VERNACULAR BUILDING 35

Scottish Vernacular Buildings Working Group

2011–2012

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Front cover: Hamilton's Land, 42–44 High Street, Linlithgow – see pp 7–20. (Photo © National Trust for Scotland)

Back cover (clockwise from top left): Tin tabernacles: St Fillan's Episcopal Church, Killin; Syre Church, Sutherland; the former Roman Catholic chapel of Our Lady of Mercy, Aberfeldy (now in Dull); and Dalswinton Barony Church, Dumfries and Galloway – see pp 21–38. (All courtesy of Sonya Linskaill except the last, which is reproduced under the Creative Commons Licence, author Rosser 1954)

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ACKNOWLEDGEMENTS

The Editor wishes to thank all contributors to this journal for the care taken in preparing their pieces, and for their swift and helpful responses to queries; and extends further thanks to Veronica Fraser, Dave Hutchinson and Dorothy Kidd for their support and assistance.

PREFACE

Just as this year's issue of *Vernacular Building* was about to go to press came the sad news of the death of Professor Alexander 'Sandy' Fenton. As readers may know, Sandy was a leading figure in the study of Scottish rural lifestyles, and was also President of the SVBWG. We have delayed publication in order to include an obituary of a person of exceptional intellect, who was still researching, writing and translating while battling his final illness at the age of 82.

Our main articles begin with a detailed study of Hamilton's Land, a pair of late medieval buildings on Linlithgow High Street that are in the care of the National Trust for Scotland. Maintenance work carried out by the Trust provided an opportunity for structural and archaeological surveys, and the paper by Daniel Rhodes and Tamlin Barton relates the findings of a thorough inspection of the roofing timbers, as well as recounting the building's historical background.

Moving forward several centuries, we then turn our attention to St Fillan's Episcopal Church in Killin, Perthshire. Here again, a project of major repairs proved an occasion to gain a greater understanding of the structure. Sonya Linskaill's informative piece not only covers the specifics of the programme of work, but takes the opportunity to set this 'tin tabernacle' in the broader context of prefabricated corrugated-iron buildings in Scotland and elsewhere.

Just north of Killin is Moirlanich Longhouse, the subject of the next article. Another National Trust for Scotland property, it has provided valuable evidence of changes in thatching techniques over time, as Tim Holden's account demonstrates.

For the final building survey of this issue we head for the Highlands where, overlooking Rannoch Moor, stands Corrour Old Lodge. Drawing on both his own observations made during repeated visits and documentary evidence, Hugh Dinwoodie provides a detailed analysis of this remote ruin, which has been uninhabited since *c*.1900.

The journal's last two contributions focus on structural components rather than specific buildings. In the first of these, Paul Bishop examines the evolution of the nail, from its early hand-wrought form to the later cut nail and, in recent times, the wire nail. He summarises the results of American studies on the subject, which has as yet been little investigated in the UK but could prove helpful in the dating of phases of work on built structures. His account covers both the extremely harsh working conditions and child labour involved during certain periods, and explanations of the manufacturing processes used.

For the final piece, Dave Hutchinson takes us to the other side of the globe to investigate brickmaking in the early penal colonies of New South Wales, Australia. While the techniques used may have had much in common with those employed in the 'settlers'' (or convicts') country of origin, the social set-up was very different. As well as giving historical information and explaining the production process, this paper highlights the clues that can be found in the imprints of individual brickmakers and state-owned brickworks.

Following Sandy Fenton's obituary, the shorter articles and notes include an update on the Scotland's Rural Past project; an introduction to the Buildings of the Scottish Countryside survey; a short note on whin millstones; and conference and meeting details. As usual, the volume's main content concludes with a series of reviews of books that may be of interest to *Vernacular Building* readers.

Abigail Grater

HAMILTON'S LAND, 42–44 HIGH STREET, LINLITHGOW: A LATE MEDIEVAL TOWNHOUSE

Daniel Rhodes and Tamlin Barton

The building known as Hamilton's Land (42–44 and 46–48 High Street, Linlithgow) was gifted to the National Trust for Scotland (the Trust) in 1938 by Mr J G B Henderson. It stands at the east end of the High Street on the north side and comprises two houses, three storeys and a garret high (fig.1). Both have crowstepped gables facing south onto the street. It is believed to date from the late sixteenth to early seventeenth century, with written records naming the earliest owner as James Robertson in 1541 and the property transferring to a Mungo Hamilton of Humble some time before 1616. However, the historical records give no indication of other inhabitants of the building (the 'indwellers' or 'unfreemen'), concentrating as they do on the owners alone. This has long been a problem in our study of medieval urban dwellings,[1] though it is

Figure 1. The main frontage of Hamilton's Land on the north side of Linlithgow High Street. (© National Trust for Scotland)

well known that multistorey tenement buildings throughout Scotland contained both owner-occupied accommodation and flatted multiple occupation.

The information presented here is as a result of maintenance carried out by the Trust. The project involved the re-slating of the roof and the strengthening of roof timbers. During this repair work an archaeological survey was carried out by Alder Archaeology. The survey analysed the timber roof structure and its relationship to the rest of the building. However, before Alder Archaeology and the roofing team moved in, the Trust archaeologist Dr Daniel Rhodes inspected the roof space with the kind help of Geoffrey Stell and Laurie Alexander. The remainder of this article comprises a combination of all of these sources of analysis, and as such the authors acknowledge gratefully the contributions of everyone involved.

Historical background

As is common in many Scottish burghs, medieval Linlithgow developed along one main long High Street. It has some of the best-preserved burgage plots of any medieval Scottish burgh, with each plot believed to be made up of one rood (a quarter of an acre; 2.47 hectares).[2] From the late seventeenth century the burgh's principal industry was leatherworking, and by the end of the eighteenth century there were 17 tanners in the burgh processing some 20,000 skins and hides a year, 13 tawers (who made hides and skins into leather by steeping in a solution of alum and salt) processing up to 60,000 skins and hides a year, 18 curriers (who dressed and coloured tanned leather) as well as 100 shoemakers producing 24,000 pairs of shoes a year.[3] The tanneries were situated on the north side of High Street, where the loch provided a ready water supply for the works.[4]

External description

At the time of transfer of ownership to the Trust in 1938 there existed a two-storey wing at the back (to the north) of each house,

with the building being described as having a ground floor comprising two shops, and with two pends giving access to the wash houses, lavatories, drying greens and gardens on the north side of the block. A stone stair led from the High Street to the first floor, which consisted of a kitchen and two bedrooms on the west side and a kitchen and four bedrooms on the east. Separate timber stairs at the rear of the building gave access to the second floor which also consisted of two tenanted dwellings, having a kitchen and bedroom on the west side and a kitchen and two bedrooms on the east.

A list of recommendations to make the building habitable was put forward by H M Office of Works, Ancient Monuments Department in 1938 and these were actioned in 1958 as part of the Trust's Little Houses in Scotland scheme. They advised:

> [I]t will be necessary to demolish the two northern wings before adequate lighting can be obtained in the main block. These wings, as has been stated, are much later and of little architectural value.
>
> On account of the low ceilings throughout [the ceilings in some of the rooms being only 2.18 metres (7 foot 2 inches) high], it is suggested that all floors and wood partitions be removed along with the stone stair from the street and the wood stairs leading to the second floor. ...
>
> Although the ceiling heights have been considerably increased the fenestration on the street frontage has not been interfered with. It will be necessary to heighten the roof-ties to obtain adequate ceiling height on the second floor. ...
>
> All window finishings to be removed.
>
> Roof timbers should be carefully examined and renewed where necessary. The tiles appear to be in fairly good condition but should be carefully examined and made good where necessary. The

slates, although out of scale, are in excellent condition and should be left.

A new slate lean-to roof supported on a stone arch should be formed over the common stair to first floor.

It is suggested that the detached out-houses at the back of the property, at present forming wash houses and lavatories etc. should be demolished.[5]

Externally both buildings represent excellent examples of the early Scottish medieval burgh high-street frontage, with their high gable and vennel positioned on the eastern boundary of each plot. Access to the first floor is via a covered forestair which has chamfered surrounds and appears to be original, suggesting that the first-floor flats were designed to be independent of the ground floor (now occupied by shops).

At the rear of the building it was possible to see the remnants of skews or corbels (fig.2) which may have acted to support the timbers for the structures within the backlands or alternatively be evidence of earlier roof heights.

Figure 2. Skews on the building's rear elevation may be remnants of the now demolished backland structures or evidence of the buildings once having a considerably lower roofline. (© National Trust for Scotland)

Roof survey

Once the stone slates were removed, it was possible to view the sarking board. This was found to be pit-sawn planks of Scots pine with maximum lengths of 3.7 metres (12 foot 2 inches). Thicknesses and widths varied, with those recorded including 220 by 20 millimetres (8 ⅝ inches by ⅜ inch), 240 by 28 millimetres (9 ½ by 1 ⅛ inches) and 220 by 25 millimetres (8 ⅝ inches by 1 inch).

The roof's northern pitch was found to have survived in a good state of repair (figs 3 and 4) and was of a common collared rafter form with many of the original collar and rafter pairs surviving. Some of the rafter pairs were still mortised and tenoned to original sole plates and ashlar posts.

At the roof apex each pair of rafters was secured by a mortise-and-tenon joint and pegged, mainly from the west. Only two of the nine original collars were missing (sawn off for a later attic

Figures 3 and 4. Views of the exceptionally well-preserved roof timbers and ashlar posts on the building's north pitch. (© National Trust for Scotland)

conversion); the rest were connected to the west side of the rafters by simple diagonal lap joints, each showing no dovetailing and held in place by a large single nail. The sole plates and ashlar posts on the north side of the roof rested on and against the external north wall of the property, but those to the south side rested on and next to brick walls that had been constructed on two steel I-beams.

This northern pitch of the roof had been extensively repaired over the years, with nine adze-trimmed timbers nailed to the original rafters to strengthen the roof and four modern timbers nailed and bolted to the rotten lower ends of various rafters. In addition, further strengthening had occurred above the original collars in the form of circular-sawn timber nailed to the majority of the rafter pairs.

Various features were noted on the original rafters, including two opposing pairs of vertical grooves, a small bridle beam and another pair of opposing shallow recesses. A complete sequence of assembly marks was present on the western-facing sides of the nine central rafters and collars. These were found in ascending order from 'I' to 'VIIII' (fig.5).

The timberwork of the south roof could be split into two main areas: that to the south of the I-beams, and that adjoining the north roof.

The south roof was constructed of pairs of rafters joined together and constructed of the same type of timber as the north roof (softwood, hewn and adze-trimmed, tenoned together). A

Figure 5. An example of the masons' marks found on the rafters and collars. (© National Trust for Scotland)

little below the apex, modern circular-sawn pine collars had been nailed to seven of the rafters, largely on both sides. To the west, original rafters that had not been cut short rested on sole plates with ashlar posts against the external wall.

To the east, original rafters rested on two beams and against the party wall between Hamilton's Land and the adjacent property. The two beams bridged a gap caused by the party wall bending quite sharply to the east. Both beams were embedded in the gable wall to the south and the party wall to the north. The narrow gap between the party wall and the north end of the beams had been filled with stone debris and mortar.

The north end of the south roof still had its original ridge plate, supported to the north by a beam straddling the gap between two rafters, and to the south by a small collar nailed to one of the roof's rafter pairs. Running down the valleys in the roof on either side of this plate were two valley timbers, one of which was original. There were four pairs of rafters running down to these valley timbers from the ridge plate, each either being nailed and set into notches in the ridge plate, or itself being notched to fit. Of the 20 rafters present in this part of the roof structure, only six still supported their own weight having been repaired, with some of the original rafters having been cut in half, their lower ends removed when replacements were fitted.

Of note within this element of the roof structure were two large bridle beams fixed to both the east and west pitches (fig.6). Both bridles were tenoned into mortised shoulders which were nailed

Figure 6. One of the bridle beams fixed to both the east and west pitch of the south roof. (© National Trust for Scotland)

to four of the rafters. The west bridle had been later superseded by attaching to it a piece of reused timber which in effect reinstated the foot of the central rafter that had been cut short. Mirroring this on the east pitch was a small thin circular-sawn plank that had been nailed below one of the shortened northernmost rafters just beneath an inserted bridle.

Further features included two bridles, inserted into the west pitch of this part of the roof structure, two horizontal slots in two of the central rafters which appeared to serve no purpose (perhaps a sign that the rafters were reused), and four sets of assembly marks in non-consecutive order (III, V, IV, IIII). It is worth noting that the carpenters responsible for the assembly marks did not make use of subtractive principles for Roman numerals, meaning that 'IIII' was used for four, and six might be expressed as 'VI' or indeed 'IV'.

Sawn-off collar stubs were noted on three of the rafters; these had been attached by nail in the same fashion as those on the north roof but were narrower. On both the east and west sides of the south attic there was evidence that laths had been nailed to the rafters from the inside. This could be seen where occasional laths were found still in place and also where rows of nails showed where they had once been. The later painting of the rafters with a copper solution and possibly a limewash to prevent rot had also preserved the old lath outlines. On the east side of the roof, laths had been nailed across the rafters right down to the floor level, whilst on the west side the laths were nailed down the rafters then down the ashlar posts. We can probably assume that these laths were plastered from the inside, creating a smooth sloping ceiling up to the former collars of this roof.

The north and south attics were historically linked by a passage, evidence of which can be seen in the form of a vertical stud rising to connect one of the rafters on the west of the north roof to one on the west of the south roof. The stud supported laths forming the west side of the original passage which was further facilitated by the shortening of two of the rafters on the south side of the north roof. A close look at the Office of Public Works 1938 plan

shows that the stairs from the second floor would have emerged in or around this passage.[6] It is likely that the north and south attics would have been separate flats, accessed from this central point.

Interpretation

From the analysis described above, the earliest surviving elements of the roofs are the main adze-trimmed timbers and it would appear that the north roof was erected prior to the south roof, as the latter's ridge plate is supported by the rafters of the former (fig.7). It is impossible to know how much time elapsed between the constructions of these two sections of the roof. We could, for example, say that the sizes of rafters and the type of joints

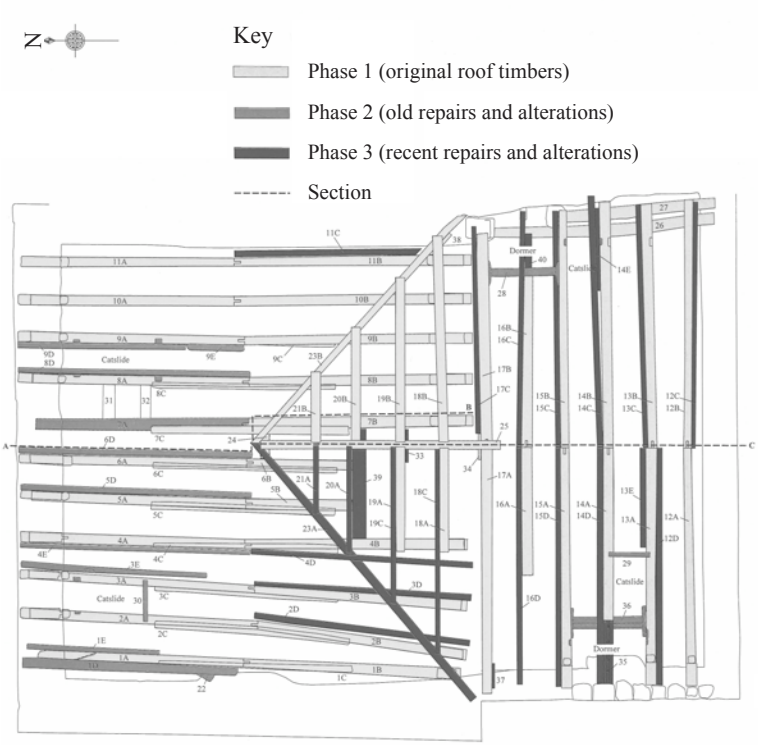

Figure 7. Overall plan of the roof structure showing its sequence of development. (© National Trust for Scotland)

between rafter pairs and rafters/collars point to both roofs being contemporary; however, the differentiation of the two sets of assembly marks (the north roof's being sequential and the south roof's being mixed up) might suggest otherwise. The confusing assembly mark sequence on the south roof suggests that the timbers here were reused from another building, unlike those of the north. This may be further supported by a number of unexplained grooves on at least two of the rafters of the south roof.

The sawn-off collar stubs of the south roof also support the latter interpretation that this is a later addition, as the collars seem to be from a different batch than those of the north, being made from narrower split timbers.

There are four sets of features which may be the remains of 'catslides' – very small, simple, low-angled dormer windows. These are represented by opposing vertical slots for uprights corresponding to small bridles or recesses for bridles further up the roof. Each catslide is only as wide as a single rafter spacing. If the attics were originally intended for habitation – which is likely given the space they enclosed – it is probable that the catslides were created soon after the roof was constructed. Their form, positioning and spacing suggest that they were probably all inserted at the same time in order to create roughly equal lighting across the two attics.

Two features which seem to be contemporary with this phase and were probably (given their similar design) both inserted at the same time are the large bridle beams on the east and west sides of the south roof. These are interpreted as full dormers, each the width of two rafter spaces. The bridles would have supported the roof beams of the dormer, with the rebates below possibly marking where the posts supporting dormer cheeks connected to the old rafters. Stratigraphically one of the bridles blocked one of the vertical slots for one of the catslides, demonstrating that the dormers are later.

Also dating to this late phase are the two steel I-beams inserted halfway along the building. It is unclear what prompted their insertion but presumably either an internal wall was removed from

the floor below or the I-beams replaced earlier wooden beams that had started to fail. Small brick walls were built above the I-beams to the level required to support the rafter feet of the north roof.

Discussion

Given the existence of external skews on the north face of the building and the evidence for the two-phase development of the roof structure, it would seem not unreasonable to conclude that the building was once a lower two-storey structure. Furthermore, the analysis described above also seems to point towards the conclusion that the building was at some stage set back from the High Street and that, in keeping with many historical burgh high-street buildings (see for example Gladstone's Land on Edinburgh's Royal Mile), it may have possessed a timber and/or a colonnaded stone frontage. This may well explain why steel I-beams were incorporated halfway along the property; a necessary response to the removal of the original frontage. Pont's map dating to 1630 shows arcaded buildings along Linlithgow High Street in the late sixteenth century (although Slezer's 1693 engraving does not).[7] This is further supported by the analysis of the preserved gable end within the adjacent building. Within the roof of numbers 38–42 on the High Street it is possible to see evidence of a lower two-storey building. This earlier building has left the scar of the roofline of a lower structure along with the remnants of a cope (fig.8).

Figure 8. Evidence in the form of a raggle line on the west gable end of 42–44 High Street, preserved in the roof space of numbers 38–42. (© National Trust for Scotland)

As for the use of the attic during its habitable lifetime, we can probably assume that the two attics were occupied soon after their construction, as this would have been an obvious way of utilising spaces in which there was ample room. Lighting in early phases would have been provided by the window in the south-facing gable overlooking the street and the four catslides which were probably added soon after the roof was constructed. The fireplaces which lie within the attic would have provided heating. Taken as a whole it seems likely that the attics together were split into three units or rooms, each with a fireplace, one in the south gable wall and two in each of the party walls, which effectively would mean the north roof was divided in half.

Finds during the recording of the roof point towards a function which very much fits the known history of the historical burgh. Shoe leather was discovered among the debris packed between the party wall and one of the bressumer beams, and may be evidence for the manufacturing of such items within the property; as already stated, leatherworking was a common business in Linlithgow during the medieval period.

The next stage of the work undertaken by the Trust is to try to raise funds to date the roof timbers using dendrochronology. Not only might this give us more accurate dates for the phasing and construction of the roof, but it would also contribute to the development of tree-ring chronologies in Scotland. However, as a first concern the Trust is proud to contribute to the conservation of such a fast-disappearing resource in Scotland's historic towns.

Notes

1 See, for example, G Stell, 'Scottish Burgh Houses 1560–1707: a conspectus and some recent surveys', in T S Turner and S Stevenson (eds), *Town Houses and Structures in Medieval Scotland: A Seminar*, Scottish Burgh Survey, Glasgow, 1980, pp 1–31.

2 E Dennison and R Coleman, *Historic Linlithgow: The Archaeological Implications of Development*, Historic Scotland in association with Scottish Cultural Press, Edinburgh, 2000, p.9.

[3] Revd J Dobie, 'Parish of Linlithgow', in John Sinclair (ed); D J Withrington and I R Grant (general eds), *The Statistical Account of Scotland*, vol.II: *The Lothians*, EP Publishing, Wakefield, 1975, pp 754–83 (pp 759–60).

[4] D Hunter, C Brooks, D Caldwell, G Stell and M Middleton, with contributions by D Bowler, A Cox, D W Hall, N Holmes, D Perry and C Smith, *Three Excavations in Linlithgow High Street, 1966–77*, SAIR (Scottish Archaeological Internet Reports), forthcoming, http://www.sair.org.uk/.

[5] The document is held in the National Trust for Scotland Central Archive, reference 01/0078/01/LIN.

[6] Old Houses, 42–48 High Street, Linlithgow, plans and sections roughly to scale showing proposed reconditioning, H M Office of Works, 122 George Street, Edinburgh, 1938 (available on the RCAHMS Canmore database, http://canmore.rcahms.gov.uk, Canmore ID 49253).

[7] Timothy Pont, *A New Description of the Shyres Lothian and Linlitquo*, H Hondius, Amsterdam, 1630, online at http://maps.nls.uk/counties/detail.cfm?id=203 (accessed 3 April 2012); John Slezer, 'The Prospect and Town of Linlithgow', in *Theatrum Scotiae*, London, 1693, online at http://digital.nls.uk/slezer/theatrum-scotiae.html (accessed 3 April 2012).

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G Stell, 'Timber in Scottish historic buildings', in *Proceedings of the Timber and the Built Environment Conference*, Historic Scotland, Edinburgh, 2004

ST FILLAN'S EPISCOPAL CHURCH, KILLIN: CONSERVATION OF A TIN TABERNACLE

Sonya Linskaill

The author became involved with St Fillan's Episcopal Church in August 2009 as Project Co-ordinator, tasked with sourcing grant funding for the repair of the building. This role soon expanded into acting as architect, managing and monitoring all aspects of the project on behalf of the congregation. This article presents information discovered during the project to repair the church, including preliminary research on surviving corrugated-iron churches in Scotland.

Introduction: St Fillan's Episcopal Church

St Fillan's Episcopal Church (fig.1) is prominently sited within the small rural village of Killin in the Loch Lomond and The Trossachs National Park. It is currently listed at category C(S), and was built in 1876 by the 7th Earl of Breadalbane to serve members of his shooting parties. It is locally known as the 'Grouse Chapel', and represented the first ministration for Episcopalians in the Killin area since 1716.

Figure 1. St Fillan's Episcopal Church, Killin after repair in 2011.

The primary use of the church by the Earl's shooting parties meant that the church only opened during the summer months when services were held, mostly, by prominent English clergy on holiday in the area. Services ceased at the outbreak of war in 1939 and with few exceptions the church remained closed until 1948. Post war, the church was licensed as a dependent mission by the Bishop of the United Diocese of St Andrew's, Dunkeld and Dunblane, with the building being lent to the Diocese Trustees by the 9th Earl, the Right Honourable Charles Campbell. In 1958 the church, its ground and a strip of land between it and Station Road was gifted by the Earl to the Diocese Trustees to be held in perpetuity on behalf on the congregation. Today the church serves as the local place of worship for both the Scottish Episcopal Church and local Roman Catholic congregations.

St Fillan's is a Latin-cross-plan church with a four-bay nave extending to the west terminated by a low single-bay entrance porch (fig.2). The southern transept is occupied by the vestry, which also has an entrance. A later, more crudely constructed extension lies to the east. This extension houses the church meeting room and was constructed in 1969 following the gift of additional land in 1958; the corrugated-iron sheets of which it is built are said to have come from the former railway station at Tyndrum.

The church building is comprised of two sheets of galvanised corrugated iron running perpendicular from eaves to base course fixed to a timber frame; there is a projecting base course protected

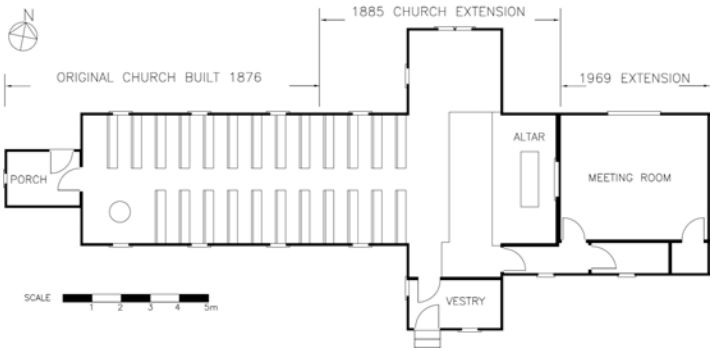

Figure 2. Plan of St Fillan's Episcopal Church, showing extension over time.

by a galvanised metal flashing. The roof similarly comprises two sheets from ridge to eaves, with a galvanised-metal ridge roughly formed into the corrugations of the roof sheets. The church roof is embellished with bargeboards, timber spike finials and a decorative cast-iron finial to the west gable. A fleche rises above the crossing of the church with scalloped timber blades. It provides internal ventilation as well as a distinctive architectural feature. All window and door openings are 'gothic' in style and protected by stop-chamfered timber facings.

Diocese records state that the church was extended in 1885. The extent of the original church was thought to comprise the full length of the nave, without the crossing. This conclusion was based on examination of the fixing patterns and methods. On the nave and porch, the connection at the horizontal lap of both roof and wall sheets is made by rivets (presumably in prefabrication) at every corrugation (fig.3). On the crossing, the sheets were connected every second corrugation by drive nails and washers. During the repair project in 2011, the true extent of the original church was discovered when the connection in the timber frame was exposed which corresponded with a change in the masonry base course, from found local stone to brickwork (fig.4). The

Figure 3 (above right). Detail of rivet fixings at the horizontal lap of the corrugated-iron sheets on the original church.

Figure 4 (right). The exposed timber frame at the eaves showing the junction of the 1876 and 1885 construction of the church.

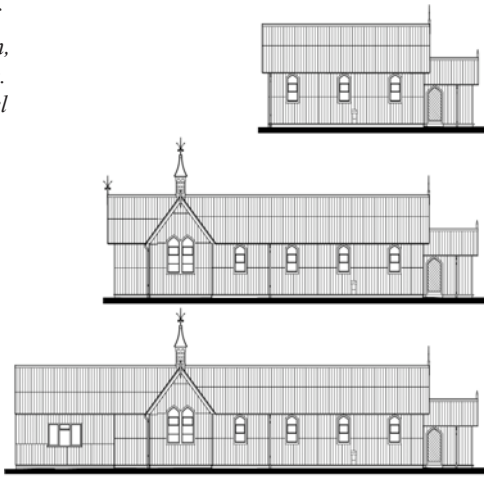

Figure 5. North elevation of St Fillan's Episcopal Church, showing extension over time. (top:) 1876 – original chapel 3 bays long with west porch (middle:) 1885 – crossing section and 1 bay added to the chapel (bottom:) 1969 – meeting room extension added.

original church was in fact only three bays in length and including the west porch (figs 2 and 5). The 1969 extension is built against the east gable of the church: the gable itself is retained and thereby the integrity of the church building. An attractive circular stained-glass window depicting the Annunciation set into the gable, although now enclosed, it is still visible internally.

Tin tabernacles: historical context

Corrugated-iron churches, or tin tabernacles, are often overlooked as part of our ecclesiastical architectural heritage, but have been described as the 'epitome of Victorian Great Britain' where technological advances met changing social, economic and, most importantly, religious needs.[1]

The term 'tin tabernacle' is a common description for a corrugated-iron church, those innovative Victorian churches constructed from standardised corrugated-iron sheets fastened to a timber framework. 'Tabernacle' is derived from the Latin *tabernaculum*, meaning a booth, hut or temporary dwelling, and referring to the portable sanctuary erected by Moses in the Scriptures.[2] Although tin is not actually used in the manufacture of corrugated iron, 'wriggly tin' serves as a colloquial descriptive reference to the distinctive corrugated sheets.

Iron sheets had been used since the second half of the eighteenth century, but it was the 'corrugated' patent (1829) which transformed its potential as a building material. The iron sheets are passed through fluted rollers, creating corrugations which provide the strength and stiffness of 'wriggly tin'. The world's first corrugated-iron building was a turpentine shed on the London Docks (*c*.1830).[3] However, it was Britain's expansion in the Colonies (from *c*.1840) which provided the ideal conditions for corrugated iron as a prefabricated building material for all sorts of structures, from houses and hospitals to schools and churches. A brief timeline is provided in Table 1.

Corrugated-iron buildings were developed by, and usually bought from, specialist manufacturers in kit form. There were large national and international companies in London, Liverpool, Glasgow and Edinburgh as well as local enterprises. Manufacturers advertised their range of kit buildings in catalogues including off-the-peg or one-off churches. With the expansion of rail throughout

Date	**Event**
1829	Patent for corrugated iron registered by architect and engineer Henry Robinson Palmer
c.1830	World's first corrugated-iron structure produced by Robert Walker: a turpentine shed for the London Dock Company
1843	Patent expires, opening opportunity for commercial development
1840s–50s	Corrugated-iron churches constructed in the Colonies
1855	First recorded corrugated-iron church built in Britain: St Paul's, erected in the grounds of a vicarage in Kensington, London
1858	The oldest corrugated-iron church surviving in Britain today: former Congregational Church, Hackney, London
1876	*St Fillan's Episcopal Church built*
1880	First mention of a 'prefabricated iron church' in the Highlands, a Scottish Episcopal Church at Tain, replaced by the church of St Andrew in 1888
1885	*St Fillan's extended to form a Latin-cross-plan church*
1890s	High point of tin tabernacle manufacture in Britain
1920s	Decline in manufacture of corrugated-iron churches in Britain

Table 1. A short timeline (after A Mornement and S Holloway, Corrugated Iron: Building on the Frontier*, Frances Lincoln, London, 2007 and E Campbell,* The Prefabricated Churches of the Highlands*, unpublished MSc dissertation, Robert Gordon University, 2000).*

the country, manufacturers advertised that such buildings could be 'delivered to the nearest Goods Station and erected on the purchaser's foundation or marked for re-erection'.[4] The Killin Railway (a branch line off the Callander and Oban Railway) did not open until 1886, but from 1870 there was a local stop at Killin Junction (close to Lix Toll); therefore the prefabricated church of St Fillan's could have been transported by rail and road.

Tin tabernacles were clearly a product of the time, designed and constructed using new materials and methods to meet changing demands. There were also strong driving forces which created a need for new churches in the later nineteenth and early twentieth centuries, especially in Scotland. For example, one of the principal forces behind many of the Highland tin tabernacles was the formation of the United Free Church in 1900 from the United Presbyterian Church and the Free Church. The United Free Church built the majority of the Highland tin tabernacles following the Churches (Scotland) Act 1905.[5] Glasgow manufacturer Speirs & Co is known to have supplied 75 churches between 1908 and 1914.[6] They were the most dominant of the prefabricated church manufacturers in the Highlands, Eoghann Campbell having identified 46 prefabricated churches of which at least 19 are known to have been supplied by Speirs & Co.[7]

However, despite their prefabricated manufacture, the final products were invariably unique: no two tin tabernacles are identical. Their character derives from both the location and setting, and invariably the detail of specific elements. Windows, spires, fleches, bargeboards or delicate brattishing, all contribute to the uniqueness of each church. The range of colours used for external walls, roof and architectural elements, as well as internal finishes, creates a richly varied building group.

Tin tabernacles: a comparative study

A key aspect of the project was to establish the significance of St Fillan's as an example of a tin tabernacle. Church records (1959) state that the building was considered to be of 'no architectural value' and the hope was expressed that 'in the not too distant

future it can be replaced with a building of more worthy character in keeping with the other buildings in the vicinity'.[8]

However, our understanding of the cultural significance of St Fillan's (and corrugated iron) has changed over time, Historic Scotland describing the building as 'an exceptionally important iron chapel'.[9] Whilst the project could not resource a comprehensive survey or study of all tin tabernacles in Scotland, the author compiled a list of Scottish tin tabernacles using a variety of primary and secondary sources and through consultation with Historic Scotland in relation to listed examples.[10] The research identified some 45 surviving corrugated-iron churches, of which only 13 are believed to be in use as places of worship (see Appendix, tables 2 and 4). Further, only nine corrugated-iron churches could be identified on Historic Scotland's statutory list (see Appendix, table 3),[11] one of which (Our Lady of Mercy, Aberfeldy) has been recently replaced by a new-build church, the tin tabernacle moved and reconstructed (fig.6). St Fillan's is therefore one of possibly only five listed corrugated-iron churches in Scotland which serve as places of worship.

This preliminary research suggests that St Fillan's is distinctive in terms of its historical and architectural significance. St Fillan's Episcopal Church (1876) is one of the oldest surviving corrugated-iron churches in Scotland found during the research, notwithstanding its extension in 1885. The only other church known to be of similar date is the Church Centre at the Royal Edinburgh Hospital, originally constructed for St Michael's Parish Church on Slateford Road, Edinburgh. This church is stated to

Figure 6. The former Roman Catholic chapel of Our Lady of Mercy was gifted by the 3rd Marquis of Bute to Aberfeldy in 1885. Recently replaced by a new-build church, the tin tabernacle has been reconstructed in the village of Dull by a private individual. The church originally had a bell tower above the tripartite window which blew down in the 1940s.

Figures 7 and 8. Dalswinton Barony Church, Dumfries and Galloway (above; 1881) and Syre Church, Sutherland (below; 1891) provide fine examples of the decorative qualities of early tin tabernacles. Syre has lost most of its decorative ridge brattishing, but retains leaded 'gothic'-style windows. (Dalswinton image reproduced under Creative Commons Licence, author Rosser 1954)

have been established in 1877 and moved in 1884.[12] These two churches are part of a group of 11 known to date from before 1900 (see Appendix, table 5). There are clear stylistic differences between the early churches and the post-1900 churches. The early churches are more ornate, in many respects attempting to imitate traditional church architecture, with decorative features such as arched windows which are found in a number of the surviving examples (figs 7 and 8).

It has been suggested that St Fillan's may have been supplied by Speirs & Co, Glasgow;[13] however, the earliest record found for this company is in the Post Office Glasgow Directory of 1891–2, after the date the church was both erected and extended.[14] Neither does the church display a Speirs manufacturer's plate, as seen for example on the corrugated-iron church at Elphin, Assynt,

Sutherland.[15] But perhaps most importantly it does not display the stylistic elements or characteristics of Speirs' churches, as identified by Campbell.[16] These chiefly relate to the presence of external timberwork and the treatment of windows. There is a notable lack of gothic-style windows, with openings always regular, often with hooded mouldings or wide segmental windows (such as at Kinlochewe, fig.9).

Arched openings were more problematic to cut neatly in corrugated sheeting; for example, the triangular-headed windows at Fort Augustus are actually made up with the addition of flat metal plates.[17] At St Fillan's the arched openings are cut from the corrugated sheet and supported on arched timber framework (fig.10). In addition to ecclesiastical references, this may also make reference to the 'gothic' style employed by the Breadalbane

Figure 9. Kinlochewe Church, Highland, a typical example of a Speirs & Co church with a tripartite segmental window and timber boarding detail, very much contemporary with the architectural style at the turn of the 20th century.

Figure 10. St Fillan's Episcopal Church: arched window construction exposed during the repair works (2011). Note, a perfect place for wasps!

Estate during this period and seen on other Killin buildings such as the former St Fillan's (Millmore) Mill (*c*.1840).

The manufacturer of St Fillan's remains enigmatic. However, a local blacksmith recently informed the congregation that he took down a corrugated-iron building in neighbouring Ardeonaig some time ago, and that this displayed a maker's lead plate: 'The London Church & Chapel Co.' Interestingly, it is believed that the Earl of Breadalbane was a shareholder in this company. Further research is however required to confirm this.

The repair of a tin tabernacle

The congregation had maintained their church, but after over 130 years of service, damp and water penetration were taking their toll on the building fabric. Its fair external appearance disguised the very real need for extensive repair to prevent further deterioration and potential loss of fabric. The attractive pitch-pine interior (fig.11) was suffering from water ingress through failure of the roofing sheet laps, ridge pieces and valleys. The defective external underground drainage was causing damp and rot in the timber floor and structural frame.

The congregation contacted the Loch Lomond and The Trossachs National Park Authority in 2008 for advice on how to proceed. Historic Scotland visited the church and provided a report on the condition of the building, which recommended a comprehensive scheme of repairs.[18] The works started in January 2011 following successful grant applications to the Heritage

Figure 11. St Fillan's Episcopal Church: the attractive pitch pine interior so characteristic of the church.

Lottery Fund and the Killin Conservation Area Regeneration Scheme, as well as contributions from the church, other grants bodies and individual donors. The repair programme took six months to complete, with the church back in service in July 2011.

The repair project proved to be an interesting exercise in the conservation of a corrugated-iron building; some of the key findings are summarised below.

Floor and wall condition

The church fabric had been subject to damp ground conditions for some considerable time due to both poor replacement of the original cast-iron down pipes in uPVC and (discovered on excavation) the failure of the original fireclay field drains. Rainwater was effectively being directed towards the base course of the building, causing vegetation to build up, which aggravated the problem (fig.12).

At commencement of the project, investigative work took place to inspect the condition of the base rail of the timber frame (which sat directly on the masonry base course) by lifting two perimeter floorboards internally; it was discovered that the base rail was rotten around the full perimeter of the church. The challenge was how to access this area for removal and replacement with the minimum of damage, particularly to the internal tongue-and-groove pitch-pine linings. It was agreed to remove all the corrugated-iron wall sheets – unplanned additional work, but the benefit of this was the full inspection of these sheets and of the timber wall frame. The wall sheets were found to be in good condition and all were refitted as existing, including the earlier patch repairs where the original stove flue had been located.

Figure 12. Build-up of ground vegetation due to inadequate removal of rainwater (2009).

Localised wet rot was found in other areas of the frame but it was generally in good condition. The wall fixings were a mixture

of chisel-point hammer-driven nails (1876 building) and twist-drive screw nails; as many fixings as possible were retained and refitted. This was particularly successful for the chisel-point nails (which were no longer available), but less so for the screw nails which tended to snap on removal through brittleness of the metal.

Internally the floor structure was examined: a simple timber joist construction on rough boulder footings. Unsurprisingly, most of the joist wall ends were also suffering from wet rot. Some replacement joists were required (the north transept was particularly bad and had previously been replaced) but in the nave the decision was made to treat and support the existing timbers with brick sleeper walls.

Roof condition

In comparison to the wall sheets, the corrugated-iron roof sheets were in a poor condition, suffering with corrosion and distortion. A protective canopy was erected over the church to allow the roof to be fully stripped for inspection (fig.13). The original felt was saturated, soaking the timber sarking boards (which also act as the internal ceiling linings). It was discovered that laps between sheets and especially at the ridge were very small, allowing water to penetrate into the church and putting the timber interior at risk.

Despite the saturation of the roofing felt, the original pine boards were in good condition apart from at the ridge. Here the uppermost purlin was suffering from wet rot in several places, and in general across the roof the nails attaching the boards to the purlins had failed. Rot damage to the ends of the boards at the ridge made re-nailing to the original purlin impossible. So a new purlin was fixed below the original one, which had the added advantage of allowing the majority of the damaged linings to be retained (the purlin covering the damaged ends internally).

Due to the condition of the corrugated-iron roof sheets, the decision was taken to replace these in full on the church building. New sheets to match existing were sourced, but whilst the pitch of the corrugations had been measured (76 millimetres (3 inches)) it was noted that profiles of sample sheets still varied. It was also

Figure 13. St Fillan's Episcopal Church: the corrugated-iron sheeting removed, the timber shell of the building is revealed (2011).

not possible to find sheets nine corrugations wide, so these had to be cut down from larger widths. One of the most difficult aspects was how to replicate the prefabricated rivet fixings which connected sheets horizontally. After a number of mock-ups, a satisfactory modern rivet was selected which best matched the scale of the original. In sum, sourcing matching corrugated-iron sheets and fixing types was the most tricky aspect of the repair, but important to maintain the detail particular to this church.

Summary

St Fillan's Episcopal Church, Killin is one of a small number of corrugated-iron churches built in the later nineteenth century, and is one of Scotland's earliest surviving examples. Designed and purchased as 'temporary buildings', they have endured for a considerable time, far beyond their perceived life span, but their physical fabric is vulnerable to decay and inappropriate repair.

Tin tabernacles are also at risk due to a lack of awareness of their cultural importance and a proper grasp on their remaining numbers. However, they tell an important story in both our technological history and ecclesiastical heritage.

Notes

1 E Campbell, *The Prefabricated Churches of the Highlands*, unpublished MSc dissertation, Robert Gordon University, 2000.

2 I Smith, *Tin Tabernacles: Corrugated Iron Mission Halls, Churches and Chapels of Britain*, Camrose Organisation, Pembroke, 2004.

3 A Mornement and S Holloway, *Corrugated Iron: Building on the Frontier*, Frances Lincoln, London, 2007.

4 Smith, *op.cit.*, p.30.

5 Campbell, *op.cit.*.

6 W Downie, entry for Elphin Church, Am Baile (website of The Highland Council), http://www.ambaile.org.uk/ [accessed March 2012].

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8 Revd L Fagerson and Revd G Willey, *St Fillan's Scottish Episcopal Church*, unpublished church pamphlet, *c*.2008.

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10 Email correspondence between S Linskaill and Deborah Mays, Head of Listing, Historic Scotland, 18 and 19 August 2009.

11 Ibid.

12 St Michael's Parish Church website, http://www.stmichaels-kirk.co.uk/history.htm [accessed March 2012].

13 McGregor, *op.cit.*.

14 Post Office Glasgow Directory (1891–2), online at http://www.nls.uk/family-history/directories/post-office [accessed March 2012].

15 Downie, *op.cit.*.

16 Campbell, *op.cit.*.

17 Ibid.

18 McGregor, *op.cit.*.

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Barnhill St Margaret's Parish Church website, http://www.bsmchurch.org.uk/history-1/church-buildings/tin-kirk [accessed March 2012]

Strathy & Halladale Church: Church of Scotland, North Coast Parish Church website at http://ncpc.getfreehosting.co.uk [accessed March 2012]

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Appendix: Information on Scotland's corrugated-iron churches

The author makes no claim that the information in the following tables is complete, and would be pleased to receive information on any of the entries or other examples: slinskaill@blueyonder.co.uk.

Table 2: Surviving corrugated-iron churches in Scotland

Current state	Number of churches
Place of worship	13
Disused place of worship	15
New use or significant physical adaptation	14
Demolished	13
Unknown	3
Total recorded	**58**
Total estimated surviving	**45**

Table 2. Surviving corrugated-iron churches in Scotland. Information collated from: Historic Scotland Listed Buildings Register; RCAHMS; E Campbell, The Prefabricated Churches of the Highlands*, unpublished MSc dissertation, Robert Gordon University, 2000; I Smith,* Tin Tabernacles: Corrugated Iron Mission Halls, Churches and Chapels of Britain*, Camrose Organisation, Pembroke, 2004.*

Table 3: Listed corrugated-iron churches in Scotland

Church name	Denomination	Region	Listing ref	Date built and current status
Carrick Castle	Church of Scotland	Argyll & Bute	50349 (category C(S) since 2006)	Built 1892; closed 2008. On Buildings at Risk Register.
Dalswinton Barony	Church of Scotland (former Mission Church? landowner?)	Dumfries & Galloway	10289 (category B since 1986)	Built 1881. Still in use.
Errogie	Former United Free Church	Highland	50029 (category C(S) since 2004)	Built after 1903. Disused since 1987.
Holy Trinity, Motherwell	Scottish Episcopal Church	North Lanarkshire	in curtilage of 48296 (category C(S) since 2001)	Built 1884; church hall from 1894. On Buildings at Risk Register.
Our Lady Of Mercy, Aberfeldy	Roman Catholic	Perth & Kinross	48853 (category B since 2002)	Built 1885. Moved, rebuilt in Dull, *c*.2006.
Pirnmill	Church of Scotland (Former Free Church)	North Ayrshire	49535 (category C(S) since 2003)	Built *c*.1920. Possibly in use as church hall.
Royal Edinburgh Hospital	Church Centre	City of Edinburgh	27713 (category B since 1993)	1876–7, re-erected 1884. Still in use.
St Fillan's, Killin	Scottish Episcopal Church	Stirling	46364 (category C(S) since 2006; previously B since 1991)	Built 1876, extended 1885. Still in use.
St Margaret's Chapel of Ease, Barnhill	Part of the church hall	Dundee	in curtilage of 25743 (category B since 1991)	Originally in Craigebuckler, Aberdeen; moved to Broughty Ferry (St Luke) before reaching Barnhill in 1884. In use until 1895, then church hall. Harled 1968. Demolished *c*.2009.
Strathy & Halladale	Church of Scotland (former United Free)	Highland	12922 (category B since 1991)	Built 1910. Still in use. Proposed redevelopment to include community hall.
Syre	Church of Scotland (former Free Church)	Highland	7147 (category C(S) since 1987)	Built 1891. Still in use.

Table 3. Listed corrugated-iron churches in Scotland. Source: Historic Scotland. Note: Two former corrugated-iron churches in the curtilage of the later church added by author.

Table 4: Corrugated-iron churches still in use as places of worship in Scotland

Church name	Denomination	Region	Date; Maker	Listing category
St Columba's, Brora	Scottish Episcopal Church	Highland	*c*.1900; Speirs & Co, Glasgow	unlisted
Dalswinton Barony	Church of Scotland	Dumfries & Galloway	1881; Liverpool	B
Elgol	Church of Scotland	Highland	*c*.1900; possibly Cowieson & Co, Glasgow	unlisted
Kinlochewe	Church of Scotland	Highland	unknown; Speirs & Co, Glasgow	unlisted
Royal Edinburgh Hospital	Church Centre	City of Edinburgh	1876 or 1877; Morton & Scott, Liverpool	B
Sanna	Church of Scotland and Free Church possibly	Highland	1890; unknown	unlisted
Scourie	Free Presbyterian Church	Highland	possibly *c*.1900; unknown	unlisted
Skerray Free Church	Free Church	Highland	possibly *c*.1900; F Smith & Co, London	unlisted
St Fillan's, Killin	Scottish Episcopal Church	Stirling	1876; 1885; possibly The London Church & Chapel Co	C(S)
St Michael's & All Angels, Elie	Scottish Episcopal Church	Fife	1905; Speirs & Co, Glasgow	unlisted
Strathy & Halladale	Church of Scotland	Highland	1910; Speirs & Co, Glasgow	B
Syre	Church of Scotland	Highland	1891; Frederick Brady & Co, Glasgow	C(S)
Tomatin	Church of Scotland	Highland	1903; unknown	unlisted

Table 4. Corrugated-iron churches still in use as places of worship in Scotland, having been constructed for this purpose. Information collated from: Historic Scotland Listed Buildings Register; E Campbell, The Prefabricated Churches of the Highlands*, unpublished MSc dissertation, Robert Gordon University, 2000.*

Table 5: Surviving pre-1900 corrugated-iron churches in Scotland

Church (in date order)	Date of construction
Royal Edinburgh Hospital Church Centre, Edinburgh	1876 or 1877
St Fillan's Episcopal Church, Killin, Perthshire	1876; 1885
Dalswinton Barony Church, Dalswinton, Dumfries & Galloway	1881
Holy Trinity Episcopal Church, Motherwell	1884
Our Lady of Mercy, originally Aberfeldy, now Dull, Perthshire	1885
Sanna, Ardnamurchan, Highland	1890
North Kessock, Highland	*c*.1890
Syre Church, Sutherland	1891
Carrick Castle Church, Argyll & Bute	1892
Oykel Bridge, Highland (Glen's Church)	*c*.1892
Foyers, Highland	*c*.1895

Table 5. Surviving pre-1900 corrugated-iron churches in Scotland, including all uses and vacant examples. Note: research has not confirmed if all of the above survive; there are other churches where the date of manufacture or construction is unknown. Information collated from: Historic Scotland Listed Buildings Register; Buildings at Risk Register; diocese records; I Smith, Tin Tabernacles: Corrugated Iron Mission Halls, Churches and Chapels of Britain*, Camrose Organisation, Pembroke, 2004; E Campbell,* The Prefabricated Churches of the Highlands*, unpublished MSc dissertation, Robert Gordon University, 2000; St Michael's Parish Church website, http://www.stmichaels-kirk.co.uk/history.htm [accessed March 2012]; W Downie, entry for Syre Church, Am Baile (website of The Highland Council), http://www.ambaile.org.uk/ [accessed March 2012].*

MOIRLANICH LONGHOUSE, KILLIN: CHANGING TECHNIQUES IN THATCHING

Tim Holden

We know from old photographs, documentary work and surviving examples that a wide variety of materials and methods were used for thatching in Scotland. These reflect not only the local environment but also the availability of resources, skills and manpower. The economic circumstances of the occupants and the use of the building were also very relevant regarding the selection of materials used. People tend not to put the same effort into their outhouses that they put into their main dwelling!

Surviving thatched buildings are increasingly rare, so it is important that we learn as much as we can from them. Moirlanich Longhouse, near Killin in Perthshire, is a well-known visitor attraction and one of Scotland's best-preserved vernacular buildings (fig.1). Occupied until the 1960s, it was purchased by the National Trust for Scotland in 1992, complete with many original internal

Figure 1. The present Moirlanich Longhouse.

Figure 2. The dwelling from a postcard by James Valentine, c.*1918.*

fixtures and fittings and a historic thatch protected by an outer roof of corrugated iron. The single-storey building with five cruck couples is thought to have late eighteenth- or early nineteenth-century origins (fig.2) but the corrugated roof is a 1930s addition. The east three-and-a-half bays form a dwelling with a gable chimney and a canopy chimney part-way along the ridge. The remaining two-and-a-half bays were most recently used as a byre.

A recent phase of renovation work in June 2011 involved the complete removal of the iron sheets from the roof, and the building was scaffolded and enclosed within a temporary weatherproof 'shell' (fig.3). The whole surface of the thatch was exposed for a short time and this provided a perfect opportunity to investigate the materials and methods used in its construction.

Method

When thatched roofs are exposed after years under sheet materials, the exposed thatch is often covered by a significant depth of loose surface debris. Some of this undoubtedly represents material raked into place as the iron sheets were positioned, but most roofs also show significant disturbance through a combination of animal activity (rodents, insects and birds), wind and water. This debris

Figure 3. The roof exposed and recording underway.

obscures the structure beneath, but even at this early stage at Moirlanich it was clear that there was a difference between the two ends of the longhouse. The west end comprised quantities of loose cereal straw and exposed turf, whereas the east end was more soot-blackened and displayed clear evidence of the use of bracken.

Two representative and reasonably well-preserved areas were selected, one at either end of the building. The loose detritus was cleaned back from the ridge to the eaves using a stiff hand brush but, even though the original in-situ materials were exposed, some invasive work was needed to distinguish repairs and resurfacings from the main thatch. This effectively required the excavation of a narrow 'archaeological trench' down the pitch at each location: one at the west end of the north pitch and the other at the east end of the south pitch.

Excavation

As the investigation progressed, the differences in construction between the parts of the roof to the east and to the west of the canopy chimney became clearer.

West end north pitch

Here the original thatch was evidently of rushes supported on a bed of turf laid vegetation side down (fig.4a). The badly degraded and compressed rushes (either the jointed *Juncus articulatus* or

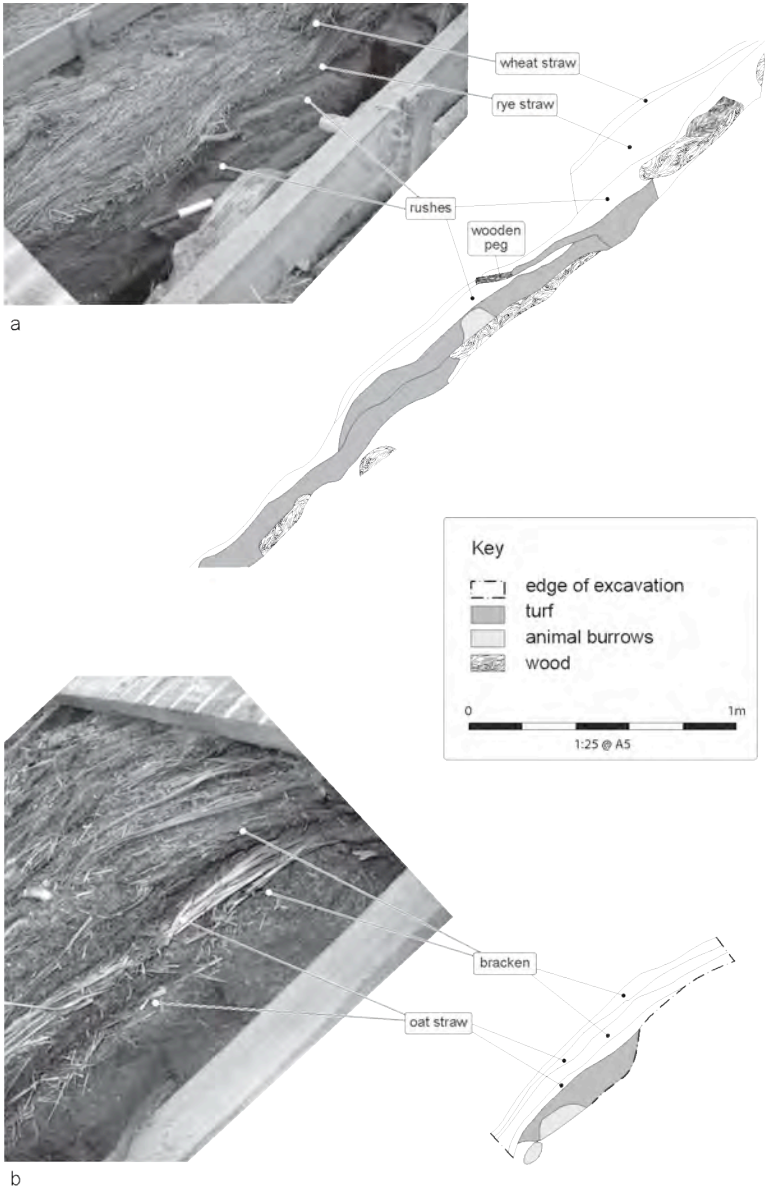

Figure 4. Sections through the thatch: (a) west end north pitch; (b) east end south pitch.

sharp-flowered rush *Juncus acutiflorus*) with their stems aligned down the pitch were held in position, in part at least, by overlapping turves. Rush is not generally the first choice as a thatching material since it tends to compress and deteriorate quickly. At Keils, on the Isle of Jura, for example, Mr Archie Black recorded that, in his younger days, the family had to re-thatch alternate pitches of their rush thatch each year to keep it watertight.[1]

Evidently, the occupants at Moirlanich eventually obtained access to other thatching materials because the roof was resurfaced firstly with rye straw and later with wheat. Rye is far superior to rushes, being both longer and tougher. In some areas it is specifically grown for its thatching qualities, and in the Scottish Highlands it is known from other roofs such as Sunnybrae Cottage, Pitlochry.[2] We do not know the age of this rye surface, but a thatch of rye could reasonably be anticipated to last for twenty years.

Eventually the whole building required resurfacing, and this was done with wheat straw fixed in place by a 'crook and caber' technique. The remains of sharpened pegs or 'crooks' were found penetrating into the thatch in many places. This method is characterised by the use of horizontal poles that were held on the surface of the straw by a crook formed of a forked tree branch. One fork would have been cut short and the other sharpened (fig.5).[3] In some places, particularly at the ridge, there was evidence of repairs using, for example, bracken.

Figure 5. The sharpened crooks projecting into the interior.

East end south pitch

The thatch at this point comprised a thick uneven turf, much of which was exposed at the surface. Cleaning back an area of the roof revealed that the predominant material was bracken with the blackened stipe (root end) pointing down the pitch. The excavated 'trench' down the pitch, however, revealed that it was constructed using alternating layers of bracken up to 10 centimetres (4 inches) thick and thin layers of oat straw (see fig.4b). The whole was supported on a bed of turves laid vegetation side down, overlying the cabers beneath.

In places there were patches of cereal straw used as repairs and remnants of wooden pegs (crooks) indicating the same 'crook and caber' method of fixing seen elsewhere.

Discussion

Thatched roofs obviously need a lot of maintenance, and as the price of corrugated sheeting and railway transport came down, metal coverings were used more and more on vernacular buildings. Throughout the latter part of the nineteenth century and during the early years of the twentieth, ridgelines of traditional Highland houses were straightened and gable wall-heads consolidated to accommodate the new metal roofs. The thatch was commonly raked back to form a level bed for the timber battens but also to provide a degree of heat and sound insulation. This evidently happened at Moirlanich, and much of the surviving material is therefore from the older levels of the roof. Only in a few select locations (see fig.4a) were traces of the later thatching episodes seen. Here the layers of wheat straw were in such good condition that they probably represent the surface visible in early twentieth-century photographs by James Valentine and others (see fig.2).

One of the most interesting observations at the site is that although the later photographs show a single uniform surface, two very different styles were used on the earlier roof. The uniform twentieth-century surface would tend to indicate a single owner, even through we know that the different ends of the building

were being used for different functions (a dwelling and byre). In contrast, the earlier period evidently had a bracken thatch over the dwelling and a rush thatch over the byre. Perhaps the most practical explanation is that the longer-lasting, and presumably more expensive, surface was restricted to the 'people end' of the building with the readily available but inferior rushes used over the byre. Other factors may also have come into play, such as availability of materials or joint ownership, or it is possible that one part of the building was damaged by storm or fire and that the occupant chose only to make partial repairs. If there is ever an opportunity to investigate the building in more depth, the answer may lie somewhere in the roof fabric, but the documentary record might also provide clues.

Putting Moirlanich into a regional context, there are no specific examples known to the author of rushes being used in the area. However, the distinctive combination of bracken and oat thatch at the east end of the building was almost identical to a roof previously investigated at the nearby settlement of Lochearnhead.[4] While this clearly indicates the use of an identical tradition in both places, perhaps could we also be seeing two examples of the same nineteenth-century thatcher's work?

Acknowledgements

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Notes

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3 B Walker, C McGregor and G Stark, *Thatch and Thatching Techniques: A Guide to Conserving Scottish Thatching Traditions*, Technical Advice Note 4, Historic Scotland, Edinburgh, 1996, p.35.

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CORROUR OLD LODGE

Hugh Dinwoodie

Corrour Old Lodge (NN 408 648) (fig.1) is a ruined shooting lodge, built probably in the first half of the nineteenth century. It should not be confused with the later Corrour Lodges, five kilometres (three miles) away, at the east end of Loch Ossian. The Corrour estate, land once held by the MacDonnells of Keppoch and by their feudal superiors, the Dukes of Gordon, was sold in 1834 to John Walker Esq. of Crawfordton, a merchant from Dumfries.[1] His son, Colonel Sir George Gustavus Walker, sold it to Sir John Stirling Maxwell of Pollok in 1891, three years before the new West Highland Railway was opened.[2]

One of the highest (only Fealar is higher) and more remote shooting lodges in Scotland, at an altitude of 525 metres (1,722 feet), it is situated south of Loch Ossian, on the western slopes of Carn Dearg,[3] to the east of Allt a'Coir' Odhar, the burn from which its name derives. It lies 8 kilometres (5 miles) from the

Figure 1. Corrour Old Lodge from the north, towards Rannoch Moor (October 2010).

nearest road or railway station, and faces south and west over the almost uninhabited expanse of Rannoch Moor. Access during the nineteenth century was by carriage, by a track from Kinloch Rannoch, 32 kilometres (20 miles) away.[4]

Sir John Maxwell set about planning and building a new and much grander lodge lower down, to the north, on Loch Ossian, with better access from the new railway. The 'new' lodge was completed in 1899 (but burnt down in 1942: a third lodge was built between 1999 and 2004[5]). The Old Lodge was vacated,[6] listed as uninhabited in the census of 1901, and omitted entirely (therefore assumed to be de-roofed) in 1911.[7] Payment of rates ceased about 1901,[8] and it has been ruinous ever since. It has been described in recent years as having been an isolation hospital,[9] or sanatorium,[10] but this is almost certainly inaccurate, and is believed to be a recent myth that has only grown up since the 1980s. (This is the subject of ongoing research.)

The ruins

The Old Lodge is a substantial structure. Much of it consists of large squared granite blocks (fig.2); even rear walls show careful masonry (fig.3). The considerable amount of material required must have been quarried on site while levelling the area, notably at the north-western corner and beyond the north wall. Up to ten courses remain upstanding in places. The lodge covers an area of 30 by 50 metres (100 by 160 feet), a short distance north of the now boggy track from Rannoch to Corrour.

The lodge was described in 1881 as being 'quite small'.[11] An account penned 20 years later states: 'The four-windowed room served as a drawing-room, dining-room, library, smoking-room, and gun room.'[12]

The complex consists of an entrance lobby with rooms to the south, north and west (fig.4). Also to the north is a courtyard area, in two parts, with a pillared area towards the west, representing stables or cart-sheds. Beyond this is an east–west passage, and then a linear northern range of rooms and/or byres or stables.

Figure 2. Corrour Old Lodge from the west (October 2010).

Figure 3. Detail of wall construction (north wall, north range).

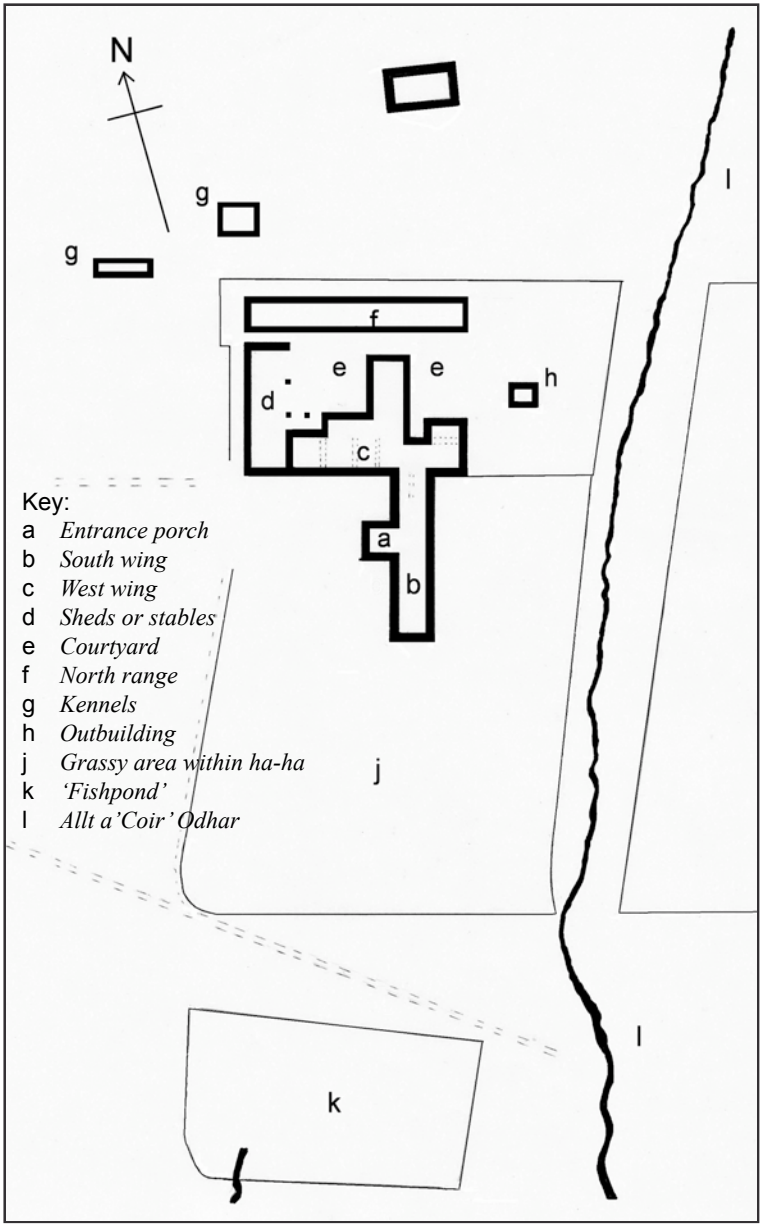


Figure 4. Corrour Old Lodge and surrounding features.

A large approximately rectangular area of improved grassy ground, about 70 metres (230 feet) long, lies to the south of the lodge, standing out from the darker bog of Rannoch Moor when seen from a distance. It lies nearly a metre (3 feet) higher than the adjoining ground. A dry-stone wall rather like a ha-ha, quarried in situ, surrounds and supports it on the west and south, and it slopes away to the burn on the east.

Other structures can be made out around the lodge, which have not been so closely examined. They include kennels, indicated on the 2nd edition Ordnance Survey (OS) map of 1901 (fig.5), and a three-roomed building (with a sink fragment visible nearby) on the higher ground behind the lodge to the north. This last could have been another kennel, or even a cottage. A small outbuilding and dykes lie to the east. Another area, about 100 metres (330 feet) long, is delineated across the burn to the east, but is not so grassy as the area to the west of the burn, within the ha-ha.

Finally, still further to the south. beyond the grassy field and the cross-country track, lies a so-called 'fishpond'. A roughly quadrilateral area (43 by 26 by 37 by 22 metres (141 by 85 by 121 by 72 feet)) has been enclosed by a low bank; a small burn cuts through it about 7 metres (23 feet) east of the south-west corner, and may have been dammed to fill it, as a shallow pond. All these features are shown on the same OS map.

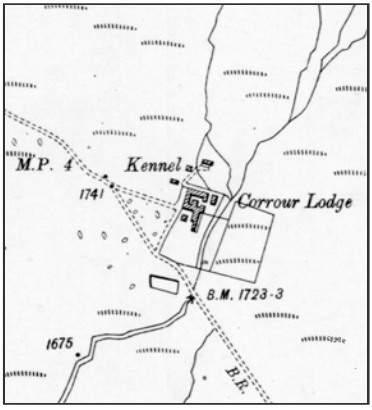


Figure 5. Detail from the 2nd edition Ordnance Survey map, 1901, showing Corrour (Old) Lodge. (Reproduced by permission of the Trustees of the National Library of Scotland)

Interpretation

The number of rooms and general layout are not entirely clear on inspection, owing to collapsed masonry and accumulated vegetation. To date, no photographs have been located taken before 1986.[13] The outline of the lodge is shown on the 1st and 2nd editions of the OS 6-inch maps (1872, and 1901/1904),[14] with minor differences on each, and also on an aerial photograph of 1988.[15] The only depiction known to exist while it was roofed is a sketch of the building by Miss Violet Montgomery in 1896,[16] an outline copy of which is shown (fig.6).[17] A small prefabricated 'iron house' also existed as accommodation for servants (or extra guests?) during the 1890s,[18] but this was removed to the newer lodge at Loch Ossian in 1899.[19] This could well be the separate structure shown in front of the main building in the 1896 sketch as well as in the 2nd edition OS maps of Perthshire and Inverness-shire, revised in 1898 and 1899 respectively (even though the maps were not published until 1901 and 1904, after its removal).

A plan was prepared to assist in describing the various parts of the ruins, and as a record of the present state of the ruins (2010–11) (fig.7). Walls and apertures (which include both windows and doors – and drains) are labelled in anticlockwise order, alphabetically and numerically respectively, commencing from the corner A.

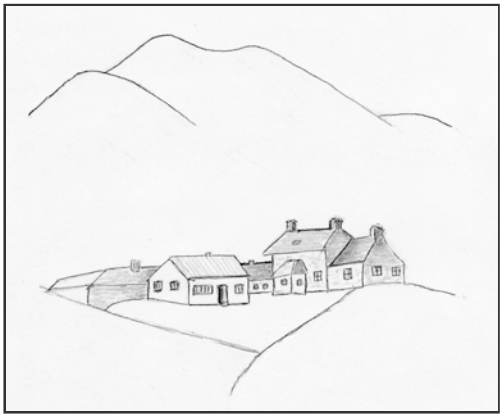


Figure 6. Corrour Old Lodge before 1900: drawing based on a sketch made by Miss Violet Montgomery in 1896.

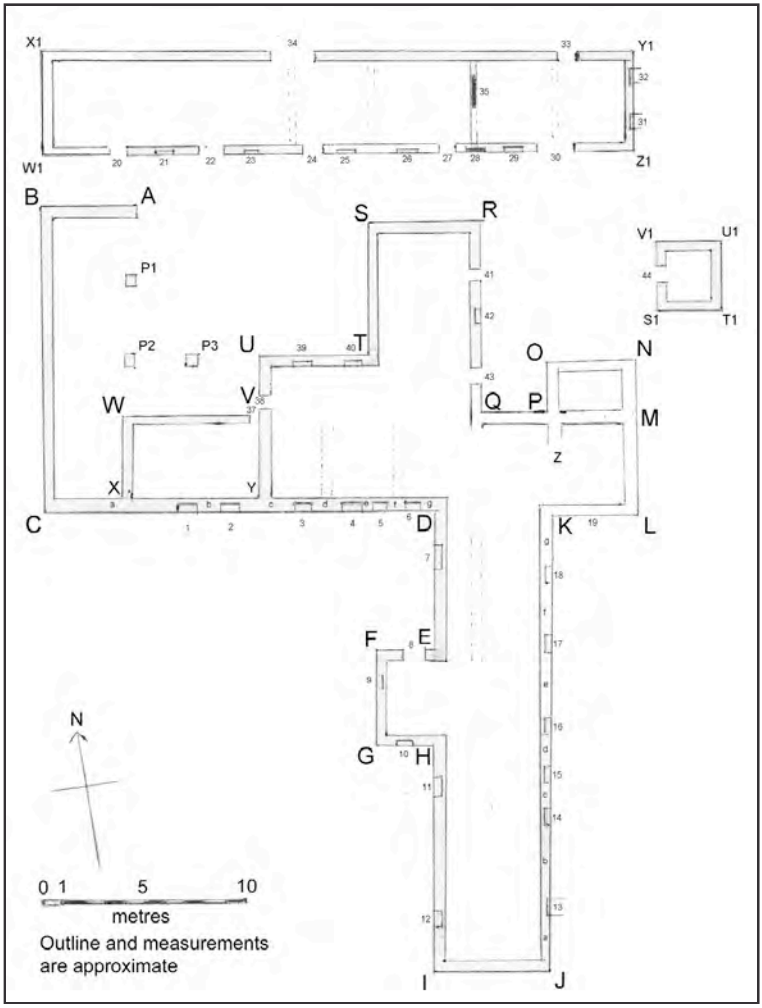


Figure 7. Plan of Corrour Old Lodge showing walls, windows and other features.

The lodge would have been approached by a track (shown on the old OS maps) up the west side of the grassy field and ha-ha, and entered by the porch EFGH adjoining the south wing DIJK. Carts and carriages could enter the courtyard from either side towards the rear. The amount of collapsed masonry in the room behind the porch tallies with its greater height in the 1896 sketch,

compared with a lesser amount at the south end of the wing, which is shown with a lower roof level. There may have been at least a partial stone stair, and sleeping room in the loft space. The sketch shows a skylight. The lodge would have been capable of accommodating at least half a dozen guests (there were six signatures at the side of the sketch, including that of John Stirling Maxwell himself). Other bedroom accommodation may have been in the east or west wing (for instance, KLMP, MNOP, DQVY); and one could even postulate an 'owner's room', with the best view, in the southmost, lower-roofed extremity.

On the west side, six south-facing windows gave a good view over the moor – at least, before the postulated 'iron house' was erected in front of them. Foundations may well remain in front of the windows; there is a flat area beyond, then seven or eight east–west stony rows and furrows opposite the porch (figs 8 and 9). Beyond the western corner of this wall is a long windowless

Figure 8. West side of Corrour Old Lodge, with porch (2010); note flat area and 'furrows'.

Figure 9. West side of Corrour Old Lodge, with porch (1995): note intact wall to left of porch.

west wall. Three pillars in the western half of the rear courtyard suggest that this was a low-roofed carriage shed or stables (ABCX, UVWP2)

To the north, the rising ground appears to have been levelled to accommodate the building, by the quarrying activities referred to above. The courtyard, partially split in two by a possible kitchen and scullery, is bounded by a long west–east block divided into several rooms or spaces, with doors and windows mainly, but not exclusively, on the south side. These could have included servants' rooms, stables or byres.

On the east side, there is a small four-metre (13-foot) square outbuilding of uncertain function, above the slope down to the burn. A cruciate outline just to the north of this on the 2nd edition Inverness-shire (though not Perthshire) OS map (not illustrated) may be a water feature, not a building. That area is now swampy.

There are lintels over at least three drains: two at the north-east corner (apertures 31 and 32 in wall Y1Z1), and one at the south-east corner (aperture 13 in wall JK).

Comments on details of individual walls

Observations were made following four brief day visits in 2010–11, totalling a few hours only, between trains to the nearest station. This did not permit extensive on-site documentation. Diagrams were constructed afterwards, making much use of photographs taken during these inspections, although these can be misleading at times. Measurements are unchecked; descriptions below may be neither complete nor totally correct. The numbers of courses of masonry are approximate.

ABCX is a large rectangular space bounded by windowless walls, except between W and X, where two pillars P1 and P2 are presumably roof supports. ABC is largely undamaged, about seven courses high.

CD is a long south-facing wall with six windows, no doors. Some at least could be for guest rooms. All lintels have fallen, all sills are intact.

DE appears to have been intact in 1986, but its southern section, beyond a door, has since collapsed and a rubble pile beyond is exposed (see figs 7 and 8).

EFGH is the porch, clearly seen in the 1896 sketch (see fig.6). The door is on the sheltered north side EF; a window (no.9), facing west, has suffered damage since 1995; one side is now 'crow-stepped'. GH has an unusually tall window (no.10), and is one of the only two windows in the whole complex still (2011) with an intact upper lintel. HE, at the rear of the porch (not outlined on the diagram), is one of the highest points of the structure standing, and could represent the remains of a chimney.

The whole south wing DIJK is full of tumbled moss-covered masonry blocks, and was not entered. The quantity is explained by the greater height of the room behind the porch, as on the 1896 sketch. It might have had a floored loft; there may have been stone steps to a stair. It is of interest that the sketch shows a lower roof at the southern end, which is matched by the lesser amount of fallen masonry inside that part. Only one or two courses remain at the south end (IJ).

JK is a long (24-metre (79-foot)) stretch of wall, with one drain (aperture no.13) at its south end, and five windows (nos 14–18). Window no.16 is the second of the two windows still with intact lintels. Nos 15, 17 and 18 still had lintels in 1986, but only the last was still complete in 1995 (figs 10, 11 and 12). The northern end of the wall, just before corner K, is one of the highest parts of the ruins, at least ten courses in height.

The area KLMNO encloses two rooms, again with tumbled blocks inside. There are no windows in the east-facing wall LMN. QRST probably represents a kitchen/scullery or servants' area: there are two back doors (nos 41 and 43) into the courtyard, which is partially divided into an east and west part by this block.

The OS maps suggests that the approach to the lodge lay up the western side of the ha-ha, and carts could perhaps have entered the courtyard through the rather narrow 2.5-metre- (8-foot-) wide passage BW1, or alternatively would have proceeded round the

Figure 10. Corrour Old Lodge from the north-east (1986). (© Roddy Smith)

Figure 11. Corrour Old Lodge from the south-east. (October 2010)

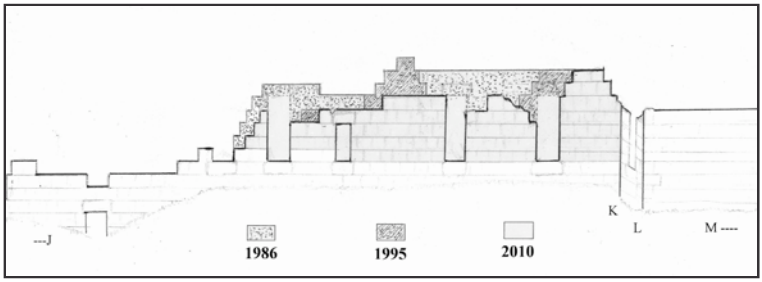


Figure 12. Drawing illustrating weathering of eastern walls of Corrour Old Lodge, 1986–2010.

back to enter by the wider opening of the east section. Just outside the courtyard to the east is a small 4-metre (13-foot) square building, whose function is uncertain. The western part of the courtyard contains low pillars, as previously noted.

To the north of the courtyard, where the rising ground must have been quarried and levelled, there is a long (30-metre (100-foot)) west–east block (W1X1Y1Z1) extending the full width of the lodge, with five doors and six windows on its south side, one of which (window no.28) has been carefully blocked up with masonry. There are two doors only in the north wall. A fireplace (aperture no.35), with an intact lintel, lies between two rooms, and two lintels over drains have been built into the short east wall. This range of rooms remains to be fully elucidated.

To the front of the lodge, a flat area immediately outside the south-facing wall of the west wing gives way to seven or eight parallel rows of furrows and stones, outside the entrance porch to the lodge (see figs 8 and 9). These may represent foundations, and seem to coincide with the site of what could have been the 'iron house', or the small building shown on Miss Montgomery's 1896 sketch.

There may even have been a garden area beside the lodge: Sir Herbert Maxwell (Sir John's father) in the 1890s concluded that it was 'too high for the growth of the potato, although rhubarb, a true alpine, flourished vigorously in a patch of kitchen garden'.[20]

Evidence of the gradual degradation of the structure has been noted in photographs of the eastern aspect in 1986, 1995 and 2010 (figs 10 and 11) and of the western aspect of the south wing in 1995 and 2010 (see figs 8 and 9). Comparison of these shows how sections of the walls have collapsed between these dates (fig 12). Walls DE, FG and JKL have certainly suffered during these 15 years.

Details of measurements made, and photographs taken, will be deposited in the archive at the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). (These have been revised and updated after a further visit in May 2012.)

Acknowledgements

My thanks are due to a large number of people who have helped in many different ways (not least my wife). I have received much encouragement and assistance from members of the Edinburgh Archaeological Field Society (EAFS). Besides many others unnamed, who I hope will forgive me for their unintentional omission, they include: Robin Campbell; Jo Doakes; John Duberley; Eleisha Fahy; Ian and Veronica Fraser; Joy Hodgkiss; J C Leslie; D Maxwell Macdonald; Hugh M Mackenzie; Mary Miers; Lisbet Rausing; M J Scott; Roddy Smith; David Stone; also librarians and archivists who gave freely of their time and expertise, both for this exercise, and for the associated ongoing historical research.

Notes

1. Lisbet Koerner and David Brian Dick, *Corrour: A History of a Sporting Estate*, Paul Martins Printers, Hoddesdon, Hertfordshire, 1998, pp 1, 8–14.
2. Ibid. p.39.
3. Ordnance Survey Landranger Map 42, Glen Garry and Loch Rannoch area, Grid Reference NN 408 648.
4. Sir John Stirling Maxwell Archives [hereafter Maxwell Archives], Nether Pollok Estates, Account Charge and Discharge of the Intromissions of George Malcolm, Invergarry, Factor to Sir John Stirling Maxwell Bt., of Corrour, from June 27th to 31st Dec 1891, Mitchell Library, Glasgow City Archives, TD 503/9/1 (contains accounts each year to 1908).
5. Mary Miers, *The Western Seaboard: An Illustrated Architectural Guide*, Rutland Press, Edinburgh, 2008, pp 73, 45–6.
6. Maxwell Archives, Accounts – Year to 31st Dec 1897.
7. General Register Office of Scotland, Census of Scotland: Lochaber District (Parish of Kilmonivaig), 1901, 1911.
8. Valuation Rolls for the County of Inverness – Parish of Kilmonivaig. 1899–1900, 1904–5, 1909–10, 1919–20.
9. Peter Hodgkiss (ed), *The Central Highlands*, Scottish Mountaineering Club District Guide, 4th edition, 1984.

[10] Miers, *op.cit.*, p.73.

[11] Robert Hall, *The Highland Sportsman and Tourist: A Comprehensive Guide to the Highlands of Scotland*, 3rd edition, Office of the Highland Sportsman, 1884, p.195.

[12] Augustus Grimble, *Deer-Stalking and the Deer Forests of Scotland*, Kegan Paul & Co, London, 1901, pp 114–5.

[13] 1986 photograph taken by Roddy Smith (see fig.10), http://www.geograph.org.uk/photo/286007.

[14] Ordnance Survey maps, all 6-inch scale (1:10,560): 1st edition, *Inverness-shire*, sheet CLXIII, surveyed 1870, published 1872; 2nd edition, *Perthshire*, sheet XXV, surveyed 1860–64, revised 1898, published 1901; 2nd edition, *Inverness-shire*, sheet CLXIII, surveyed 1870, revised 1899, published 1904.

[15] 1988 aerial photograph, RCAHMS, John Sinclair Building, Bernard Terrace, Edinburgh, Photo Ref: Sortie ASS_636_88, Frame 0255.

[16] Violet A Montgomery, Visiting album (1888–1909), sketch dated 'Aug 21–26 1896', RCAHMS, Ref: IND 278/1.

[17] A reduced copy of the original sketch is published in Miers, *op.cit.*, p.73.

[18] Maxwell Archives, Accounts to 31st December 1891.

[19] Maxwell Archives, Accounts to 31st December 1899.

[20] *Country Life*, 24 July 1980, p.309.

HOLDING OUR BUILDINGS TOGETHER: PEGS, HAND-WROUGHT NAILS, CUT NAILS AND WIRE NAILS

Paul Bishop

An appreciation of how timbers in a building are fastened is a key issue in understanding vernacular building methods, styles and ages. *Vernacular Building* articles commonly refer to pegs as the means of fastening roofing timbers[1] and the superiority of pegs to nails for this function is sometimes explicitly stated.[2] Nonetheless, nails have largely replaced pegs as the principal means of fastening timbers and there is a clear implication that nails are a more recent means of fastening. Indeed, in the buildings listed in Table 2 of Anne Crone and Coralie Mills's recent paper on dendrochronology, wooden pegs in the timbers they examined are noted as being used from *c*.1540 to 1805, and nails largely from the late eighteenth century to the latest building listed (nineteenth century), with one instance of wooden pegs and nails in 1718.[3] There is an overlap in ages of buildings using wooden pegs and/or nails (late eighteenth century to early nineteenth century (1805)), but the evolution from using pegs to using nails is clear, and prompts the question as to whether the nature of fastenings can be used to 'date' buildings.

There is an established tradition in the US of using nails to provide chronologies of buildings that date from the eighteenth century onwards, with a supporting published literature dating back to the 1920s.[4] Such dating is based on the evolution of types of iron (and then steel) nails as these nails' means of production evolved. Early nails, dating from antiquity, were hand wrought, followed by several types of cut nails. This evolving technology culminated in the wire nail, the type of modern nail with which we are most familiar. This paper presents the characteristics and a brief history of each of these nail types, followed by a summary of their significance in terms of age in the American context.

I am by no means an expert in nails and nail chronology, and not even an accomplished amateur. I came to this area completely by chance when I recovered old roofing timbers that were being replaced in 2011–12 on the University of Glasgow's Main Building, which dates from the 1860s. I used some of these timbers as fuel in a wood-burning stove and recovered the nails out of curiosity (fig.1). Their distinctive form – which I learned was that of the cut nail – contrasts with the form of hand-wrought nails, one of which I had recovered from an archaeological excavation in south-east Asia in the 1990s (fig.2). That contrast prompted me to wonder about nails and I became aware of the famous hoard of Roman hand-wrought nails at Inchtuthil in Perthshire (figs 3 and 4),[5] and

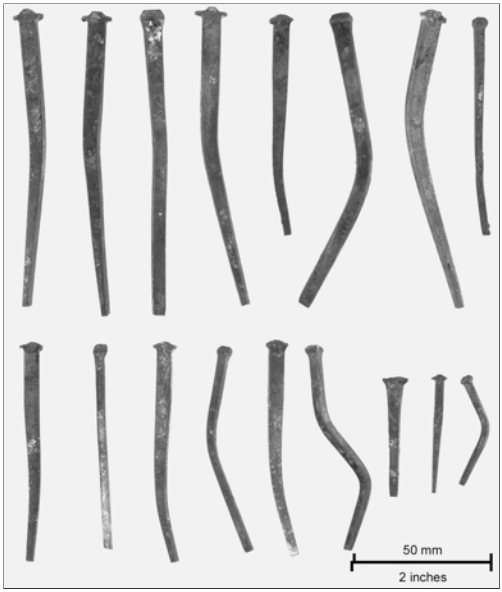


Figure 1. Cut nails recovered by the author from roofing timbers of the north range (Hunterian Museum) and east range (School of Geographical and Earth Sciences) of the East Quad of the University of Glasgow's Main Building. The bending of the nails is as they were in the timber. Depending on an individual nail's orientation, the parallel and tapering characteristics of the nail's edges are visible (see also figs 6, 7 and 9). (Photograph by Les Hill)

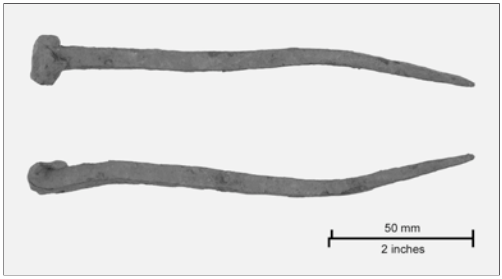


Figure 2. Two views of a 14th-century AD hand-wrought nail recovered from an archaeological context in north-central Thailand, highlighting how all sides of the hand-wrought nail taper to the point. (Photograph by Les Hill)

confirmed the morphological difference between hand-wrought and cut nails. I then discovered that the only remaining factory in the UK producing cut nails – the Glasgow Steel Nail Company – is in Bishopbriggs in East Dunbartonshire, and I was able to visit the factory and see cut nails being made.

Figure 3. Hand-wrought nails recovered from the 1st-century AD hoard of Roman nails discovered in the 1950s at Inchtuthil, Perthshire. The left-hand nail is 35 cm (13¾ in) long. (© The Hunterian, University of Glasgow 2012)

Figure 4. Part of the original Inchtuthil hoard. (© Royal Commission on the Ancient and Historical Monuments of Scotland. Licensor www.scran.ac.uk)

This paper summarises my reading on the North American use of nails as a dating tool, and aims to prompt discussion of the utility of ferrous nails, and particularly cut nails, for such dating in Scotland. I pose – but do not answer – two questions: (1) Is a nail-based chronology possible for dating vernacular buildings in Scotland; and (2) Is the development of such a chronology for Scotland worth pursuing?

Summary of nail types

Hand-wrought nails

These nails are known from antiquity (figs 2, 3 and 4) and were to a large extent the only type of ferrous nail for centuries (the other type being a cast nail). Hand-wrought nails were produced until the nineteenth century before being superseded by cut nails, but wrought and cut nails coexisted for some time. Hand-wrought nails are manufactured essentially individually, by hand, with a length of square or round rod being hammered out (wrought) to the characteristic tapering hand-wrought nail shape. A head is then added using a heading tool (fig.5). An important feature of a hand-wrought nail is the four corners on its shank (shaft) as these provide the grip that fastens the nailed timbers.

The making of hand-wrought nails during the Industrial Revolution was closely associated with the iron industry, and the Central Belt of Scotland was typical of this industry in having

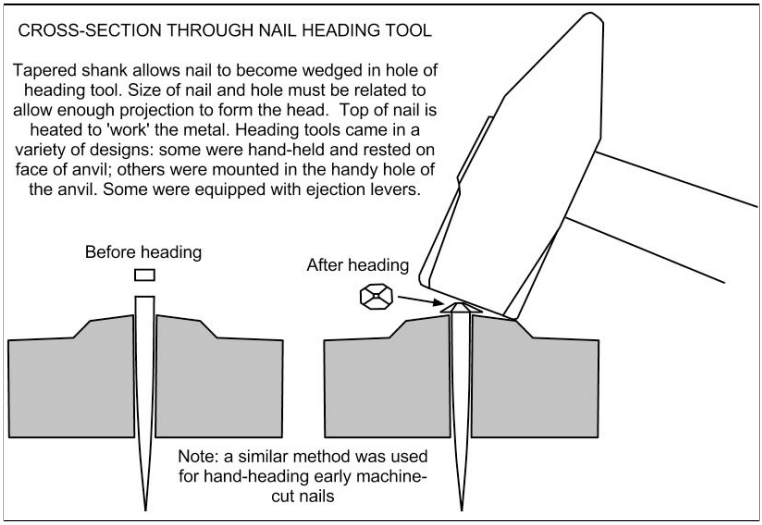


Figure 5. Diagram to illustrate the heading of a nail. (Redrawn from L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.1)

many 'nailers' associated with it. The manufacture of hand-wrought nails from lengths of iron rod was dirty and repetitive, and commonly associated with poorly paid piecework, often exploiting young and very young boys. In some cases these boys were the sons of nailer fathers, but they were often poor boys from the charity poorhouses of Glasgow and Edinburgh.[6] Duncan recounts this exploitation of nailers, commonly in the face of severe downward pressure on prices for nails at times of economic downturn and depression.[7] At these times, piecework rates for nailers fell and so a nailer and his boy workers had to work ever longer hours to make a living. Duncan quotes from an 1841–2 parliamentary enquiry into child labour in mines and ironworks in eastern and central Scotland, which concluded that the boy nail-workers experienced some of the worst working conditions that the enquiry uncovered (and, as Duncan notes, those findings included the atrocious conditions for girls working in the coal mines). It is worth quoting part of the parliamentary report here, as it recounts how the boy nailers produced nails, as well as documenting the conditions under which they worked:

> The child in the first place squares the rod of heated iron of which the nails are formed, i.e. flattens the rod equally on four sides; the hammer in striking off the required length of rod by a little ingenuity at the same time points the nail which, being received into, and firmly held by a small pair of iron block pincers, is shanked or headed to the required form by repeated blows of the hammer on a small portion of the rod left exposed for that purpose. This process is executed with great rapidity, and I was informed by several of the nail masters that three months' teaching was sufficient to enable an infant to accomplish the manufacture of 1,000 nails a day ... or 1,250 nails, as is required of boys who have been two or three years at the work. ... [T]he men frequently work till 10 or 11 o'clock, assisted by their infant apprentices, who recommence their toil at five or six the next morning.
>
> Such is a plain and unexaggerated statement of the exhausting labour of these infant slaves. These boys rarely exceed seven or eight years of age; and it may fairly be said that they are starved into quickness at their work, as the meals depend on the quality of work done.[8]

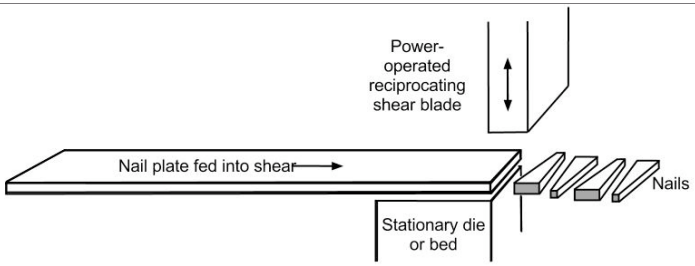
And all of that took place 'in squalid, insanitary conditions, amidst the heat, fumes and dust [and the noise (author's comment)] of confined brick outhouses equipped with a small forge'.[9] The replacement of such hand labour by nail-making machines (such as in Wishaw's Excelsior Iron Works in the late 1860s) led to an improvement in working conditions.[10]

Hand-cut nails

Hand-cut nails are made by a nail-making machine that cuts narrow triangular shapes from sheet iron (and later steel). The triangular shape is the nail; two sides of the nail are parallel (being the top and bottom surfaces of the sheet) and two sides are tapered (being the two cuts) (see fig.1). After the 'triangle' is cut, it is 'headed', either by simply bending over the broad end by hand

(as was done in the early days of cut-nail manufacture[11]), or in the same way as was done for wrought nails, or by a machine that held the new 'nail' and flattened its broad end to form the head.

The making of cut nails seems to have developed in North America. During the British colonial period, most nails were imported to America from Britain. The breakdown in trade with Britain during the American Revolution meant, however, that America became more reliant on locally made nails, and it seems that the technology for making cut nails was largely developed in America.[12] These developments were substantially hastened by the imposition by American Congress of a duty on imported nails in 1789 and by Congress's passing of the US Patent Act in 1790. Both actions were attempts to foster American industry,[13] and they provided a major stimulus to the development of cut nails. Various different machines were developed (and often patented) in America[14] and those that persisted relied on a guillotine action to shear off the narrow triangular shapes from iron sheet (fig.6).



SIMPLIFIED DIAGRAM SHOWING THE BASIC PROCESS OF MAKING EARLY CUT NAILS

Nail plate was made in rolling mills, and so cut nails were of uniform thickness, depending on nail size. Thin nail plate (i.e., small nails) was usually hand-held while feeding into the shear. Thicker nail plate (i.e., larger nails) offered more resistance to shearing and was usually heated and held with tongs while feeding into the shear. To create the tapered shank, nail plate had to be alternately WIGGLED from side to side (fig.7) or FLIPPED (fig.9).

After cutting, the nails were headed by: (a) hand, after heating them and using a heading tool similar to thjat used for wrought nails (fig.5). This was the earliest method, and was used for many years, een after the introduction of (b) machine heading, which gripped the nail instantly (after cutting) and applied great pressure to the end of the nail, thus forming the head by displacement of metal.

Figure 6. Principle of making cut nails by shearing triangular shapes from sheet metal. (Redrawn from L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.2)

One class of machines achieved the long triangular shape by the operator wiggling the nail plate from side to side (fig.7), producing a characteristic 'diagonal' distribution of shear marks and burrs that is diagnostic of nails that have been cut from the same side of the sheet (figs 7 and 8). These types of nails are sometimes called Type A cut nails.[15] A subsequent development involved flipping the nail plate between each shear, which resulted in a second characteristic distribution of shear marks and burrs that is diagnostic of later, 'flipped' cut nails, also called Type B cut nails (fig.9).[16] These characteristic distributions of shear marks and burrs were clarified by Nelson, correcting a long-standing mistake related to their significance that dated from a misinterpretation by Mercer in the 1920s.[17] This change from Type A to Type B cut nails is the basis of a subdivision of the period of use of cut nails in America, which is explored further below. Phillips has noted that there was scepticism, or uncertainty, about the 'holding power' of cut nails, especially related to whether they would clench (curl into) wood to make the fastening firm.[18] This concern was addressed by the occasional or scattered but regular use of wrought nails, and so

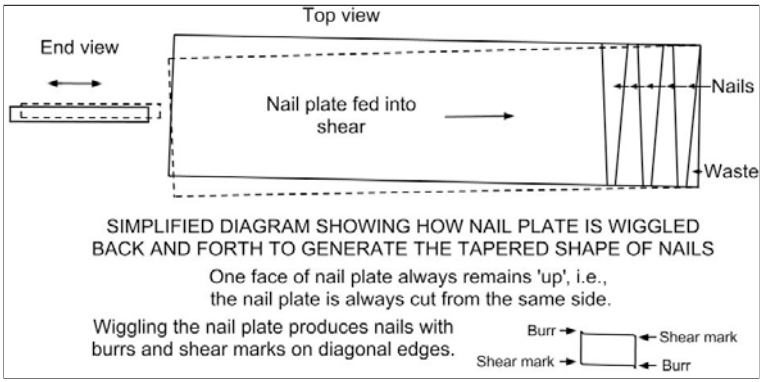


Figure 7. Diagrammatic illustration of the shearing of cut nails from plate by wiggling the plate from side to side to achieve the tapered shape of the nail. As shown in fig.6, this side-to-side wiggling between each shear produces a nail with shear marks on diagonally opposite corners of the rectangular cross-section of the nail (and, likewise, burrs on diagonally opposite corners). (Redrawn from L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.3)

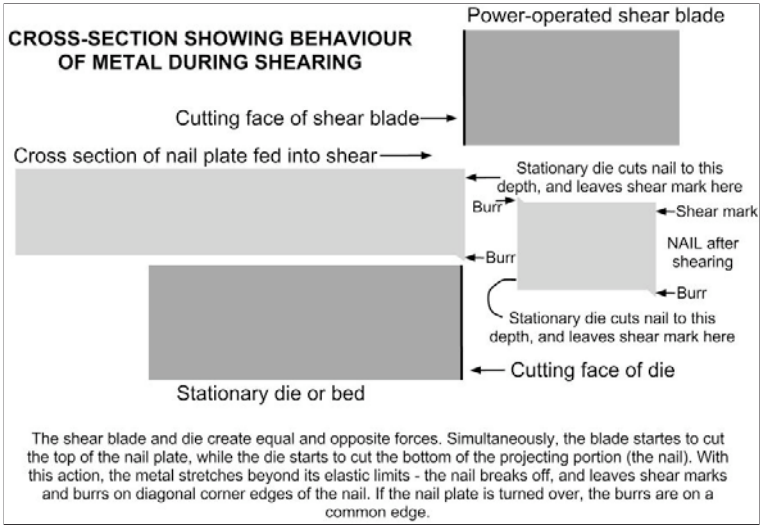


Figure 8. Diagram explaining the formation of burrs and shear marks on the four corners of the shank (shaft) of a cut nail (see also figs 7 and 9). (Redrawn from L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.6)

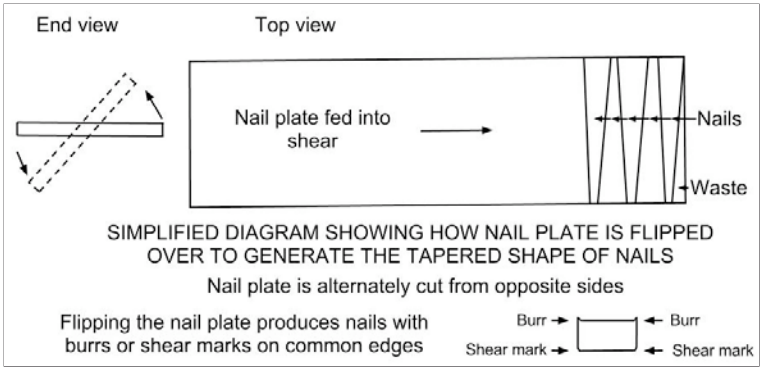


Figure 9. Diagrammatic illustration of the shearing of cut nails from plate by flipping the plate over between each shear, to achieve the tapered shape of the nail by having the shear blade and stationary die (bed) set in the horizontal at an angle to the nail plate and flipping the plate between each cut. As implied by fig.8, this flipping between each shear produces a nail with shear marks and burrs on common edges of the nail. (Redrawn from L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.4)

the presence of wrought nails is insufficient to conclude that a building incorporating wrought nails pre-dates the period of cut-nail manufacture and use (see below).

Wire nails

The modern nail with which we are familiar is the wire nail, cut from a coil of wire, and pointed and headed. The circular cross-section of the shank of a wire nail has less holding/fastening power than a rectangular cross-section with its square corners. This shortcoming has been addressed in the case of wire nails in heavily used items, such as shipping containers and shipping pallets, by adding a twist to the shank of the nail to provide more grip.

We are not concerned here with the chronology of wire nails but it is worth noting (if only for completeness) that, in the American context, the 1880s development of the Bessemer process for producing inexpensive soft steel resulted in the rapid decline in using iron for nail making.[19] Visser has reported that by the mid-1880s, one tenth of the nails produced in the United States were made of soft steel wire, and that within six years, more steel-wire nails were being produced than iron cut nails.[20] By the second decade of the twentieth century, 90 per cent of nails were wire nails.[21]

The chronology of cut nails in America

Nelson[22] and Phillips[23] have detailed the chronology of cut-nail development and characteristics, which is summarised here without repeated references to those two key sources. Mercer's work from the 1920s[24] is the basis of all the Nelson and Phillips work but suffers from the fundamental flaw that was corrected by Nelson, as summarised above.

Nelson noted that the development and use of the cut nail in America is marked by at least five distinct phases. The evolution of cut nail types may be roughly outlined as follows:

1. Cut from common sides (as in fig.7), with hammered heads (as in fig.5) — 1790s–1820s

2.	Cut from opposite sides (flipped, as in fig.9), hammered heads	1810–1820s
3.	Cut from common sides, crude machine-made heads	1815–1830s
4.	Cut from opposite sides, crude machine-made heads	1820s–1830s
5.	Cut from opposite sides, perfected machine-made heads	late 1830s to present

Both Nelson and Phillips have noted that such a chronology must be applied carefully and not be used to date a building based on only one or a few nails from the building. Such caution is necessitated by several factors, including the use of nails of different apparent ages on a building (as in the simultaneous use of wrought and cut nails noted above). Such caution is also necessary because the chronology of manufacture of different types of cut nails is subject to revision, as has been shown by Phillips's detailed work on the chronology of cut nails in New England before 1820. Phillips used patent records, court cases, various reports and other data, to revise Nelson's nail characterisation and chronology. Her chronology for New England is:

1.	Hand-wrought nails	17th century to early 19th century
2.	Early machine-cut nails	post-1790 to *c*.1820
3.	Transitional machine-cut nails	post-1810 (possibly as early as 1807) to *c*.1840
4.	Modern machine-cut nails	*c*.1835 to *c*.1890

Phillips also provides detailed and age-diagnostic information on the shank and head forms that characterise the different periods of cut-nail manufacture in New England, using the location of burrs and shear marks to indicate whether the nail plate was wiggled or flipped to achieve the triangular shape of the cut nail. Flipping was preferred in the transitional and modern cut nails because, Phillips speculates, the wider end of each cut nail – the

end that was to become the nail head – was always in the same position, simplifying the mechanisation of the heading process.

In essence, the form of cut nails became more regular and more uniform through time as the manufacturing processes became more mechanised and standardised. One important diagnostic characteristic of the early and transitional cut nails is the horizontal grain (cross-grain) of the iron fibres. This characteristic reflects the rolled manufacture of the nail plates from which the nails were cut. In the modern machine-cut nails, the grain of the iron fibres is longitudinal, because these nails were cut from plates that had themselves been cut from larger plates specifically so that the cut-nail grain would be longitudinal.

Concluding remarks

The Main Building of the University of Glasgow, the starting point of this short paper, is hardly a vernacular building, but its timbers are fastened in ways that are common in vernacular buildings. Nails are generally hidden, except for the nail head, perhaps explaining why they have received less attention in the Scottish context than they warrant. It is clear that the technology of timber fastening changed through time in Scotland, as elsewhere, and we can be confident that hand-wrought nails were replaced by cut nails, which were in turn replaced by wire nails. Duncan's comment above that the nail-making machine replaced the hand-wrought process in Wishaw in the 1860s confirms that evolution in Scotland. What is not clear in the Scottish context, however, is the extent to which the cut-nail technology was imported into Scotland (from England? from America?), and the timing (and duration) of that transition from hand-wrought nails to cut nails. If the 1860s adoption of the nail-making machine in Wishaw was one of the early adoptions of the technology (and Duncan implies that it was when he notes that it signalled the end of the terrible conditions under which nailers worked), then the technology is late in Scotland compared to America, where 'modern' cut-nail manufacture had been achieved by the 1830s.

My first aim in presenting this summary of the evolution of nail-making has been to bring this interesting history to the attention of *Vernacular Building* readers, and then to ask whether the quite detailed cut-nail chronology that has been developed in America is possible for Scotland. If such a chronology is possible for Scotland, I also ask whether it is worth pursuing. As a starting point, one might hypothesise that the technology for cut-nail manufacture was imported into Scotland from America and/or England, and not locally developed. Such a hypothesis should be eminently testable using business records, patents and other sources. But the key question remains: would that work advance the study of vernacular buildings in Scotland? Perhaps the readership of *VB* will share their thoughts on these questions.

Addendum: The Glasgow Steel Nail Company

The website of the Glasgow Steel Nail Company notes that the company is the UK's last manufacturer of traditional square cut nails.[25] A selection of the company's nails, which are used in conservation and restoration projects in buildings, ships, railways, furniture, and so on, is given in fig.10.

The nails in fig.10 bear the marks of having been made by the flipping process illustrated in fig.9, and this flipping is done by hand at the Glasgow Steel Nail Company, rather than being automated. Hand flipping by a human operator is preferred because the nail plate used at the Glasgow Steel Nail Company is quite small and a new nail plate is easily loaded as needed. The company's website has a video clip of this nail-cutting process, as well as accounts of the history of nail making and photographs of their own manufacturing processes. The latter includes images of their own in-factory hardening of steel for the cutting edges of the shear and stationary die or bed.

A few statistics from the Glasgow Steel Nail Company factory may be of interest: one of their machines, cutting medium-sized nails, works at approximately 120 strokes per minute, corresponding to a production rate of 120 nails per minute.

Allowance for the time to change the nail plate means that such a machine produces between 5,000 and 6,000 nails per hour. The maximum thickness of nail plate that is cut cold for nails in the Glasgow Steel Nail Company is normally 6 millimetres (a quarter of an inch). Larger nails made from thicknesses greater than this are usually cut from hot nail plate.

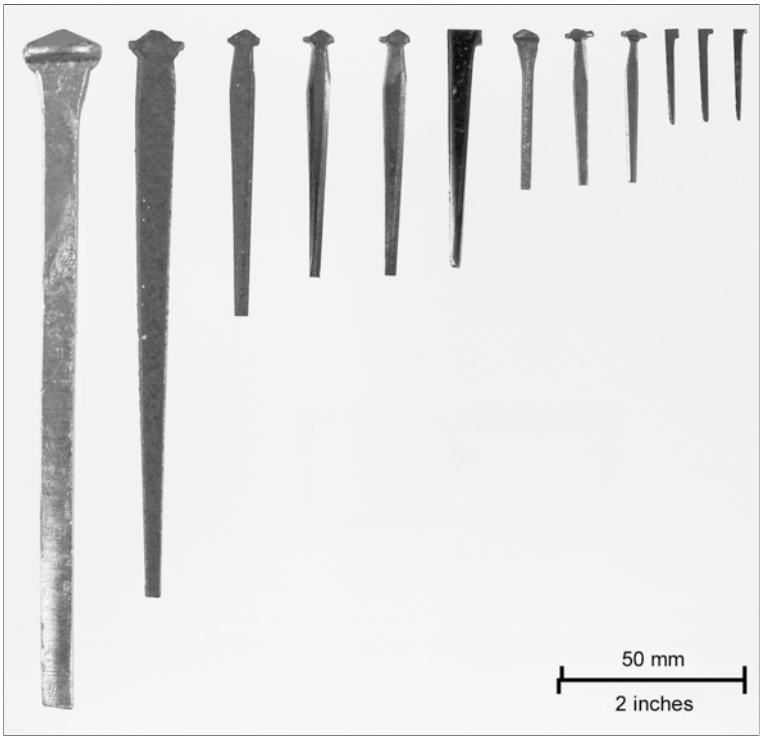


Figure 10. Some of the types of modern cut nails produced by the Glasgow Steel Nail Company in Bishopbriggs. The left-hand nail, which has been galvanised, is orientated to show how two faces of the cut-nail shank are parallel, contrasting with the tapering nature of the other two faces (as in the second nail from the left). The smallest nails here are used in furniture making. The heads of these nails (also called 'brads') are formed in the cutting process, using a specially shaped shearing blade that incorporates that head shape (see also the seventh nail from the right). This process and shear blade shape are illustrated in L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968), fig.5. (Photograph by Les Hill)

Acknowledgements

I thank Sally-Anne Coupar and John Faithfull of the University of Glasgow's Hunterian Museum for discussions about nails and for making nail samples available for examination. Les Hill, of the School of Geographical and Earth Sciences at the University of Glasgow, provided the original images used here. The Glasgow Steel Nail Company kindly allowed me to visit its factory to see cut nails being made and provided samples of their nails. The American Association for State and Local History cheerfully provided a PDF of Lee Nelson's 1968 pamphlet, which is a key reference when using cut nails for dating buildings. And I am grateful for the helpful comments provided by Dave Hutchinson and John Harrison of the SVBWG, and by Dr Thomas Visser of the Historical Preservation Program at the University of Vermont. The mistakes and shortcomings are mine.

Notes

1 Recent *VB* articles highlighting the use of pegs for fastening roof timbers include, for example: N Brown, 'Clay thatch roof at 35 Main Street, Newmill, Keith, Moray', *Vernacular Building*, vol.34 (2010–2011), pp 83–93; P Newman, 'Thatch traditions in Orkney farm buildings', *Vernacular Building*, vol.26 (2002), pp 3–12; B Stuart, 'A barn on the Priorslynn Farm in Canonbie, Dumfriesshire', *Vernacular Building*, vol.27 (2003), pp 25–41; A P K Wright, 'A history of the thatched house at Lonbain, Applecross, Wester Ross', *Vernacular Building*, vol.34 (2010–2011), pp 67–82.

2 For example, Newman, *op.cit.*, p.9.

3 A Crone and C Mills, 'The native oak and pine dendrochronology project – and some observations on timber and woodworking in Scottish buildings *c*.1450–1800', *Vernacular Building*, vol.34 (2010–2011), pp 19–42.

4 For example: H Mercer, 'The dating of old houses', Bucks County Historical Society Papers, vol.5 (1923; reprint, New Hope, PA: Bucks County Historical Society, 1973); L J Nelson, 'Nail chronology as an aid to dating old buildings', Technical Leaflet 48, American Association for State and Local History, Nashville (1968); M K Phillips, '"Mechanic geniuses and duckies," a revision of New England's

cut nail chronology before 1820', *APT Bulletin* [Association for Preservation Technology International], vol.25 (1993), pp 4–16 ; M K Phillips, 'Mechanic geniuses and duckies redux: nail makers and their machines', *APT Bulletin*, vol.27 (1996), pp 47–56.

5 The Hunterian Museum at the University of Glasgow has many Roman hand-wrought nails, including some from the famous Inchtuthil hoard.

6 R Duncan, *Sons of Vulcan: Ironworkers and Steelmen in Scotland*, Birlinn, Edinburgh, 2008, p.62.

7 Ibid.

8 Quoted by Duncan, *op.cit.*, p.63; original source: Children's Employment Commission, Appendix to Second Report, 1842, 'Trades and Manufactures', Part 2. Nail-making is included in the Report and Minutes of Evidence for 'Manufactures in the East of Scotland', reporter R H Franks, p.k32.

9 Duncan, *op.cit.*, p 63.

10 Duncan, *op.cit.*, p 64.

11 Phillips (1993), *op.cit.*.

12 Nelson, *op.cit.*; Phillips (1993), *op.cit.*; see also the website of the Glasgow Steel Nail Company, which likewise attributes the development of cut nail manufacture to American advances: http://www.glasgowsteelnail.com/nailmaking.htm.

13 Phillips (1993), *op.cit.*.

14 Ibid.

15 For example, Thomas Visser's website: http://www.uvm.edu/histpres/203/nails.html.

16 Ibid.

17 Mercer, *op.cit.*; Nelson, *op.cit.*; Phillips (1993), *op.cit.*.

18 Phillips (1993), *op.cit.*.

19 Thomas Visser website: http://www.uvm.edu/histpres/203/nails.html.

20 Ibid.

21 Ibid.

22 Nelson, *op.cit.*.

23 Phillips (1993), *op.cit.*.

24 Mercer, *op.cit.*.

25 http://www.glasgowsteelnail.com/nailmaking.htm.

BRICKMAKING IN THE EARLY PENAL SETTLEMENTS OF NEW SOUTH WALES, AUSTRALIA

Dave Hutchinson

On a recent trip to Australia I came upon a brick mould displayed in an early colonial house we were visiting. A few enquiries and I was led on a journey that included two other early houses, more moulds, collections of bricks from a humble few to wall displays of over one hundred in a private collection, and, above all, enthusiasts willing to share their research, knowledge and collections.

I visited three houses in Parramatta: Experiment Farm Cottage (National Trust of Australia), Elizabeth Farm (Historic Houses Trust) and Hambledon Cottage (Parramatta History Society) (fig.1).

When the first settlers landed in Sydney, New South Wales, suitable agricultural land to sustain the penal settlement was hard to find. Eventually after a fortunate reconnoitre along a river estuary an appropriate location was found. Originally known by the Darug, Aboriginal peoples, as Burramatta ('the place where eels lie down'),

Figure 1. Colonial houses in Parramatta: Experiment Farm Cottage (top), Elizabeth Farm (below left) and Hambledon Cottage (below right).

it was renamed Parramatta by the then Governor, Arthur Phillip. The first settlement was 'under canvas', but was rapidly succeeded by huts made from local timber. Although this was plentiful it quickly warped and twisted and was constantly damaged by white ant infestations. Clearly a more resilient building material was needed. The *Scarborough*, one of the fleet of ships that had brought the 'settlers' (in using this term I have to recognise that many of these had little choice in this venture), had brought as cargo some 5,000 bricks and a number of brick moulds. Clearly such a small number of bricks was of limited use, probably serving mainly for the construction of ovens and chimneys for those in charge of this new colony. Governor Phillip looked to his convict list and came upon James Bloodsworth, who had been sentenced to seven years' transportation for fraud and was his only convict with any experience of brickmaking. Bloodsworth found a useful local supply of clay and water. A sample of the clay was dispatched to the English potter Josiah Wedgwood, who 'pronounced it to be of good quality', and brickmaking began.[1]

Bloodsworth became the 'Brickmaster' and over time so impressed the Governor that he was given a full pardon and eventually became Superintendent of Works for the new settlement of Parramatta. Convicts selected to join his workforce were less fortunate; these were considered to be the most hardened and intractable prisoners. They worked a ten-hour day, pugging the clay, moulding and drying the bricks, then transporting them to the kiln. Bricks and tiles were manhandled on carts. A loaded cart weighed three quarters of a ton and 12 men were needed to draw it, making some nine trips a day to the settlement a kilometre (two thirds of a mile) away.

The state-owned brickworks in Parramatta began producing large quantities of hand-made bricks, commonly known as 'sandstocks' because of their distinctive colour and gritty texture. They varied greatly in quality and not surprisingly the best were selected for public building. This brickworks was 'staffed' by convicts, and in the early days no bricks were marked. Eventually, however, following the establishment of private brickworks in the

Figure 2. The 'penal arrow' mark introduced to identify the wares of state-owned brickworks. Each penal settlement used a different configuration, including Parramatta (left) and Tasmania (middle). (The source of the right-hand example is unidentified.)

area, the government introduced a mark in the form of a clear 'penal arrow' device, variations of which were subsequently adopted by other penal settlements (fig.2).

Governor Phillips adopted a system of task working, giving the convicts the opportunity to work in their own time if they had completed their allotted task by 3pm. Many of the more skilled workers took advantage of this and continued making bricks for private contracts in their own time; it is interesting to note that bricks made during these periods were often considered to be of higher quality. Further encouragement was extended to convicts of good behaviour, who were allowed portions of land on which to build a small house and prove that they could be relied upon to become self-sufficient. This almost always culminated in an early pardon. Many of those who had been involved in brickmaking were able to meet the combined demands of providing for the new settlement in creating their own businesses.

Each brickmaker marked their bricks with their own unique design (figs 3 and 4). These were carved in wood and later cast in lead to impress a 'frog' or depression as a brick was moulded. Some of these frogs were as simple as finger impressions, but by

Figure 3. Bricks displaying different brickmakers' frog marks, including many inspired by card suit symbols. (From the collection of Garry E Andrews)

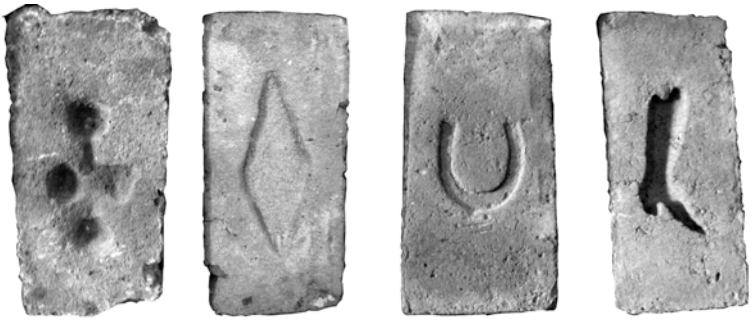


Figure 4. The frog marks of various independent brickmakers.

far the most common were those taken from the suits of playing cards. Perhaps the most frequently used frog mark was the heart, which was carried from a small single-table brickmaker to a major brickmaking yard, eventually to be replaced by steam-powered machinery. As the simpler shapes were taken up, more complex designs were used. In time these delightful variations were replaced by the standard frog with letters impressed. After settlement in 1790 with the major provider being the state penal colony, in 1839 there were 26 private brickmakers and by 1877 this had expanded to 56 brickmaking yards.

After discovering the clay and confirming its suitability, brickmaking was a relatively simple task, but one requiring considerable labour. The initial process was undertaken by 'puggers up', young boys aged between eight and 14 who were required to pug and tread the clay in pits to a suitable consistency. This was then transferred to the brickmaker's tables. These lads often worked a ten-hour day, shifting as much as 8 tonnes of clay in that time. In 1875 it was estimated that several hundred boys were employed in this way.

The brickmaker's bench or table was 2 metres (6 foot 6 inches) long by 1 metre (3 foot 3 inches) wide, standing on four legs sometimes fitted with wheels for ease of movement. Heaps of sand were placed at each end of the table together with a barrel of water. The clay was rolled in the sand and handed on to the brickmaker. Bricks were formed using a stockboard and mould (fig.5). The stockboard was around 25 millimetres (1 inch) thick

and slightly over the size of the finished brick, allowing for shrinkage in the brick when it was fired. In the centre of this stockboard on one side was the 'kick', a raised former that would create the brick's frog. The mould was a bottomless box approximately 100 by 230 by 100 millimetres high (4 by 9 by 4 inches), and this fitted over the stockboard.

The brickmaking process was simple. The mould and the stockboard were sprinkled with sand, which would allow for the easy release of the brick after moulding. A sufficient piece of clay, called a 'clot', a little larger than the mould, was pressed into the box and excess clay was removed from the top using a 'stick' or 'strike'. This surplus clay was thrown back on the heap. The filled mould was removed from the stock and placed on a board, and the mould was lifted off. These boards with several bricks were transported to the drying yard near to the kiln.

Watkin Tench, a Marine officer with the 1st Fleet, wrote of two brickmakers in 1790. The first, Samuel Wheeler, 'with two tile stools and one brick stool was tasked to make and burn ready for use 30,000 tiles and bricks per month'.[2] The second, John

Figure 5. Brickmaking equipment: the stockboard with heart-shaped kick (left), the mould (centre), and a finished brick (right).

King, ‘last year with the assistance of 16 men and two boys ... made 11,000 bricks weekly with two stools’.[3]

After drying, the bricks were fired in simple updraft kilns which were often built into the hillside. Firing the kiln was an art gained by experience, and it was often said that a good operator could judge the heat to within ten degrees, with a firing temperature of 1,000 degrees Celsius (1,832 degrees Fahrenheit).

It is recorded that Wally Rochester, foreman of the burner at the Walker Benson Yard, said: ‘We used our sense of smell and sight to ascertain when the kiln was cooked ... for one thing you could tell by the colour of the “dob” (the surface soil over the wicket) – the grey earthy colour turned gingery brown.’[4] Others talk of a kiln being nearly ready when there was a smell of ‘fresh bread’ around the wicket. The wickets were woven timbers used to seal the top of the kiln. When the kiln was thought to be ready, the bricks were tested for shrinkage. Usually two or three trial bricks were allowed to stick a little out of the kiln, and these were extracted using tongs and measured. In a good firing a brick would shrink by one eighth of its original size.

In rural areas bricks were often made and fired on site, and there are tales of brickmakers building their kilns, firing them up and going on their way leaving the housebuilder to open the kiln after what may or may not have been a good firing.

In the early days of settlement there was an additional problem: walls built without a suitable mortar would become porous, damp and unsafe. This was proven with the early attempts to use earth mortar, which was washed away by the rain and restricted buildings to a single storey. The search for a suitable supply of lime was begun in earnest, but for some considerable time there was none to be found. Initially seashells were used; these were washed, crushed and burnt in specially dug pits. The lime produced was mixed with water and left for a few days to slake. To meet the huge demand for shells, convict women were sent barefoot along the seashore to gather them, and for many decades Aboriginal middens were raided for their shells. For a considerable time the unauthorised collection of shells from the seashore resulted in a

penalty of £5. The situation was helped by intermittent cargoes of limestone from England and coral lime from Norfolk Island until the eventual discovery of rock lime in Tasmania in 1799 and along the Hunter River in 1808.

Convicts not only proved to be an easily exploitable workforce; their masters saw them as a readily available source of material. In 1832 a shortage of binding material for lime mortar was met by shaving the hair off 400 convicts on Norfolk Island.

Whilst the building needs of early settlements were met by hard labour and innovation, this rapidly proved insufficient for the major development of Sydney, which soon became reliant on imported materials, including bricks coming from the United Kingdom, Germany and the United States of America.

Acknowledgements

I am grateful for the assistance of Kevin Shaw, Jo Henwood, Garry Andrews, Michael Brock, Ralph Hawkins, Ken Smith and the Parramatta & District Historical Society.

Notes

1 Warwick Gemmel, *And So We Graft from Six to Six: The Brickmakers of New South Wales*, Angus & Robertson, Sydney, 1986, p.2.

2 Ibid. p.3.

3 Ibid.

4 Ibid. p.7.

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The Archive of the Parramatta & District Historical Society

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SHORTER ARTICLES AND NOTES

Obituary: Sandy Fenton

Emeritus Professor Alexander Fenton CBE DLitt FRSE
(26 June 1929 – 9 May 2012)

The death of Sandy Fenton, following a long period of ill health, removes an outstanding intellectual who committed his life to understanding the practical aspects of how all kinds of people, mostly in Scotland, lived their lives. Perhaps because of the subjects he studied, perhaps because of his upbringing on an Aberdeenshire croft, and perhaps because of his own personality, he always had his feet firmly on the ground. He was an institution-builder, a founder of journals, and a wise source of advice. He was also an outstandingly productive writer of research papers and books. His greatest legacy is a huge body of publications, including material which he edited. He was one of the founders of the Scottish Vernacular Buildings Working Group in 1972, and remained its president until his death.

He was born in Shotts, Lanarkshire, but the family moved to the North-East, and most of his childhood was spent near Auchterless. At Turriff Academy an English teacher encouraged him to read widely in English and French literature, and lent him books from her own library. While an undergraduate at Aberdeen University he was encouraged to explore languages such as Old High German and Norn, and it became clear that he had great linguistic ability. He reached the point where he could understand a new language in written form after simply reading a summary of its grammar. Late in life, when asked which European languages he could not read, he replied: 'Polish … Basque … but my Faroese is quite good!'

After taking a degree at Cambridge, National Service, and a time as one of the editors of the *Scottish National Dictionary*, he joined the National Museum of Antiquities of Scotland in 1959, and set about creating country-life collections. He started the Scottish Life Archive as a structured assemblage of images and other information about material aspects of country life in Scotland, including building: it now contains more than 250,000 items. He trained young curators who have played a major role in Scottish ethnology in the last half-century, including Gavin Sprott and Hugh Cheape who were to make their careers in the National Museums, and others who went on to work elsewhere, such as Andrew Hill, who created the Aberdeenshire Farming Museum at Aden. He believed deeply that the whole of human thought and activity was a continuous unity, and that everything related to everything else. 'Let us avoid driving wedges between town and country,' he wrote in *Vernacular Building* in 1987, meaning that wedges anywhere were dangerous.

His first full-length book, *Scottish Country Life*, appeared in 1976. It was soon followed by *The Northern Isles: Orkney and Shetland* (1978), which linked traditional farming and fishing with their material remains, and was grounded in his linguistic expertise. Assembled almost at the last moment when there were sufficient informants alive to make a detailed record, it remains both a highly valuable body of information and a classic interpretation. He wrote with Bruce Walker another standard work, *Rural Architecture of Scotland* (1981).

His last book was being bound when he died. In 1934 two Swedish ethnologists, Sven T Kjellberg and Olof Hasslöf had visited the Western Isles of Scotland to make a record of the traditional buildings there, compiling field notes (which include diagrams) and a diary, as well as taking photographs. Sandy translated their work and added a commentary, a final work which draws together his belief in the importance of fieldwork and his mastery of languages.

John Burnett

Scotland's Rural Past

Dave Hutchinson

Last year saw the culmination of a five-year project initiated by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) on a concept initially founded by the Historic Rural Settlement Trust: 'to improve our understanding and valuing of and caring for all Scotland's historic rural settlements for the wide benefit of present and future generations.' The SVBWG has been part of the Scotland's Rural Past (SRP) advisory board throughout this time, initially represented by Veronica Fraser and latterly by myself. This experience has been enthralling; the energy and professionalism of the SRP staff group and the enthusiasm, involvement and creativity of the community groups have been, and will continue to be, joyous and humbling. Those members who were able to attend the SRP annual conferences will, I am sure, endorse these observations.

On completion the staff produced two publications as well as a most helpful website with excellent training videos that I commend to readers.

Scotland's Rural Past: Community Archaeology in Action
This is the summary report on the SRP project. So many such documents are put together mainly to satisfy sponsors and ensure all boxes are ticked, but that is far from the case here. This is not only readable, it is enlightening and above all a text that I, for one, will be constantly dipping into. The outline of the scheme and how it was managed is beautifully laid out, informative and touched with occasional delightful humour; a staff team that is willing to share its indulgence in an estimated 15,000 cups of tea is, if I may say, 'refreshing'. But for me the real testament to the project is to be found in the 30 documented reports of community groups from throughout Scotland. They are magnificent, containing clear drawings, good photography and thorough research, a reflection of the 59 training sessions organised

throughout the project. There is also one other wee gem in the content, all so often overlooked: the Foreword, in which John Hume's use of language is a delight.

A Practical Guide to Recording Archaeological Sites
This is one of the clearest guides to the fundamentals of fieldwork relating to the remains of vernacular buildings that I have come across. Its progression from 'Getting Started' through the various methods of recording to finally 'Writing Up' and 'Sharing' is highly accessible and superbly laid out. The drawings and photography are of high quality. In so many areas we are told that it is the 'journey' that is important, but I would suggest that any project takes on a new and more fulfilling role when it is shared. Chapter 8 is most helpful here, and the final section on 'Inspiring your community' is enhanced by a delightful painting from a P4/5 pupil – I want to ride on that bus! The final chapter on websites and resources is most helpful and includes a reference to the four training videos on the SRP site.

Both of these volumes are available free from RCAHMS and would be a great addition to the shelves of any vernacular buildings enthusiast. I have a limited number of *A Practical Guide to Recording Archaeological Sites* for members; please contact me at: davehutchinson@btinternet.com to make arrangements for posting. [Editor's note: a review of the latter is included on pages 96–7 of this volume.]

Buildings of the Scottish Countryside revisited

Ruth Macdonald

Between 1979 and 1981 Robert J Naismith, then senior partner of the Edinburgh architectural practice Sir Frank Mears & Partners, led a survey of more than 23,000 Scottish rural buildings on behalf of the Countryside Commission for Scotland. The Buildings of the Scottish Countryside survey took place at a time when interest

in documenting the appearance and the environmental and social contexts of vernacular buildings was on the increase. A vast amount of original documentary evidence was produced in the course of the project, including record sheets, questionnaires and, most importantly, around 38,000 photographs. Now held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS), a re-housing and cataloguing project has recently been launched in an effort to make these valuable resources available to the public.

The Buildings of the Scottish Countryside survey collected material about Scotland's vernacular buildings for use in a way that was, for the time, quite innovative: Robert Naismith sought to identify and describe regional variations in the architectural character of the traditional buildings that populate Scotland's countryside. His findings were published in the book *Buildings of the Scottish Countryside* (Victor Gollancz in association with Peter Crawley, London, 1985). The Countryside Commission's intention in requesting the survey was for the resources created in the course of the project to inform the thinking of contemporary and future architects, builders and planners working in Scottish rural areas and thereby ensure that new architectural designs would fit with their surroundings. In this way, it was hoped that the survey would play an instrumental role in fulfilling the Commission's duty to protect the amenity and integrity of the Scottish countryside.

With these goals paramount, surveyors set out to observe and record the external features of 23,500 small rural edifices, using cameras to capture their proportions, architectural details and construction materials. The buildings examined were chosen randomly from within defined categories and with a view to achieving even and comprehensive geographical coverage. Samples had to be located in settlements of 2,200 inhabitants or fewer and could not be churches, mansion houses or any other large building. The construction date for most fell between 1750 and 1914.

The rationale for the 1914 cut-off was that rural buildings erected before that date were more likely to display stronger signs of local building traditions than those built after, as local designers

Above: Examples of architectural details captured by the Buildings of the Scottish Countryside survey. From Kirkton of Monikie, Angus, and Crossburn Farm, Stirling, respectively. (© Scottish Natural Heritage; courtesy of RCAHMS)

and materials tended to be used. However, the period selected for study is equally significant as one during which revolutionary practices in agriculture and rural industries made their way progressively across Scotland, transforming rural lifestyles in a sudden and comprehensive fashion. Such sweeping changes to the ways many Scots lived and worked went hand in hand with the rebuilding of many parts of the old rural built fabric, and also engendered the construction of new settlements and the expansion of existing ones. It is, therefore, an important architectural period to have a record of and to study.

Having gathered their evidence, Naismith and his colleagues approached the task of analysis in a fascinating way. Inputting the primary data into a computer, they allowed this reasonably new and 'impartial' machine to extract and map information about building materials and the proportions of plans, elevations and sections so that regional patterns could be detected. Naismith then interpreted and described these variations, picking out 13 geographical 'character zones' each covering two to three of the

Above: The survey's scope was not restricted to domestic architecture. This mill and bakery in Blair Atholl, Perthshire, is one of a number of small commercial and industrial buildings that were also photographed. (© Scottish Natural Heritage; courtesy of RCAHMS)

Scottish historical counties. He concluded that climatic and geological factors in the various zones had an important impact on their architectural character.

In the mid-1980s, all primary evidence gathered during the survey and copies of the original computer analysis of this data were deposited with RCAHMS. Although the collection's contents had been thoroughly documented by its creators, the sheer size of the archive and the storage situation of the 38,000 photographic prints proved until recently to be a barrier to making this rich resource fully accessible. Since 2011, however, the collections department at RCAHMS has been taking steps to improve accessibility and further action is envisaged in the near future to increase dissemination considerably.

Volunteers at RCAHMS and trainees from the first two years of the Heritage Lottery-funded 'Skills for the Future' programme have begun to re-order and re-house the photographic prints by county, which will make it much more straightforward for staff and researchers to locate a specific image or images after checking

the detailed record sheets. This system of organisation will also allow those interested in a particular region or locality to browse easily. Study of the archive need not be restricted to projects with an architectural focus; the collection contains material that could be of value to family historians, local history groups and students of rural life, among others.

We are looking at ways of making this material more widely accessible through digitisation to have this invaluable resource available on the Web. Ideally each image in the collection should be linked to its own record in the RCAHMS database, Canmore. At the moment, only a minority, perhaps around 20 per cent of the buildings, have been recorded. The identification and creation of all these sites is beyond the resources of RCAHMS but lends itself to a public-engagement project, harnessing the specialist local knowledge of individuals and groups. It is both fitting and desirable that the legacy of this important survey, groundbreaking in its scope, level of detail and high-tech methods of analysis, should be carried forward into the digital age and used to enrich our interactive online map of Scotland's places.

Look out for further updates on the project in future issues.

Above: This family picnic in the garden of a rural cottage in Auchenoir, Arran, was captured by a BOSC photographer. The archive may contain many more finds like this one which could delight family historians.
(© Scottish Natural Heritage; courtesy of RCAHMS)

Whin millstones: a postcript

Paul Bishop

My article on whin millstones in *Vernacular Building* 34 (pp 43–54) does not mention spherical or ovoid stones with an axle through the centre so that the stone can be rolled across whin to crush the whin for animal feed. I was unaware of these stones until I came across the the Wikipedia entry for the National Museum of Rural Life at Wester Kittochside near East Kilbride (http://en.wikipedia.org/wiki/National_Museum_of_Rural_Life; consulted 9 April 2012). The website includes a short article headed 'Whin stone' with an image and the following related text:

> Lying outside in the farm courtyard is a large oval sandstone object with metal attachments on its central axis. This was used to crush whin or gorse in a shallow trough, the stone being dragged up and down by a horse, making the spiny and tough branches of the plant suitable for use as animal feed. It was normally only used when other sources of feed were lacking.

The image is not of the stone at the Wester Kittochside museum but of one at the Museum of Ayrshire Country Life and Costume, at Dalgarven Mill in Kilwinning, Ayrshire.

Right: The whin stone at Dalgarven Mill, North Ayrshire. The pins at either end of the stone (more prominent on the left-hand end) acted as an axle so that a horse could pull and roll the stone across whin to crush the plant to make it palatable for animals.

CONFERENCES AND MEETINGS

SVBWG Autumn Day Meeting and AGM Loudoun Hall, Ayr, 5 November 2011

The 2011 autumn meeting was held on a mild and sunny Saturday in November. Our base was the sixteenth-century Loudoun Hall which is now home to a variety of societies, such as the Ayrshire Archaeological and Natural History Society, Ayrshire Philatelic Society and Ayr Photographic Society. The building was refurbished in 1952–7 by Robert Hurd and again in 1997–8 by A R P Lorimer & Associates. Following coffee and the AGM, we embarked on a walking tour of Ayr, led by Sheena Andrews who introduced us to the history of Ayr and its buildings. As ever, when guided by such a local expert, we learned a vast amount, and saw many hidden treasures.

From Loudoun Hall, we walked past Ayr Academy, one of many buildings in the town to bear excellent sculptural details. Passing remains of the Cromwellian fort, we then visited St John's Tower, the remains of Ayr's original parish church; we were allowed access to its now pleasantly landscaped surroundings. Our next destination was the splendid Wellington Square, laid out in the early nineteenth century, and giving a sense of spaciousness to the town. Its neat Georgian buildings provide a good combination with Wellington Chambers of 1895, well detailed with ironwork. The earlier town layout is echoed in the High Street and Sandgate and includes such buildings as Lady Cathcart's House from the seventeenth century, now the Tourist Information Office. The town centre is dominated by Thomas Hamilton's Town Buildings of 1827–32; stonework of the highest quality includes a splendid set of griffins.

Lunch was followed by a viewing of the exterior of Ayr Auld Kirk (1652–4) which features fine mortsafes and gravestones. We then crossed the river by the Auld Brig of *c*.1470; this massively constructed symbol of the town is still a busy crossing.

We finished the day with what was, for most, the highlight: a visit to a wine store that has been in continuous use since 1776, where we learned about the trade, surrounded by a fabulous quantity of enticing bottles. It was fascinating to see how Ayr's traditional trade has continued to thrive.

Throughout the day we learned of the work by local organisations to preserve Ayr's architectural heritage; while there have been some struggles, there is also evidence of success, which we trust will continue.

Our thanks as ever to Ronnie Robertson for organising such an informative day.

Scotland's Community Heritage Conference Birnam, 11 and 12 November 2012

SVBWG is not planning a solo autumn conference in 2012, but instead, in a new departure, invites members to attend Scotland's Community Heritage Conference at Birnam Arts and Conference Centre on Saturday 10 and Sunday 11 November. This will be a weekend of talks, workshops, exhibitions and field trips with the opportunity to learn about active community heritage projects within Scotland and network with fellow heritage enthusiasts. The SVBWG 2012 AGM will be held on the Saturday; trips on the Sunday will include visits to local buildings and archaeological sites.

REVIEWS

Edited by Veronica Fraser

A Practical Guide to Recording Archaeological Sites

Royal Commission on the Ancient and Historical Monuments of Scotland. 2011. Available at http://www.scotlandsruralpast.org.uk/images/pdfs/SRP%20Manual%20single%20page.pdf .

This excellent publication sets out in clear and practical detail the skills required by explorers of Scotland's rural past to read mysterious bumps in the landscape with confidence, discover their significance and add to the nation's historical record.

The nineteenth-century Ordnance Survey mapping of Scotland was limited to ruins above a certain height. Therefore the record of ruined clachans, fermtouns, dwellings and archaeology is incomplete, and there are thousands of such sites awaiting a curious audience. The Scotland's Rural Past project trained volunteers in recording skills and monitored the progress of volunteers recording sites of interest to them. This user-friendly guide is distilled from that experience.

A clear pathway is set out to anyone willing to gather evidence of unrecorded structures in the landscape and to present it in an explicit way. As more and more sites are recorded and evidence accrues, reasoned interpretation and comparison become more valuable, and the hidden history of our ancestors will be revealed with descriptions of materials and methods of construction.

A confessed enthusiast and participant in training days, I can confirm that the process is enlightening and the steps remarkably simple. I had always wondered how to record sloping buildings, and now know how to use pegs, strings and levels. Working in pairs is essential; a group fosters enthusiasm. I thoroughly recommend this publication to those interested in Scotland's unrecorded history:

the opportunity for exploration and understanding it provides will enlarge the history of dwellings in the Scottish landscape. I hope every library in Scotland will have a copy.

Special thanks must go to the Scotland's Rural Past team for their unfailing good nature and patience, making participation a memorable experience.

Reviewed by Crissie White

Historic Fraserburgh

R D Oram, P F Martin, C A McKean, T Neighbour and A Cathcart. Edinburgh. Historic Scotland. 2010. xi + 172pp. £9.50 paperback. 978-1-902771-79-3. Available from: http://www.britarch.ac.uk/books/fraserburgh2010.

Historic Galashiels

Martin Rorke, Dennis Gallagher, Charles McKean, E Patricia Dennison and Gordon Ewart. Edinburgh. Historic Scotland. 2011. xii + 131pp. £9.50 paperback. 978-1-902771-80-9. Available from: http://www.britarch.ac.uk/books/galashiels2011.

The latest Scottish Burgh Survey volumes examine Fraserburgh and Galashiels. In so doing, they continue this invaluable series in offering guidance on the archaeological resource present in Scotland's towns as well as providing for the more general reader a summary of the history, development and buildings of the individual burghs.

As with other volumes in the series, they are examples of meticulous research, providing a remarkable familiarity with the burgh. This familiarity is enhanced by the excellent provision of historic and current images, mainly from public archives. Each contains a broadsheet featuring a map of the area at a useful scale and with the chronology of the burgh's development clearly indicated. The volumes also highlight those areas that would

benefit from further research, whether individual areas from excavation, building survey or work on historical developments; Fraserburgh is highlighted as an area of only low-level recording in the past. The primary purpose of the volumes is as a tool in the planning process; they are aimed at local authorities, developers and residents of the areas, while not being comprehensive histories. Instead, they summarise the available knowledge, and highlight the potential for increasing that knowledge. Of particular value are the substantial bibliographies providing assistance with deeper research, as well as useful glossaries. Appendices include lists of archaeological work and scheduled and listed sites; a profile of commercial use and occupation gleaned from Trade Directories; lists of dated and carved stones in Fraserburgh; and an inventory of the mills of Galashiels by Mark Watson.

Fraserburgh and Galashiels are settlements with rich and varied histories which have both seen periods of prosperity and then decline before stabilisation in the late twentieth and early twenty-first centuries. Their histories contain all the elements contributing to a burgh's prosperity or decline in fortunes: site; proximity to transport of many kinds; the availability of water supplies vital for both health and industry; and vulnerability to changes brought by wider circumstances beyond their control. Both took the opportunity to develop a single industry – herring fishing in Fraserburgh and the textile industry in Galashiels – but, within a short period of time, both burghs suffered from the effects of global changes in demand and developments elsewhere which led to enforced changes in direction. The built environment created by these histories helps to tell their stories.

Fraserburgh's development came from its position in the North Sea maritime trade network. It was on the route to the northern entrance to the Caledonian Canal, and was also the first landfall from Russia, Greenland and Spitsbergen. It is a town of many phases: medieval settlements; a sixteenth-century new town, followed by another in the eighteenth century; and then subsequent developments through to the present day, including an interwar garden-city development. As well as featuring the

fishing for which it was famous, it was also home to shipbuilding, a short-lived university, a garrison, the first lighthouse built by the Northern Lighthouse Board, a spa and munitions manufacture. All of these activities have left their mark on the burgh, whether it be in the form of the multi-phase harbour, first used for trade and then for fishing, or in the reuse of stone from the university, or in the shape of rebuilding after clearance of insanitary areas inhabited by the transitory fishing community, or after destruction by Second World War bombing aimed at the munitions factories. The history of its buildings shows use of granite and sandstone, local clay, brick and bents for thatch. Eighteenth- and nineteenth-century buildings use whinstone with sandstone drawings, and after the middle of the nineteenth century, machine-cut granite was employed for frontages. The prosperity created by Fraserburgh's position as the 'chief seat of the herring fishing industry in Scotland' was followed by the industry's decline during the First World War and ultimate collapse in 1921. Efforts to re-create prosperity focused on other types of fishing and munitions manufacture, and recently there has been an emphasis on the tourism industry, echoing the late eighteenth-century spa attraction. Fraserburgh's history of change has meant much development and the loss of early buildings, but enough remains to demonstrate how the burgh was used, and to guide future work on the town in tandem with future development.

Fraserburgh's early fortunes were linked to the founding Fraser family, and another family, the Scots, were closely linked to Galashiels, a settlement which grew up around the Gala Water. From as early as 1580 the burgh's suitability for textile manufacture was apparent, with at least two waulk mills which used either the Gala Water, or a constructed mill lade; the ingenious exploitation of the local water resources was to be a feature of the burgh. The industry continued to develop in the form of fulling mills, and in the eighteenth century weaving began to dominate the burgh which led to an increase in population and a rise in living standards. The development of the structures associated with the industry can be traced from houses where

domestic looms could be used to smaller mills, through to large-scale industrial mills. The industry led to a unique development of the burgh, as the pattern of a mill surrounded by housing was coupled with the feature of large open spaces in the centre of the burgh formed by tenting grounds for stretching and laying out the cloth. One can also trace the distinct housing of the workers, the managers and the owners. The pattern of development was further affected by advances in technology; mills grew up by the water courses to exploit water power, but once steam power evolved, expansion could happen more freely. The industry developed to the stage where the Galashiels firms were the largest textile exhibitors of the Great Exhibition of 1851; however, by the 1890s a decline had begun, due in part to remoteness from population centres and coalfields, and a limit to the amount of water available. Though weaving and dyeing continue, as in Fraserburgh alternative sources of employment were sought, ultimately in the form of electronics and local government. Later developments in architecture were to include early sheltered housing in the 1930s. A historical picture of the burgh can be obtained from documentary sources: for example, the fact that in 1802 there were only 13 slated houses in the town, but by 1900 all roofs were slated, the last thatch having been removed in 1889; a development no doubt linked to the success of the textile industry. Inevitably, the impressive mill buildings became obsolete, and a pattern emerged of either demolition or reuse, as outlined in Mark Watson's excellent appendix. Notable features do survive: the mill lade of the sixteenth century (or earlier) still flows through public parks and into the water feature in Corn Mill Square by Sir Robert Lorimer, thus preserving a reminder of the industry integral to the burgh's history.

In common with the previous volumes in the series, *Historic Fraserburgh* and *Historic Galashiels* highlight the histories of their respective burghs, and contribute to a greater understanding of Scotland's development.

Reviewed by Veronica Fraser

CONTRIBUTORS

Tamlin Barton studied Archaeology at Edinburgh University (graduating in 2004) and for the last six years has worked for professional archaeological units in Scotland and England. He originally trained as an archaeological illustrator in Suffolk, but since moving back to Scotland he has pursued a career in fieldwork and developed his interest in historic building recording and digital surveying. He currently works for Alder Archaeology as projects and graphics officer.

Paul Bishop is a Professor in the School of Geographical and Earth Sciences at the University of Glasgow. He has worked for many years on the interaction between tectonics and landscape, as well as on the geoarchaeology of major archaeological sites in South-East Asia. He is now increasingly turning his attention to issues of landscape history and geoarchaeology in Scotland.

Hugh Dinwoodie is a retired general medical practitioner in Edinburgh, qualified in Glasgow in 1953. His National Service, spent in Libya, aroused an interest in archaeology, later pursued in retirement. He joined the Edinburgh Archaeological Field Society in 1990 and has assisted with the post-excavation work and their report (2001) on Fast Castle, as well as a number of small-scale excavations and geophysical surveys. He is a Fellow of the Society of Antiquaries of Scotland and a lifelong hillwalker.

Tim Holden is a founder member and Managing Director of Headland Archaeology Ltd. Over the last 20 years he has undertaken or managed numerous building surveys in Scotland including many vernacular, industrial and historic buildings. He is the author of several publications on historic buildings including two Historic Scotland Technical Advice Notes on 'The Archaeology of Scottish Thatch' and 'The Blackhouses of Arnol'.

Dave Hutchinson is a historian and craftsman with a passion for the vernacular. He is particularly interested in materials, methods of practice and the builders of our domestic heritage. He regularly visits his daughter in Australia.

Sonya Linskaill studied design before qualifying as an architect, and subsequently worked in private architectural practice for a number of years. In 2004 she returned to full-time education, gaining an MSc in European Urban Conservation. She currently works part-time as Manager of the Stirling City Heritage Trust and as an independent conservation consultant and architect, undertaking a wide range of projects from research and funding, to project management and architectural services.

Daniel Rhodes is the Area Archaeologist for the National Trust for Scotland's southern region. He studied Archaeology as an undergraduate at the University of Wales and holds a PhD and MSc from the Centre for Maritime Archaeology at the University of Ulster. He has worked extensively throughout Ireland, Scotland, Iceland and East Africa and taught Archaeology and Global Heritage at the University of Ulster and the Open University in Scotland. His most recent publications have focused on historical archaeology in the western Indian Ocean.

Scottish Vernacular Buildings Working Group

The SVBWG was set up in 1972 to provide a focus for all those interested in Scotland's traditional buildings. To some, 'vernacular' may mean cottages, croft houses or farmsteads; to others its essence may be urban tenements or terraces, industrial water mills and smithies, or even older traditions of tower-house buildings. All – and more besides – find a place in SVBWG.

The group embraces those whose interests are centred on general settlements or social patterns as well as those who have a specialist interest in building techniques or function, or in traditional building crafts. The subject brings together architects, surveyors, archaeologists, historians, geographers, ethnologists and, above all, those who simply want to know how and why Scotland's traditional buildings have come to possess such variety and character. This refreshing blend of interests and attitudes is clearly evident in the Group's activities. Members are invited to attend annual conferences held at different venues, mainly in Scotland. SVBWG's publications include *Vernacular Building*, an annual miscellany of articles issued free to members, and a series of Regional and Thematic works.

For contributions to *VB* 36, please contact the Editor, *Vernacular Building*, c/o Veronica Fraser, RCAHMS (address overleaf). An initial enquiry indicating the nature of the proposed piece would be helpful; we ask that original photographs or drawings are not sent in the first instance, although photocopies of these are useful at this stage. Articles for the main section of the journal should normally be between 1,500 and 3,500 words long, while more brief pieces can be included in the 'Shorter articles and notes' section. Any text submitted should be as far as possible in the style of this volume, and should be supplied in digital form on a CD or by email. Illustrations may be provided as professional prints or as digital files; the latter should measure at least 1200 pixels across. Please save text and images as separate files, indicating the suggested position of illustrations through notes in the text.

We also welcome publications for review. These should be sent to Veronica Fraser, SVBWG Reviews Editor (address overleaf).

Further information is available at www.svbwg.org.uk

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