks' garden**		***Leacht* area**
	Early medieval	**Post-medieval**	**Post-medieval**
Skull	*	–	–
Loose tooth	1	2	–
Mandible	6	–	–
Ribs	*	–	*
Vertebrae	–	–	–
Scapula	–	–	–
Humerus	1	–	1
Radius	–	–	–
Ulna	–	–	1
Pelvis	2	–	2
Femur	–	–	–
Tibia	1	–	–
Patella	–	–	–
Astragalus	–	–	–
Calcaneum	–	–	–
Metapodial	1	–	–
Tarsal/carpal	–	–	–
Phalanges	–	–	–
NISP	12	2	4
MNI	3	1	1

Table 25—Metrical data from Skellig Michael for cattle (B), goat (CAH), sheep/goat (O) and sheep (OVA). Measurements are in millimetres, with the exception of EWH (estimated withers height), and follow von den Driesch 1976. RA = radius; SC = scapula; HC = horn core; HU = humerus; MC1 = metacarpal; MT1 = metatarsal; TI = tibia; R = right; L = left; U = side unknown. The EWHs were calculated using the values of Teichert, quoted in von den Driesch and Boessneck 1974, 339.

Phase (cm)	S No.	Sp.	Element	Side	GL	Bp	SD	Bd	BT	HTC	GLP	SLC	W min. (46)	W max. (45)	L	EWH (47)
E. med.	S050	B	RA	R	–	72.2	–	–	–	–	–	–	–	–	–	–
E. med.	S049	B	SC	R	–	–	–	–	–	–	54.6	36.7	–	–	–	–
E. med.	S089	CAH	HC	–	–	–	–	–	–	–	–	27.3	45.6	155	–	
E. med.	S045	CAH	HC –	–	–	–	–	–	–	–	34.1	54.3	210	–		
E. med.	S050	CAH	HU	L	–	–	–	–	28.6	12.3	–	–	–	–	–	–
E. med.	S050	CAH	HU	L	–	–	–	–	28.6	13	–	–	–	–	–	–
E. med.	S034	CAH	HU	L	–	–	–	–	31.6	14.6	–	–	–	–	–	–
Post-med.	S026	O	HU	R	–	–	–	–	28.3	12.1	–	–	–	–	–	–
E. med.	1 EXT	CAH	MC1	L	112.1	–	16.6	27.2	–	–	–	–	–	–	–	54.8
E. med.	S046	OVA	MC1	R	110.5	20.5	12.7	23.5	–	–	–	–	–	–	–	54.0
E. med.	1 EXT	CAH	MT1	L	–	19.1	14.2	24.9	–	–	–	–	–	–	–	–
E. med.	1 EXT	OVA	MT1	L	139.6	19.1	14.2	23	–	–	–	–	–	–	–	63.4
Post-med.	S026	CAH	MT1	L	–	18.7	–	–	–	–	–	–	–	–	–	–
E. med.	S050	CAH	RA	L	–	29.0	–	–	–	–	–	–	–	–	–	–
E. med.	S082	OVA	RA	L	130.7	–	17.5	–	–	–	–	–	–	–	–	52.5
Post-med.	S129	O	RA	L	–	27.4	–	–	–	–	–	–	–	–	–	–
E. med.	S050	O	TI	L	–	39.2	–	–	–	–	–	–	–	–	–	–

Table 26—Tooth eruption and tooth wear data for sheep/goat (O) and goat (CAH). Sp. = element; MN = mandible; LMT = loose mandibular molar; dP = deciduous premolar; P = premolar; M = molar; MWS = mandible wear stage.

Phase	S No.	Sp.	Elem.	SIDE	dP2	dP3	dP4	P2	P3	P4	M1	M2	M1/2	M3	Higham MWS	Est. age in months
E. med.	S090	CAH	MN	L	p	p	16L	–	–	–	5A	–	–	C	13	21–24
E. med.	S050	CAH	MN	L	p	p	16L	–	–	–	8A	2A	–	C	13	21–24
E. med.	S050	O	MN	L	p	p	–	–	x	7A	9A	8A	–	H	13	21–24
E. med.	S050	O	MN	L	p	p	–	A	P	4A	X	X	–	X	–	-
E. med.	S082	O	MN	L	–	–	–	–	x	5A	9A	9A	–	2A	14	25–26
E. med.	S043	O	MN	L	–	–	–	A	p	12S	12A	9A	–	X	14	25–26
E. med.	S043	O	MN	L	–	–	–	A	p	12S	9A	9A	–	X	14	25–26
E. med.	S043	O	MN	R	–	–	–	A	p	14A	12A	9A	–	11A	17	Adult
E. med.	S043	O	MN	R	–	–	–	A	p	14A	14A	9A	–	12G	17–18	Adult/old
E. med.	S040	O	MN	R	–	–	–	A	p	15A	15A	12A	–	X	17–18+	Old
E. med.	1 EXT	O	LMT	U	–	–	–	–	–	–	–	P	10A	–	–	–
E. med.	S082	O	LMT	U	–	–	–	–	–	–	–	–	8A	–	–	–
Post-med.	S026	O	MN	L	–	–	–	X	p	12S	9A	X	–	X	14	25–26
Post-med.	S026	O	MN	R	–	–	–	X	p	12S	9A	9A	–	X	14	25–26
Post-med.	S004	O	MN	R	–	–	–	–	–	X	12A	9A	–	11G	17	Adult
Post-med.	S044	O	MN	L	–	–	–	a	p	15A	14A	9A	–	11G	17	Adult
Post-med.	S026	O	LMT	R	–	–	–	–	–	–	–	–	–	U	–	–

Ill. 7.1—Part of the skull of a sperm whale or baleen whale (e.g. humpback, minke, fin and blue whales) recovered from wall collapse dated to the nineteenth century, near Cell G (Con Brogan, DAHG).

Ill. 7.2—Immature seal mandible with multiple cut-marks across the hinge (lower monks' garden, F635(5)) (Con Brogan, DAHG).

Ill. 7.3—Seal ulna with chop-mark located above (to the proximal end of) the olecranon process (F576 south-east of *leacht*) (Con Brogan DAHG).

Table 27—Sample numbers, location and phasing for features/contexts that produced animal bone and/or shells.

S No.	Location	Date
1 EXT	–	Early medieval
S004	Small oratory terrace (F229)	Early medieval
S006	South entrance 2, inner enclosure (F12)	Post-medieval
S008	*Leacht* area	Early medieval
S024	*Leacht* area	Post-medieval
S025	Lower monks' garden	Post-medieval
S026	Lower monks' garden	Post-medieval
S031	Lower monks' garden	Early medieval
S032	Lower monks' garden	Early medieval
S033	Lower monks' garden	Early medieval
S034	Lower monks' garden	Early medieval
S037	East entrance	Early medieval
S038	East entrance	Early medieval
S039	East entrance	Early medieval
S040	East entrance	Early medieval
S043	Lower monks' garden	Early medieval
S044	Lower monks' garden	Post-medieval
S045	Lower monks' garden	Early medieval
S046	Lower monks' garden	Early medieval
S048	Lower monks' garden	Early medieval
S049	Lower monks' garden	Early medieval
S050	Lower monks' garden	Early medieval
S051	Lower monks' garden	Early medieval
S055	*Leacht* area	Early medieval
S082	Lower monks' garden	Early medieval
S089	Lower monks' garden	Early medieval
S090	Lower monks' garden	Early medieval
S091	*Leacht* area	Early medieval
S113	Lower monks' garden	Early medieval
S114	Lower monks' garden	Early medieval
S115	Lower monks' garden	Early medieval
S116	Lower monks' garden	Early medieval
S117	Lower monks' garden	Early medieval
S118	Lower monks' garden	Early medieval
S119	Lower monks' garden	Early medieval
S120	Lower monks' garden	Post-medieval
S121	Lower monks' garden	Early medieval
S122	Lower monks' garden	Early medieval
S123	*Leacht* area	Post-medieval
S128	*Leacht* area	Post-medieval
S129	*Leacht* area	Post-medieval
S130	*Leacht* area	Post-medieval
S131	Cell G	Post-medieval
S132	*Leacht* area	Post-medieval
S400	South entrance 1	Post-medieval
S401	*Leacht* area	Post-medieval

7.2 BIRD AND FISH BONES

Sheila Hamilton-Dyer

7.2.1 Introduction and methodology

Bird and fish bones were hand-collected during excavation along with the mammal bones. Some dry sieving was employed but wet sieving over fine mesh was not possible owing to the lack of a fresh water supply. The bones were separated out during the mammal bone recording and made available for analysis.

Taxonomic identifications were made using the author's modern comparative collections. All fragments were identified to taxon and element where reasonably possible. Measurements mainly follow von den Driesch 1976 for birds and Morales and Rosenlund 1979 for fish and are in millimetres unless otherwise stated. The archive includes metrical, condition and other details of individual specimens not presented in the text.

The remains have been analysed in three phase groups: Phase 1, early medieval, mostly from levels in the lower monks' garden; Phase 2, post-medieval, including a collapse deposit from that area; Phase 3, nineteenth-century and later, including material from revetment cuts and a recent puffin burrow. Although this division is rather broad, it enables analysis of the largest groups possible and avoids some of the bias inherent in small samples and possible contamination. All of the bone was recorded by sample number or context group and remains separate in the archive. Comparison of the bone condition (Table 28) shows that the two later phases are less well preserved and have no burnt bones. The last group (Phase 3) is likely to be biased by small sample size.

7.2.2 Birds

Over a thousand bird bones were available for analysis, the majority from early medieval levels in the lower monks' garden area. There are eight species present in the assemblage, dominated by the remains of Manx shearwaters, *Puffinus puffinus*. Auks are common, with puffin, *Fraticula arctica*, the most frequent. Some of the auk bones could not be distinguished between guillemot, *Uria aalge*, and razorbill, *Alca torda*, and have been recorded as indeterminate auk. The majority of the phalanges, vertebrae, ribs and other indeterminate fragments are probably from these four species. There are a few bones of gannet, *Sula bassana*, shag, *Phalacrocorax aristotelis*, and gull (probably kittiwake, *Rissa tridactyla*) and a single small passerine bone. It is not possible to determine the species on this one bone but the size, in combination with the locality, is suggestive of rock pipit. The distribution of the remains is summarised in Table 29.

The anatomical distribution of the most frequent species includes all body areas. Some of the most fragile elements and the smallest ones are underrepresented as expected, although the number of the small elements that are present is a testament to the careful collection of the material (Tables 30 and 31). There is further bias in the Manx shearwater bones, with lower leg bones the most frequent elements. The remains of wild sea birds at coastal sites, especially where they breed, could be attributable to non-anthropogenic causes. Analysis of the anatomical distribution might indicate the source of the bones. Taphonomic analysis of gull-predated Manx shearwaters shows distinctive damage and anatomical pattern (Serjeantson *et al.* 1993). The clearest evidence is beak damage on the sternum but this was not seen on the few that were identified in this assemblage. In gull predation the wing bones and pectoral girdle remain together longer than other elements as the carcass decomposes and becomes dispersed. In the archaeological remains, however, it is the tarsometatarsus and tibiotarsus of the leg that are most frequent. A study by Ericson (1987) showed that wing bones were more frequent in natural accumulations of bird bones, while leg bones were more frequent in food remains. This can be modified by the biological anatomy of the species; larger or sturdier bones would tend to be preferentially preserved and collected in excavation. In the case of the Manx shearwater, however, the humerus and ulna of the wing are much larger than the leg bones. The implication is that the bird bones from Skellig Michael are mainly food remains, a conclusion supported by processing evidence on several bones. The humeri are often snapped in half, and in some cases a blade mark can be observed at the break point (Ills 7.4, 7.5). Other bones have very clear cut-marks (Ills 7.6, 7.7); those on tarsometatarsi (Ills 7.8, 7.9) indicate the removal of the feet as waste (Table 32). The puffin and razorbill bones have similar breaks and the puffin bones are also biased in favour of the lower leg. Some of the bones are charred or heat-affected. Two razorbill humeri, which are chopped/broken in half, are partially charred and discoloured, showing where the lower part of the bone was exposed but the rest was protected by the flesh (Ill. 7.10). This, together with the number of similarly broken/chopped humeri of several species, probably indicates that the birds were roasted over a fire after the end of the wing was broken off. The deposits appear to contain both trimmings and the final food waste, the discrepancy between leg and wing bones perhaps indicating that some of the food waste was discarded away from the midden deposits. In the smaller assemblages from the post-medieval and later layers there are also several broken and/or chopped bones but the anatomical distribution is less biased. Most of the bones from the post-medieval group are from a collapse layer in the lower monks' garden; this context group has many similarities with the earlier material and should perhaps be considered with caution as the bones are probably redeposited. Bones from the puffin/shearwater burrow may include the partial remains of a natural mortality but there are bones present of three different species, including the non-burrowing guillemot, and there are also two butchered bones. It is probable that these burrowing birds caused some stratigraphic disturbance in the same manner as rabbits (also present today).

Almost all of the bird remains represent a seasonal resource exploited during the summer breeding season. The Manx shearwater in particular is a migratory bird only seen in the north Atlantic region during summer. Puffins are resident but during winter remain at sea, as do the other sea birds identified. Puffin and Manx shearwater both breed in burrows that they excavate themselves or in rabbit burrows. These small, fat birds have long been used for food, and puffins are still eaten in Iceland and the Faroes. The young and sitting adults can be dug out of the burrows; adults can also be caught in long-handled nets, as can razorbills (see Serjeantson 2009). Almost a quarter of the Manx shearwater bones are from immature birds (see Table 30); these are not young chicks but half-grown and near full-sized birds. The young birds would be at their maximum fatness just before fledging, and could be taken while still flightless around the end of August. Immature puffin bones are also present but less frequent than for the Manx shearwater; all are from the medieval levels rather than the post-medieval and modern ones. The other, less frequently found, bird species tend to nest on cliff ledges. Perhaps eggs were also collected in addition to the birds themselves, though there is no direct evidence for this in the finds.

The negligible amount of gannet is of interest, considering that Little Skellig is today home to the world's second-largest breeding colony (Wanless *et al.* 2005). Although there is, as yet, no archaeological date for the colony, it was certainly present by 1700 (Gurney 1913), but it has suffered from severe fluctuation (Fisher and Vevers 1943; 1944) and the birds were heavily harvested in the nineteenth century (Lavelle 1993). Also known as 'Solan Goose', the unfledged birds are still exploited in Ness, Isle of Lewis, from the colony on Sula Sgeir. Gannets do not breed on Skellig Michael despite protection of all birds there today and do not seem to have done so in the past. Of the few gannet bones, half (four) are immature but full-size; none of these are from medieval levels. Little Skellig is a difficult place to land a boat; if there were gannets breeding at that time, perhaps the monks were not equipped to visit the island, or perhaps they were deliberately restricted by choice or instruction to remain on Skellig Michael.

The bird bone assemblage from Illaunloughan is similar in species and distribution but without razorbill, only a few guillemot and with some additional species such as cormorant, waders and single bones of species such as pigeon, goose and crow (O'Sullivan 2005). Unlike Skellig, there are bones of domestic fowl, albeit just two. The balance of the species is slightly different; Manx shearwater is again dominant, but the secondary species are more evenly spread between puffin, cormorant, shag and kittiwake, perhaps reflecting the difference in environment. Gannet is again present but rare. The lack of domestic poultry is not surprising, given the extreme location and the availability of wild birds. Domestic fowl bones are found at non-coastal sites such as Lough Gur and Lagore but do not dominate as they do in urban and castle assemblages; although mentioned in law-tracts (Kelly 1998), the widespread use of domestic fowl appears to be an Anglo-Norman interest (Hamilton-Dyer 2007). At the much larger establishment on Iona, domestic poultry are more frequent in the medieval deposits; only one bone was identified in the Early Christian levels (McCormick 1993; Coy and Hamilton-Dyer 1993).

7.2.3 FISH

Fish remains were not recovered in such numbers as those of birds; a total of 273 bones have been recorded. The majority of the remains again come from early medieval levels in the lower monks' garden.

At least seven species are present, with bones of sea breams the most frequent of the identified bones at 50 specimens (Table 33). Some of the sea bream bones can be identified as the red sea bream, *Pagellus bogaraveo*, and most bones represent fish of around 40cm in length. In the medieval deposits pollack, *Pollachius pollachius*, is the next most frequent species at twelve bones, followed by whiting, *Merlangus merlangus*, and wrasse at seven bones each. The pollack are mainly from fish of about 50cm, with one considerably larger. The wrasse, probably all Ballan, *Labrus bergylta*, are from fish of about 30–45cm in length. There are two bones of scad, *Trachurus trachurus*, and one each of grey gurnard, *Eutrigla gurnardus*, and cod, *Gadus morhua*. This last is from the small oratory terrace and is a large precaudal vertebra. This is of interest as the only other cod bones are a group of 26 vertebrae from a post-medieval deposit in the *leacht* area. The sample size is too small for detailed analysis of anatomical distribution but the sea bream, pollack and wrasse bones do contain head elements and vertebrae suggesting the use of whole fish (Table 34). Apart from the cod, all of these species are fish typical of the area that could have been caught directly from the island on lines, or from local boats. Cod over 1m are less common catches from the immediate area; the post-medieval vertebrae may represent the remains of a piece of store cod.

At nearby Illaunloughan the fish assemblage was of considerable size (over 4,000 bones) and much larger than the bird assemblage from that site (Hamilton-Dyer 2005). Part of the reason must be the routine sieving at the site; while most bird bones are large enough for hand-recovery, only the largest fish bones are usually visible on excavation. At Illaunloughan sea breams were also the dominant fish, with wrasse second and hake and pollack the next most frequent species. As at Skellig, cod bones were comparatively rare. Although the lack of sieving at Skellig will inevitably bias the assemblage in favour of the larger bones and species, the remains do seem broadly similar. This pattern of inshore, rocky-coast fishing is also seen at Doonloughan (Hamilton-Dyer 2000). Other west coast sites appear to be similar but were not sieved and have too few fish bones to be certain. This exploitation pattern contrasts with the evidence from later and urban sites, which are dominated by large Gadidae (Hamilton-Dyer 2007; in prep.). On Iona hand-collected fish bones are mainly of large cod and ling, while whiting, gurnard and flatfish dominate the sieved material (Coy and Hamilton-Dyer 1993). The smaller fish are inshore species, but the cod and ling would probably have been caught offshore on a long line. The combination of different location and status may explain the large gadids at Iona.

7.2.4 Comment

In considering the diet at the Atlantic island monasteries it is suggested that Illaunloughan may have been an outpost dependent on a larger house (Murray *et al.* 2004). If so, the nearby Skellig Michael would have been an even more isolated community. Most of the meat for the monks would have been supplied from the mainland, as shown by the mammal bones; the birds and fish would, however, have been a useful complementary resource. Being of the sea, the birds may well have been classed as fish for days when meat was not permitted; indeed, this still appears to have been the case for inhabitants of Kerry in 1765 (Smith 1765). Wildfowling would have taken place mainly during the summer, although it is possible that some of the birds might have been salted and pickled or smoked for later use. Fishing is likely to have been restricted to periods of good weather and might therefore also have been a mainly summer pursuit.

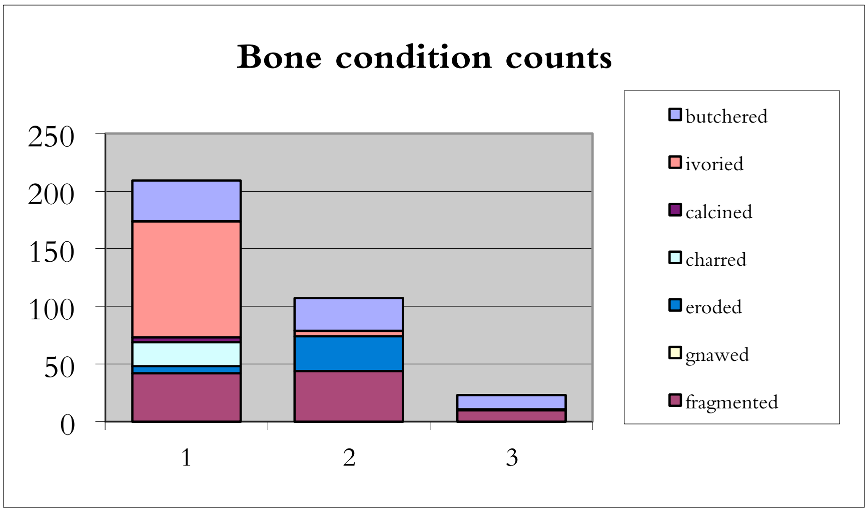


Table 28—Bird and fish bone condition: counts and percentages.

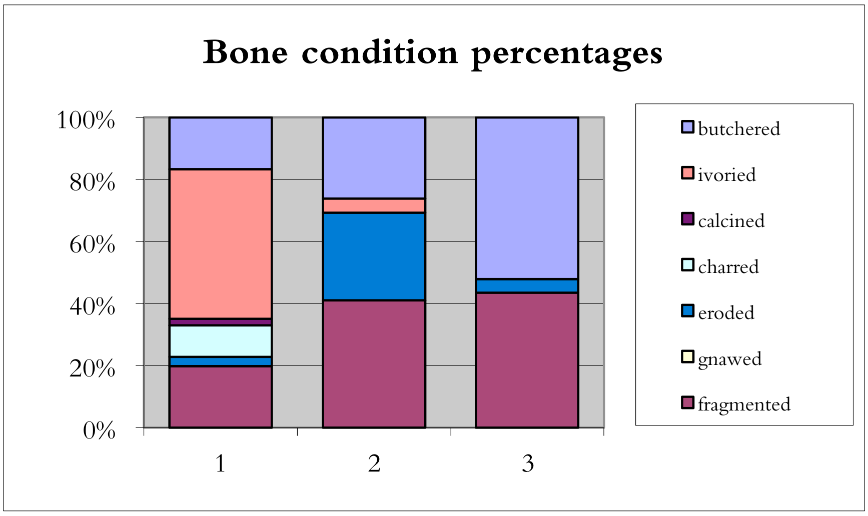


Table 29.—Bird species: context totals.

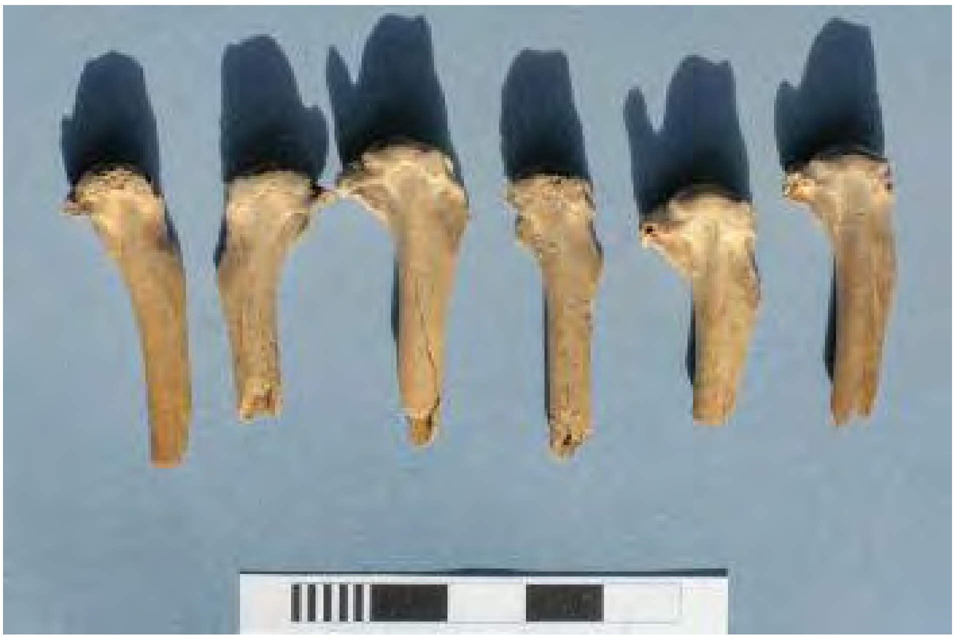
Phase	Site sub	Sample	Manx shearwater	Gannet	Shag	Gulls	Razorbill	Guillemot	Puffin	Indet. auks	Small passerine	Indet. bird	Total
1	East ent.	25	2				1						3
1	L and St M	10	8				3	1	3			4	19
1	LMG	6							9	1		3	13
1	LMG	7							1	1		3	5
1	LMG	8	46				2	2	5	1		25	81
1	LMG	9	45				1	2	6	1		82	137
1	LMG	12			1								1
1	LMG	13	231	2			20	2	73	2	1	107	438
1	LMG	14	41					1	5	1		82	130
1	LMG	16					1						1
1	LMG	17	1					1		2		1	5
1	LMG	19	1		1					1			3
1	SOT	1	2						1				3
		Total	**377**	**2**	**2**	**0**	**28**	**9**	**103**	**10**	**1**	**307**	**839**
		Percentage	***44.9***	***0.2***	***0.2***	***0***	***3.3***	***1.1***	***12.3***	***1.2***	***0.1***		
		% excl. unid.	***70.9***	***0.4***	***0.4***	***0***	***5.3***	***1.7***	***19.4***	***1.9***			
2	L and St M	24	7						1			2	10
2	LMG	2					1						1
2	LMG	4	27	3		2	27	2	80	14		31	186
		Total	**34**	**3**	**0**	**2**	**28**	**2**	**81**	**14**	**0**	**33**	**197**
		Percentage	***17.3***	***1.5***	***0***	***1.0***	***14.2***	***1.0***	***41.1***	***7.1***	***0***		
		% excl. unid.	***20.7***	***1.8***	***0***	***1.2***	***17.1***	***1.2***	***49.4***	***8.5***			
3	Burrow	20	2				1	1	13	3			20
3	Cell G	5	2										2
3	L and St M	23	2				1						3
3	LMG	21								1			1
3	LMG	22	11	3			9	3	22			3	51
		Total	**17**	**3**	**0**	**0**	**11**	**4**	**35**	**4**	**0**	**3**	**77**
		Percentage	***22.1***	***3.9***	***0***	***0***	***14.3***	***5.2***	***45.5***	***5.2***	***0***		
		% excl. unid.	***23.0***	***4.1***	***0***	***0***	***14.9***	***5.4***	***47.3***	***5.4***			

Table 30—Manx shearwater and auk: element counts.

Manx	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Skull	6		
	Premaxilla	16		
	Mandible	17		
	Humerus	22	7	4
	Radius	17	1	3
	Ulna	20	4	4
	Scapula	12	3	
	Coracoid	14	1	
	Furcula	19	1	1
	Pelvis	5		
	Femur	11		
	Tibia/tibiotarsus	34		
	Carpometacarpus	15	4	2
	Tarsometatarsus	54	6	
	Major wing phalanx	7		
	Synsacrum	7	2	1
	Sternebra/sternum	8		
Juv. Manx	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Humerus	19	5	
	Radius	8		
	Ulna	15		
	Coracoid	1		1
	Tibia/tibiotarsus	5		1
	Carpometacarpus	7		
	Tarsometatarsus	35		
	Major wing phalanx	3		
Razorbill	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Skull		8	
	Quadrate			1
	Premaxilla	1	1	
	Humerus	5	1	4
	Radius	2	1	
	Ulna	3	1	2
	Coracoid	3	1	
	Furcula	1		
	Femur	3	2	
	Tibia/tibiotarsus	8	8	
	Tibia/tibiotarsus		2	
	Carpometacarpus			1
	Tarsometatarsus	1	1	
	Synsacrum			1
	Sternebra/sternum	1	2	2
Guillemot	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Skull	1		1
	Mandible		1	
	Humerus	2		1
	Furcula	3	1	
	Femur	1		1
	Tibia/tibiotarsus	1		
	Sternebra/sternum	1		1

Table 30 (cont.)—Manx shearwater and auk: element counts.

Puffin	Anatomy	Phase 1	Phase 2	Phase 3
	Premaxilla	1		2
	Mandible	8		
	Humerus	9	9	7
	Humerus	2		
	Radius	1	4	
	Radius	1		
	Ulna	3	18	6
	Scapula	7	4	3
	Coracoid	5	10	4
	Furcula	6	2	
	Pelvis	3		
	Femur	9	3	1
	Femur	1		
	Tibia/tibiotarsus	14	11	6
	Tibia/tibiotarsus	2		
	Carpometacarpus		4	
	Carpometacarpus	1		
	Tarsometatarsus	13		3
	Major wing phalanx	1		
	Synsacrum	5	8	1
	Sternebra/sternum	11	8	2
Indet. Auk	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Skull	1		
	Mandible		1	
	Humerus	4	6	3
	Ulna		4	
	Scapula		1	
	Coracoid	1		
	Furcula	1		
	Femur	1		
	Synsacrum	2	2	1



Ill. 7.4—Manx shearwater broken humeri, proximal halves, cranial view (S. Hamilton-Dyer).

Table 31—Other birds: element counts.

Gannet	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**	
	Mandible		1		
	Humerus			1	Juv.
	Radius	1			
	Ulna	1			
	Femur		2		Juv.
	Tibia/tibiotarsus			1	
	Sternebra/sternum			1	Juv.
Shag	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**	
	Femur	1			
	Tibia/tibiotarsus	1			
Gull	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**	
	Radius		1		
	Ulna		1		
Passerine	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**	
	Ulna	1			
Indet.	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**	
	Humerus	2			
	Ulna	3			Juv.
	Furcula	3			
	Furcula	1			Juv.
	Femur	2			
	Tibia/tibiotarsus			1	
	Tibia/tibiotarsus	1			Juv.
	Fibula	4			
	Carpal	2			
	Tarsometatarsus	1			
	Tarsometatarsus	1			Juv.
	Foot phalanx (bird claw)	4			
	Foot phalanx 1	112			
	Atlas	1			
	Axis	4			
	Precaudal vertebra 1	1			
	Cervical vertebra	22	2		
	Cervical vertebra		1		Juv.
	Vertebra not assigned	13			
	Rib	61			
	Limb shaft fragment	64	30	2	
	Limb shaft fragment	5			Juv.

Table 32—Butchery: species anatomy.

Phase	Common name	NISP	Anatomy
1	Manx shearwater	9	Humerus
1	Manx shearwater	5	Ulna
1	Manx shearwater	4	Coracoid
1	Manx shearwater	1	Femur
1	Manx shearwater	3	Tarsometatarsus
1	Razorbill	5	Humerus
1	Razorbill	2	Tibia/tibiotarsus
1	Puffin	6	Humerus
2	Manx shearwater	11	Humerus
2	Manx shearwater	1	Furcula
2	Gannet	1	Mandible
2	Gannet	2	Femur
2	Razorbill	1	Humerus
2	Razorbill	1	Ulna
2	Puffin	9	Humerus
2	Auks	2	Humerus
3	Manx shearwater	3	Humerus
3	Razorbill	3	Humerus
3	Guillemot	1	Humerus
3	Puffin	5	Humerus

Ill. 7.5—Manx shearwater broken humeri, proximal halves, caudal view (S. Hamilton-Dyer).

Table 33—Fish species: context totals.

Phase	Site Sub	Sample	Cod	Pollack	Whiting	Gadid	Gurnard	Seabream	Wrasse	Scad	Indet.	Total
1	East ent.	25		3		3					15	21
1	L and St M	10						1	1			2
1	LMG	6						3			22	25
1	LMG	8						8			10	18
1	LMG	9			2	1		9	2		26	40
1	LMG	12									2	2
1	LMG	13		9			1	11	3		26	50
1	LMG	14			5			4			20	29
1	LMG	16							1			1
1	LMG	18						8		2	23	33
1	LMG	19						2			4	6
1	SOT	1	1									1
		Total	**1**	**12**	**7**	**4**	**1**	**46**	**7**	**2**	**148**	**228**
		Percentage	***0.4***	***5.3***	***3.1***	***1.8***	***0.4***	***20.2***	***3.1***	***0.9***	***64.9***	
		% excl.	***1.3***	***15.0***	***8.8***	***5.0***	***1.3***	***57.5***	***8.8***	***2.5***		
2	L and St M	24	26		1	1		1	1		11	41
2	LMG	3							1			1
		Total	**26**	**0**	**1**	**1**	**0**	**1**	**2**	**0**	**11**	**42**
		Percentage	***61.9***	***0***	***2.4***	***2.4***	***0***	***2.4***	***4.8***	***0***	***26.2***	
		% excl.	***83.9***	***0.0***	***3.2***	***3.2***	***0***	***3.2***	***6.5***	***0***		
3	LMG	22						3				3

Table 34—Fish species: element counts.

Cod	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Precaudal vertebra	1	13	
	Caudal vertebra		13	
Whiting	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Vomer		1	
	Precaudal vertebra	3		
	Caudal vertebra	4		
pollack	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Post temporal	1		
	Articular	2		
	Hyomandibular	1		
	Vomer	1		
	Premaxilla	1		
	Mandible	1		
	Precaudal vertebra 1	1		
	Precaudal vertebra	2		
	Caudal vertebra	2		
Gadid	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Articular		1	
	Precaudal vertebra	1		
	Caudal vertebra	3		
Gurnard	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Spine	1		
Scad	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Caudal vertebra	2		
Seabream	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Skull	1		
	Skull fragment	1		
	Face area (fish)	2		
	Post temporal	2		
	Articular	2		
	Hyomandibular	2		
	Preoperculum	1		
	0perculum			1
	Mandible			1
	Scapula		1	
	Precaudal vertebra	10		1
	caudal vertebra	25		
Wrasse	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Operculum		1	
	Inferior pharyngeal	3		
	Premaxilla	1		
	Face area (fish)		1	
	Caudal vertebra	3		
Indet.	**Anatomy**	**Phase 1**	**Phase 2**	**Phase 3**
	Vertebra not assigned	1		
	Ray/spine/frag	109	7	
	Scale	27		
	Fragment	11	4	

Ill. 7.6—Manx shearwater coracoid showing clear cut mark near humeral articulation (S. Hamilton-Dyer).

Ill. 7.7—Manx shearwater furcula showing several cut-marks (S. Hamilton-Dyer).

Ill. 7.8—Manx shearwater tarsometatarsus with cut-mark (S. Hamilton-Dyer).

Ill. 7.9—Manx shearwater tarsometatarsus with proximal cut through (S. Hamilton-Dyer).

Ill. 7.10—Razorbill humeri chopped/ broken in half and partially charred (S. Hamilton-Dyer).

7.3 The marine molluscs

Emily Murray

A small number of marine molluscs were recovered during excavations at Skellig Michael and these comprised limpet, oyster and scallop shells (Table 35). All of the shells were poorly preserved and fragmentary. The scallops were quantified by the number of umbones or hinges present, and as they were all of the left, flat valve the total of nine also represents the minimum number of individuals (i.e. no pairs of left and right valves were represented). Limpets were quantified by the number of apices present.

The scallop shells were all of the great scallop (*Pecten maximus*) and all were found associated with human skeletal remains. It seems probable that they were deliberately placed with the stones covering these burials, especially as they comprise exclusively left flat valves and are apparently absent from other midden and garden deposits on the island. The shells were all broken, with uneven, indented margins, so it was not possible to determine whether any had been artificially perforated, as has been recorded on medieval sites elsewhere, including at the nearby monastic island settlement on Illaunloughan, Co. Kerry (Marshall and Walsh 2005, 89). Scallop shells have been widely used in ceremonial and symbolic imagery (*ibid*., 89–96) and are famously associated with St James and the pilgrimage to Santiago de Compostela in northern Spain, where the adoption of the scallop as a pilgrim badge appears to date from around the twelfth century (*ibid*., 95). Giraldus Cambrensis states that by the late twelfth century the monks of Skellig Michael had left the island and moved to Ballinskelligs (Bourke 2005, 125). The tradition of pilgrimage to the island continued, however, in particular during the sixteenth and seventeenth centuries and through to the present (*ibid*.). It is possible that the scallop shells were placed on the graves on Skellig Michael at the time of burial, sometime in the tenth–twelfth centuries, or, if the graves were accessible and marked, they may have been left by pilgrims visiting the island at some later date.

Oysters were represented by just one right, cupped valve and, like the scallop shells, it was badly eroded and incomplete. Unlike the scallop shells, it is more probable that the oyster may have been exploited for its meat, possibly by the lighthouse-keepers, given its discovery in contexts that had been disturbed in the nineteenth century. Alternatively, given the occurrence of just one shell, its introduction to the island may have been more esoteric—as a keepsake, as a mistaken scallop or through the activities of birds.

The third and most common species represented (94% NISP) is the limpet (*Patella* sp.). Limpets are ubiquitous on rocks all around the Irish coastline, and could easily have been harvested from the rocky margins of the island at falling or low tide. The recovery of dumps of limpet shells, in particular from the backfill of the east entrance, would suggest that they were eaten and processed in one spot, either as food or as a source of bait for fishing lines.

Table 35—Range and number of marine molluscs from Skellig Michael by context and phase.

S no.	Location	Phase	Great scallop (*Pecten maximus*)	Flat oyster (*Ostrea edulis*)	Limpets (*Patella* sp.)
–	*Leacht* (93E0195:235)	Post-medieval (19thC disturbance)	–	1	–
–	South entrance	–	–	–	5
S001	From among and below stones covering skeletal material		1	–	–
S002			1	–	–
S003			1	–	–
S004			1	–	–
S005			4	–	–
S006			1	–	–
S033	Lower monks' garden	Early medieval	–	–	1
S038	Backfill in east entrance	Early medieval (5th–6thC)	–	–	74
S039	East entrance	Early medieval	–	–	56
S046	Lower monks' garden	Early medieval	–	–	1
S046	Lower monks' garden	Early medieval	–	–	1
S049	Lower monks' garden	Early medieval	–	–	1
S051	Lower monks' garden	Early medieval	–	–	3
S091	*Leacht* area	Early medieval	–	–	2
		Total (MNI)	9	1	144

8. INTERIM CONCLUSIONS

The following interim conclusions are presented as initial thoughts on the implications of the results of archaeological excavations carried out to date. It is intended to obtain a number of additional radiocarbon dates and, if deemed suitable, the human remains will also be subjected to further scientific analysis (e.g. strontium isotope analysis), all of which will hopefully contribute further to the story of Skellig Michael. The archaeological results will also need to be fully assessed in the context of the ongoing geological, architectural and historical researches to provide an integrated account and better understanding of the form and development of the monastic settlement and its place in a wider early medieval context.

8.1 THE FOUNDATION OF THE MONASTIC SETTLEMENT

The date of the establishment of the monastic settlement on Skellig Michael is still a matter of conjecture. The earliest definite historical reference to an ecclesiastical foundation on the island is an annal entry dated AD 824, which records a Norse raid on the site. The dearth of securely stratified deposits in the areas excavated has also hindered the establishment of a chronology for the early phases of occupation of the island. The radiocarbon dates obtained from excavated material indicate activity on the island no earlier than the late seventh century. The material dated, charcoal and animal bone, was mostly from redeposited contexts and so cannot be tied into specific building phases.

It should be remembered that in the monastery, in particular, the areas excavated were limited to the upper levels of revetment walls and terrace deposits, with the lower (earlier) levels left largely undisturbed. In the area of the east entrance (inner enclosure), for instance, up to 3m of deposits remain unexcavated below the Phase 3 entrance. None of the beehive huts were excavated and, with the exception of a quadrant of the large oratory, the ecclesiastical buildings were not investigated. A chronology of building can be postulated based on stratigraphic relationships and masonry styles (see Section 8.2 below), but an accurate dating of the foundation and subsequent development of the monastery will require further investigation and dating programmes.

On present evidence, therefore, it can be stated that the monastic settlement on Skellig Michael was established by the late seventh/early eighth century AD. There is no evidence, to date, to corroborate the suggested association with St Fionán in the sixth century. Neither has any evidence of pre-monastic occupation of the island come to light.

8.2 THE EVOLUTION OF THE MONASTERY

8.2.1 The cells

There are seven cells in the monastery, six in the inner enclosure and one in the lower monks' garden. The first six are described by O'Sullivan and Sheehan (1996, 284–5) and the sixth is described above in the account of the excavation of the lower monks' garden. The stratigraphic relationship between Cells B, C and D has been established, with D being the earliest, B the second-earliest and C the latest. Cell D is the only cell with a circular internal ground-plan, and the only cell with an orthostatic base to its inner drystone wall. Cell C was built on the ruins of Cell D after its roof had collapsed. Cell E can be shown to post-date Cell D, as the platform on which it is built post-dates the platform for Cell D. Cells B and D are taller and narrower than the other cells, with well-finished interior walls and a square plan internally, but neither have an offset base. It can be shown that Cell B pre-dates Cell C, but their similarities in form and the fact that they are both built on the one platform indicate that they were roughly contemporary. Cells A and E share certain constructional features: a square internal plan, projecting external slabs and a base which is offset externally. Both are set on separate platforms, with Cell A pre-dating Cell B and Cell E post-dating Cell D. Cell F, which is also on a separate platform, stands on an offset base and has wall niches similar to those in Cell A, but it cannot be physically related to the other cells, except on the basis of form.

Cell G, at the eastern end of the lower monks' garden, is the simplest of the cells, with no internal features and a simple circular plan. It is not tied to any of the other cells stratigraphically and was reoccupied in the nineteenth century. No material for dating its construction was found, but its simpler plan may place it earlier in the sequence than some of the cells in the inner enclosure.

The nearby island monastery of Illaunloughan has a hut (Hut D), with similarities to Cell G, which has been dated to between AD 775 and 961. This hut also had projecting stones on the outside similar to those from Cell A, but not the elaborate plan of that cell (Marshall and Walsh 2005, 37–42).

Based on stratigraphic relationships and limited comparanda, a suggested sequence of building of cells on Skellig Michael is: G, D, A, F, B, C, E.

8.2.2 The oratories

As the stratigraphic relationship between the large and small oratories is not known, it is difficult to differentiate them by date. It seems most likely that the *leacht* and small terraces on the small oratory terrace are roughly contemporary with the small oratory.

Rourke (in Marshall and Walsh 2005, 112–21) has postulated a typological series for the drystone oratory, based on building-style evolution, which places the oratory on Illaunloughan in the eighth century, the large oratory on Skellig Michael slightly later and the small oratory in the ninth century. This scheme, which shows the oratories gradually adapting from structures with rounded corners and roofs to structures entirely rectangular in shape, has been generally accepted (Ó Carragain 2010, 49–52). The date (AD 672–869) from the make-up of the small oratory terrace does not contradict the scheme as proposed. Unfortunately the excavations did not provide any dates relating to the construction of the large oratory.

8.2.3 St Michael's Church

This was the last building constructed within the monastery. At some period, either between 950 and 1040, based on historical evidence (Horn *et al*. 1990, 10), or between 690 and 880, based on a ^{14}C date (Berger 1995, 168), a mortared church was constructed which blocked the decorated face of the south cross and *leacht* and the west doorway of the large oratory from view. This church was subsequently enlarged some time between 990 and 1280 (*ibid*., 169). On architectural grounds, this most likely occurred in the twelfth century.

Part of the foundations of the early phase of the east wall was revealed during the excavation in the *leacht* area. A burial (Skeleton 3), dated to between AD 990 and 1165, was interred against these foundations, providing a *terminus ante quem* for the early phase of construction of St Michael's Church. A date of AD 779–970 obtained for the fill of the nearby cist, which was disturbed by the construction of the church foundations, provides a *terminus post quem* for the construction. This evidence, taken together, implies a late tenth-century date for the first phase of construction of St Michael's Church.

8.2.4 THE CIST

Beneath the paving that underlay the *leacht* south of the large oratory was a structure (F599) composed of upright stones. The western end had been disturbed, but it originally formed a long cist, divided in two by uprights at its centre. This structure is remarkably similar to the two cists (F104 and F24) from nearby Illaunloughan. A radiocarbon date of between AD 779 and 970 was obtained for the fill of this feature. Similar cists in Illaunloughan were lined with quartz. This did not occur here, but seven water-rolled pebbles were found in its fill (F588). Similar features have also recently been excavated on Church Island (Valentia), where cists and a charnel-pit have been interpreted as part of the 'translation' of human remains into shrines (A. Hayden, pers. comm.).

At a later stage a large cross (see below) was inserted into this cist, the area was paved over and a *leacht* was built up against the east face of the cross.

8.2.5 THE BURIAL PLATFORMS

While it is not possible to date all these structures, it is possible to indicate the order in which they were constructed. The earliest of the burial platforms is the one to the north of and partly underlying the large oratory. The north wall of the large oratory is built on top of this burial platform, which supports a large cross. Excavation of the nearby monks' graveyard has shown that it started its life as two similar platforms—a larger southern platform with a later, smaller platform added at its northern end. The excavation did not remove any of the interior of the original platforms and therefore no dating evidence can be offered for this structure.

8.2.6 THE *LEACHTA*

The *leacht* to the south of the large oratory is built on paving stones that form the surface of the lower plinth beneath the oratory. This lower plinth does not respect the orientation of the south wall of the oratory and may in fact be a plinth for an earlier structure. There was no datable material in the *leacht*, but two dates were derived from material later than the *leacht*—from layer F581 above the paving on which the *leacht* was built (AD 775–941) and from layer F583 (AD 778–942). As the date from the cist, which pre-dates the *leacht*, and the two contexts that post-date it are so similar, a late eighth- to tenth-century date seems likely for the structure itself.

The *leacht* on the small oratory terrace appears to be contemporary with the oratory, as both lie directly on the paved surface. There is one date from the construction layer of this terrace of AD 672–869, which would provide a *terminus post quem* for this feature between the late seventh and ninth centuries.

The construction of *leachta* would appear to fit most comfortably into a late ninth- to eleventh-century context (O'Sullivan and Ó Carragáin 2008, 320–1) and, if correct, this would place the two *leachta* on Skellig Michael early in the series.

8.2.7 THE LARGE CROSSES

It has recently been noted by G.D. Rourke (pers. comm.) that the stone forming the west end of the *leacht* to the south of the large oratory is in fact the base of a second cross, almost identical in shape and decoration to the cross set in the burial platform to the north of the oratory.

The *leacht* and the burial platform, both supporting monumental crosses and flanking the large oratory, would have made an impressive east end to a public open area in front of the large oratory.

8.2.8 The burials

Three burials that post-dated the *leacht* were revealed in the area south of the large oratory. These were interred in the late tenth to late twelfth century; as their dates overlap and their relative stratigraphical position is known, it is hoped to conduct Bayesian analysis to give tighter dates for each burial.

8.2.9 The pavements

The pavement in the small oratory terrace appears to be original and forms part of the original layout of the terrace, with both the *leacht* and the oratory built directly on it. The pavement between the large oratory and the platforms supporting the cells appears to be largely original, but the pavement surrounding the monks' graveyard is nineteenth-century.

8.2.10 The cisterns

There are two cisterns in the main area of the monastery, one in the base of the platform south of Cell E and one in the base of the platform south of Cell B. A third cistern was excavated *c.* 18m west of Cell A. All three appear to follow a similar pattern, utilising the geology of the island to collect rainwater (see above, Section 1.2.2). A fourth structure outside the outer enclosure may also have been for water collection, but was collecting water filtered through the lower monks' garden. Collection of water was of great importance for the monks, as there is no natural spring on the island. It is likely that cisterns for the collection and storage of water would have been essential from the earliest days of the monastic settlement.

8.2.11 The enclosing walls and entrances

Inner enclosure

The earliest phase of the inner enclosure walls is in the south-east corner.

South wall

An earlier entrance was uncovered in the southern wall in 1999 (Illus. **2.36**) that pre-dates the large oratory by a long period. This can be stated with confidence, as the plinth for this oratory lies on up to 1.5m of earth built up inside the entrance (Illus. **2.40**). This wall is unusual, as it is constructed with an inner face of stones running parallel to the line of the wall and an outer face comprising large angular stones with their long axis at right angles to the line of the wall.

West of this segment of the south wall, the base of another early wall (Phase 2) can be seen below St Michael's Church. This wall is comprised of large, roughly square blocks. It collapsed at some time in the early medieval period, taking the west end of the Phase 1 wall with it, and was replaced by Phase 3, which survived until it collapsed and was repaired in the 1890s by the OPW. Phase 3 helped to support

St Michael's Church, and its collapse undermined the church, causing the collapse of its south-west corner (Westropp 1897, 307, 311). It was the collapse of the Phase 2 wall that was later dealt with by redepositing earth in the middle part of the enclosure to make the lower monks' garden in the fourteenth century. The Phase 4 wall is the nineteenth-century repair, and there is an area that was repaired in the 1970s (Phase 5).

East wall

Here the base of the wall (Phase 1) appears, owing to its depth beneath the present interior ground surface, to be of the same date or earlier than Phase 1 of the south wall. As the south wall is built on a step in the bedrock, however, there is no bonding between the south and east walls at this point. The southern portion of the Phase 1 wall partially collapsed, between Cell F and the south-east corner, in the early medieval period, and the wall was rebuilt, stepping back slightly to prevent further collapse (Phase 2). This was not successful, as a further collapse took place, necessitating the same remedial work (Phase 3). This repair, which included the construction of an entrance at the south-east corner, was more successful and the entrance still stands, although blocked following a collapse within the enclosure and the raising of the level to build the large oratory. Once again it can be shown that this pre-dated the construction of the oratory by a long time, as the plinth of the oratory is *c*. 3m higher than the base of the entrance. Three radiocarbon dates were obtained for the backfilling of this entrance. F508, a backfill layer, produced dates of AD 691–876 and AD 675–871. A date of AD 778–948 was obtained from the layer below (F509), which is interpreted as the collapse of a structure into the entrance. These dates indicate collapse and later backfilling in the eighth/ninth centuries. The entrance was again repaired in the nineteenth century, when another wall was built over the lintels (Phase 4).

North of the Phase 1 masonry, the small oratory terrace is enclosed by a wall constructed in an entirely different style, with both the inner and outer faces formed by stones running parallel to the line of the wall and the top of the wall being considerably narrower. This wall appears later on stylistic grounds but the exact relationship between the two has not been established. It is argued above that the small oratory terrace was built as one operation and survived relatively intact. The late seventh- to ninth-century date would probably put this later than the first three phases of the south wall.

Outer enclosure walls

Excavation of part of the upper monks' garden revealed that there was an original outer wall, built on natural boulders, underlying the lighthouse period rebuilding. None of the original surface survived below nineteenth-century and modern soils, and no date could be assigned to the monastic wall.

The monastic wall and wall-walk in the lower monks' garden survived at the western end of the garden, but had been removed from the east end of the garden when a major collapse took place in the nineteenth century. The entrance at the western end of the garden, which had been blocked up in the nineteenth century, was reopened in 1988 and conserved. This wall appears to be a single phase of construction, although there are some alterations visible in the wall-walk on the inside of the wall. None of the stratigraphy contemporary with the wall survives.

In the absence of direct stratigraphic relationships between the inner and outer enclosing walls and datable contexts contemporary with their construction, it is not possible to define a sequence of enclosure or to date the original construction of either wall.

8.2.12 Private and public spaces

If one reconstructs the *leacht* supporting a large cross south of the large oratory, combined with the burial platform and cross north of it, the result is a very narrow access to the area east of the oratory. It is tempting to see this as a deliberate strategy. Before St Michael's Church was built, there would have been a large open space west of the large oratory, which could have been for pilgrims. The area east of the oratory may have been restricted territory. The layout of the small oratory terrace is even more private and may have been regarded as an even more sanctified space. This idea of *sanctus, sanctior* and *sanctissimus* has been used to describe the outer, middle and inner enclosures in early medieval ecclesiastical sites such as Armagh. On Skelligs it is tempting to see this represented as a linear phenomenon.

8.2.13 The lower monks' garden

At the east end of this terrace there are two phases of early medieval occupation, both of which are above the level of the wall-walk of the outer enclosing wall. The second phase of early medieval occupation consists of a paved area, a wall and Cell G. This cell was still standing in the nineteenth century, when it was occupied by the builders of the lighthouse.

Further west, the inner enclosure wall collapsed at some time in the fourteenth century and filled that area of terrace with rubble and very large building stones. It must have proved too difficult for the monks to completely clear this collapse out of the outer enclosure, and so they redeposited midden material from elsewhere on the site and seem to have used the middle section as a garden. This midden material produced radiocarbon dates ranging between the seventh and twelfth centuries, while the finds included medieval pottery dating from the twelfth to fourteenth centuries. This area remained a garden, while the area to the east remained occupied by buildings and paving. This begs the question as to whether there had been buildings in this part of the 'garden' prior to the collapse and redeposition. The redeposited material sloped downwards to both the south and east, and a small pathway led through it towards the paved area at the east end of the garden. The only other features were walls that appear to have been built in order to terrace part of the garden, probably for cultivation. There were no structures relating to the lighthouse occupation at this end of the garden.

8.2.14 The structure at the end of the east steps

This enigmatic structure is at the current base of the east steps. It has an orthostatic base to its inner wall and is built into the east steps. Material was sampled but did not provide enough charcoal for a radiocarbon date. This may have been a storehouse for material brought ashore at the east landing and appears to be monastic in date.

8.2.15 A history of structural weaknesses/collapse within the monastery

- Pre-tenth century: Phase 1 east wall (inner enclosure)
- Pre-tenth century: Phase 2 east wall (inner enclosure)
- Pre-tenth century: blocking of entrance in Phase 3 east wall (inner enclosure)
- *C.* 1300: collapse of Phase 2 south wall (inner enclosure)
- Nineteenth century or earlier: collapse of south wall (outer enclosure), upper monks' garden
- *C.* 1820: movement in Phase 3 east wall (inner enclosure)
- *C.* 1820: collapse of Phase 1 south wall (inner enclosure).
- *C.* 1820: collapse of east end of outer enclosure, lower monks' garden

- *C.* 1870: collapse of south wall (inner enclosure) below St Michael's Church
- *C.* 1978: small collapse west of south entrance 2 (inner enclosure)

8.2.16 DATING

The dates obtained from the redeposited layers in the lower monks' garden show that, while the artefacts mostly date from the high medieval period, the soil that was redeposited in the garden contained charcoal dating from the seventh to twelfth centuries. This indicates that the soil was probably redeposited from midden material sourced from elsewhere in the monastery. In the *leacht* area the three burials have overlapping dates and have a direct stratigraphical relationship; the same is true of the dates from above and below the *leacht* and from the east entrance. It is hoped to conduct Bayesian analysis in order to tighten up these dates and give greater precision to our understanding of the site.

8.3 THE SOUTH PEAK

8.3.1 EROSION

While it is inevitable that the passage of time will have an effect on any built structures, especially those erected in an environment as exposed and harsh as that of the South Peak, the recent works dramatically demonstrated that the surviving structures were generally in a worse state of preservation than had been anticipated by the ongoing monitoring. This was a result of so much being hidden beneath plant growth, and the earlier difficulty of access without ropes and scaffolding. The works clearly showed that much has been lost, that the surviving remains were often highly vulnerable and that erosion and loss were continuing. The south and east sides of the oratory terrace, the shrine terrace, the outer terrace and the south end of the 'garden' terrace were actively eroding and deteriorating, and demonstrably had lost material since the 1980s/90s. Even in some areas where structures initially appeared to be well preserved, e.g. the upper traverse and the west end of the 'garden' terrace, they proved to be in a much poorer state of preservation when they were examined in detail, which was often only possible after a certain amount of excavation. The lower part of the route up the Peak was also very vulnerable, as there only the very last remnants of previously unknown and formerly substantial structures survived.

The works revealed, not unexpectedly, that a host of different factors were having a detrimental effect on the surviving remains and, if not dealt with, would result in even further loss. Some of the erosional factors, such as weathering and falling rocks, are unstoppable and will always continue; others, however, could be slowed or halted. There was clear evidence in places that of course these effects also occurred during the time when the South Peak was used by the monks of the monastery.

The very basic structure of the Peak itself contributes to the erosion of anything built upon it. The relatively soft nature of the sandstone of which it is composed, allied to its fractured, folded and faulted state, renders it vulnerable to erosion. The natural fracturing of the rock of the Peak along fault lines, for example, resulted in the breaking away of a substantial area of rock at the base of the gully and a section of the cliff at the junction of the short broad and ragged ledges. This erosion, indeed, could have been the cause of the abandonment of the gully as a route to the top of the Peak, and in the other example it severed access to the Peak and led the lighthouse-builders to blast away a section of the cliff to restore it. On a smaller scale, the erosion of the exposed ends of the fracture planes in the bedrock has led to the break-up or disappearance of several rock-cut steps, particularly those on the western-facing slopes of the Peak.

Of course, without such natural erosion the ledges, which the routes up the Peak follow and on which the various terraces and traverses were constructed, would not have formed out of the natural bedding planes. The erosion of gullies that had formed along fault lines also provided natural access routes, while the presence of fracture lines provided naturally broken-off rock and allowed the relatively easy quarrying of rock for use as building material. Indeed, it is clear that the underlying geology had a most fundamental influence on what was erected on the Peak, where it could be erected and how well it survived. The monks clearly had a very intimate familiarity with and knowledge of their natural environment, the uses to which they could put it, how they could alter and shape it, but also the limits of its use.

Naturally falling rocks constitute an ongoing and unstoppable erosive force. Their dramatic effects can be seen in particular all along the lower part of the route and along the southern traverses of the north-west passage. There are several large stones in the gully at the north-west end of the broad terrace, for example, which will fall at some time in the relatively near future.

Erosion caused by rainwater gathering and flowing down the Peak was also well attested. The features in the gully were all heavily eroded by water and the material washing down in it. The bridging stone beneath the oratory was partly rotted away by the rainwater that gathered and flowed down the gully dividing the oratory and shrine terraces. This erosion ultimately led to the collapse of the oratory, but also to the loss of the wall of the shrine terrace and the undermining of the shrine itself. There was a substantial debris fan on the first section of the north-west passage at the base of a natural gathering point for water. The monks themselves built a wall there to try to hold back this material. Narrow 'drip gullies' also formed at the base of cliffs as a result of water trickling down the cliff faces, for example on the upper traverse and the broad ledge. In the case of the latter, the gathering water flowed down and out across the ledge, eroding and removing much material and depositing it over the cliff. The monks themselves utilised the water-gathering effects of the high cliffs to collect water to feed cisterns on the oratory terrace.

Rainwater also had a detrimental effect on virtually all the built structures on the Peak, as it washed out the finer particles in the quarry waste used to infill and level the terraces. This caused many of the terrace walls to move inwards and some eventually to fail and collapse. The loss of the walls at the southern end of the 'garden' terrace and the northern end of the outer terrace was largely due to water draining down to the lower ends of these terraces and undermining and destabilising their lower walls. Once the lower ends of these terraces collapsed, the terrace infill began to erode ever more quickly and would eventually have led to the collapse of most of these terraces. As the outer walls moved inwards, the stones in the base of the outer face gradually moved to an ever-steeper angle until they slid out and brought the whole wall down. This process was dramatically illustrated by the wall at the west side of the outer terrace, which would have fallen relatively soon if not dealt with. The monks tried to halt the inward collapse of the wall of the 'garden' terrace by the construction of an inner reinforcing wall. A similar reaction to such a situation is evidenced in the monastery, and also along the inner side of the enclosing wall on nearby Church Island in Valentia Harbour. Even walls built close to rock faces were vulnerable to erosion and undermining by water running down the rock faces behind them. The high terrace on the fourth section of the north-west passage, the wall of the outer passage and the west wall of the outer terrace were all good examples of this effect.

The exposure of the walls to sun for long hours during the summer months, particularly on the southern side of the Peak, may also have had a weakening effect on the stones, by causing them to expand and contract and eventually to break up. The fractured nature of the stone revealed in the walls of the 'garden' and outer terraces may have been partly due to this effect. In addition, the opening of joints in the walls and the fracturing of the edges of the individual stones could be caused by a combination of sun and rainfall. The very finely jointed nature of a small section of the outer wall of the south end of the 'garden' terrace that was protected by soil contrasted dramatically to the open-jointed nature of the more exposed walling revealed elsewhere on the Peak.

Even wind had a demonstrably damaging effect on the structures on the South Peak. As well as driving water into the walls and blowing away the finer particles from the terrace infill, strong winds have actually blown stones off the tops of walls. This was clearly demonstrated at the south end of the upper traverse, where east to south-easterly winds funnelled by the cliffs at the top of the south side of the Peak blew away the conserved inner face of the top of the wall. Wind damage from a westerly wind was also documented on the lower and upper platforms and the small enclosure above the Needle's Eye.

Winds blowing up the cliffs create unusual vortices on the terraces, resulting in the removal of fine material (and small stones) from the inner side of the terrace and its deposition against the inner face of the outer wall, where it forms a low mound. This also noticeably affects the lighthouse roadway.

Plant growth, especially sea campion and to a lesser extent sea pinks, also served to open joints in stonework and actually lifted and separated stones in structures, thereby weakening and destabilising them.

Burrowing birds and animals also contributed to undermining walls and weakening structures, and were responsible for the destruction of the interior of the *leacht* on the oratory terrace, for example. Indeed, some birds were even more destructive. A herring gull was witnessed throwing stones with its beak off the top of the wall of the small enclosure in an attempt to get at petrels nesting in the walls. Rabbits are to be found all over the South Peak: an active burrow was revealed halfway up the near-vertical lower part of the gully, for example.

Even humans cannot escape blame for erosion, whether deliberate or accidental, although, thankfully, deliberate acts of vandalism have not occurred on the Peak. Climbers jumping down onto masonry structures, where the erosion of previous steps forced such actions, also damaged structures such as the west end of the lower traverse. Indeed, just by their presence humans have eroded some fragile rock-cut steps and have had a particularly detrimental effect on the looser soils, cutting deep scars into the scree slope, for example.

Some of the very construction methods employed by the monks contributed to the vulnerability and destruction of the structures they erected. The fact that the terraces were infilled with fine, loose material and were not constructed from solid stonework weakened them considerably. The tendency to build the inner face of the outer terrace walls with very small stones—a testimony to the difficulty of winning sufficient stone for construction—also weakened the structures. The erection of the inner face of the wall of the 'garden' terrace on loose infill and the building of some terrace walls on sloping but smooth bedding plane ledges on the north and south sides of the Peak also led to instability. Only on the oratory terrace, where the slopes of the bedding plane were at its steepest, did the monks cut notches into the rock to provide a better footing for the walling.

8.3.2 Construction

The recent works on the South Peak have clearly evidenced the great degree to which the monks altered the South Peak. There is in fact hardly any place where the climber of either of the access routes stands on a natural surface. Many areas where the cliffs were substantially cut back to facilitate or improve access were recorded. The monks also quarried or removed stone from many areas, and sometimes moved it considerable distances for construction work. In some areas direct evidence was uncovered of how the stone was raised to build structures: for example, the hauling platform beneath the oratory terrace, the tripod holes on the ledge with fallen stones, and rope-worn notches that survived on the outer terrace.

The carefully worked ledges that created a secure footing for the builders outside the outer passage and oratory terrace demonstrated how the monks utilised natural features to help their building works.

The monks also displayed several construction techniques by which they sought to use natural features or overcome obstacles. Walls were sometimes keyed into fissures in the rock (as at the east end of the 'garden' terrace), or tucked behind high ribs of bedrock (as at the north-east and south-east ends of the outer terrace) to give them greater stability. Gullies were bridged by placing large stones across them (as evidenced beneath the oratory on the oratory terrace, and the north and south platforms below the 'garden' and oratory terraces). Narrow passages were widened by building walls outside them on lower ledges (as on the narrow ledges on either side of the blind corner, and where the route crosses the gullies on the southern traverses of the north-west passage). Stones were also sometimes jammed vertically down into fissures or gullies in the bedrock or vertically down and transversely across them to provide a secure footing for walling (as in the gully leading up to the oratory terrace, and at the junction between the northern stairway and the northern traverse on the north-west passage). Some of these techniques can be paralleled elsewhere on the island and further afield. The reinforcing wall on the 'garden' terrace has a clear parallel with that used to counteract the inward movement of the cashel wall on Church Island, near Valentia, Co. Kerry. Walls built on lower ledges to widen access can also be seen on the recently discovered early route to the monastery.

The monks created rock-cut steps where construction was impossible or where altering a bedrock ledge could most easily create steps. Climbing the steps makes it readily apparent that they were very carefully laid out. There are clear right foot/left foot sequences, and the steps are always exactly where they are needed. On some of the more awkward climbs and passages, the climber naturally reaches out to hold onto adjacent rock and almost invariably finds carefully placed rock-cut handholds there.

The excavation and conservation works revealed that there would have been very major practical issues with storage space when building the various terraces. The rock lying on ledges would have had to be broken up, removed and stored before being used for construction, as would the quarrying debris used to fill the interior of the terrace.

We very often do not know how much rock was quarried away or removed to allow the construction of the larger terraces and traverses on the Peak, as the bedrock beneath these structures was generally not revealed in total. For example, only some of the rock lying on the second section of the southern traverse of the north-west passage was removed; that lying beneath the intended finished level of the terracing was left *in situ*. In this case, however, leaving some of the fallen rock in place may indicate that there was a more than adequate supply of building stone in this area, which was very prone to falling stone. In other areas the use of very small stones in the inner faces of walls shows that good building stone was in short supply.

8.3.3 The two access routes

The most important finding of the recent works has undoubtedly been the discovery of the new and earlier route to the top of the South Peak and the terraces and structures associated with it.

The archaeological evidence could not clearly demonstrate how this route evolved into the previously recorded final route. Because the two routes intersect twice and there is virtually no dating evidence for most of the structures, several different scenarios are possible. All hinge on the relationship in time between the opening of the Needle's Eye and the building of the oratory and 'garden' terraces and the upper traverse.

It is possible that the upper terraces may all have been built before the Needle's Eye was opened. The route then could have run across the north-west passage, up the lower half of the gully and then on up to the 'garden' terrace. While this could explain the elaborate terracing of the north-west passage (its presence when the route simply extended up the full length of the gully seems almost superfluous when the difficult climb up the full height of the gully had to be faced), it does seem like an unlikely conclusion. The second suggested scenario could have seen the Needle's Eye being opened to bypass only the lower half of the gully. This was the most difficult part of the climb. Because of the presence of intersecting faults, the lower part of the gully was very prone to large-scale erosion and so could have been rendered very difficult to climb at an early stage. Above the Needle's Eye the route could have run back into the upper half of the gully and straight on up to the top of the Peak. As we do not know whether the area where the upper traverse was constructed would have been passable prior to its construction, it is possible that the upper part of the route in this second scenario could have extended up what later became the upper part of the final route. The 'garden' and oratory terraces need not necessarily have been built, as the upper part of this route can involve not actually setting foot on either of them. The most likely scenario suggested, however, would appear to involve the opening of the Needle's Eye and the building of the 'garden' and oratory terraces and the upper traverse as part of one single development. The opening of the Needle's Eye was a considerable and difficult undertaking. It required quarrying and the cutting of many rock-cut steps just to get to its base, and then, of course, there was the substantial amount of quarrying involved in opening the Needle's Eye itself. The upper part of the cleft leading up to the 'garden' terrace also had to be substantially quarried back to allow access to this terrace.

The interrelationship of the 'garden' and oratory terraces and the upper traverse is somewhat complicated by the fact that there are two worked routes linking the three structures. While the route via the outer passage from the 'garden' terrace to the oratory terrace is little used today, this is largely because of the collapse of the upper part of the outer wall at the west end of the oratory terrace. Although more exposed and vertiginous, this route is actually an easier climb than that up from the north-west end of the 'garden' terrace. The route to the upper traverse up the cliff at the north side of the oratory terrace is also the lesser-used today of the two routes connecting these structures. It is a very easy climb, at least upwards. The placement of the large stone across the drip gully on the upper traverse, which probably facilitated access to this route, suggests that it was not just a route used during construction and then abandoned. While we will probably never know for certain what these different routes signify and how they were used, it is possible that the routes represent something of a 'round', allowing for a different route to be followed on the descent from the top of the Peak than was taken on the ascent. One of these routes would have involved visiting the oratory terrace, while the other could have bypassed it.

8.3.4 The outer terrace

The presence of the outer terrace complicates matters even more, as it is accessible from both the primary and final routes and we have no dating or stratigraphic evidence to show when it was built. It is also an enigmatic structure but its interpretation could be vital to understanding the history of the development of the site.

We do not know, for example, whether the outer terrace was even completed, such was the degree of erosion to its lower and eastern sides. If completed it would have been a substantial structure; its lower (north) wall probably would have been the highest built on the Peak. The alignment of the terrace is similar to that of the oratory terrace and afforded a fine view eastwards of the monastery and Little Skellig beyond. That this view was significant is clear from the orientation of the oratory on the oratory terrace and St Michael's Church in the monastery. It is therefore not impossible that a small oratory could have stood, or there could have been the intention to erect one, on the outer terrace, although no evidence remains of such a structure. The presence of the probable *leacht* on the outer terrace could also suggest that this terrace was, or was intended to be, a version of the oratory terrace, possibly earlier than it but never finished. The *leacht*, of course, could be later and was perhaps intended to mark an earlier sacred spot.

8.3.5 New structures on the lower part of the access route

The partial and poorly preserved remains of previously unrecorded and substantial structures were uncovered or detected all along the lower part of the route. They were generally in very poor condition and represented only the very last remnants. They do, however, show that there was hardly anywhere on the climb that was not improved by the monks. Unfortunately it is not possible to determine when these structures were built relative to the usage of two different routes higher up.

8.3.6 Dating

It has generally and perhaps correctly been suggested that the structures on the South Peak would most likely have been built only after the monks established a permanent presence in the monastery on the island. This does not, however, preclude the early use of the South Peak. John Windele's description of the South Peak refers to a 'stone of Don' on the South Peak (Horn *et al*. 1990, 16). The *Leabhar Gabhála Érenn* records that Don, killed during the battles between the Tuatha Dé Danann and the Milesians for the control of Ireland, requested burial on an island, supposed to have been Skellig, and that his brother Amairgen declared that the high rock, Tech Donn, should be visited by people (quoted in Horn *et al*. 1990, 16). This myth raises the possibility of a pre-Christian presence on Skellig. It seems unlikely, given the conspicuousness and brooding presence of the Skelligs, that the islands would not have had a human presence in early times, even if only a temporary or seasonal one. No evidence for such early occupation has been recovered as yet. Neither is it clear whether the primary route, which gives access to the South Peak, would have been negotiable before the monks cut back the rock faces and constructed the various terraces, raising the issue of whether the South Peak could have been accessed in pre-monastic times.

The date of commencement of use of the South Peak by the monks themselves is also not determinable. Unfortunately the samples of burnt material from the oratory and outer terraces only contained oxidised clay and were not suitable for radiocarbon dating. The only dating evidence therefore relies on a comparison of the structures on the South Peak with those found elsewhere.

The cross-slab found on the oratory terrace in the 1980s is the only reasonably closely datable object that was found on the South Peak. Marshall has argued that it belonged within a ninth-century tradition (Horn *et al*. 1990, 80–3). The oratory there also fits comfortably into a similar time period. As noted above, however, the oratory was built after the rock-cut water basins were constructed and so it is possible that this area could have been in use for some time before the small church was built. The shrine associated with the oratory terrace is unlikely to be earlier than the eighth or ninth century, as recent excavations of other shrines in Iveragh have shown. The relative dating of the construction of the shrine and oratory terraces is also unknown.

It is not possible to determine on present evidence how much earlier the primary route may have been than the final route.

Some of the structures on the South Peak have general parallels with parts of the very earliest set of steps to the monastery (which were only discovered in 2010), and also with the monastery itself.

It should be remembered that the individual structures uncovered on the South Peak represent their final form. Owing to, for example, natural erosion and damage by falling stones many of these structures must have been repaired or rebuilt on a number of occasions. Unfortunately, owing to the nature of these structures, with the exception of the reinforcing wall on the 'garden' terrace and the raising of the interior of the upper traverse we cannot distinguish with any certainty between what might be original and what might be a repair or replacement. It is also impossible to determine in what order the structures on each route may have been built. One would expect that construction of the various terraces and climbs would have been undertaken over a protracted period, and that there would also have been a natural urge to enhance and improve the access over a considerable time. There are places where access originally may have been possible but where at a later time additional structures may have been built to improve it. A good example of this is the additional walling on lower ledges below the narrow ledges on either side of the blind corner on the lower part of the route. It is not clear whether this masonry was primary or added to widen the route at a later time. It is also unclear whether the rock-cut steps there were intended originally as steps for feet or were primarily intended or secondarily used to secure masonry. This constructional trick, however, has a parallel on the earliest steps built to the monastery. The masonry stairway on the broad ledge is another example. It was a large construction project and could conceivably have been undertaken at a later time to improve access. There are also several structures on the Peak that were not necessary to the climb—the platforms and the small enclosure above the Needle's Eye and the 'garden' terrace, for example. These could have been later additions. The crosses and *leachta* that dot the routes up the Peak could also have been added at any time. We have to remain aware that pilgrimage to the South Peak continued until the seventeenth/eighteenth century and that some structures could have been repaired, rebuilt or even added at a relatively late date. For example, the kneeling stone before the altar in the ruined oratory on the oratory terrace appears to have been moved, relaid and had crosses scratched on it after the collapse of the oratory at an unknown date.

The hole drilled for explosives at the junction of the short broad and ragged ledges also clearly shows that the lighthouse-builders were active on the South Peak. They may have used the lower part of the route combined with the southern traverses of the north-west passage (the masonry of the fourth section of which they may have repaired) as a short cut between the monastery (where they lived) and the upper lighthouse. We also know that later in the nineteenth century the lighthouse-keepers were also familiar with the South Peak, as they first brought the structures there to antiquarian attention.

8.3.7 FUNCTION

The final access route, with its oratory, shrine, *leachta* and crosses, was obviously used for pilgrimage. We know little about early pilgrimage to Skellig Michael, however; one of the first references to it is in 1543 (Harbison 1991, 87), while the first historical mention of pilgrimage to the South Peak itself only occurred several centuries later.

The monks went to great lengths to allow the circumambulation of the oratory, reminiscent of the layout of the small oratory terrace within the monastery itself. Such circumnavigation of structures is well attested in medieval pilgrimages, such as that to Lough Derg (*ibid.*, 62), but is also evidenced in the construction of the seventh/eighth-century shrines on nearby Illaunloughan and Church Island (near Valentia). The presence of the shrine on the oratory terrace is also a sure indication of pilgrimage. The small *leachta* and crosses at several points along the routes up the Peak would also appear to indicate pilgrimage and were probably used as 'stations' where prayers were said. There are also a number of places—e.g. section 1 of the southern traverses of the north-west passage, the upper and lower platforms above the Needle's Eye and the 'garden' terrace—where the terracing appeared excessively wide, and these locations could have been used as gathering points or stations. The small enclosure above the Needle's Eye and the extension at the north-west end of the 'garden' terrace could also have functioned as small prayer stations.

The primary access route appears to have run directly to the top of the Peak but may also have been a pilgrimage route. The presence of the Outer Terrace and the fact that we cannot relate its building to the use of either of the two routes complicate matters somewhat.

Horn *et al.* (1990) suggested that the South Peak was also a hermitage. They postulated that either the 'garden' terrace or the outer terrace might have been the site of a hermit's residence. The presence of the reinforcing wall on the 'garden' terrace precludes the presence of a cell there, but the possible shelter at the end of the outer terrace could have been the putative hermit's residence. This, however, is the most exposed and coldest terrace on the Peak and would have been a very challenging place to stay for extended periods. If the outer terrace was built at an early date, it could alternatively have been the focus for early pilgrimage, as it would have been the only terrace on the upper part of the Peak. This shelter therefore could have been intended for pilgrims. If the outer terrace was built later when the final access route was in use, it could have been a possible residence for a hermit, as it lay isolated from the main route. The presence of a *leacht* there means, however, that the terrace could also have functioned as part of the pilgrimage. Unfortunately, we do not know when this *leacht* was built. Of course, any putative hermit associated with the final access route might have lived in the oratory on the oratory terrace.

As with much else on the South Peak, the surviving archaeological evidence is more than ambiguous, and interpretation is not helped by the lack of relative and absolute dating.

8.4 THE MONASTIC COMMUNITY

The excavations have thrown some light on the lifestyle of the monks who toiled, prayed and died on Skellig Michael.

8.4.1 The local environment

The analysis of pollen from the old ground surface at the time of construction of the large oratory has indicated the possibility that pockets of *Sorbus* (*Sorbus aucuparia*?—rowan or mountain ash) were growing on the island. Even though there is no record of trees growing on Skellig Michael within living memory, there is no reason why *Sorbus* could not have grown there in the past, as it is a tree which is found at the highest level on our mountains and can grow from crevices in rocks. Otherwise, as expected, the pollen analysis indicated that the local environment was one of open grassy swards, with species such as *Sedum* that occur on sea cliffs and rock outcrops. The burning off of herbaceous vegetation before construction of the large oratory is also suggested by the presence of charcoal in the old ground surface.

8.4.2 Crop cultivation

The evidence from both pollen and plant macrofossil remains indicates that barley and oats were cultivated by the monks on Skellig Michael. The presence of fat hen (*Chenopodium album*), an invasive species generally associated with plant cultivation, supports the theory of on-site cultivation, although it could also be argued that the *Chenopodium* was gathered together with the sheaves of barley and oats on the mainland and that its seeds (and pollen) were released during processing on the island. The fragments of quernstones found during excavation confirm that crop-processing took place within the monastery. Neither cereal species could be identified to type, nor does the very small sample size allow any conclusions to be drawn about the relative importance or spatial distribution of the cereals.

The presence of barley and oats is not surprising, given that these cereals were important plants in the early medieval period and both are tolerant of cooler and wetter climates. This is especially true of oats, which can also withstand high coastal winds and which was a cheap and readily available crop used for making flat oatcakes, porridges and gruels (Monk 2011, 37). Its high nutritional value has led to its being referred to as the 'superfood' of the early medieval period (*ibid.*, 36). Barley was also used for making bread, porridge and gruels, along with malt for beer production, but there was no evidence for the latter at Skellig Michael. The cultivation of barley and oats on Skellig Michael fits well with the evidence from contemporary eccelesiastical sites, such as nearby Illaunloughan (where the cereals were sourced from the mainland) (Marshall and Walsh 2005, 130), Caherlehillan, near Cahirciveen (J. Sheehan, pers. comm.), and High Island, Co. Galway (G. Scally, pers. comm.). Research by Monk (1991) has also shown that these two cereals are the dominant species on secular sites of the early medieval period.

Perhaps what is most surprising is that cereal cultivation was attempted at all on the craggy rock that is Skellig Michael. The monastery and South Peak structures were constructed on terraces supported by substantial revetment walls. Several of these terraces do not appear to have supported structures of any kind and consequently are referred to as 'garden terraces'. The largest of these are the upper and lower monks' gardens within the outer enclosure of the monastery, although excavation revealed that at some stage in its use the lower monks' garden supported a cell (Cell G) and associated paving. Built on a south-facing slope and sheltered by the retaining wall, these areas are well suited to gardening and cultivation, as demonstrated in the 1980s, when a range of vegetables were grown as an experiment in the upper monks' garden (G.D. Rourke, pers. comm.). The insect remains analysed from the lower monks' garden indicate that seaweed may have been used as a fertiliser, in addition to human excrement and animal/bird bones. The possible use of seaweed is interesting, given that it is used to mitigate the lack of nutrient nitrogen that can affect the production of oats (Marshall and Walsh 2005, 132).

8.4.3 Exploitation of mammals, birds and fish

Bearing in mind the limitations imposed by sample size and the broad date range (from the late seventh century to the fourteenth century), the excavated evidence allows us to hypothesise that the diet of the Skellig Michael monks was relatively broad-based. In addition to using cereal-based foods and presumably vegetables, which do not normally leave a trace in the archaeological record, the monks also exploited a diverse range of terrestrial and marine resources.

Goat and sheep dominated the small assemblage of mammal bones and would have been important sources of milk and meat. Both could have been kept on the island but no evidence of the presence of animal dung could be inferred from the insect remains. Joints of pig and cattle meat must have been imported from the mainland, and there is evidence that complete cattle carcasses were butchered on the island. Seal meat was also consumed and may have been a food permitted during periods of fasting. The single horse bone found must have made its way to the island in a joint of meat.

Birds, predominantly Manx shearwater and the auk family, were exploited mainly during the summer breeding season, and it is possible that some of them may have been salted, pickled or smoked for later use. Both trimmings and final food waste were retrieved during excavation. Chop-marks indicate that the feet were removed as waste and there is evidence that the birds were roasted over a fire after the ends of the wings were broken off.

At least seven species of fish were recorded in the bone assemblage, with sea bream (probably red sea bream) the most frequent. All except cod could have been caught locally, either directly from the island on lines or from local boats. The cod, which favours deep, cooler waters, must have been caught well offshore. Marine molluscs are represented by a cache of limpet shells and a small number of scallop shells found with the human remains.

The dietary evidence, restricted as it is, reflects much richer fare than the penitential diets described in early documentary sources and certainly does not suggest an ascetic regime commensurate with the extreme monasticism indicated by the choice of location. Perhaps pragmatism ruled the day, and monks who must have had to maintain their health and physical fitness to construct and maintain their monastery were allowed a balanced and varied diet. The nature of that diet reflects the monastery's remote coastal location and the need to exploit local resources as a means towards establishing an element of self-sufficiency.

8.4.4 Wood and fire

Charcoal and wood analysis has thrown some light on the wide range of wood brought onto the island and used for fuel and possibly for structural purposes, e.g. the construction of temporary shelters, scaffolding etc. Nine different trees were identified as having been utilised during the early medieval period, dominated by oak and also including ash, hazel, birch, alder, willow, holly, yew and purging buckthorn. All are native species and must have been collected from a range of different environments on the mainland, indicating strong external contacts.

8.4.5 Material culture

The limited number of artefacts recovered allow us further glimpses of the monastic way of life and contacts with the outside world. Of the nineteen sherds of medieval pottery found, thirteen are imports—from near Bristol, England, and the Saintonge and Orléans areas of France. Dating predominantly from the late twelfth and early thirteenth centuries, these could perhaps be attributed to offerings by pilgrims, if not from abroad then possibly from the nearby urban centres of Limerick and Cork, where such pottery would have been in plentiful supply.

A single writing lead, for use on parchment or vellum, hints at scholastic activities. The two fragments of incised slates, whilst not having clearly discernible patterns or subject-matter, could also perhaps relate to instruction or training, as evidenced at the contemporary island monastic site of Inchmarnock, Scotland (Lowe 2008). The bodies of juveniles aged 9–12 years at death on Skellig Michael also suggests the presence of novices. The practice of fostering out young children, between the ages of seven and seventeen for boys and fourteen for girls, was widespread in Ireland in the early medieval period, both in the secular world and the religious world, where training began in boyhood (*ibid.*, 262). Fosterage is also suggested as an explanation for the presence of three juveniles buried in the monastic settlement of Illaunloughan (Marshall and Walsh 2005, 84–5). This theme of fosterage will be further researched in relation to Skellig Michael and it is hoped that additional analytical research will be carried out on the juvenile burials, which may shed light on their genetic make-up and cultural backgrounds.

The antler gaming piece, lignite ring and disc bead and bronze pins all provide insights into the more personal side of the monastic community.

8.4.6 Conclusion

In spite of the limitations imposed by the scale of the excavations, the nature of the deposits and the small sample sizes, important information has been gleaned about the lifestyle of the Skellig Michael monks. Perhaps the most significant picture that is emerging is that in many respects the Skellig Michael monastery is little different in terms of diet and economy from other contemporary island and mainland ecclesiastical sites. Given the precipitous nature of the island, it would be unrealistic to expect the monastery to have been self-sufficient, but the extent of external provisioning suggested by the findings is somewhat surprising and hints at a degree of external contact not to be expected for an eremitical community. The monastery would of course have developed and changed over the centuries, but towards the end of the early medieval period perhaps we should think of Skellig Michael as offering both a communal experience for those in the monastery and the opportunity for a more eremitical way of life on the South Peak.

8.5 ABANDONMENT OF THE ISLAND MONASTERY

The departure of the monks from Skellig Michael is generally dated to the thirteenth century, with deteriorating weather conditions and the influence of the twelfth-century church reform movement cited as contributing factors. A tradition of pilgrimage to the island appears to have been well established by the thirteenth century, a factor which may also have contributed to the monks' decision to relocate to Ballinskelligs Abbey on the mainland. It is likely that the abandonment of the island monastery took place gradually over a period of time. Once the Augustinian priory was established in Ballinskelligs, the monks may no longer have occupied Skellig Michael on a year-round basis but instead used it as a place of 'retreat' during the summer months.

The radiocarbon dates obtained from habitation material (animal bone, shells and charcoal) indicate activity on the island up to the early twelfth century. Burials 1 and 3 have been dated to the period between the early eleventh and early twelfth centuries, while burial 2 produced the wide date range of early eleventh–late thirteenth century. The latter is the only radiocarbon date that extends (at 2 sigma) into the thirteenth century.

The medieval pottery tells a slightly different story and, if the single sherd of Saintonge sgraffito (which dates from the late thirteenth/early fourteenth century) is excluded, the assemblage could belong to a 50-year period in the later twelfth/early thirteenth century. Those sherds which came from secure contexts indicate that substantial works, including the rebuilding of walls and building up of terrace deposits (particularly in the lower monks' garden), continued into the late twelfth/early thirteenth century. The Saintonge sgraffito sherd does not come from a secure context.

In conclusion, then, the results of the excavations indicate that substantial works were being carried out on the structural remains on Skellig Michael into the early thirteenth century. We do not know whether the monks were in full-time occupation of the monastery at this time, but on present evidence it appears that the final abandonment of the island probably took place in the mid–late thirteenth century.

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Abbreviations

JCHAS = *Journal of the Cork Historical and Archaeological Society*
JIA = *Journal of Irish Archaeology*
JRSAI = *Journal of the Royal Society of Antiquaries of Ireland*
PRIA = *Proceedings of the Royal Irish Academy*
PSAS = *Proceedings of the Society of Antiquaries of Scotland*
UJA = *Ulster Journal of Archaeology*

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APPENDIX I—FINDS CATALOGUE

E No.	No.	Type	Description	Area	Location	Context
93E0195:	1	Pottery	Ham Green A/B transitional ware	LMG	Layer C, Cutting 5	F633(5)
93E0195:	2	Pottery	Ham Green A/B transitional ware	LMG	Layer C, Cutting 5	F633(5)
93E0195:	3	Pottery	Saintonge	LMG	Layer C/E, Cutting 5	F650(5)
93E0195:	4	Clay pipe		LMG	Layer B, Cutting 7	F632(7)
93E0195:	5	Clay pipe		LMG	Layer B, Cutting 6	F632(6)
93E0195:	6	Pottery, medieval	Local medieval ware	LMG	Top of steps, Cutting 6	Top of steps, Cutting 6
93E0195:	7	Pottery, medieval	Local medieval ware	East steps	Surface find	Surface find
93E0195:	8	Pottery	Transfer-printed	LMG	Layer B, Cutting 6	F632(6)
93E0195:	9	Pottery	Transfer-printed	LMG	Layer B, Cutting 6	F632(6)
93E0195:	10	Pottery	Transfer-printed	LMG	Layer B, Cutting 6	F632(6)
93E0195:	11	Pottery	White earthenware	LMG	Layer B, Cutting 6	F632(6)
93E0195:	12	Pottery	White earthenware	LMG	Layer B, Cutting 6	F632(6)
93E0195:	13	Pottery	White earthenware	LMG	Layer B, Cutting 6	F632(6)
93E0195:	14	Pottery	White earthenware	LMG	Layer B, Cutting 6	F632(6)
93E0195:	15	Pottery	Earthenware (Staffordshire)	LMG	Layer B, Cutting 6	F632(6)
93E0195:	16	Pottery	Banded ware	LMG	Layer B, Cutting 6	F632(6)
93E0195:	17	Pottery	Porcelain?	LMG	Layer B, Cutting 6	F632(6)
93E0195:	18	Pottery, unglazed	Ham Green A/B transitional ware	Cistern 3	Main fill	F615
93E0195:	19	Pottery	White earthenware	LMG	Layer A, Cuttings 6 & 7	F631(6&7)
93E0195:	20	Pottery	Shell-edged (green)	LMG	Layer A, Cuttings 6 & 7	F631(6&7)
93E0195:	21	Pottery	Transfer-printed	LMG	Layer A, Cuttings 6 & 7	F631(6&7)
93E0195:	22	Pottery	White earthenware	*Leacht* area	Stones over skeletal material	F562
93E0195:	23	Pottery	Transfer-printed	LMG	Layer B, Cutting 5	F632(5)
93E0195:	24	Pottery	White earthenware	LMG	Layer B, Cutting 5	F632(5)
93E0195:	25	Pottery	Earthenware (Staffordshire)	LMG	Layer B, Cutting 5	F632(5)
93E0195:	26	Pottery	Banded ware	LMG	Layer B, Cutting 5	F632(5)
93E0195:	27	Pottery	Earthenware (Staffordshire)	LMG	Layer B, Cutting 5	F632(5)
93E0195:	28	Pottery	Pearlware	LMG	Topsoil, Cutting 7	F631(7)
93E0195:	29	Pottery	White earthenware	LMG	Topsoil, Cutting 7	F631(7)
93E0195:	30	Pottery	Banded ware	LMG	Topsoil, Cutting 7	F631(7)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	31	Pottery	Black-glazed ware	LMG	Topsoil, Cutting 7	F631(7)
93E0195:	32	Pottery, medieval	Orléans-type ware	LMG	4th level, Cutting 6	F635(6)
93E0195:	33	Pottery, medieval	Ham Green A/B transitional ware	LMG	N/S wall, Cutting 5	F637
93E0195:	34	Pottery, medieval	Local medieval ware	LMG	Layer E, Cutting 6	F635(6)
93E0195:	35	Pottery, medieval	Local medieval ware	LMG	Inside Cell G, upper level	F1014
93E0195:	36	Pottery	19th-century stoneware	*Leacht* area	South of large oratory, between *leacht* and wall	F561
93E0195:	37	Clay pipe bowl	c. 1800–30	LMG	Cell G, upper levels	F1014
93E0195:	38	Pottery	Shell-edged (blue)	LMG	Layer B, Cutting 7	F632(7)
93E0195:	39	Pottery	White earthenware	LMG	Layer B, Cutting 7	F632(7)
93E0195:	40	Pottery	White earthenware	LMG	Layer B, Cutting 7	F632(7)
93E0195:	41	Pottery	Shell-edged (blue)	LMG	Campion above and west of Cell G	F1012
93E0195:	42	Pottery	White earthenware	LMG	Campion above and west of Cell G	F1012
93E0195:	43	Pottery	Banded ware	LMG	Campion above and west of Cell G	F1012
93E0195:	44	Pottery	Banded ware	LMG	Campion above and west of Cell G	F1012
93E0195:	45	Pottery	Unidentified	LMG	Campion above and west of Cell G	F1012
93E0195:	46	Pottery	White earthenware	LMG	Campion above and west of Cell G	F1012
93E0195:	47	Pottery	Banded ware	LMG	Campion above and west of Cell G	F1012
93E0195:	48	Pottery	Glazed red earthenware	LMG	Campion above and west of Cell G	F1012
93E0195:	49	Pottery	19th-century stoneware	LMG	Campion above and west of Cell G	F1012
93E0195:	50	Pottery	White earthenware	*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	51	Pottery	Transfer-printed	*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	52	Pottery	White earthenware	*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	53	Pottery	White earthenware	LMG	East of Cell G	F1013
93E0195:	54	Pottery	White earthenware	LMG	East of Cell G	F1013
93E0195:	55	Pottery	19th-century stoneware	LMG	East of Cell G	F1013
93E0195:	56	Pottery	White earthenware	LMG	Just inside Cell G	F1014
93E0195:	57	Pottery	White earthenware	LMG	Just inside Cell G	F1014
93E0195:	58	Pottery	White earthenware	LMG	Just inside Cell G	F1014
93E0195:	59	Pottery	White earthenware	LMG	Just inside Cell G	F1014
93E0195:	60	Pottery	Banded ware	LMG	Just inside Cell G	F1014

E No.	No.	Type	Description	Area	Location	Context
93E0195:	61	Pottery	Shell-edged (blue)	LMG	Just inside Cell G	F1014
93E0195:	62	Pottery	Shell-edged (blue)	LMG	Just inside Cell G	F1014
93E0195:	63	Pottery	Shell-edged (blue)	LMG	Just inside Cell G	F1014
93E0195:	64	Pottery	Shell-edged	LMG	E and N of Cell G	F1013
93E0195:	65	Pottery	Shell-edged	LMG	E and N of Cell G	F1013
93E0195:	66	Pottery	White earthenware	LMG	E and N of Cell G	F1013
93E0195:	67	Pottery	White earthenware	LMG	E and N of Cell G	F1013
93E0195:	68	Pottery	White earthenware	LMG	E and N of Cell G	F1013
93E0195:	69	Pottery	White earthenware	LMG	E and N of Cell G	F1013
93E0195:	70	Pottery	White earthenware	LMG	E and N of Cell G	F1013
93E0195:	71	Clay pipe stem		LMG	E and N of Cell G	F1013
93E0195:	72	Pottery	Pearlware	LMG	East end in campion, upper levels	F1011
93E0195:	73	Pottery	Pearlware	LMG	East end in campion, upper levels	F1011
93E0195:	74	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	75	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	76	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	77	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	78	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	79	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	80	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	81	Pottery	Transfer-printed	LMG	East end in campion, upper levels	F1011
93E0195:	82	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	83	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	84	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	85	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	86	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	87	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	88	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	89	Pottery	White earthenware	LMG	East end in campion, upper levels	F1011
93E0195:	90	Clay pipe bowl	*c.* 1800–30	LMG	East end in campion, upper levels	F1011
93E0195:	91	Pottery	19th-century stoneware	LMG	East end in campion, upper levels	F1011

E No.	No.	Type	Description	Area	Location	Context
93E0195:	92	Pottery	Mocha ware	LMG	East end in campion, upper levels	F1011
93E0195:	93	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	94	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	95	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	96	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	97	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	98	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	99	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	100	Pottery	White earthenware	Cistern 3	Main fill	F615
93E0195:	101	Pottery	Transfer-printed	Cistern 3	Main fill	F615
93E0195:	102	Pottery	Black-glazed ware	Cistern 3	Main fill	F615
93E0195:	103	Pottery	19th-century stoneware	LMG	In Cell G	F1015
93E0195:	104	Pottery	White earthenware	LMG	Layer B, Cutting 7	F632(7)
93E0195:	105	Pottery, medieval	Local medieval ware	LMG	Layer E, Cuttings 6 & 7	F635(6&7)
93E0195:	106	Pottery, medieval	Local medieval ware	LMG	Layer E, Cuttings 6 & 7	F635(6&7)
93E0195:	107	Pottery, medieval	Saintonge green-glazed	LMG	Cleaning of east steps (F10?)	Not from excavation
93E0195:	108	Pottery	North Devon gravel-free	LMG	Cleaning of east steps (F10?)	Not from excavation
93E0195:	109	Pottery	North Devon gravel-free	LMG	Cleaning of east steps (F10?)	Not from excavation
93E0195:	110	Pottery, medieval	Ham Green B ware	LMG	Spoil heap, soil derived from LMG	Spoil heap
93E0195:	111	Pottery	White earthenware	Steps, cleaning	Unknown	Not from excavation
93E0195:	112	Pottery	White earthenware	Steps, cleaning	Unknown	Not from excavation
93E0195:	113	Pottery	White earthenware	Steps, cleaning	Unknown	Not from excavation
93E0195:	114	Pottery	Shell-edged (blue)	Steps, cleaning	Unknown	Not from excavation
93E0195:	115	Pottery	Transfer-printed	Steps, cleaning	Unknown	Not from excavation

E No.	No.	Type	Description	Area	Location	Context
93E0195:	116	Pottery	Transfer-printed	Steps, cleaning	Unknown	Not from excavation
93E0195:	117	Clay pipe stem		Steps, cleaning	Unknown	Not from excavation
93E0195:	118	Pottery	White earthenware	East entrance		F504
93E0195:	119	Pottery	Black-glazed ware	LMG	Found on surface	Surface find
93E0195:	120	Pottery	19th-century stoneware	LMG	Just outside Cell G to west	F1016
93E0195:	121	Clay pipe stem		LMG	Just outside Cell G to west	F1016
93E0195:	122	Clay pipe stem		LMG	Just outside Cell G to west	F1016
93E0195:	123	Pottery	Shell-edged (blue)	LMG	Fill of Cell G	F1017
93E0195:	124	Clay pipe stem		LMG	Fill of Cell G	F1017
93E0195:	125	Pottery	Banded ware	LMG	Fill of Cell G	F1017
93E0195:	126	Pottery	Hand-painted fine ware	LMG	Fill of Cell G	F1017
93E0195:	127	Pottery	19th-century stoneware	LMG	Fill of Cell G	F1017
93E0195:	128	Pottery	Glazed red earthenware	LMG	Fill of Cell G	F1017
93E0195:	129	Pottery	Glazed red earthenware	LMG	Fill of Cell G	F1017
93E0195:	130	Pottery	Glazed red earthenware	LMG	Fill of Cell G	F1017
93E0195:	131	Pottery	Transfer-printed	LMG	Cell G, dark layer above pavement	F1018
93E0195:	132	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	133	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	134	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	135	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	136	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	137	Pottery	Transfer-printed	LMG	Cell G, dark layer above pavement	F1018
93E0195:	138	Pottery	White earthenware	LMG	Cell G, dark layer above pavement	F1018
93E0195:	139	Pottery	Shell-edged (green)	LMG	Cell G, dark layer above pavement	F1018
93E0195:	140	Pottery	Shell-edged (green)	LMG	Cell G, dark layer above pavement	F1018
93E0195:	141	Pottery	White earthenware	*Leacht* area	Puffin burrow	F598
93E0195:	142	Pottery	Unidentified	*Leacht* area	Puffin burrow	F598
93E0195:	143	Pottery	Transfer-printed	*Leacht* area	Puffin burrow	F598
93E0195:	144	Pottery	19th-century stoneware	Wailing Woman	Stray find on surface (not from excavation)	Not from excavation

E No.	No.	Type	Description	Area	Location	Context
93E0195:	145	Pottery	19th-century stoneware	Wailing Woman	Stray find on surface (not from excavation)	Not from excavation
93E0195:	146	Glass, modern		*Leacht* area	Puffin burrow	F598
93E0195:	147	Glass, modern		LMG	Just outside Cell G to west	F1016
93E0195:	148	Glass, modern		LMG	East of Cell G	F1013
93E0195:	149	Glass, modern		LMG	East of Cell G	F1013
93E0195:	150	Glass bottle		LMG	East of Cell G	F1013
93E0195:	151	Glass bottle		LMG	East of Cell G	F1013
93E0195:	152	Glass bottle	Neck sherd, post-1820	*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	153	Glass bottle	Sherds from bottle made pre-1800 but sherds worn	*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	154	Glass bottle		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	155	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	156	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	157	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	158	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	159	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	160	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	161	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	162	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	163	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	164	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	165	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	166	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	167	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	168	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	169	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	170	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	171	Glass, modern		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	172	Glass, modern		*Leacht*area	19th-century disturbance SW of *leacht*	F562
93E0195:	173	Glass, modern		LMG	In N/S wall, Cutting 5E	F637(5E)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	174	Glass, modern		*Leacht* area	From among stones covering skeletal material (F2?)	F563
93E0195:	175	Glass, modern		*Leacht* area	From among stones covering skeletal material (F2?)	F563
93E0195:	176	Glass bottle	Sherds from bottle made pre-1800 but sherds worn	*Leacht* area	Outside east wall of St Michaels Church (F6?)	F562
93E0195:	177	Glass, modern		*Leacht* area	Outside east wall of St Michaels Church (F6?)	F562
93E0195:	178	Glass, modern		*Leach t*area	Outside east wall of St Michaels Church (F6?)	F562
93E0195:	179	Glass, modern		*Leacht* area	Outside east wall of St Michaels Church (F6?)	F562
93E0195:	180	Glass, modern		LMG	Top layer, Cuttings 6 & 7	F631(6&7)
93E0195:	181	Glass, modern		LMG	Top layer, Cuttings 6 & 7	F631(6&7)
93E0195:	182	Glass, modern		LMG	Inside Cell G, upper level	F1014
93E0195:	183	Glass, modern		LMG	Inside Cell G, upper level	F1014
93E0195:	184	Glass, modern		LMG	Inside Cell G, upper level	F1014
93E0195:	185	Glass, modern		LMG	Inside Cell G, upper level	F1014
93E0195:	186	Glass, modern		East entrance		F504
93E0195:	187	Glass, modern		LMG	East end in campion, upper levels	F631
93E0195:	188	Glass, modern		?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	189	Glass, modern		?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	190	Glass, modern		?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	191	Glass, modern		?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	192	Pottery	Shell-edged	?LMG?	Fire-damaged (from Cell G?)	F1019
93E0195:	193	Pottery	Shell-edged	?LMG?	Fire-damaged (from Cell G?)	F1019
93E0195:	194	Pottery	White earthenware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	195	Pottery	White earthenware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	196	Pottery, medieval	Saintonge green-glazed	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	197	Pottery, medieval	Ham Green A ware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	198	Pottery	White earthenware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	199	Pottery, medieval	Local medieval ware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	200	Pottery, medieval	Orléans-type ware	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	201	Pottery	White earthenware	?LMG?	Very badly damaged in fire in site hut	F1019

E No.	No.	Type	Description	Area	Location	Context
93E0195:	202	Pottery, medieval	Saintonge green-glazed	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	203	Pottery	Unidentified	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	204	Pottery	Glazed earthenware; may have been reused as a gaming piece	?LMG?	Very badly damaged in fire in site hut	F1019
93E0195:	205	Copper-alloy stick-pin	Rounded spatulate head, decorated with crosses, c. 1130–1200	LMG	Cutting 3 in lower collapse c. 2m from wall	F636(3)
93E0195:	206	Brass and wood crucifix	c. 1900–59	LMG	Under campion roots, directly below large oratory in LMG	F631
93E0195:	207	Writing lead?	Possibly a writing lead; possibly 13th-century	*Leacht* area	From clearance to S of *leacht* and N of wall	F561
93E0195:	208	Copper or bronze wire	Bent, undiagnostic, found with bottle glass	LMG	Layer C, Cutting 5E	F633(5E)
93E0195:	209	Iron rod	Uncertain function and date	LMG	Layer D, Cutting 5E	F634(5E)
93E0195:	210	Metal fragments		*Leacht* area	East of St Michaels Church	F579
93E0195:	211	Iron nail		*Leacht* area	East of St Michaels Church	F577
93E0195:	212	Iron strip		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	213	Copper-alloy ringed pin	Crutch-headed with moulded cross decoration, *c.* 1000–70	South entrance	Pre-excavation find, found by workmen in the west jamb of the south entrance	Pre-excavation find
93E0195:	214	Slag		LMG	Layer E, Cutting 5E (00:25)	F635(5E)
93E0195:	215	Slag		LMG	East end in campion, upper levels	F1011
93E0195:	216	Slag		LMG	Layer D, Cutting 5 (00:24)	F634(5)
93E0195:	217	Slag		LMG	Layer C/D, Cutting 5 (00:26)	F639(5)
93E0195:	218	Slag		LMG	Layer E, Cuttings 6 & 7 (00:39)	F635(6&7)
93E0195:	219	Iron	Thin-walled, possibly from a can; 19th-century or later	LMG	Layer D, Cutting 5 surface (00:44)	F634(5)
93E0195:	220	Fused metal		LMG	Layer E, Cutting 5 (00:27)	F635(5)
93E0195:	221	Slag	With possible hammerscale attached	LMG	Layer E, Cutting 6 (00:28)	F635(6)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	222	Iron		East step structure	From wall of structure	F693
93E0195:	223	Iron fused onto stone	Possible hinge strap	LMG	Layer E, Cutting 7 (00:41)	F635(7)
93E0195:	224	Metal fused onto stone	Thin-walled, possibly from a can; 19th-century or later	*Leacht* area	From outside St Michaels Church (F7?)	F561
93E0195:	225	Metal fused onto stone		*Leacht* area	E of St Michaels Church, in cavity under *leacht*	F594
93E0195:	226	Iron fused onto stone		LMG	Layer E, Cutting 5, overlying new steps (00:29)	F635(5)
93E0195:	227	Bone, animal/bird		*Leacht* area	Puffin burrow	F598
93E0195:	228	Antler gaming piece	Date uncertain; EC or medieval	LMG	Layer D, Cutting 5E	F634(5E)
93E0195:	229	Charred seed		LMG	Layer D, Cutting 5 (00:21)	F634(5)
93E0195:	230	Fish bone/bead		LMG	Layer F, Cutting 5	F636(5)
93E0195:	231	Fish-bone pin	Date uncertain; EC or medieval	LMG	Layer F, Cutting 5	F636(5)
93E0195:	232	Oyster shell		LMG	Area E of Cell G	F1013
93E0195:	233	Coal?		LMG	Area E of Cell G	F1013
93E0195:	234	Coal?		LMG	Just inside Cell G upper levels	F1014
93E0195:	235	Oyster shell		*Leacht* area	19th-century disturbance SW of *leacht*	F562
93E0195:	236	Wooden object		East steps	From cleaning steps	Not from excavation
93E0195:	237	Bone fragment, triangular		East steps	From cleaning steps	Not from excavation
93E0195:	238	Leather stitched object		Cistern 3	Main fill	F615
93E0195:	239	Brick fragment		LMG	Cell G, upper levels	F1014
93E0195:	240	Brick		*Leacht* area	Puffin burrow	F598
93E0195:	241	Mortar		*Leacht* area	Puffin burrow	F598
93E0195:	242	Mortar		*Leacht* area	Puffin burrow	F598
93E0195:	243	Mortar?		*Leacht* area	Puffin burrow	F598
93E0195:	244	Mortar?		*Leacht* area	Puffin burrow	F598
93E0195:	245	Leather object	Possible shoe upper	LMG	Organic layer below campion, below Cell G	F1021
93E0195:	246	Stone (lighthouse?)		*Leacht* area	Puffin burrow	F598
93E0195:	247	Stone, red		*Leacht* area	Puffin burrow	F598

E No.	No.	Type	Description	Area	Location	Context
93E0195:	248	Stone, red		*Leacht* area	Puffin burrow	F598
93E0195:	249	Water-rolled pebble		*Leacht* area	Puffin burrow	F598
93E0195:	250	Whetstone fragment	One face and edge; fine micaceous sandstone, Skellig	LMG	Layer E, Cutting 5	F635(5)
93E0195:	251	Stone disc		*Leacht* area	Stony layer between *leacht* and S wall	F577
93E0195:	252	Stone dish/plate		LMG	Boulder layer, Cuttings 3 and 1	F638(1&3)
93E0195:	253	Water-rolled pebble		*Leacht* area	West of broken cross base	F575
93E0195:	254	Water-rolled pebble		*Leacht* area	Burnt area SE of *leacht*	F576
93E0195:	255	Flint nodule		*Leacht* area	Within *leacht*	F590
93E0195:	256	Rock crystal		*Leacht* area	Burnt area SE of *leacht*	F576
93E0195:	257	Quartz (milky)		*Leacht* area	Dark stony layer S of *leacht*, N of S wall	F577
93E0195:	258	Water-rolled pebble		*Leacht* area		F579
93E0195:	259	Water-rolled pebble		*Leacht* area	Loose dark stony layer	F577
93E0195:	260	Water-rolled pebble		*Leacht* area	Loose dark stony layer	F577
93E0195:	261	Water-rolled pebble		*Leacht* area	Loose dark stony layer	F577
93E0195:	262	Water-rolled pebble		*Leacht* area	Loose dark stony layer	F577
93E0195:	263	Spindle-whorl	Complete discoid; hourglass perforation	Spoil by lighthouse toilet	Origin LMG	Spoil heap
93E0195:	264	Net-weight/ spindle-whorl	Hourglass perforation, slightly off-centre	East entrance	Uppermost cut	F503
93E0195:	265	Hone stone?		LMG	Layer B, Cutting 7 (00:14)	F632(7)
93E0195:	266	Water-rolled pebble		*Leacht* area	Loose dark stony layer 00:10	F577
93E0195:	267	Water-rolled pebble		*Leacht* area	Loose dark stony layer 00:08	F577
93E0195:	268	Water-rolled pebble		South Peak	Prayer station	
93E0195:	269	Water-rolled pebble		South Peak	Prayer station	
93E0195:	270	Water-rolled pebble		South Peak	Prayer station	
93E0195:	271	Water-rolled pebble 7		*Leacht* area	E of St Michaels Church	F588
93E0195:	272	Water-rolled pebble 5		*Leacht* area	Mortar and soil layer above Skeleton 3	F566
93E0195:	273	? Two incompatible descriptions		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	274	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561

E No.	No.	Type	Description	Area	Location	Context
93E0195:	275	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	276	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	277	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	278	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	279	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	280	Water-rolled pebble		*Leacht* area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	281	Water-rolled pebble		*Leacht*area	Surface find E of St Michaels Church around *leacht*	F561
93E0195:	282	Cross fragment	Small cross, simple squared arms; Valentia slate	LMG	Layer E, Cutting 7 (00:32)	F635(7)
93E0195:	283	Roof slate		LMG	Layer D, Cutting 5	F634(5)
93E0195:	284	Roof slate		East entrance		F504
93E0195:	285	Cross fragment	Grey sandstone, Skellig	None	From spoil heap	Spoil heap
93E0195:	286	Cross fragment		None	From spoil heap	Spoil heap
93E0195:	287	Cross fragment	Simple squared arms	None	From spoil heap	Spoil heap
93E0195:	288	Cross fragment	Rounded expanding arms; Skellig?	None	From spoil heap	Spoil heap
93E0195:	289	Slate (cross-inscribed)	Simple cross roughly scratched into surface;Valentia?	*Leacht* area	Dark stony layer S of *leacht*, N of S wall	F577
93E0195:	290	Quernstone fragment	Two concentric bands pecked into surface; fine green conglomerate, Reenadrolaun, Valentia	LMG	Surface find	Surface find
93E0195:	291	Cross-incised stone	Linear cross pecked into front face	LMG	Found in stone stack	Stone stack
93E0195:	292	Stone object (sandstone)		LMG	Layer B, Cutting 6 (S47)	F632(6)
93E0195:	293	Water-rolled pebble		LMG	Layer B, Cutting 6 (S47)	F632(6)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	294	Roof slate		*Leacht* area	Within *leacht* over stone 88 (S35)	F560
93E0195:	295	Stone, non-local		East entrance	Taking down wall above lintel to entrance	F500
93E0195:	296	Stone, non-local		East entrance	Taking down wall above lintel to entrance	F500
93E0195:	297	Stone, pinkish		LMG	West end in campion	F631
93E0195:	298	Stone, granite		LMG	West end in campion	F631
93E0195:	299	Stone and mortar		LMG	Layer D, Cutting 5 (S53)	F634(5)
93E0195:	300	Stone and burnt mortar		LMG	Layer D, Cutting 5 (S52)	F634(5)
93E0195:	301	Red brick		East entrance	Taking down wall above lintel to entrance	F500
93E0195:	302	Yellow sandstone		East entrance	Taking down wall above lintel to entrance	F500
93E0195:	303	Pottery, medieval		East entrance	Taking down wall above lintel to entrance	F500
93E0195:	304	Glass	Bottle	East entrance	Taking down wall above lintel to entrance	F500
93E0195:	305	Roof slate		*Leacht* area	E of St Michaels Church (S36)	F561
93E0195:	305B	Stone cross fragment	Simple squared arms	*Leacht* area	E of St Michaels Church (S36)	F561
93E0195:	305D	Slate	Incised linear band and cross-hatching	*Leacht* area	E of St Michaels Church (S36)	F561
93E0195:	306	Roof slates (32)		*Leacht* area	Loose dark stony layer	F577
93E0195:	306K	Incised slate	Lightly incised with cross-hatched band	East steps structure	Beneath doorway of structure	F694
93E0195:	307	Stone cross fragment	Simple squared arms	LMG	In campion	F631
93E0195:	308	Stone cross fragment	Rhyolite, Skellig	East steps structure	Beneath doorway of structure	F694
93E0195:	309	Animal tooth		Stray find	From 1994	Stray find
93E0195:	310	Slag		LMG	In campion above Cell G and to W	F1012
93E0195:	311	Ceramic furnace lining	Possible Early Christian smithing	LMG	Outside Cell G to E and N	F1020
93E0195:	312	Quernstone fragment	Domed top, concave underside; tapering handle hole; pecked radial lines at handle hole; fine red conglomerate, Reenadrolaun, Valentia	Inner enclosure	In pathway outside Cell B	Lifted from pavement for safety
93E0195:	313	Pottery	White earthenware	South entrance	High in stone blocking	F500
93E0195:	314	Pottery	Banded ware (cats-eye)	LMG	Cutting 3 inside outermost wall	F631(3)
93E0195:	315	Pottery	White earthenware	LMG	Cutting 3 inside outermost wall	F631(3)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	316	Pottery	White earthenware	LMG	Cutting 3 inside outermost wall	F631(3)
93E0195:	317	Pottery	Shell-edged (green)	LMG	Cutting 3 inside outermost wall	F631(3)
93E0195:	318	Pottery	Banded ware	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	319	Pottery	Transfer-printed	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	320	Pottery	White earthenware	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	321	Pottery	Transfer-printed	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	322	Pottery	Transfer-printed	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	323	Pottery	White earthenware	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	324	Pottery	White earthenware	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	325	Pottery	White earthenware	LMG	Cutting 3	F631(3)
93E0195:	326	Pottery	White earthenware	LMG	Cutting 3	F631(3)
93E0195:	327	Pottery	Banded ware	LMG	Cutting 3	F631(3)
93E0195:	328	Pottery	White earthenware	LMG	Cutting 3	F631(3)
93E0195:	329	Pottery	Banded ware	LMG	Cutting 3	F631(3)
93E0195:	330	Pottery	Hand-painted fine ware	LMG	Cutting 3	F631(3)
93E0195:	331	Pottery	White earthenware	LMG	Cutting 3	F631(3)
93E0195:	332	Pottery	19th-century stoneware		Cutting 3	F631(3)
93E0195:	333	Iron	Object	LMG	Cutting 1 extension, lower collapse, black organic	F638(1E)
93E0195:	334	Slag		LMG	In collapse of Cell G	F1014
93E0195:	335	Rubber/hammer stone	Modified cobble	LMG	Cutting 1A in black organic and wall	F632(1A)
93E0195:	336	Iron cauldron sherd	18th-century or later	LMG	Cutting 3	F631(3)
93E0195:	337	Glass	Bottle	LMG	Cutting 3	F631(3)
93E0195:	338	Glass bottle	Letters scratched into surface	LMG	Cutting 3	F631(3)
93E0195:	339	Glass	Bottle	LMG	Cutting 3	F631(3)
93E0195:	340	Clay pipe bowl	c. 1800–30	LMG	Cutting 3	F630
93E0195:	341	Glass bead	Turquoise, rounded profile	LMG	Cutting 3	F631(3)
93E0195:	342	Furnace bottom		LMG	In collapse of Cell G	F1014
93E0195:	343	Glass vessel	Modern tumbler	LMG	Cutting 1	F631(1)
93E0195:	344	Glass vessel	Modern tumbler	LMG	Cutting 1	F631(1)
93E0195:	345	Pottery, medieval	Saintonge sgraffito	LMG	Cutting 1 extension, lower collapse	638(1E)

E No.	No.	Type	Description	Area	Location	Context
93E0195:	346	Pottery	White earthenware	LMG	Cutting 1 extension, lower collapse	F638(1E)
93E0195:	347	Pottery	Hand-painted fine ware	LMG	Cutting 1 extension lower collapse	F638(1E)
93E0195:	348	Bone	Part of sideplate for handle?	LMG		F638(1E)
93E0195:	349	Composite	Italian bayonet —Scabiola-Baionette, M70, 1870–87	?		Unprovenanced
93E0195:	350	Iron	Fragments of a possible object	S entrance 1, inner enclosure	In campion above lintel	Surface find
93E0195:	351	Pottery	Creamware sherd	LMG	In collapse of Cell G	F1014
93E0195:	352	Pottery	Creamware sherd	LMG	In collapse of Cell G	F1014
93E0195:	353	Pottery	Creamware sherd	LMG	In collapse of Cell G	F1014
93E0195:	354	Pottery	Creamware sherd	LMG	In collapse of Cell G	F1014
E338:	1	Pottery	3 sherds shell-edged (blue), 1820–30	S entrance 2, inner enclosure	Cutting 1	F4
E338:	2	Pottery	2 sherds shell-edged (green), c. 1860	S entrance 2, inner enclosure	Cutting 1	F4
E338:	3	Pottery	2 rim sherds, white earthenware, plate	S entrance 2, inner enclosure	Cutting 1	F4
E338:	4	Pottery	Rim sherd, white earthenware, bowl?	S entrance 2, inner enclosure	Cutting 1	F4
E338:	5	Pottery	Base sherd, white earthenware, bowl?	S entrance 2, inner enclosure	Cutting 1	F4
E338:	6	Pottery	Base sherd, white earthenware, plate?	S entrance 2, inner enclosure	Cutting 1	F4
E338:	7	Pottery	Sherd of transfer-printed ware	S entrance 2, inner enclosure	Cutting 1	F4
E338:	8	Pottery	Sherd hand-painted fineware	S entrance 2, inner enclosure	Cutting 1	F4
E338:	9	Clay pipe	Stem, early 19th-century	S entrance 2, inner enclosure	Cutting 1	F4
E338:	10	Flint	Flake with secondary retouch	S entrance 2, inner enclosure	Cutting 1	F12
E338:	11	Clay pipe	Stem, early 19th-century	S entrance 2, inner enclosure	Cutting 1	F9
E338:	12	Pottery	Body sherd, transfer-printed ware	SOT ledge	Cutting 2	F102
E338:	13	Pottery	Body sherd, unidentified	SOT ledge	Cutting 2	F102
E338:	14	Pottery	Base sherd, white earthenware	SOT ledge	Cutting 1	F102
E338:	15	Flint	Small waste flake	SOT ledge	Cutting 2	F102
E338:	16	Bone comb	Fragment of decorated sideplate	St Michaels Church	Surface find	
E338:	17	Flint	Small nodule	SOT ledge	Cutting 1	F106
E338:	18	Flint	Nodule	SOT ledge	Cutting 2	F102
E338:	19	Iron	Possible part of strap hinge	SOT ledge	Cutting 1	F102
E338:	20	Whetstone	Subrectangular, wear on all sides	SOT ledge	Trial-pit 1	F104

E No.	No.	Type	Description	Area	Location	Context
E338:	21	Pottery	3 sherds transfer-printed saucer	SOT	Cutting 1	F201/F202 interface
E338:	22	Pottery	9 sherds shell-edged (blue), plates	Large oratory	SE quadrant	F302
E338:	23	Coin	Silver long-cross penny, 1247–50	Large oratory	SE quadrant	F302
E338:	24	Lignite ring	Half of polished ring, 2.6cm internal diam.	Large oratory	SE quadrant	F302
E338:	25	Flint	Possible end scraper	Large oratory	SE quadrant	F302
E338:	26	Flint	Tiny waste flake	SOT	Cutting 2	F219
E338:	27	Stone cross fragment	Rhyolite cross fragment	SOT	Cutting 2	F219
E338:	28	Lignite bead	Disc bead	Large oratory	SE quadrant	F306
E338:	29	Leather shoe	Probably mans shoe, late 19th/ early 20th-century	S entrance 2, inner enclosure	Found in wall	F1
E338:	30	Knife	Worn iron blade with remains of wooden handle	Large oratory	SE quadrant	F306
E338:	31	Flint	Waste flake	Large oratory	SE quadrant	F304
E338:	32	Flint	Small nodule	Large oratory	SE quadrant	F306
E338:	33	Flint	Small nodule	S entrance 2, inner enclosure	Cutting 1	
E338:	34	Clay pipe	Stem, early 19th-century	SOT?	Unprovenanced	
E338:	35	Clay pipe	Stem, early 19th-century	SOT?	Unprovenanced	
E338:	36	Slate	Ovoid with remains of perforation	SOT	Fill of drain F226	F224
E338:	37	Cord	Length of modern cordage	SOT ledge	Cutting 2	F102
E338:	38	Crucifix	Fragments of modern wooden crucifix	Large oratory	Found within make-up of altar	
E338:	39	Pottery	Sherd of shell-edged ware, 1790–1820	Large oratory	Entrance cutting	F321
E338:	40	Plastic inset	Circular inset with inscription		Unprovenanced	Surface find

APPENDIX II—CONCORDANCE OF CONTEXT/FEATURE NUMBERS USED ON SITE AND IN THIS REPORT

Feature no. (report)	Context no. (excavation)	Area
500	No number	East entrance
501	No number	East entrance
502	No number	East entrance
503	00:34	East entrance
504	00:29	East entrance
505	00:30	East entrance
506	00:31	East entrance
507	00:32	East entrance
508	00:33	East entrance
509	00:35	East entrance
510	00:36	East entrance
511	No number	East entrance
512	No number	East entrance
513	No number	East entrance
514	No number	East entrance
515	No number	East entrance
516	No number	East entrance
517	No number	East entrance
518	00:28	East entrance
520	No number	Monks graveyard
521	No number	Monks graveyard
530	98.2	South entrance, inner enclosure
531	98.1	South entrance, inner enclosure
532	98.18 = F1008	South entrance, inner enclosure
533	98.21A	South entrance, inner enclosure
534	98.21B	South entrance, inner enclosure
535	98.22	South entrance, inner enclosure
536	98.23	South entrance, inner enclosure
537	98.24	South entrance, inner enclosure
538	98.25	South entrance, inner enclosure
539	98.27	South entrance, inner enclosure
540	98.28	South entrance, inner enclosure
541	98.29	South entrance, inner enclosure
542	98.3	South entrance, inner enclosure
542	98.3 = 98:3	South entrance, inner enclosure
543	98.4	South entrance, inner enclosure
543	98.31 = 98:4	South entrance, inner enclosure
544	98.5	South entrance, inner enclosure
545	98.1	South entrance, inner enclosure
546	98.6	South entrance, inner enclosure
547	98.7	South entrance, inner enclosure
548	98.8	South entrance, inner enclosure
549	98.11	South entrance, inner enclosure
550	98.12	South entrance, inner enclosure
551	98.13	South entrance, inner enclosure
552	98.14	South entrance, inner enclosure
553	98.2	South entrance, inner enclosure
554	98.15	South entrance, inner enclosure
555	98.19	South entrance, inner enclosure
556	98.9	South entrance, inner enclosure
557	98.16	South entrance, inner enclosure

558	98.17		South entrance, inner enclosure
559	No number		South entrance, inner enclosure
560	0		*Leacht*
561	99.1		Inner enclosure near *leacht* S of St Michaels Church
562	99.2		Inner enclosure near *leacht* S of St Michaels Church
563	99.3		Inner enclosure near *leacht* S of St Michaels Church
564	99.4		Inner enclosure near *leacht* S of St Michaels Church
565	99.5		Inner enclosure near *leacht* S of St Michaels Church
566	99.6		Inner enclosure near *leacht* S of St Michaels Church
567	99.7		Inner enclosure near *leacht* S of St Michaels Church
568	99.8		Inner enclosure near *leacht* S of St Michaels Church
569	99.9		Inner enclosure near *leacht* S of St Michaels Church
570	No number		East of St Michaels Church
571	00:01		West of lower monks garden
572	00:02		West of lower monks garden
573	00:03		West of lower monks garden
574	00:04	= 568	East of St Michaels Church
575	00:05		East of St Michaels Church
576	00:06		East of St Michaels Church
577	00:07		East of St Michaels Church
578	00:08		East of St Michaels Church
579	00:09		East of St Michaels Church
580	00:10		East of St Michaels Church
581	00:11		East of St Michaels Church
582	00:12		East of St Michaels Church
583	00:13		East of St Michaels Church
584	00:14		South of St Michaels Church. Last cut for new revetment
585	00:15		South of St Michaels Church. Last cut for new revetment
586	00:16		South of St Michaels Church. Last cut for new revetment
587	00:17		East of St Michaels Church
588	00:18		East of St Michaels Church
589	00:19		East of St Michaels Church
590	00:20		East of St Michaels Church
591	00:21		East of St Michaels Church
592	00:22		East of St Michaels Church
593	00:23		East of St Michaels Church
594	00:24		East of St Michaels Church
595	00:25		East of St Michaels Church
596	00:26		East of St Michaels Church
597	00:27		East of St Michaels Church
598	No number		East of St Michaels Church
599	No number		East of St Michaels Church
600	No number		East of St Michaels Church
601	96.1		Cistern
602	96.2		Cistern
603	96.3		Cistern
604	96.4		Cistern
605	96.5		Cistern
606	96.6		Cistern
607	96.7		Cistern
608	96.8		Cistern
609	96.9		Cistern
610	96.10		Cistern

611	96.11	Cistern
612	96.12	Cistern
613	96.13	Cistern
614	96.14	Cistern
615	96.15	Cistern
616	96.16	Cistern
617	96.17	Cistern
618	96.18	Cistern
619	96.19	Cistern
620	96:20	Cistern
621	96:22	Cistern
622	96:23	Cistern
628	No number	LMG
629	No number	LMG
630	No number	LMG
631	A	LMG
632	B	LMG
633	C	LMG
634	D	LMG
635	E	LMG
636	F	LMG
637	No number	LMG
638	No number	LMG
639	No number	LMG
640	No number	LMG
641	No number	LMG
642	No number	LMG
643	G	LMG
644	G?	LMG
645	No number	LMG
646	= F633(1)	LMG
647	= F628	LMG
648	= F657	LMG
649	No number	LMG
650	No number	LMG
651	No number	LMG
652	No number	LMG
653	H	LMG
654	I	LMG
655	No number	LMG
656	= F633(4)	LMG
657	= F648	LMG
658	= F1029	LMG
659	No number	LMG
660	No number	LMG
661	No number	LMG
662	No number	LMG
663	No number	LMG
664	No number	LMG
665	No number	LMG
666	No number	LMG
667	No number	LMG
668	No number	LMG

669	No number	LMG
670	No number	LMG
680	03:01	Structure at base of east steps
681	03:01a	Structure at base of east steps
682	03:02	Structure at base of east steps
683	03:03	Structure at base of east steps
684	03:03a	Structure at base of east steps
685	03:04	Structure at base of east steps
686	03:05	Structure at base of east steps
687	03:06	Structure at base of east steps
688	03:07	Structure at base of east steps
689	03:08	Structure at base of east steps
690	03:09	Structure at base of east steps
691	03:10	Structure at base of east steps
692	03:13	Structure at base of east steps
693	03:14	Structure at base of east steps
694	03:15	Structure at base of east steps
695		
696	No number	Structure at base of east steps
700	No number	UMG
701	No number	UMG
702	90:05	UMG
703	90:04	UMG
704	90:03	UMG
705	90:02	UMG
706	90:01	UMG
707	No number	UMG
708	No number	UMG
709	No number	UMG
1001	No number	East entrance
1002	No number	East entrance
1003	No number	East entrance
1004	No number	East entrance
1005	No number	East entrance
1006	No number	East entrance
1007	No number	East entrance
1008	No number	East entrance
1009	No number	East entrance
1010	No number	East entrance
1011	No number	LMG
1012	No number	LMG
1013	No number	LMG
1014	No number	LMG
1015	No number	LMG
1016	No number	LMG
1017	No number	LMG
1018	No number	LMG
1019	No number	LMG
1020	No number	LMG
1021	No number	LMG
1022	No number	LMG
1023	No number	LMG
1024	No number	LMG

1025	No number	LMG
1026	No number	LMG
1027	No number	LMG
1028	No number	LMG
1029	No number	LMG
1030	No number	LMG
1031	No number	LMG
1050	No number	LMG
1051	No number	LMG

APPENDIX III—CATALOGUE OF DISARTICULATED HUMAN SKELETAL REMAINS

Codes used in catalogue of disarticulated human skeletal remains (based on Chamberlain and Witkin 2000):

??	Unknown
GB	Burnt bone
GC	Calcified soft tissue
GT	Soft tissue
KK	Skeleton
WW	Unknown (faunal)
AI	Auditory: Incus
AM	Auditory: Malleus
AS	Auditory: Stapes
CC	Cranium
CE	Endocast
CF	Frontal
CH	Ethmoid
CL	Lacrimal
CN	Nasal
CO	Occipital
CP	Parietal
CS	Sphenoid
CT	Temporal
CV	Calvaria
CX	Vault fragment
CZ	Zygomatic
QH	Hyoid
D1	Upper dI1
D2	Upper dI2
D3	Upper dC
D4	Upper dM1
D5	Upper dM2
E1	Lower dI1
E2	Lower dI2
E3	Lower dC
E4	Lower dM1
E5	Lower dM2
D?	? Deciduous tooth
DD	Deciduous tooth
DR	Deciduous tooth root
DX	Deciduous crown fragment
M1	Lower I1
M2	Lower I2
M3	Lower C
M4	Lower P1
M5	Lower P2
M6	Lower M1
M7	Lower M2
M8	Lower M3

X1	Upper I1
X2	Upper I2
X3	Upper C
X4	Upper P1
X5	Upper P2
X6	Upper M1
X7	Upper M2
X8	Upper M3
MC	Mandibular body
MM	Mandible
MR	Mandibular ramus
MS	Mandibular symphysis
MY	Mandibular condyle
XD	Demimaxilla
XP	Premaxilla
XX	Maxilla
PP	Permanent tooth
PR	Permanent tooth root
PX	Tooth crown fragment
QM	Manubrium
QS	Sternum
QX	Sternum fragment
QC	Clavicle
S?	? Scapula
SA	Acromion
SB	Scapula blade
SC	Coracoid
SG	Scap. glenoid cavity
SS	Scapula
SX	Scapula fragment
QR	Rib
VC	Cervical vertebra
VT	Thoracic vertebra
VL	Lumbar vertebra
VS	Sacrum
VY	Coccyx
VV	Vertebra
VX	Vertebra fragment
I?	? Hip bone
IA	Acetabulum
II	Hip bone
IL	Ilium
IP	Pubis
IS	Ischium
IX	Hip bone fragment

H?	? Humerus	F?	? Femur
HH	Humerus	FF	Femur
HP	Humerus, proximal	FP	Femur, proximal
HM	Humerus, midshaft	FM	Femur, midshaft
HD	Humerus, distal	FD	Femur, distal
R?	? Radius	LL	Patella
RR	Radius	T?	? Tibia
RP	Radius, proximal	TT	Tibia
RM	Radius, midshaft	TP	Tibia, proximal
RD	Radius, distal	TM	Tibia, midshaft
U?	? Ulna	TD	Tibia, distal
UU	Ulna	B?	? Fibula
UP	Ulna, proximal	BB	Fibula
UM	Ulna, midshaft	BP	Fibula, proximal
UD	Ulna, distal	BM	Fibula, midshaft
YC	Carpal	BD	Fibula, distal
YY	Hand bone	ZT	Tarsal bone
YS	Scaphoid	ZZ	Foot bone
YL	Lunate	ZA	Talus
YQ	Triquetral	ZC	Calcaneus
YI	Pisiform	ZN	Navicular
YZ	Trapezium	ZE	Medial cuneiform
YD	Trapezoid	ZI	Intermedial cuneiform
YA	Capitate	ZL	Lateral cuneiform
YH	Hamate	ZU	Cuboid
YM	Metacarpal	ZM	Metatarsal
YP	Phalanx (hand)	ZP	Foot phalanx
LS	Sesamoid		

ID	Area	Detail	Context	Bone	Code	Portion	Side	Sex	Age1	Age2	Pathology	Additional comments
1	E of St Ms Ch.	Puffin burrow		Mandible	MR	Ascending ramus & condyle	L		JUV			
2	E of St Ms Ch.	Puffin burrow		Mandible	MM	Body, ascending ramus, condyle, gonial angle	L		JUV			In two frags; contains 3, 4, 5
3	E of St Ms Ch.	Puffin burrow		Tooth	M5	Lower second premolar	L		JUV	10–11 yrs		Root forming; contained within 2
4	E of St Ms Ch.	Puffin burrow		Tooth	M6	Lower first molar	L		JUV	10–11 yrs		Complete; contained within 2
5	E of St Ms Ch.	Puffin burrow		Tooth	M7	Lower second molar	L		JUV	10–11 yrs		Root forming; contained within 2
6	E of St Ms Ch.	Puffin burrow		Mandible	MC	Body frag.	L		JUV			Contains 7, 8
7	E of St Ms Ch.	Puffin burrow		Tooth	M6	Lower first molar	L		JUV	10.5–11.5 yrs	Moderate calculus	Contained within 6
8	E of St Ms Ch.	Puffin burrow		Tooth	M7	Lower second molar	L		JUV	10.5–11.5 yrs	Slight calculus	Contained within 6
9	E of St Ms Ch.	Puffin burrow		Mandible	MS	Frag. of anterior symphysis canine; assoc. with 21?			AA			Contained roots of all incisors and left
10	E of St Ms Ch.	Puffin burrow		Tooth	M2	Lower second incisor	R		AA		Severe calculus	
11	E of St Ms Ch.	Puffin burrow		Mandible	MC	Body frag.	L		AA		First molar lost ante-mortem	Contains 12 and 13; same individual as 14
12	E of St Ms Ch.	Puffin burrow		Tooth	M7	Lower second molar	L		YA	17–25 yrs	Slight calculus	Contained within 11
13	E of St Ms Ch.	Puffin burrow		Tooth	M8	Lower third molar	L		YA	17–25 yrs	Slight calculus	Contained within 11
14	E of St Ms Ch.	Puffin burrow		Mandible	MC	x 2 body frags	R		AA			Contains 15, 16, 17, and 18; same individual as 11
15	E of St Ms Ch.	Puffin burrow		Tooth	M5	Lower second premolar	R		AA		Slight calculus	Enamel broken p-m; contained within 14
16	E of St Ms Ch.	Puffin burrow		Tooth	M6	Lower first molar	R		AA			Contained within 14
17	E of St Ms Ch.	Puffin burrow		Tooth	M7	Lower second molar	R		YA	17–25 yrs		Contained within 14
18	E of St Ms Ch.	Puffin burrow		Tooth	M8	Lower third molar	R		YA	17–25 yrs	Slight calculus	Contained within 14
19	E of St Ms Ch.	Puffin burrow		Mandible	MY	Frag. of condyle	R		JUV			
20	E of St Ms Ch.	Puffin burrow		Mandible	MR	Frag. of gonial angle	R		JUV			
21	E of St Ms Ch.	Puffin burrow		Tooth	M3	Lower canine	L		AA		Hypoplastic defects	May be assoc. with 9
22	E of St Ms Ch.	Puffin burrow		Maxilla	XX	Small frag. only	R		AA			Contains 23 and 24
23	E of St Ms Ch.	Puffin burrow		Tooth	X3	Upper canine	R		AA		Hypoplastic defects	Contained within 22
24	E of St Ms Ch.	Puffin burrow		Tooth	X4	Upper first premolar	R		AA		Slight calculus	Contained within 22
25	E of St Ms Ch.	Puffin burrow		Tooth	X1	Upper first incisor	R		JUV		Moderate calculus	No wear evident
26	E of St Ms Ch.	Puffin burrow		Tooth	X6	Upper first molar	R		YA		Slight calculus	
27	E of St Ms Ch.	Puffin burrow		Cranial	CT	Temporal frag. with occipital groove	L		AA?			
28	E of St Ms Ch.	Puffin burrow		Cranial	CT	Temporal—mastoid & petrous portion	R		AA?			
29	E of St Ms Ch.	Puffin burrow		Cranial	CT	Temporal—mastoid & petrous portion	R		AA?			
30	E of St Ms Ch.	Puffin burrow		Cranial	CT	Temporal—frag. of petrous portion	R		AA?			
31	E of St Ms Ch.	Puffin burrow		Cranial	CF	Frontal—eye orbit	L	M?	AA			Joins with 32, 33 and 34
32	E of St Ms Ch.	Puffin burrow		Cranial	CF	Frontal—eye orbit	R	M?	AA			Joins with 31, 33 and 34
33	E of St Ms Ch.	Puffin burrow		Cranial	CF	Frontal—vault frag.	R		AA			Joins with 31, 32 and 34
34	E of St Ms Ch.	Puffin burrow		Cranial	CF	Frontal—vault frag.			AA			Joins with 31, 32 and 33
35	E of St Ms Ch.	Puffin burrow		Cranial	CO	Occipital—posterior of base			AA			Joins with 36
36	E of St Ms Ch.	Puffin burrow		Cranial	CO	Occipital—pars bas., lat. wings, sphenoid frag.			AA			Joins with 35
37	E of St Ms Ch.	Puffin burrow		Cranial	CP	Parietal frag.			AA?			
38	E of St Ms Ch.	Puffin burrow		Cranial	CP	Parietal frag.			AA?			
39	E of St Ms Ch.	Puffin burrow		Cranial	CX	x 14 vault frags						

	Area	Detail	Context	Bone	Code	Portion	Side	Sex	Age1	Age2	Pathology	Additional comments
40	E of St Ms Ch.	Puffin burrow		Cranial	CS	Sphenoid—frag. of greater wing			AA			
41	E of St Ms Ch.	Puffin burrow		Sternum	QS	Complete			AA			
42	E of St Ms Ch.	Puffin burrow		Clavicle	QC	Frag. of midshaft	L		AA			
43	E of St Ms Ch.	Puffin burrow		Vertebra	VC	C1—complete			AA			
44	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—body only, C3?			AA			Articulates with 45
45	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—body only, C4?			AA			Articulates with 44 and 46
46	E of St Ms Ch.	Puffin burrow		Vertebra	VC	C5?—complete			AA			Articulates with 45
47	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—frag. of arch and body	L		AA			
48	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—frag. of posterior neural arch			AA			
49	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—frag. of neural arch	L		AA			
50	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—x 6 body frags			AA			
51	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—body and arch frag.	R		AA			
52	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—neural arch frag.	R		AA			
53	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—frag. of arch and body	R		AA			
54	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—neural arch frag.	L		AA			
55	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—frag. of arch and body	R		AA			
56	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—frag. of arch and body	R		AA			
57	E of St Ms Ch.	Puffin burrow		Vertebra	VL	Lumbar—neural arch frag.	L		AA			
58	E of St Ms Ch.	Puffin burrow		Vertebra	VX	Small vertebral frags x 6 frags						
59	E of St Ms Ch.	Puffin burrow		Vertebra	VX	Thoracic/lumbar—inferior body frag.			AA		Herniation & osteophytes	
60	E of St Ms Ch.	Puffin burrow		Vertebra	VC	Cervical—complete			JUV			Fused except for vertebral plates
61	E of St Ms Ch.	Puffin burrow		Rib	QR	x 10 medial frags	R		AA			
62	E of St Ms Ch.	Puffin burrow		Rib	QR	x 3 medial frags	L		AA			
63	E of St Ms Ch.	Puffin burrow		Rib	QR	x 6 shaft frags			AA			
64	E of St Ms Ch.	Puffin burrow		Rib	QR	x 1 medial frag.	R		JUV			
65	E of St Ms Ch.	Puffin burrow		Rib	QR	x 2 shaft frags			JUV			
66	E of St Ms Ch.	Puffin burrow		Humerus	HM	Shaft frag. c. 15cm long			AA			
67	E of St Ms Ch.	Puffin burrow		Humerus	HP	Frag. of proximal neck			AA			
68	E of St Ms Ch.	Puffin burrow		Metatarsal	ZM	Unidentified			AA			
69	E of St Ms Ch.	Puffin burrow		Unidentified	??	x 4 long bone shaft frags			AA			
70	E of St Ms Ch.	Puffin burrow		Unidentified	??	x 20 small frags						
71	E of St Ms Ch.	Puffin burrow		Scapula	SB	Frag. of blade			AA			
72	E of St Ms Ch.	Puffin burrow		Unidentified	??	Long bone frag.—hum/fem/tib?			AA		Bony process—may be supraconhyloid process	Possible non-metric trait
73	E of St Ms Ch.	Puffin burrow		Vertebra	VT	Thoracic—neural arch frag.			AA			
74	E of St Ms Ch.	Assoc. w/Skel. 1		Femur	FD	Distal condyle of femur	?		AA			
75	E of St Ms Ch.	Assoc. w/Skel. 1		Patella	LL	Complete	L		AA			
76	E of St Ms Ch.	Assoc. w/Skel. 1		Cranial	VX	Vomer in two frags			AA			
77	E of St Ms Ch.	Assoc. w/Skel. 1		Cranial	VX	x 3 vault frags			AA			
78	E of St Ms Ch.	Assoc. w/Skel. 1		Tooth	D5	Upper 2nd decid. molar	L		JUV	<10 yrs		Roots damaged p-m
79	E of St Ms Ch.	Assoc. w/Skel. 1		Vertebra	VX	Body frag.			AA			

80	E of St Ms Ch.	Assoc. w/Skel. 1		Vertebra	VC	Cervical—frag. of artic. facets	R	AA			
81	E of St Ms Ch.	Assoc. w/Skel. 1		Hyoid	QH	Body only		AA			Unfused
82	E of St Ms Ch.	Assoc. w/Skel. 1		Unidentified	??	x 15 long bone frags					
83	E of St Ms Ch.	Assoc. w/Skel. 1		Rib	QR	x 2 shaft frags		AA			
84	E of St Ms Ch.	Assoc. w/Skel. 1		Rib	QR	x 1 lateral frag.		JUV			
85	E of St Ms Ch.	Assoc. w/Skel. 1		Hand phalanx	YP	Inter. phalanx—complete		AA			Porosity on prox. end—probably p-m
86	E of St Ms Ch.	Assoc. w/Skel. 1		Cranial	CX	x 2 vault frags		?			
87	E of St Ms Ch.	Assoc. w/Skel. 1		Pelvis	IL	x 2 iliac body frags					
88	E of St Ms Ch.	Assoc. w/Skel. 1		Unidentified	??	x 12 small frags					
89	E of St Ms Ch.	Assoc. w/Skel. 1		Cranial	CX	x 1 frag. of palatine		AA			
90	E of St Ms Ch.		7	Cranial	CF	Frontal—orbit fused to palatine		OA?			Matches w/94
91	E of St Ms Ch.		7	Cranial	CT	Temporal—zygo. arch, EAM & TMJ	L	AA?			
92	E of St Ms Ch.		7	Cranial	CT	Temporal—EAM, TMJ, & pet. portion	R	AA?			
93	E of St Ms Ch.		7	Cranial	CT	Temporal—frag. of zygo. arch	R	AA			
94	E of St Ms Ch.		7	Cranial	CZ	Zygomatic—fused to maxilla	R	OA?			Matches w/90
95	E of St Ms Ch.		7	Mandible	MC	Small body frag. w/2 sockets	?	OA?			Contains 96
96	E of St Ms Ch.		7	Tooth	PP	Lower molar—unidentified	?	OA?			Extremely worn almost to roots, contained w/in 95
97	E of St Ms Ch.		7	Tooth	PP	Lower 1st/2nd perm. molar	?	AA		Moderate calculus	Roots damaged p-m
98	E of St Ms Ch.		7	Tooth	M7	Lower 2nd perm. molar	?	AA		Severe calculus	Roots damaged p-m
99	E of St Ms Ch.		7	Tooth	X7	Upper 2nd? perm. molar	R	AA		Large caries on mesial side	Roots damaged p-m
100	E of St Ms Ch.		7	Tooth	X8	Upper 3rd? perm. molar	R	JUV	13–14 yrs?		Roots forming
101	E of St Ms Ch.		7	Mandible	MC	Frag. w/sockets		AA?			
102	E of St Ms Ch.		7	Unidentified	??	x 14 long bone shaft frags		AA?			
103	E of St Ms Ch.		7	Cranial	CX	x 3 small frags					
104	E of St Ms Ch.		6	Cranial	CT	Temporal—petrous portion	L	AA?			
105	E of St Ms Ch.		6	Cranial	CT	Temporal—petrous portion	R	AA?			
106	E of St Ms Ch.		6	Cranial	CO	Occipital—squamous frag.		AA?			
107	E of St Ms Ch.		6	Cranial	CS	Sphenoid—body frag.		AA?			
108	E of St Ms Ch.	From clearance		Scapula	SC	Frag. of corocoid	R	AA			Bleached and weathered
109	E of St Ms Ch.	Skeleton 2 (1998), bone 5		Vertebra	VX	x 2 body frags		AA			Refers to Skel. 1, this report
110	E of St Ms Ch.	Skeleton 2 (1998), bone 5		Femur	FM	Shaft frag. c. 20cm long	R	JUV			Refers to Skel. 1, this report; joins w/111
111	E of St Ms Ch.	Skeleton 2 (1998), bone 5		Femur	FP	Prox. metaphysis	R	JUV			Refers to Skel. 1, this report; joins w/110,
112	E of St Ms Ch.	Skeleton 2 (1998), bone 5		Femur	FM	Unfused greater trochanter	R	JUV			Refers to Skel. 1, this report; joins w/111 112
113	E of St Ms Ch.	Skeleton 2 (1998), bone 10		Unidentified	??	x 23 long bone shaft frags		AA?			Refers to Skel. 1, this report; femur/tibia frags
114	E of St Ms Ch.	Skeleton 2 (1998), bone 6		Hand phalanx	YP	Inter. phalanx, prox. end unfused		JUV			Refers to Skel. 1, this report; same ind. as 115, 116, 117
115	E of St Ms Ch.	Skeleton 2 (1998), bone 6		Metacarpal	YM	Unidentified—prox. end only		JUV			Refers to Skel. 1, this report; same ind. as 114, 116, 117

ID	Area	Detail	Context	Bone	Code	Portion	Side	Sex	Age1	Age2	Pathology	Additional comments
116	E of St Ms Ch.	Skeleton 2 (1998), bone 6		Hand phalanx	YP	Unidentified—distal end only			JUV			Refers to Skel. 1, this report; same ind. as 114, 115, 117
117	E of St Ms Ch.	Skeleton 2 (1998), bone 6		Metacarpal	YM	Unidentified—distal end			JUV			Refers to Skel. 1, this report; unfused epip. absent; same end[¿ind.?] as 114, 115, 116
118	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Tibia	TP	Anterior prox. metaphysis	L		AA			Refers to Skel. 1, this report; joins with 119
119	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Tibia	TP	Posterior proximal metaphysis	L		AA			Refers to Skel. 1, this report; joins with 118
120	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Femur	FD	Frag. of distal femur			AA			Refers to Skel. 1, this report
121	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Femur	FD	Frag. of distal metaphysis			JUV			Refers to Skel. 1, this report; unfused epip. absent
122	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Tibia	TM	x 4 shaft frags			AA?			Refers to Skel. 1, this report; anterior spine identified
123	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Femur	FM	x 5 shaft frags			AA			Refers to Skel. 1, this report; linear aspera identified
124	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Unidentified	??	x 49 long bone shaft frags			AA?			Refers to Skel. 1, this report
125	E of St Ms Ch.	Assoc. w/Skel. 2 (1998)		Unidentified	??	x 1 long bone shaft frag.			?			Refers to Skel. 1, this report
126	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Humerus	HM	Shaft frag.			AA			Refers to Skel. 1, this report; joins with 127
127	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Humerus	HD	Distal third of humerus	R	M?	AA			Refers to Skel. 1, this report; joins with 126
128	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Ulna	UP	Frag. of olecranon process	?		AA			Refers to Skel. 1, this report
129	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Radius	RP	Prox. head	?	M	AA			Refers to Skel. 1, this report; head—27.7mm diameter
130	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Radius	RP	Frag. of prox. metaphysis			JUV			Refers to Skel. 1, this report; unfused prox. epip. absent
131	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Ulna	UM	Shaft frag.	R		JUV			Refers to Skel. 1, this report; joins with 132; not part of Skel. 1
132	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Ulna	UP	Frag. of prox. head	R		JUV			Refers to Skel. 1, this report; joins with 131; not part of Skel. 1
133	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Scapula	SS	Glenoid + frag. of blade	R		JUV			Refers to Skel. 1, this report
134	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Scapula	SB	Blade frag.	L		AA			Refers to Skel. 1, this report
135	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Rib	QR	x 8 shaft frags			AA?			Refers to Skel. 1, this report
136	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	x 11 long bone shaft frags						Refers to Skel. 1, this report
137	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Carpal	YA	Capitate—complete	L		AA			Refers to Skel. 1, this report

138	E of St Ms Ch. w/Skel. 2 (1997)	Misc. assoc.		Carpal	YZ	Trapezium—almost complete	R		AA			Refers to Skel. 1, this report
139	E of St Ms Ch. w/Skel. 2 (1997)	Misc. assoc.		Metatarsal	ZM	4th metat., distal head absent	R		AA			Refers to Skel. 1, this report
140	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Metacarpal	YM	5th metac., distal head absent	R		AA			Refers to Skel. 1, this report
141	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	Shaft of metat. or metac.			AA			Refers to Skel. 1, this report
142	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	Metat. or metac. prox. end			JUV			Refers to Skel. 1, this report
143	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	Metac. or metat.—distal end			JUV			Refers to Skel. 1, this report; unfused distal end absent
144	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Pelvis	IL	Ilium—frag. of aricular surface			AA			Refers to Skel. 1, this report
145	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Pelvis	IL	Ilium—frag. w/sciatic notch			AA			Refers to Skel. 1, this report
146	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Pelvis	IL	x 1 iliac body frag.			AA			Refers to Skel. 1, this report
147	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Vertebra	VL	Lumbar?—x 6 body frags			AA		Some possible degeneration	Refers to Skel. 1, this report
148	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Vertebra	VL	Lumbar?—frag. of sup. facet	R		AA		Osteophytes on facet	Refers to Skel. 1, this report
149	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Vertebra	VL	Lumbar x 2 inferior facets			AA			Refers to Skel. 1, this report
150	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Sacrum	VS	Frag. of sup. sacrum			AA			Refers to Skel. 1, this report
151	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Femur	FP	Prox. head	?	M	AA			Refers to Skel. 1, this report; 51.2mm in iameter
152	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Tibia	TD	Poss. frag. of distal epip.	?		AA			Refers to Skel. 1, this report
153	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	x 2 unfused ends of long bones			JUV			Refers to Skel. 1, this report; unidentified—epiphyses absent
154	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Humerus	HP	Unfused prox. epip. of humerus			JUV			Refers to Skel. 1, this report; frag. only
155	E of St Ms Ch.	Misc. assoc. w/Skel. 2 (1997)		Unidentified	??	x 21 small frags						Refers to Skel. 1, this report
156	Small oratory		F229	Tibia	TP	Prox. half of diaphysis	R		JUV		Healing perio. on medial side of ant. shaft	Unfused epip. absent; lat. half of metaphysis absent; c. 9–11 rs
157	Small oratory		F229	Humerus	HD	Distal diaphysis			JUV?			Superior to olecranon fossa; c. 9–11 rs
158	Small oratory		F229	Unidentified	??	x 2 large long bone shaft frags			?			Humerus/femur/tibia?
159	Small oratory		F229	Unidentified	??	Small quantity of small long bone shaft frags			?			
160	Small oratory		F229	Tooth	PX	x c. 65 small broken enamel frags			?			Broken p-m
161	Small oratory		F229	Mandible	MC	Body frag.	R	?	JUV	10.5–12.5 yrs?		Frag. w/ mental foramen; contains 162, 163

ID	Area	Detail	Context	Bone	Code	Portion	Side	Sex	Age1	Age2	Pathology	Additional comments
162	Small oratory		F229	Tooth	M5	Lower 2nd premolar	R	?	JUV	10.5–12.5 yrs?		Contained w/in 161; enamel extensively broken; Rc or A1/2
163	Small oratory		F229	Tooth	M6	Lower 1st perm. molar	R	?	JUV	10.5–12.5 yrs?		Contained w/in 161; enamel extensively broken
164	Small oratory		F229	Tooth	M2	Lower 2nd perm. incisor	R	?	?			Root broken off p-m
165	Small oratory		F229	Tooth	M7	Lower 2nd perm. molar	?	?	?			Enamel only; broken p-m
166	Small oratory		F229	Tooth	X5	Upper 2nd premolar	?	?	?			Enamel only; broken p-m
167	Small oratory		F229	Tooth	M5	Lower 2nd? premolar	?	?	?			Enamel only; broken p-m
168	Small oratory		F229	Tooth	X6	Upper 1st perm. molar	R	?	?			Distal half of crown only; broken p-m
169	Small oratory		F229	Tooth	PP	Upper 2nd/3rd perm. molar	R	?	?			Enamel only; broken p-m
170	Small oratory		F229	Tooth	M4	Lower 1st premolar?	?	?	?			Enamel only; broken p-m
171	Small oratory		F229	Tooth	M7	Lower 2nd perm. molar?	?	?	?			Frag. of enamel and root; extensively damaged
172	Small oratory		F229	Tooth	M7	Lower 2nd perm. molar?	?	?	?			Small frag. of enamel; broken p-m
173	Monks Graveyard			Humerus	HD	distal 4/5, capit. absent, troch. ant. 1/2 only	R	?	AA			P-m damage—min. 22cm; min. cir. 67mm; max. dia. 23.1mm; min. dia. 20.6mm
174	Monks graveyard			Femur	FD	Distal 2/3; med. con. ab.; lat. cond. very incomp.	R	?	AA			P-m damage—min. 25cm long
175	Monks graveyard			Scapula	SS	Glenoid, frags of acromion & spine	R	?	AA			P-m damage; glenoid length min. 35.6mm
176	Monks graveyard			Tibia	TM	Shaft frag. 65mm long w/frag. med. cond.	R	?	AA			Small frag. only
177	Monks graveyard			Mandible	MR	Frag. of sup. ascending ramus, no condyle	L	?	AA?			Severe p-m damage; bone is like paper
178	Monks graveyard			Unidentified	??	x 12 small frags						
179	Lower monks garden		Cutting 5, Layer C, E ext.	Femur	FD	Distal 1/6 of femur	L		AA			
180	E of St Ms Ch.	With pelvis of Skel. 1 (1998)	585/95?	Tooth	X1	1st upper incisor	R		AA		Significant wear	Within 182, fragmenting
181	E of St Ms Ch.	With pelvis of Skel. 1 (1998)	585/95?	Tooth	X2	2nd upper incisor	R		AA		Significant wear	Within 182, fragmenting
182	E of St Ms Ch.	With pelvis of Skel. 1 (1998)	585/95?	Maxilla	XX	Anterior frag. containing 180 and 181	R		AA			