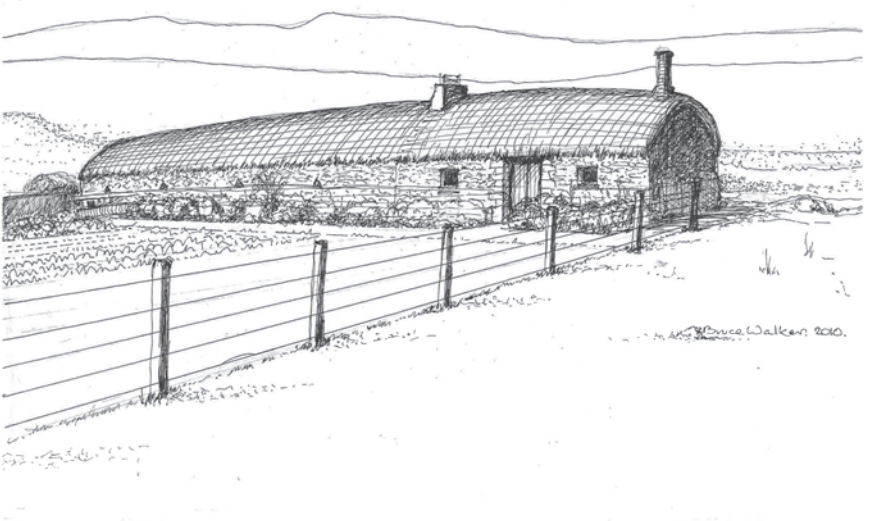
VERNACULAR BUILDING 34

Scottish Vernacular Buildings Working Group

2010–2011



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Cover: Reconstruction of Cairniebottom, East Ayrshire, by Bruce Walker: see pp 55–66.

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PREFACE

This year's journal presents a small array of articles covering a diverse variety of topics, from broad-ranging surveys to highly focused single-building reports.

We begin with an article by Thorsten Hanke examining the impact of available materials and other factors on the location and type of chimney present in historical Scottish homes, as compared to their counterparts elsewhere in Britain and in Europe.

We move on to an extensive essay by Anne Crone and Coralie Mills, detailing the discoveries they have made through intensive study of the use of timber in Scottish buildings. Their findings throw light on both the historical sourcing of timber and the way in which it was worked.

Next, Paul Bishop returns to the question asked in *Vernacular Building* 32 – whether whin mills are a uniquely Doric phenomenon within Scotland – by examining evidence at Craigmaddie Muir, near Baldernock in East Dunbartonshire, which suggests that they may not be.

The second half of the journal's main section comprises three detailed surveys and historical analyses of specific vernacular buildings.

In the first of these, Ross Murray and Bruce Walker give an account of their excavation of Cairniebottom, a long-abandoned nineteenth-century smallholding in East Ayrshire, and the conclusions they were able to draw about its original structure and the living conditions of its former inhabitants.

We then turn to Andrew P K Wright's examination of a thatched house on the Applecross peninsula in Wester Ross that was purchased several years ago by the National Trust for Scotland. Its last occupant, who was born in the house in 1901 and remained there for most of the century, stalwartly resisted any temptation to modernise, and the house offers rare evidence of a Highland way of life that is no more.

Lastly, Nick Brown describes how modernisation work on a house in Newmill, Keith, Moray led to the discovery of a clay thatch roof.

The main articles are followed as usual by a series of shorter contributions, news on SVBWG events, and reviews of recently published books that are likely to be of interest to readers.

Contributions are invited for next year's issue of *Vernacular Building*; please see page 117 for information about how to submit proposals.

Abigail Grater

CHIMNEY, ROOF AND PLAN IN SCOTTISH DOMESTIC ARCHITECTURE

Thorsten Hanke

Among the most arresting sketches completed by Karl Friedrich Schinkel (1781–1841) during his journey through Great Britain and northern France in 1826 are those that evoke the spirit of the industrial revolution.[1] On his way from England to Scotland and vice versa, Schinkel hardly pays attention to the decorative details of individual buildings; instead, he seems to be predominantly concerned with the morphology of urban and architectural structures, so as to unveil the dynamics of the rapid industrialisation that transformed Europe in the early nineteenth century. His sketches of townscapes, bridges, roof trusses, warehouses and chimney stacks most forcefully betray Schinkel's interest in the 'brute skeleton' of the man-made environment, subtly reminding us of the fact that the spatial organisation of functional units is one of the most important aspects of architectural design (see fig.1).

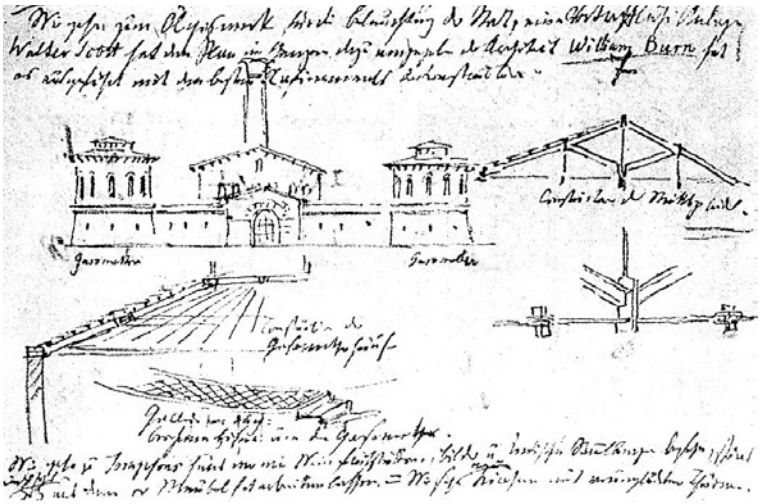


Figure 1. Karl Friedrich Schinkel, sketch of Tayfield Gasworks, Edinburgh, 1826. (Stiftung Preussischer Kulturbesitz)

This essay addresses this problem, offering a theoretical sketch of architectural making rather than a case study of any individual building. By taking this approach, it illuminates the process of how Scottish builders – well-known architects and anonymous artisans alike – managed to integrate vital functional units into the social and material fabric of the Scottish house. Discussing in detail the architectural and structural relation of the chimney to the floor plan and the roof, it is intended to contribute to a better understanding of some of the constraints that significantly affected the evolution of Scottish domestic architecture.

Most prominent among those constraints was certainly the range of building materials available to the builders (and, equally importantly, the tools and technical knowledge for working them). Pointing out that the physical qualities of stone, clay, brick and timber – as well as the financial resources necessary to acquire them – confine to a considerable degree the design options open to the architect, may not appear an original observation.[2] However, it has always been the case that those who know most about materials and construction techniques, that is to say the artisans, seldom write about buildings, and it is therefore worthwhile to reconsider the relation between materials, construction techniques and the evolution of architectural form from the perspective of those involved in the practical process of building. Schinkel, for instance, remarks that the high quality of stone used in the New Town of Edinburgh was instrumental to the high quality of the architectural details noticeable there – which could be interpreted as implying that the design quality he encountered in Edinburgh depended to a certain degree on environmental factors.[3]

Schinkel's depiction of a cottage on the west coast of Scotland near Staffa (fig.2) offers a good idea of some of the materials that were at the disposal of the majority of Scottish builders, as well as showing how they were using them.[4] Braving the elements on a windswept coast, the house ducks down under a low thatched roof whose covering is secured by a set of ropes. The chimney is incorporated into the gable wall and the house possesses neither overhanging eaves nor any elements piercing the roof. The Staffa

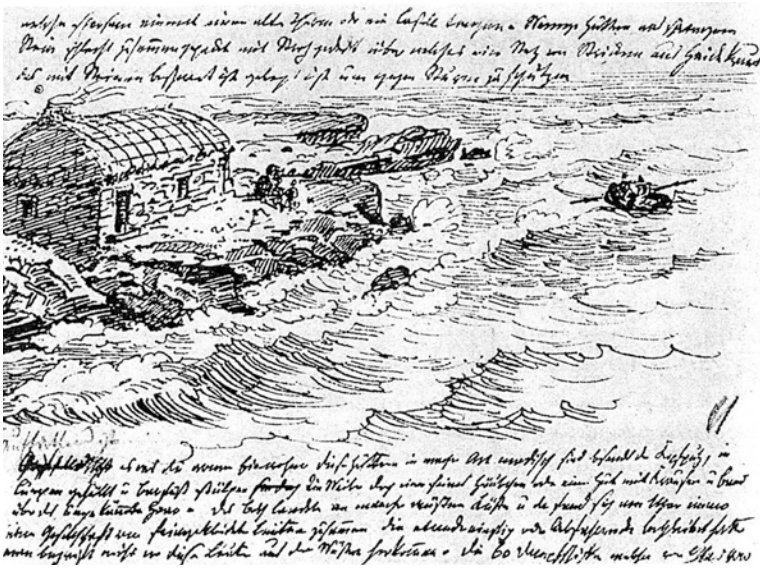


Figure 2. Karl Friedrich Schinkel, sketch of a cottage near Staffa, Argyll, 1826. (Stiftung Preussischer Kulturbesitz)

house belongs to a type of vernacular building that distinctively differs from the farmhouses that Schinkel encountered in his native Prussia, articulating its belonging to an environment that historically knew neither large-scale arable production (hence its fairly limited size, since there was no need to provide extensive storage space for grain) nor any significant production of bricks as was customary in continental Europe and south-east England. This points to the absence of suitable clay in large parts of west and north-west Britain and, perhaps, to a fundamentally different architectural tradition, a school that was not shaped through early encounters with Roman brick building technology.

Scottish builders, and particularly those operating in the western and northern parts of the country, generally had to cope with materials that were difficult to work with.[5] Rubble – that is to say irregularly shaped natural stone of often challenging geological quality – as well as the cruck frames used in contemporary Scottish vernacular timber buildings, hardly allowed for the creation of delicately executed architectural details.[6] This explains why the

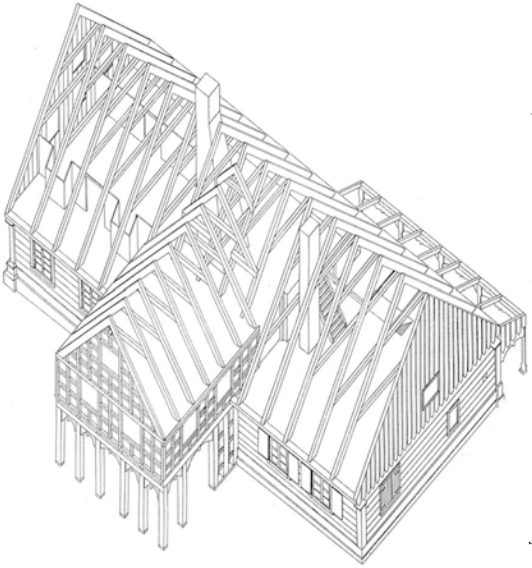
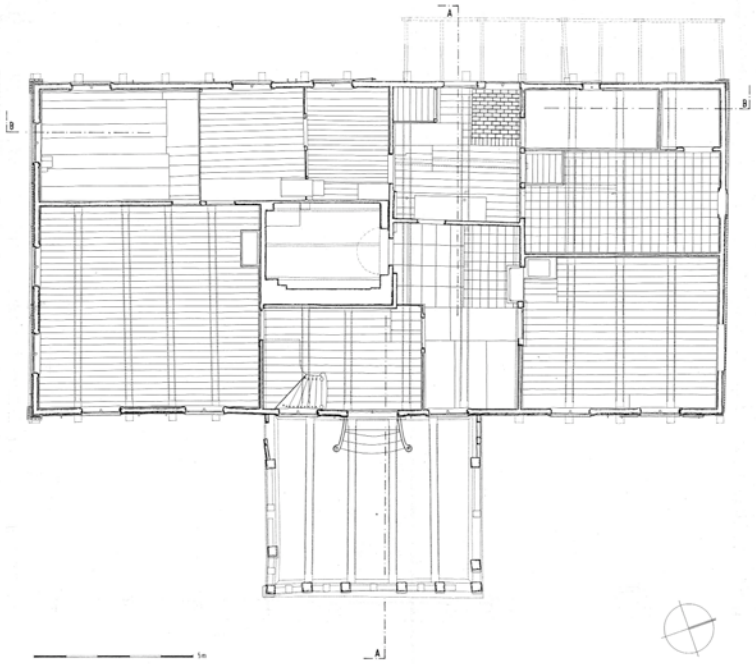


Figure 3. Laubenhaus, Zulawki, Poland (1803): axonometric projection – central chimney. (T Hanke)

Figure 4. Laubenhaus, Zulawki, Poland (1803): ground-floor plan – central chimney. (T Hanke)



chimneys of Scottish buildings often sprout from the gable walls, rather than forming freestanding units, as happened, for instance, in the farmhouses of contemporary Prussia (see figs 3 and 4). The creation of architectural elements such as tall and slender chimneys, window frames, arches or neatly moulded vault-ribs, is without doubt considerably eased by the availability of a regularly shaped material such as ashlar or brick, both of which were only available to a fairly limited degree to many Scottish builders.[7]

The freestanding chimney is obviously a common phenomenon through large parts of continental Europe and south-east England rather than one that can be encountered at the Celtic cultural fringes of Europe.[8] In continental farmhouses it often tapered over the kitchens, which, in many cases, were the only stone-built part of the house. It is this timbered and half-timbered tradition of continental Europe (and also England) that provides a clue as to why centrally located chimneys featured far more prominently in these areas than in Scotland, north-west England or Brittany. These chimneys not only controlled the smoke extraction but also offered a convenient and safe solution to the problem of shielding open fire in a building that was constructed to a large degree of combustible materials. Thus they often constituted the stone-built core of the edifice around which the principal living units were located, the latter frequently containing elaborate tile-stoves that further shielded the fire. That is not to say that Scottish buildings do not possess any chimneys springing from centrally located fireplaces – consider for instance the cottages at Rait, Killiecrankie and Knapp, all of them located in Perthshire, to name just a few.[9] Such chimneys, however, are usually incorporated into the cross-walls of the house – a type of wall that, in a structural and typological sense, differs only marginally from the gable wall.[10]

The only notable exception to this pattern is to be found in the ancient houses of rural Scotland,[11] in which, similarly to the farmhouses of continental Europe mentioned above, the (open) hearth was placed more or less in the centre of the building.[12] This arrangement not only reflected the wish to assemble the community around the hearth, but also created a safety margin between the

combustible wattle and daub walls of the house and the open fire. In terms of locating the fireplace the Scottish builders thus applied the same principle as their European peers.

Longhouses, blackhouses and byre houses often did not possess any chimney at all – the smoke was either extracted through a hole in the roof, or was controlled by wooden smoke-hoods, which, in some cases, pierced the thatched roof (see figs 5 and 6).[13] The technical solutions for exhausting the smoke in these structures clearly reflect the reliance of their builders on materials such as wattle, daub, timber and rubble rather than the high-quality ashlar that was available to the builders of the more sophisticated and better-funded houses of medieval and post-medieval Scotland. Although it is difficult to be precise in this matter, we know that such buildings possessed stone chimneys at least from the fifteenth century onwards.[14]

With regard to the further evolution of fireplace architecture it becomes increasingly difficult to observe any commonalities

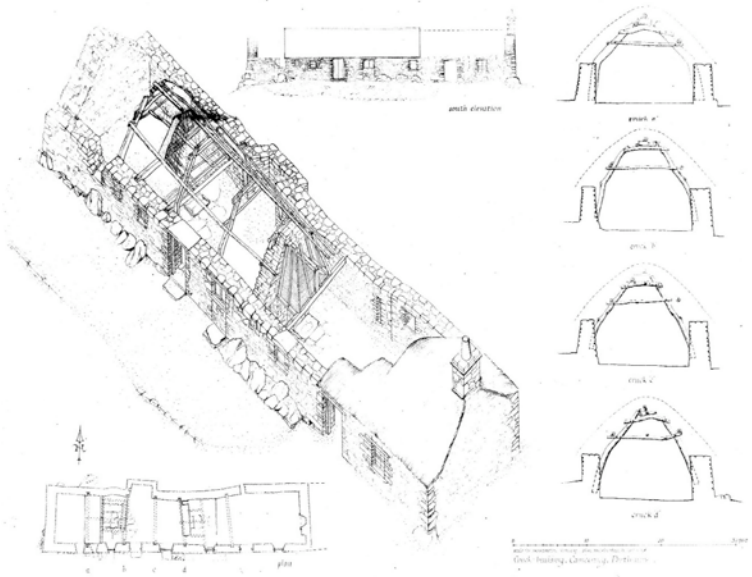


Figure 5. Camserney Longhouse, Perthshire (mid-18th century): plan, elevation, sections and axonometric projection – mural chimney and hanging chimney. (© Crown Copyright: RCAHMS. Licensor www.rcahms.gov.uk)

Figure 6. Camserney Longhouse, Perthshire (mid-18th century): hanging chimney. (© Crown Copyright: RCAHMS. Licensor www.rcahms.gov.uk)

among the vernacular buildings of Central Europe and Scotland. While European architects integrated the centrally located fireplace into the fabric of the house, Scottish architects adopted a different method. They moved the fireplace to the external walls of the building (see fig.7), thus developing the open mural fireplaces that eventually became an archetypal element of Scottish (or British) houses, resulting in an often impressive array of chimneys sprouting from the heads of the external walls.[15] Most Scottish post-medieval and early modern houses indeed possess chimneys that are either incorporated into the gable or cross walls or emerge from the heads of the lateral walls, avoiding the potentially tricky issue of roof-piercing.[16] In addition, this solution reflects the typical layout of towerhouses with their vertically arranged functional units, which made the employment of

Figure 7. Culross Palace, Fife (1597–1611) – mural chimney and crow-stepped gable.

centrally sited chimneys virtually impossible – a fact that further explains the popularity of mural fireplaces in Scotland.

The chimney eventually moved back to the centre of the house – without ever fully giving up the 'mural location' – but this was not before the time of the agricultural improvements of the eighteenth and nineteenth centuries (see fig.8), when Scottish houses developed more complex floor plans. The centrally located chimney here results from sophistication in floor design, reflecting a situation in which the ancient hall house gave way to buildings with more diverse functional units such as kitchens, bedrooms, corridors and separate apartments.

There are thus two explanations for the conspicuous absence of the freestanding centrally arranged chimney in the pre-improvement houses of Scotland: firstly, the limited size of most houses and halls, a factor that finds an explanation in the

prevailing economic conditions of medieval and post-medieval Scotland; and secondly, the particular nature of the construction material, which favoured the creation of relatively straightforward architectural units while at the same time being largely incombustible. Without embarking on further systematic research into the archaeology of Scottish houses, it is difficult to say at which historical stage Scottish builders abandoned the open hearth in favour of the combination of mural fireplace and stone-built chimney stack. It can be said, however, that this happened far earlier in urban and castellated high-status buildings than in the more humble cottages of rural Scotland. The evolution of the Scottish stone industry, resulting in the wider distribution of materials such as ashlar and brick, was certainly a very important factor in that development.

Figure 8. Dalmeny Estate, Leuchold Gate (19th century): view from the south-west – central chimney.

Notes

1 For Schinkel's travel diary, see G Riemann (ed), *Karl Friedrich Schinkel: Reise nach England, Schottland und Paris im Jahre 1826*, C H Beck, Munich, 1986.

2 The term 'architect' refers here to those individuals directing the building process – whether designers, artisans, patrons or surveyors.

3 D Bindman, 'Schinkels Erfahrung von Gesellschaft und Architektur Großbritanniens', in: Riemann, *op.cit.*, pp 31–46 (p.45).

4 For Schinkel's sketch of the Staffa house, see Riemann, *op.cit.*, p.234.

5 See: I Fisher, 'Building – stone and slates: some regional aspects of Scottish quarrying', in: A Fenton, B Walker and G Stell (eds), *Building Construction in Scotland: Some Historical and Regional Aspects*, SVBWG, Edinburgh, 1976, pp 16–27 (p.16); J Gifford, *The Buildings of Scotland: Highland and Islands*, Yale University Press, New Haven and London, 2003, pp 21–2; and E Hyslop, A McMillan and I Maxwell, *Stone in Scotland*, UNESCO, Paris, 2006, pp 23–4.

6 Cruck-blades normally consist of naturally but conveniently grown trees that have been split in the middle. Joined at the apex and reinforced with collarbeams, two of these timbers constitute a 'cruck-couple'. Arranged at a distance of *c*.3 metres and connected by purlins, four to six such couples constitute the structural skeleton of cruck-built cottages. The external walls of these buildings were, depending on the region, usually constructed by means of wattle and daub or local rubble. For Scottish cruck buildings, see: J Dunbar, 'Some cruck-framed buildings in the Aberfeldy district of Perthshire', *Proceedings of the Society of Antiquaries of Scotland*, Vol.90 (1956–7), pp 81–92; and G Stell, 'Crucks in Scotland: a provisional list', in: N W Alcock (ed.), *Cruck Construction: An Introduction and Catalogue*, Council for British Archaeology, Research Report 42, London, 1981.

7 Gifford suggests the 1790s as the earliest period of brick production in the Highlands (Gifford, *op.cit.*, p.22). Production of bricks happened roughly a century earlier from 1709 onwards in south-east Scotland, hence considerably later than in England and continental Europe (J Shaw, 'Dutch and Scotch pantiles: some evidence from the seventeenth and early eighteenth centuries', *Vernacular Building*, Vol.14 (1990), pp 26–9). With regard to the production of ashlar, it

should be understood that the Scottish quarrying industry was not highly developed until the late eighteenth century, when the jobs of quarrier and mason became definitively separate (Fisher, *op.cit.*, p.19). Given the mountainous territory in most parts of Scotland, it is reasonable to suggest that many local builders relied on rubble rather than ashlar due to difficulties in obtaining such material.

[8] For the sake of convenience, I confine my provision of references to Germany, Northern France, England and Scotland. For the employment of centrally located chimneys in Germany and England, see: Verband Deutscher Architekten- und Ingenieurvereine (ed.), *Das Bauernhaus im Deutschen Reiche und in seinen Grenzgebieten*, 2 vols, Küthmann, Dresden, 1906; P Smith, 'Der regionale Hausbau der Britischen Inseln', *Jahrbuch für Hausforschung*, Vol.40 (1992), pp 9–28; and R W Brunskill, *Houses and Cottages of Britain*, Gollancz, London, 1997. For the predominance of mural gable-chimneys in Brittany, north-east England and Scotland, see: R W Brunskill, *Vernacular Architecture of the Lake Counties*, Faber, London and Boston, 1978; A Fenton and B Walker, *The Rural Architecture of Scotland*, John Donald, Edinburgh, 1981; and G I Meirion-Jones, *The Vernacular Architecture of Brittany: An Essay in Historical Geography*, John Donald, Edinburgh, 1982.

[9] See Fenton and Walker, *op.cit.*, pp 23, 26, 51.

[10] See ibid, pp 23, 26, 144, 151, 191, 201.

[11] See, for instance: Dunbar, *op.cit.*, pp 85–91; H Fairnhurst and J Dunbar, 'The study of deserted medieval settlements (to 1968)', in: M Beresford and J G Hurst (eds), *Deserted Medieval Villages: Studies*, Lutterworth Press, London, 1971, pp 229–46 (pp 236–8); and Fenton and Walker, *op.cit.*, p.32.

[12] A Fenton, 'Fires and firing: an overview', in: M Wood (ed.), *The Hearth in Scotland*, SVBWG, Dundee and Edinburgh, 2002, pp 5–24 (p.5).

[13] The use of a simple hole in the roof led to a smoke-filled interior – something that was found desirable in some cases; see: J E Crowley, *The Invention of Comfort: Sensibilities and Design in Early Modern Britain & Early America*, John Hopkins University Press, Baltimore and London, 2000, pp 9–10; and Fenton, *op.cit.*, p.5. An example of a wooden smoke-hood is to be found at 'Upper Quais', Mainland, Orkney: see Fenton and Walker, *op.cit.*.

[14] '(H)ouses (…) built of hewn stone and provided with excellent doors, glass windows, and a great number of chimneys' could be encountered in Scotland, as testified in 1498 by Pedro de Ayala, the ambassador of Ferdinand and Isabella of Spain (see P Hume Brown, *Early Travellers in Scotland*, David Douglas, Edinburgh, 1891, p.47). It is, however, still a matter of contention at what stage in history Scottish domestic houses saw the introduction of mural fireplaces and chimneys. The English language uses the term 'chimney' from the fourteenth century onwards (Crowley, *op.cit.*, p.22) and Stell has confirmed the existence of stone chimneys in several Scottish fifteenth-century buildings, for instance Borthwick Castle. Other Scottish fifteenth-century structures, however, did not possess any mural fireplaces; in these, heating was provided by means of an open hearth. The walls at Moy Castle (Lochbuie, Isle of Mull) and Balgonie Castle (Fife) possess vents that could have been introduced for extracting the smoke of an open hearth. See G Stell, 'Architecture: the changing needs of society', in: J M Brown (ed.), *Scottish Society in the Fifteenth Century*, Edward Arnold, London, 1977, pp 153–84 (pp 162–3).

[15] For the evolution of chimneypieces in Scotland, see I Gow, 'The Scottish chimneypiece', in: M Wood (ed.), *The Hearth in Scotland*, SVBWG, Dundee and Edinburgh, 2002, pp 50–67.

[16] For the interdependence of roofing materials and architectural details, in particular with regard to the joint between roofing material and chimney, see Brunskill, *Vernacular Architecture of the Lake Counties*, *op.cit.*, pp 115–8. Generally speaking, piercing the slate roof with chimney stacks became manageable with the wide availability of lead to make the joint watertight. It is certainly not a coincidence that the thatched roofs of Scotland were more often pierced than slate roofs. The latter normally possess mural chimneys. The more flexible nature of thatch makes it far easier to guarantee a watertight joint between the chimney stack and the roof cover.

THE NATIVE OAK AND PINE DENDROCHRONOLOGY PROJECT – AND SOME OBSERVATIONS ON TIMBER AND WOODWORKING IN SCOTTISH BUILDINGS *c.*1450–1800

Anne Crone and Coralie Mills

Scotland's built heritage is often seen as relatively impoverished in terms of timber use. The timber-framed tradition of building, which was so ubiquitous on the Continent and in England and Wales, did not develop to the same extent in Scotland, especially in the countryside, in large part because the social and tenurial structure did not encourage the development of a freeholding yeomanry who would make significant investments in their own dwellings.[1] Very few pre-1500 buildings with *in situ* timber structures survive, although many more fifteenth-century timber structures may remain within later buildings, as the evidence from 68–74 High Street, Brechin has demonstrated (see below).[2] However, from the sixteenth century onwards there is a sizeable corpus of surviving timber components, mainly roofs and floors – even if some of them are no longer *in situ* as, for instance, the many boards and beams from the painted ceilings of mid-sixteenth- to mid-seventeenth-century date that were recovered during demolition in the 1960s and 1970s.[3] Nonetheless, many aspects of the structural timber resource still remain largely unexplored and poorly understood. Most of the comparatively few studies of timber in Scottish buildings have been architectural, the design and evolution of the roof structures being the primary focus.[4] Perhaps because of this focus, there is rarely any comment on the species and woodworking techniques. This paper seeks to redress this balance, if only slightly.

This paper is specifically about native-grown timber in Scottish buildings. From the late fifteenth century, Scottish

wrights working on urban and high-status buildings, particularly along the east coast, relied heavily on imported timber; of 33 post-1450 buildings which we have dendro-dated, only five include any native oak.[5] Throughout the sixteenth to eighteenth centuries oak and pine timber was imported from Scandinavia and the Baltic, and because of the extensive network of regional tree-ring chronologies that now exist across northern Europe it has become increasingly straightforward to dendro-date imported timber.[6] This is not the case with native-grown oak and pine, mainly because it has rarely been found in the higher-status buildings which are more commonly the subject of dendrochronological study (such as Stirling Palace[7]), and consequently there are few dated native master chronologies. This paper chronicles our efforts to develop native oak and pine chronologies in Scotland and the extent to which it is now possible to dendro-date vernacular buildings.

As dendrochronologists we have spent much time over the past few decades crawling around roof spaces throughout Scotland to assess and subsequently sample the timbers (see fig.1). Assessing their dendrochronological potential means observing and recording a number of variables. Species, length of ring-pattern and presence/absence of outermost rings are essential factors in determining whether the timber is datable or not, and how precise a date we can obtain. Equally important are other details, such as the evidence

Figure 1. Working in the roof of Allargue House, Strathdon.

Figure 2. Duplicate carpenters' marks on oak in the roof of the Mansion House, Drum Castle.

for reuse of timbers (i.e. redundant joints and duplicate carpenters' marks – see fig.2), whether wooden trenails or iron spikes have been used to secure the joints, how the timber has been converted from the tree and what sort of tools have been used to dress and shape the timber. This paper is therefore concerned as much with the subsidiary knowledge that we have acquired over the years about the type of timber and how it has been used in Scottish buildings as with their dendro-dating. In view of Bruce Walker's recent appeal for a greater understanding in the world of architectural conservation of that physical evidence – of the building materials themselves – this paper seems timely.[8]

The Native Oak and Pine project

The framework within which much of our work has been carried out is the Native Oak and Pine project (NOAP), the aim of which is to expand the existing native tree-ring chronologies so that the fabric of more historic structures can be dated and better understood. Although existing native oak chronologies extended continuously as far back as the mid-tenth century AD, geographical coverage was biased towards south and central Scotland.[9] More importantly from our viewpoint, sections of the chronology were poorly represented, in particular the sixteenth to eighteenth centuries, and this was hindering our ability to date buildings of that period.[10] The only native Scots pine chronologies that existed

had been built for climatological work; they were based on living trees often growing in remote locations and only extended as far back as the seventeenth century, so their use for dating buildings was limited.[11]

We therefore set out to identify buildings and woodlands which would enable us to improve the geographical and chronological coverage of native oak and pine tree-ring data in Scotland. We selected north-east Scotland as our study area because this region had abundant supplies of native woodland until the late eighteenth century, primarily because much of the woodland was remote and inaccessible and the lack of a developed transport infrastructure made the extraction and movement of timber in any great quantity extremely difficult.[12] Building timber is therefore likely to have been sourced locally not only because there were plentiful supplies but also because the very inaccessibility which prevented export will also have discouraged the import of foreign timber. We focused on the interior, and particularly the upper reaches of the Dee, Don and Spey valleys, assuming that in the coastal areas imported timber would have been used. (We now realise that this may have been a false assumption, as many of the fishertowns along the Moray Firth coast were probably built by landowners using timber they floated down the rivers from their inland estates – see Duff House below, for instance).

It may be worthwhile outlining our approach to identifying suitable candidate buildings, because our eventual selection may appear somewhat patchy to those readers who are familiar with buildings in the area which were not included. The Listed Buildings Register was used as the primary source and it was sifted through rapidly to select those buildings identified as pre-1800 in date and which are likely to have included timberwork in their construction. This was a rather hit-and-miss approach because many were privately owned buildings, the interiors of which had often not been seen by the listed building surveyors and for which there is no documented record. The final list of candidate buildings ranged from tower houses such as Craigievar, Drum and Crathes, to small laird's houses, cruck-frame cottages, farm steadings and other

agricultural buildings. The buildings are predominantly eighteenth century in date but also include some early nineteenth-century examples; only 25 per cent of the final list was seventeenth century or earlier in date. Time and other exigencies (such as non-response to our letters requesting access) meant that we eventually assessed the timber component of 48 buildings (see Tables 1a and 1b). As mentor to a Millennium Forest project, one of the authors (B A Crone) also examined a number of buildings with Una Lee as part of her study of building timber in Strathspey, and these are included in the list.[13]

At least some of the original timberwork had survived in 36, or 75 per cent of the buildings that we examined. It was almost always the roof structures that had survived, although some floor joists were also original (see Table 1a). The following observations are based primarily on this sample.

Species

The species of timber used in Scottish buildings is rarely identified in published reports. As it is crucial in evaluating the dendrochronological potential of a building, it was always our primary observation. Apart from two buildings which employed oak in their construction, the species used in these buildings was invariably pine. Without microscopic identification we could not identify it beyond *Pinus* sp. but in those buildings that we sampled we were able to identify the species more specifically as Scots pine (*Pinus sylvestris*). Walker lists an array of other species including chestnut, ash, aspen, beech and willow; these may have been mentioned in contemporary records but we did not encounter any physical evidence for their use.[14] There are several possible reasons for this; these species may have been used for other elements of the buildings which have not survived, or the predominance of pine in north-east Scotland may simply reflect regional availability.

We have certainly encountered a wider variety of species in cases where we have been able to examine other components of

BUILDING	County	NGR	Est. date
Drum Castle – Brewhouse	Aberdeenshire	NJ 7692 0049	15th C?
Castle Grant – Phase A	Morayshire	NJ 0413 3018	*c*.1540
Crathes Castle	Kincardineshire	NO 7341 9680	1596
Burgie Tower	Morayshire	NJ 0936 5931	1602
Castle Fraser – main tower	Aberdeenshire	NJ 7227 1255	1615–18
Drum Castle – Mansion House	Aberdeenshire	NJ 7692 0049	1618–21
Leith Hall	Aberdeenshire	NJ 5408 2978	*c*.1650
Brodie Castle	Morayshire	NH 9795 5777	mid-17th C
Davidston House	Aberdeenshire	NJ 4195 4514	1678
Bellabeg House, Strathdon	Aberdeenshire	NJ 3554 1305	*c*.1690s?
Castle Grant – Phase C	Morayshire	NJ 0413 3018	*c*.1695
Dallas Lodge – steading	Morayshire	NJ 1093 5272	late 17th C
Mansefield, Alford	Aberdeenshire	NJ 5534 1610	1718
Kilravock, 45 Findhorn, Kinross	Morayshire	NJ 0390 6444	early 18th C
Brodie Castle – stables	Morayshire	NH 9778 5700	1720–80
Duff House, Banff	Banffshire	NJ 6906 6331	1737
Allargue House, nr Corgarff	Aberdeenshire	NJ 2594 0947	1748?
Fort George	Inverness-shire	NH 7607 5667	
Barracks Blocks			1747–69
N Ordnance Store			1747–69
Chapel			1747–69
Staff Block			1747–69
pier			1747
Castle Grant – Phase D	Morayshire	NJ 0413 3018	*c*.1760
Coulnakyle House	Inverness-shire	NH 9986 2148	*c*.1770
Garvamore Barracks, Laggan	Inverness-shire	NN 5280 9430	1777
Pitmain House, Kingussie	Inverness-shire	NH 7601 0064	1791–2
Kildrummy Mill	Aberdeenshire	NJ 4699 1652	late 18th C
Waterside, Glenkindie	Aberdeenshire	NJ 4377 1375	late 18th C
Badden Cottage, Kincraig	Inverness-shire	NH 8251 0614	1800?
Red House, Mar Lodge	Aberdeenshire	NO 0029 8688	1799 & 1808
Auchmore Cottage, Allargue	Aberdeenshire	NJ 2638 0949	18th C
Inverey, Braemar	Aberdeenshire	NN 0900 8940	1800/01 & 1815
Cluny Castle, Laggan	Aberdeenshire	NJ 6890 1274	1805
96 High St, Grantown-on-Spey	Morayshire	NJ 0314 2786	tpq 1805
MacRobert House, Kingussie	Inverness-shire	NH 7600 0067	c1820
Inchley, Deebank Rd, Ballater	Aberdeenshire	NO 3706 9560	early 19th c?
Derry Lodge, Mar Estate	Aberdeenshire	NO 0412 9338	early–mid-19th C
Pananich Wells Hotel bothy	Aberdeenshire	NO 3952 9675	mid-19th C?

Table 1a. Buildings assessed as part of the NOAP project, listed chronologically.

No. of timbers	Location of timbers	Species	Est. no. of rings	Measured rings
**	roof	Pine	30–40	
***	roof	Pine	*analysed*	63–146
***	roof	Oak	*analysed*	95–141
**	floor joists	Pine	20–30	
***	roof	Pine	60–70	
***	roof	Oak	*analysed*	41–151
***	roof	Pine	20–30	
*	floor joists	Pine	50–70	
***	roof	Pine	20–30	
***	roof	Pine	30–50	
***	roof	Pine	40–50	
***	roof	Pine	20–60	
***	roof	Pine	12–60 (av 30)	
***	cellar	Pine	10–20	
***	roof	Pine	40–50	
***	roof & floor joists	Pine	10–50	
***	roof	Pine	*analysed*	80–161
***	roof	Pine	*analysed*	41–61
***	roof	Pine	50–60	
***	roof	Pine	*analysed*	
***	roof	Pine	*analysed*	
***	roof	Pine	*analysed*	
*	pier	Pine	50–60	
***	roof	Pine	40–50	
**	roof	Pine	20–30	
*	roof	Pine	30–50	
***	roof	Pine	30–50	
**	?	Pine	16–20	
*	roof	Pine	20–30	
***	cruck frame	Pine	30–70	
*	cruck posts	Pine	*analysed*	86–102
***	roof & floors	Pine	20–30	
***	cruck frame	Pine	*analysed*	50–134
*	roof	Pine	30–70	
**	post & beam	Pine	*analysed*	59–74
***	roof	Pine	*analysed*	47–124
**	roof	Pine	6–12	
*	floor joists	Pine	*analysed*	58–108
**	roof	Pine	20–30	

*Table 1a (cont'd). Number of timbers: * = <10; ** = 10–20; *** >20.*

BUILDING	County	NGR
Mill of Bellabeg, Strathdon	Aberdeenshire	NJ 3532 1318
Glenkindie House	Aberdeenshire	NJ 4226 1445
Mill of Logie	Aberdeenshire	NK 0401 5770
Steading, Bridge St, Ballater	Aberdeenshire	NO 3719 9561
Alltdourie Cottage, Invercauld	Aberdeenshire	NO 1667 9296
Lethen House Granary	Nairn	NH 9375 5190
Mill of Newe	Aberdeenshire	NJ 3714 1230
Old Parish Church, Glenbuchat	Aberdeenshire	NJ 3756 1513
Abernethy Old Church	Inverness-shire	NJ 0059 2180
Craigievar Castle	Aberdeenshire	NJ 5667 0948
N & S Mains Cottages, Craigievar	Aberdeenshire	NJ 5661 0954
Mains of Drummuir	Banffshire	NJ 40664 4490

Table 1b. Further buildings assessed as part of the NOAP project. Those listed here had no remaining original timberwork.

a timber structure. In the longhouse at Moirlanich, Killin most of the cruck-frame components were ash but there were also blades of elm and one of sycamore, with collars and purlins of pine.[15] In Sunnybrae Cottage, Pitlochry the cruck components were all ash, the purlins were pine, and the cabers were mainly birch with a few pine.[16] Oak, ash and elm pegs were employed in the construction of the pine post-and-beam building at 96 High Street, Grantown-on-Spey.[17]

We have seen ash crucks in other buildings in Lochtayside and surmised that it may have been the preferred species, or the most easily available, for cruck-blades throughout the area; although John Dunbar recorded a wider variety of species in the six cruck-framed buildings that he studied around Aberfeldy, including oak, Scots pine, ash and silver birch.[18] In south-west Scotland oak was used, in the cruck-framed cottage at Torthorwald near Dumfries and in the cruck-framed byre at Priors Linn, Canonbie.[19] Historically, birch was used for crucks in Sutherland; and Geoffrey Stell also recorded birch crucks in Caithness, frequently with purlins of pine.[20] Pine was used for the crucks at Corrimony and Edderton, near Tain, and in a cruck-framed outhouse in Nethybridge.[21]

In the course of the NOAP project the only two buildings in which we found oak timbers were Crathes Castle and the Mansion

House at Drum, Aberdeenshire. Dendro-dated to the late sixteenth and early seventeenth centuries respectively, these are rare examples of buildings of that date in which local oak was used; elsewhere in Scotland imported oak was the norm.[22] The only other building of this period in which we have identified locally grown oak is Newark Castle, in Port Glasgow (felled 1598[23]); the oakwoods used in these three buildings started growth in the mid- to late fifteenth century, probably planted in response to growing concerns about the shortage of native oak.[24] The oak in Drum and Crathes had almost certainly been felled in the Old Wood of Drum and was not well grown; it was bastard-grained and often quite knotty, with large patches of bark left on the edges of timbers (see figs 3a and 3b), presumably to get the maximum scantling out of the trees. If the relatively wealthy landowners of Drum and Crathes could only source oak of this poor quality, it is perhaps hardly surprising that we find so little of it in buildings further down the social order.

Figures 3a and 3b. Bastard-grained oak timbers in the roof of the Mansion House, Drum Castle.

Woodworking techniques and conversion of timber

Wherever possible the method of converting the timber, the tools used to shape the timber, and the means of fixing the joints were recorded in the candidate buildings; this evidence is presented in Table 2 in roughly chronological order. Some patterns emerge.

Timber used for roof frames and joists in the earliest buildings was invariably hewn baulks, shaped square by adze-dressing all four faces, often leaving a strip of bark on the corners – ideal candidates for dendrochronological sampling. Early examples can be seen in the roofs of the Guthrie Aisle in Angus (felled 1464) and 68–74 High Street, Brechin (felled 1470) where oak timber of small scantling, no more than 150 x 150 millimetres (5 ⅞ x 5 ⅞ in) at the former and 110 x 130 millimetres (4 ⅜ x 5 ⅛ in) at the latter, were used.[25] The size of the logs available and the uses for which the timber was destined obviously determined how the timber was converted. These small timbers were squared heart baulks, as were the majority of the oak baulks used throughout Stirling Palace (felled 1538/9), although they were of significantly larger scantling, up to 180–200 millimetres (7 ⅛ to 7 ⅞ in) in cross section.[26] Guthrie Aisle, Brechin and Stirling are all examples of imported Scandinavian oak which almost always occurs in the form of squared heart baulks or squared half-baulks. Amongst the NOAP candidate buildings, hewn squared heart baulks were also the predominant form of timber conversion throughout the seventeenth century and they continue to be used in buildings of eighteenth-century date (see fig.1). However, during the eighteenth century, logs which had been hewn square and then sawn in half became the predominant form of timber conversion. Hewn roundwood was still used into the early nineteenth century but only in the lower-status vernacular buildings such as the post-and-beam construction at 96 High Street, Grantown-on-Spey.

Hewn and sawn timbers appear to have become the norm for rafters and joists throughout Scotland during the eighteenth century. Walker comments on timbers converted in this fashion in buildings in South Queensferry, and we have observed hewn

BUILDING	Date	hewn logs	hewn & sawn logs	sawn square	mill-sawn rectangular	circular sawmarks	wooden pegs	nails
Castle Grant, Grantown-on-Spey, Phase A	*c.*1540	whole					*	
Crathes Castle	1591		1/2 & 1/4				*	
Castle Fraser, Aberdeenshire	1615–18		1/2					
Drum Castle, Mansion House	1618–21	1/4	1/2 & 1/4				*	
Leith Hall, nr Huntly, Aberdeenshire	*c.*1650	whole					*	
Davidston House, Aberdeenshire	1678	1/4						
Bellabeg, Strathdon	*c.*1690s?	whole						
Dallas Lodge steading, Moray	late 17th C	whole					*	
Mansefield, Alford – roof	1718		1/2 & 1/4				*	*
Mansefield, Alford – cellar		whole						
Kilravock, 45 Findhorn, Kinross	early 18th C	whole					*	
Duff House, Banff	1737	whole	1/2 & 1/4	*			*	
Allargue House Phase 1	1748?	whole					*	
Castle Grant, Grantown-on-Spey Phase D	*c.*1760		1/2	*				
Old Courthouse, Campbeltown	1760		1/2				*	
Coulnakyle, Nethy Bridge	*c.* 1765	whole					*	
Garvamore Barracks, Laggan	*c.*1777		1/2				*	
Pitmain House, Kingussie	*c.*1790		1/2				*	
Kildrummy Mill, Alford	18th C		1/2					
Waterside, Glenkindie, Aberdeenshire	late 18th C?		1/2					*
Badden Cottage, Kincraig – cruck	1800?	whole					*	
Dalry House, Edinburgh	*c.*1800	whole	1/2				*	*
Red House, Mar Lodge Estate	1799 & 1808		1/2				*	
Inverey, Braemar	1800/01 & 1815		1/2				*	
Cluny Castle, Laggan	1805		1/2					*
96 High St, Grantown-on-Spey	tpq 1805	whole				*	*	
MacRobert House, Kingussie	tpq 1820?		1/2 & 1/4		*	*		*
Cross Keys Close, Brechin	early 19th C		1/2					*
Inchley, Deebank Rd, Ballater	early 19th C?				*			
Allargue House Phase 2	mid-19th C?		1/2					*
Pananich Wells Hotel bothy, Ballater	mid-19th C		1/2					*
Auchmore Cottage, Allargue	19th C				*			*

Table 2. Woodworking and conversion techniques, listed chronologically.
** indicates whether the timber is a quarter- or half-log.*

Figure 4. Sawn and hewn pine baulks in the roof of the Old Courthouse, Campbeltown. Note the wooden pegs in the sarking.

and sawn pine baulks in the Old Courthouse, Campbeltown, a building of probable eighteenth-century date (fig.4), in an early nineteenth-century building at Cross Keys Close, Brechin, and in the *c*.1800 roof of Dalry House, Edinburgh.[27] Some crucks were converted in the same way; sawn half-trees which have been adze-dressed have been recorded at Priors Linn, Canonbie, Sunnybrae Cottage, Pitlochry and in other Perthshire buildings.[28]

Apart from the mill-sawn rectangular baulks seen in some of the nineteenth-century buildings in our sample, the sawn timber in the buildings listed in Table 2 and mentioned above was almost invariably hand-sawn. The sawmarks were usually quite coarse and irregular, and lay at roughly right-angles to the edge of the baulk (see figs 5 and 6).

Figure 5. Hand-sawn oak collars in the roof of the Mansion House, Drum Castle.

Figure 6. Hand-sawn pine in a composite cruck in the Inverey byre.

Saws and sawyers are mentioned in Scottish documents from as early as the mid-fourteenth century but the earliest physical evidence that we have encountered for the use of saws in Scotland comes from the Greyfriars Friary at Shuttle Street, Glasgow, which was in use between around 1472–6 and 1560.[29] The well in the friary had been lined with pine boards which all bore sawmarks lying diagonally to the edge of the board, indicating that they had been rip-sawn over a trestle.[30] It may be that saws were employed primarily for the manufacture of boards for use as sarking and floorboards, those fittings of a building which often have not survived. Certainly, there is little evidence in other early buildings for the use of a saw in the conversion of timber (except on imported timber – see below); as described above, the standard means of converting and dressing baulks (as opposed to boards) throughout the sixteenth century was hewing with axe or adze.

The earliest examples of hand-sawn baulks in our sample were found in Crathes Castle, the Mansion House at Drum (fig.5) and Castle Fraser in Aberdeenshire, in roofs of late sixteenth- and early seventeenth-century date, but hand-sawing as a means of converting timber into baulks does not appear to have come into common use in Scotland until the eighteenth century. Elsewhere in Europe, rip-sawing was undertaken by professional sawyers who moved from job to job, taking their equipment with them, so it may have been too costly a means of conversion for most in the Scottish countryside.[31] It is perhaps unsurprising that it appears earliest in prestigious buildings whose wealthy owners could afford to hire a sawyer.

Mill-sawn timber has been found in sixteenth-century buildings but it is imported. Sawmills had been in use in Sweden since the 1460s and in Norway from the early sixteenth century, and throughout the sixteenth and seventeenth centuries Scotland imported large quantities of mill-sawn pine boards, or deals, from these countries.[32] We are now beginning to identify this material using dendrochronology; examples of these Scandinavian deals include the pine floorboards found over the Queen's Bedchamber in Stirling Palace (felled 1535) and painted ceiling boards

from the Bay Horse Inn, Dysart, Fife (felled 1583) and 302–4 Lawnmarket, Edinburgh (felled 1591 and 1605).[33]

Sawmills were belatedly adopted in Scotland to exploit the commercial potential of the Highland woods; there are references to water-powered sawmills in Strathspey by 1630 and in Deeside by 1638.[34] Despite this, there is little mill-sawn timber to be seen in the buildings in these valleys until the nineteenth century, although there was clearly a local market for their produce; again, this may be because the planks and deals produced by the sawmills have not survived in the buildings we examined.[35] The sawn floorboards and sarking over the seventeenth-century roof of Castle Grant must be a rare survival of the produce of one of these early sawmills.[36]

Circular sawmarks were observed in two buildings – MacRobert House, Kingussie and 96 High Street, Grantown-on-Spey – and in both buildings they were found on only one timber.[37] These were clearly not replacement timbers so the variation in technology may relate to different woodlands and different mills. The earliest reference to circular saws in Strathspey is 1820 when Grant of Rothiemurchus constructed a mill near Inverdruie which contained ten circular saws.[38] Thus, although we were unable to dendro-date these buildings (see below), the circular sawmarks do provide us with a *terminus post quem* of *c*.1820 for their construction.

The mixture of woodworking and conversion techniques at Duff House, Banff (completed 1739) also suggests different sources. There were hewn squared heart baulks, half- and quarter-baulks which had been hand-sawn on all visible faces, and baulks which had been sawn on two opposing faces and hewn on the lower face. These differences, in combination with varying growth rates, enabled us to identify different sources for the timber (see below).

In summary, it would appear from this study that up until the end of the eighteenth century, whatever the status of the building, the most economical way to convert and dress baulks of locally

felled timber was with the adze and the minimal use of a pit- or frame-saw. This was the approach adopted in both rural and urban settings. Even in Dalry House, which was on the outskirts of Edinburgh in the early 1800s, small pine timbers were pit-sawn and adze-dressed for use as rafters and joists.

Dendrochronological potential of the timber

The number of rings in the timber is crucial in successful dendrochronological analysis; usually timbers with less than 70 years are not considered viable for dating, although this can vary with the size of the sample, i.e. the number of timbers within an assemblage.[39] As Table 1a shows, the bulk of the pine timbers found in the buildings were young, the average, estimated age being *c*.30–50 years (see fig.7). In some cases these figures may be underestimates because, without an exposed cross section on which to neatly count the growth rings, our estimates were usually based on the figuring on the dressed surfaces of the timbers; subsequent analysis has demonstrated that some of the pine had very narrow outer rings which could not be clearly observed in tangential section. Nonetheless, there is some exceptionally young timber in some of the buildings and it will never be possible to date this type of material through dendrochronology.

A handful of buildings promised longer ring-patterns and these were subsequently sampled and analysed; in particular, we targeted

*Figure 7. Small, fast-grown hewn pine timbers in the roof over the Old Laundry, Drum Castle (*c.*1800).*

buildings near some of the recently developed living tree chronologies in Upper Deeside to test whether the proximity of ultra-local reference chronologies would aid in the dating of relatively short ring-sequences.[40] This has resulted in the successful dating of two vernacular buildings, the first time in the UK that dendrochronological dates have been obtained for native pine timbers in buildings. The uprights of a cruck frame within the Red House, on the Mar Lodge Estate, were felled in 1799 and 1808 (the presence of two felling dates suggests either reuse or remodelling, or possibly stockpiling of timber), while the timbers for the main construction phase of a cruck-frame byre at nearby Inverey were felled in 1799/1800 and the building was subsequently remodelled in 1815.

The dated timbers from these buildings had relatively long ring-patterns (see Table 1a) and this will certainly have aided their dating. The timbers from Inverey also displayed closely comparable growth patterns (referred to as internal correlation) indicating a similar source area, and this was probably as vital a factor in their successful dating. Several buildings along the Spey valley were analysed but none could be dated, despite the presence in some buildings of many sequences over 80 years in length.[41] Poor internal correlation prohibited the construction of robust site chronologies for Castle Grant, Grantown-on-Spey, MacRobert House, Kingussie and the timbers from the building at 96 High Street, Grantown-on-Spey; only occasional pairs and trios of growth patterns correlated well together and this is usually indicative of a variety of woodland sources. Grantown-on-Spey and Kingussie were both planned towns and the timber used to build these towns would have been bought either from merchants at a local burgh market, from sales held in the woodlands themselves, or directly from the landowner's factor or forester.[42] The adverts to attract residents to Grantown-on-Spey drew attention to the abundant local timber in the woods of Abernethy and Glenchernich; the timber used in building the town is likely to have been floated down the Spey from the Grant estates throughout Strathspey.[43] Thus, the timbers could have originated in woodlands growing in

varying conditions, from the moraines and eskers along the valley floor, to the higher altitudes of the Cairngorms, and increasingly by the early nineteenth century, from the plantations around the town itself.[44]

Poor internal correlation is not necessarily an obstacle to successful dating, but proximity to local reference chronologies representative of the original source area may be the most critical factor in the dating of native pine timber. In contrast to the situation around Upper Deeside where we now have some chronologies extending as far back as the fifteenth century, well-replicated chronologies from Strathspey extend only as far back as the late eighteenth century, although work on expanding these chronologies is in progress.[45] If, as other historical information suggests, the Kingussie and Grantown-on-Spey buildings were built in the early decades of the nineteenth century then none of the existing chronologies from Strathspey currently provides sufficient overlap.

Some exceptionally long-lived pine was observed in Duff House, Banff and in the complex of buildings at Fort George, Inverness, but the bulk of this material proved to be imported.[46] These buildings had been selected for the NOAP study because there was documentary evidence to suggest that at least some of the timber had come from local sources. The owner of Duff House, Lord Braco provided timber 'partly from his own Woods in Braemar, where there are very fine Trees, which he caused to be flotted down the River Dee to Aberdeen, and from thence brought about to Banff'.[47] There was a mixture of hand-sawn and axe-dressed timber within the roof and we observed that many of the sawn timbers in particular were very fast-grown, some as young as 15 years. The carpenters had been instructed 'to saw out the longest of the logs that came from Braemar', suggesting that the young, fast-grown timber was indeed native.[48]

The Army ledgers mentioned the use of local timber at Fort George. Both the Barrack blocks and the pier were built with relatively young and fast-grown pine which was consequently not sampled, and one wonders whether this was the local timber. These were the first structures to be erected in the Fort, so this

may have been the only type of timber that the Army could obtain rapidly.[49] It was clearly not of sufficient quality, as in 1752 the builder for the army garrison at Fort William demanded imported wood rather than local supplies because he considered that it would be better quality.[50]

Elsewhere in Scotland home-grown pine was also rejected in favour of imported wood; for instance, in Clackmannan in the eighteenth century 'home-fir, of 35–40 years growth was generally used for the roofs' but 'it scarcely lasted 20 years, whereas foreign wood continued good for a century'.[51] This accords with our observations on age, that imported pine is generally longer-lived and slower-grown (usually 100 years or more), and thus we have come to assume that when we encounter young, fast-grown pine it is likely to be locally grown, although we cannot demonstrate this dendrochronologically.

Summary

The purpose of this paper has been to present the NOAP project and those of its outcomes which might be of specific interest to building historians and conservation architects. The focus of the project has been north-east Scotland but we have tried to broaden the results with examples from other parts of the country. A similar approach to the building stock of other parts of Scotland would surely reveal some distinct regional differences.

One surprising outcome was the large proportion (75 per cent) of buildings in our sample in which at least some element of the original timber structure survived. From these buildings, data have been collected on the species and quality of wood used and the techniques employed to convert and dress the timbers, and this may be of use in the selection and preparation of more authentic materials for building conservation.[52] In terms of dating potential the results from north-east Scotland tend to confirm our suspicions that very little native oak was used in building in Scotland from the sixteenth century onwards, and so that section of the regional oak chronology may always remain weak. The project has

revealed that a great many vernacular and other buildings have been built with young fast-grown pine which will never be susceptible to dendrochronological analysis. Nevertheless, it has also demonstrated that, with a robust network of ultra-local pine chronologies, as now exists in Deeside, it can be possible to date some vernacular buildings. This brings with it the potential to identify regional trends in joinery and construction.[53] Other outcomes of the project have been a contribution to the study of the historic timber trade and to Scottish woodland history, topics which are discussed in more detail in separate papers.[54]

The timber fabric of our historic buildings has been studied from many different perspectives, as part of the country's building traditions, in the evolution of carpentry styles, to provide a context for twenty-first-century advances in timber construction, or in our case to construct tree-ring chronologies for dating and provenancing purposes.[55] However, overall the subject still remains relatively under-studied and fragmented in approach, perhaps because the various interest groups – historians, architects and materials specialists – are rarely brought together on the study of any one building. This has on occasion happened, as at Newark Castle, Port Glasgow and Sunnybrae Cottage, Pitlochry, and our understanding of those buildings is much improved as a result.[56] This paper thus ends with an appeal for the greater integration of all those interest groups in building recording and conservation projects.

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NB: All the unpublished reports referenced in this article have been archived with the Royal Commission on the Ancient and Historical Monuments of Scotland.

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WHIN MILLSTONES IN BALDERNOCK, WESTERN CENTRAL BELT

Paul Bishop

Whin, otherwise known as gorse, furse or furze, is a prickly evergreen shrub with bright yellow flowers that smell of coconut. The most common species of whin is Common Gorse (*Ulex europaeus*), a native of Western Europe. In the eighteenth and nineteenth centuries, whin shoots were a supplementary cattle feed, once the whin's prickles had been crushed and the shoots bruised and reduced to a pulp that is palatable to cattle and horses.[1] Graeme Collie's recent *Vernacular Building* article posed the question as to whether whin mills are a uniquely Doric phenomenon.[2] Collie was revisiting an issue raised more than eight decades earlier by James Ritchie who had also concentrated his discussion of whin mills on Aberdeenshire.[3] As Collie noted, Ritchie's concentration on Aberdeenshire may have simply reflected the narrowness of his investigation and his main sources of information, including his father-in-law who was an Aberdeenshire farmer.[4] Collie judged this explanation unsatisfactory, however, because the information held by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) and notes in Sites and Monuments Records confirm that, as Collie said, 'all the known examples [of whin mills] are found in modern (i.e. post-1996) Aberdeenshire'.[5]

Shaw reported the earliest known example of a mill for crushing whin, from Aberdeenshire in the late 1760s.[6] Fenton reported the construction of a mill for crushing whin shoots in Perth in 1778, and went on to note that many whin mills were set up subsequently, from Inverness-shire to the Borders, but with a concentration in the North-East.[7] A range of machinery was used to crush whin, including the complicated and sophisticated early to mid-nineteenth-century 'furze machine' and 'Mackenzie's Gorse Masticator, made in Cork'.[8] Forrester described similar machines, also noting that steam-powered gorse crushers were advertised in

the second half of the nineteenth century.[9] The type of whin mill described by Ritchie, Collie and Forrester is simpler than these machines, consisting of either a cylindrical or slightly tapered stone roller, pivoted at one end and pulled by an animal around a circular path to crush the whins, or a circular stone with an axle fixed at one end to a central pole, with the stone on its axle pulled edge-on around a circular trough containing the whins to be bruised. Both types were illustrated by Collie and the latter – an edge-running stone or 'edgerunner'– is our interest here (see fig.1).[10] Ritchie, Forrester, Collie and Fenton all included one or more photographs of this type of whin mill, with Fenton noting that the whin mill was used to crush year-old whin shoots and that 'an acre of whins could keep six horses for four months, on twenty minutes bruising daily'.[11] Interestingly, that acreage and whin consumption were reported from late eighteenth-century practice in Midlothian (i.e. not the North-East), and Forrester reported whin gathering and crushing throughout the British Isles (England, Wales and Ireland and the Isle of Man, along with Scotland), as well as noting the use of whin in early nineteenth-century Brittany.[12]

This note picks up on that last point and Collie's question as to whether whin mills were, 'perhaps with very few exceptions, unique to Aberdeenshire'.[13] The quarrying of possible whin millstones is reported in Baldernock, a rural locality about 2 kilometres (just over a mile) east of Milngavie on the northern outskirts of Glasgow in East Dunbartonshire. Baldernock is famous for Baldernock Mill, a still-functioning water mill in which the mill wheel, which used to drive a corn mill, now drives a saw mill. This note on whin millstones in Baldernock arose from an examination of the Baldernock Mill and its associated dam and lade.[14] Before reporting on the possible whin millstones in Baldernock, a brief background on millstones is provided.

Millstones

Millstones are either monolithic (a circular disc of a single stone) or segmented (generally between eight and 28 pieces of stone

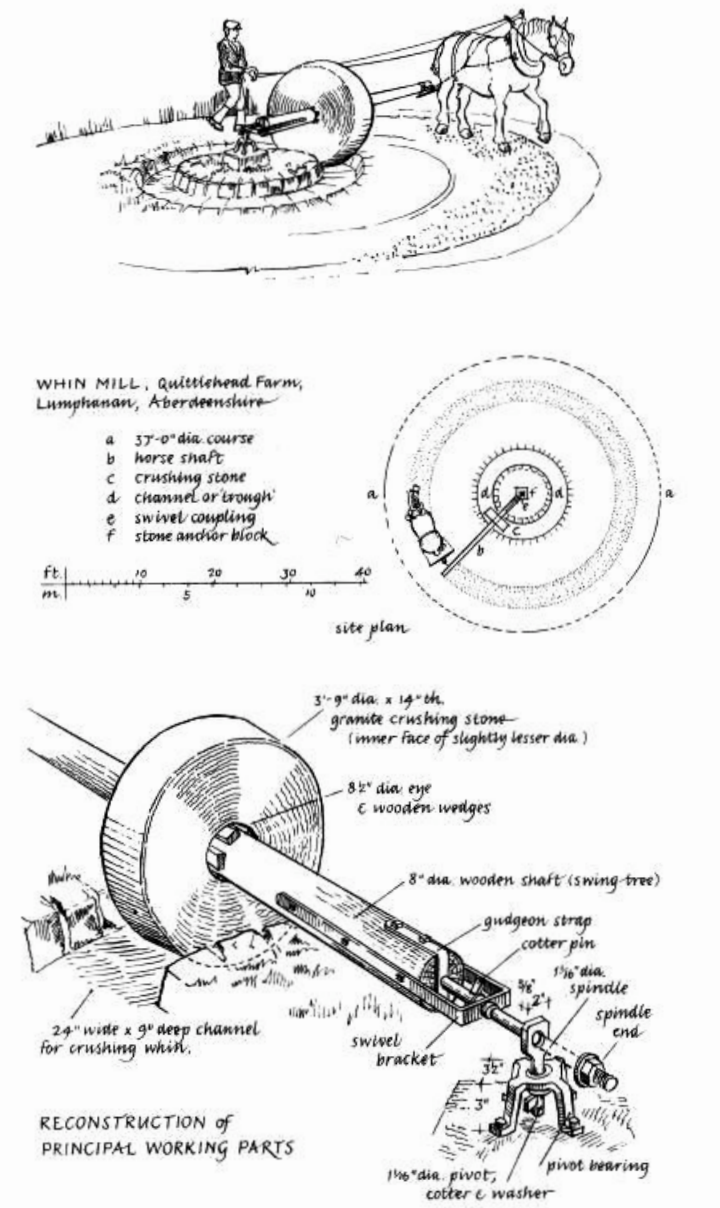

Figure 1. Plan and drawings of whin mill at Quittlehead, Lumphanan, Grampian, from the RCAHMS Scran website (http://www.scran.ac.uk/, Scran ID: 000-299-998-742-C). (© Crown Copyright: RCAHMS. Licensor www.rcahms.gov.uk)

	Lithology (where known)	Diameter (mm)	Thickness (mm)		Eye diameter (mm) and character	Fig.no.
'Normal' Scottish monolithic millstone (Tucker 1984)*	N/A	*c*.1100–1400	*c*.300			
Gauldie (1981)** on corn millstones in general (p.95)	N/A		New stone: 280–457 Worn down to ~75 thick			
Worn millstone at Baldernock Mill Cottage	Pebbly sandstone	1410	Rim: 108	Eye: 180	290–345 'stepped'	Figs 2–3
Burgh Muir (Tucker 1984)*		1676	Rim: 254	Eye: 305		
Kaim Hill (Tucker 1984)*	Quartz sandstone / conglomerate	1220				
Abbey Craig (Tucker 1984)* (segmented)	Basalt	1370	Rim: 280	Eye: 330		
Spittal (Tucker 1984)*		*c*.1500				
Gigha (Tucker 1984)*		1500				
Barrnacarry (Tucker 1984)*		1000–1200				
Mull (Tucker 1984)*	Pebbly grit stone	*c*.1250				
*[Norse – horizontal water wheel (Tucker 1984)**		*680–910*	*130]*			
Pennan stone (Gauldie 1981, p.93)**			356			
Perth grain mill stone specification (Gauldie 1981, pp 93–4)**	Grey sandstone	≤915 ['not more than 3' in diam. (which is plenty)']	Glamis Greys			
			Rim ('hem'): 191–203	Eye ('crown runner'): 267-279		
	Sandstone		French Burrs			
			Rim ('hem'): 279	Eye ('crown'): *c*.318–330		
In England (Gauldie 1981, p.94)**	N/A	610–1829, but 1219 most common	Rim: 381	Eye: 432		

	Lithology (where known)	Diameter (mm)	Thickness (mm)		Eye diameter (mm) and character	Fig.no.
Craigmaddie Muir						
Pecked outline of millstone on outcrop west of Muirhouse Farm (RCAHMS)***	Sandstone	1524–1981				
Broken monolithic millstone, Muirhouse Farm yard	Sandstone	1280	355		140; circular	Fig.4
Millstone set in stone wall at gate, Muirhouse Farm	Sandstone	1420	Rim: 405	Eye: 460	140; ?circular	Fig.5
Craigmaddie Muir north-east of Muirhouse Farm						
RCAHMS***	Sandstone	~1220 (‘about 4’ in diam.’)				
Partially cut stone (reported by Tucker 1984)*	Sandstone	1420				
Unlifted millstone measured by author	Sandstone	1300	c.430 (max)			Fig.6
Pecked millstone outline	Sandstone	1380				Fig.7
Two adjacent circular ‘cavities’ from which millstones appear to have been lifted	Sandstone	1830–2130 (NB. > diam. of the lifted millstone)				
Whin millstones as reported by Ritchie****		~750–~1500 but mostly ~850–~1400	~150–~500 but very predominantly ~300–~400		~150–~300 but predominantly ~180–~250; both circular and square holes reported	

Table 1. Characteristics and sizes of Scottish millstones (all monolithic, except if noted as segmented).
**D G Tucker, ‘Millstone making in Scotland’,* Proceedings of the Society of Antiquaries of Scotland*, Vol.114 (1984), pp 539–56*
***E Gauldie,* The Scottish Country Miller*, John Donald, Edinburgh, 1981*
****RCAHMS, Site Record for Craigmaddie Muir, Millstone Quarries, Canmore database, http://canmore.rcahms.gov.uk/*
*****J Ritchie, ‘Whin-mills in Aberdeenshire’,* Proceedings of the Society of Antiquaries of Scotland*, Vol.59 (1924–5), pp 128–42*

cemented together and bound by iron hoops to form a circular 'disc').[15] Whin millstones are monolithic. Millstones, as we commonly think of them in water mills or windmills, consist of a pair of stones mounted in horizontal position, the runner stone atop the nether stone (which is also known as the bed stone or lying stone). The vertical circular motion of the water wheel or windmill sail is converted by a set of gears into the horizontal circular motion of the runner stone; the nether stone is stationary. In grain mills, the grain is fed through the eye (a large hole at the centre of the runner stone) and ground between the rotating runner stone and the stationary nether stone as the grain makes its way outwards. The grain emerges from the edges of the stones as meal or flour, depending on the spacing and dressing of the stones. The two stones are generally of the same diameter, but the nether stone is normally a thick discoid in shape, with parallel top and bottom

Figure 2. Baldernock Mill runner stone viewed from the underside. Note the cross section of the eye and the circular grooves around it. The ruler on top of the stone is 457 mm (18 in) long.

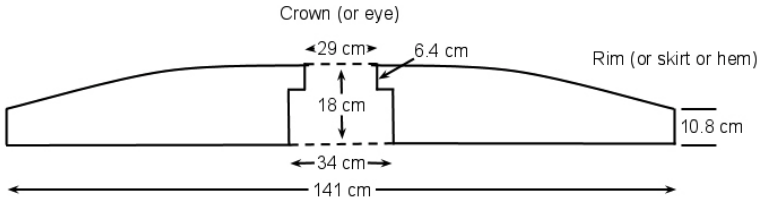

Figure 3. Diagrammatic cross section of Baldernock Mill runner stone (not to scale) with measured dimensions. The upper surface of the stone is slightly curved (shown diagrammatically here).

surfaces, whereas the runner stone is commonly thicker at the eye than at the rim (see figs 2–3). In some instances the upper surface of the nether stone may be convex-up, in which case it is matched by a concave-down lower surface of the runner stone; the curved surfaces help the grain to migrate outwards as it is ground. Table 1 (see previous pages) sets out measured and reported dimensions of some millstones in Scotland and elsewhere.

Millstones may also be used singly, as a monolithic edge-running stone that grinds by on-edge rotation about a central pivot (see fig.1). Many materials were ground in this way, including bark, charcoal, sulphur and gunpowder, as well as whin.[16]

Craigmaddie Muir Millstone Quarries

Craigmaddie Muir, about 1.5 kilometres (just under a mile) north-north-east of Baldernock Mill, is underlain by sedimentary rocks (sandstones and conglomerates) of the Carboniferous Lawmuir Formation. Sandstones along the southern edge (the Baldernock side) of the muir crop out as disconnected ragged cliff sections over about half a kilometre. These sandstones have been worked for millstones and the overall site is known by RCAHMS as the Craigmaddie Muir Millstone Quarries.[17] Evidence of the millstone working ranges from circular pecked outlines of (presumably) millstones, to *in situ* but unlifted millstones, to circular depressions in the rock where millstones have been lifted, to complete monolithic millstones that have been recovered from the muir (see figs 4–8).

Figure 4. Broken monolithic millstone, Muirhouse Farm yard. Ruler is 457 mm (18 in) long).

Figure 5. Millstone set in stone wall at Muirhouse Farm gate. Ruler is 914 mm (36 in) long.

Figure 6. Unlifted millstone north-east of Muirhouse Farm.

Figure 7. Pecked millstone outline north-east of Muirhouse Farm.

Figure 8. Detail of broken monolithic millstone in Muirhouse Farm yard, highlighting the millstone edge's worked (pecked), slightly convex-out surface. Scale is 457 mm (18 in) long.

RCAHMS and Tucker implicitly treated the Craigmaddie quarry site solely in terms of its being for the production of millstones for the grinding of grain as outlined above.[18] That viewpoint was identical to my own on first recognising the site, which occurred before I was aware of the RCAHMS and Tucker discussions. The farmer at Muirhouse Farm on Craigmaddie Muir commented, however, that he had been told that these were stones for the grinding of whin, and that comment stimulated this note.

Several characteristics of the stones point to their not being millstones for the grinding of grain. In particular, there is a complete lack of any stones that have been shaped as runner stones, in terms of either the stone being thinner at the rim than at the eye or the shape of the hole through the stone at the eye. The Craigmaddie stones are massive, basically worked monoliths. The data in Table 1 from the millstone set in the wall at the Muirhouse Farm gate do show that that stone is thicker at the eye than at the rim, but this greater thickness is symmetrical either side of the stone and not asymmetrical as in the runner stone at Baldernock Mill (figs 2–3). Moreover, the central hole of the Baldernock Mill stone is larger, neater, more finely finished and more elaborate than the simple circular hole in each of the moorland stones. The diameters and thicknesses of the Craigmaddie Muir millstones (when these can be determined) lie within the ranges of these dimensions reported by Ritchie[19] for Aberdeenshire whin millstones (see Table 1).

In detail, the edge of the stone that is lying in the Muirhouse Farm yard is slightly convex outwards and has been worked to peck its surface, whereas its exposed flat surface (upper surface here) has been left rough and almost unfinished (figs 4 and 8). The convex pecked surface of the edge is entirely consistent with the stone being rolled on edge as a crusher and is also apparent in Fenton's photograph of the whin mill.[20] The slight outwards curvature (convexity) of the edge presumably would have aided the crushing action. The slight difference in inside and outside diameters of the stone illustrated in fig.1 helped the edge-running stone to roll around a circle, but that difference in diameters is neither essential for satisfactory operation of an edge-running stone nor universal in whin millstones described by Collie.[21] In short, all the evidence points to the millstones quarried from Craigmaddie Muir Millstone Quarries being edge-running stones, most likely used to crush whin. The latter use is not proven by the data presented here but the farmer's comment that the monolithic stones are whin millstones is telling.

Final comment

It might not yet be possible to conclude definitively that the Craigmaddie Muir millstones are whin millstones, but that possibility raises several interesting issues concerning Graeme Collie's question as to whether whin mills are a uniquely Doric phenomenon in Scotland. Early reports of whin mills from across the British Isles in general, as well as from across Scotland in particular, suggest that they are not uniquely Doric. Collie argued that the best evidence for whin mills is the archaeological trace of the course and trough, but the massive nature of edge-running stones used to crush whin means that the stones may provide better evidence for the former presence of whin mills. The data also presented here suggest that diagnostic characteristics of a whin millstone include its massive character and a convex edge that is pecked for better crushing. Indeed, many monoliths identified by RCAHMS and Tucker may in fact have been misidentified as stones for milling grain. If some or the majority of those stones are

indeed whin millstones, it means that the former distribution of whin mills may have been quite widespread throughout Scotland.

Acknowledgments

I thank Douglas Murray, of Muirhouse Farm, for permission to work on the Craigmaddie Muir site and for interesting discussions about the millstones. Members of the Scottish Industrial Heritage Society are also thanked for responding to my early queries about whin mills.

Notes

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4 Collie, *op.cit.*, p.51.

5 Ibid. pp 48–9.

6 Shaw, *op.cit.*, p.163.

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CAIRNIEBOTTOM, EAST AYRSHIRE: CASE STUDY OF A NINETEENTH-CENTURY SMALLHOLDING

Ross Murray and Bruce Walker

When the occupants finally abandoned Cairniebottom Farm in the Muirkirk parish of East Ayrshire in the late nineteenth century, it is hard to imagine them thinking that over a hundred years later someone would seek to tell the tale of their unassuming, marginal little smallholding. Indeed nobody would have if it were not for the work done in advance of open-cast coal mining. While this could be viewed as a sad occasion, although it is difficult to imagine who would mourn its passing, I think the opposite is true. It has allowed a thorough investigation of a building that would have sat virtually anonymously in the Ayrshire hills until it decayed to nothing.

This investigation took the form of a survey of Cairniebottom and its surrounding landscape, trial trenching in and around the smallholding and the study of cartographic and documentary sources. The results of this research, presented in this report, have shown how the smallholding was constructed and functioned, and what the building and its surrounding lands would have looked like at the time it was in use, as well as determining, to some extent, what life at Cairniebottom would have entailed.

Cairniebottom was situated in an area of flat land in a landscape that is the very definition of the word bleak, approximately 2.5 kilometres (1.5 miles) to the east of Muirkirk in the upper Muirkirk valley and just west of the location of the former village of Glenbuck (see fig.1). At the time of the survey, the land consisted of poor agricultural grassland in fields bounded by stock fencing that generally fell towards the south from a high point of approximately 300 metres (1,000 feet) above sea level, and it is drained by the Ponesk and Lightshaw Burns which flow to the south and west respectively into the River Ayr.

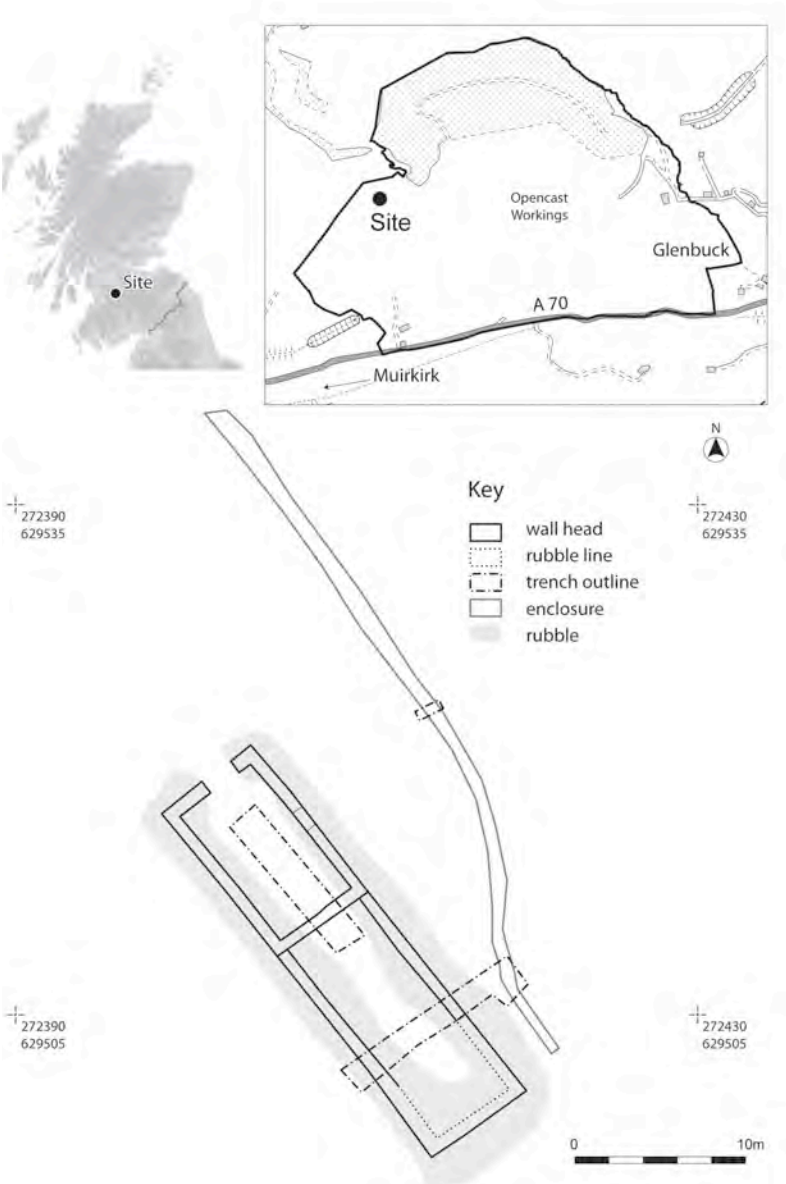


Figure 1. The location of Cairniebottom.

Survey

The survey of Cairniebottom revealed the remains of a low turf-covered building that measured 22.5 by 6.8 metres (74 x 23 ft) externally, with walls roughly 0.7 metre (2 ft 3 in) wide and up to 1 metre (3 ft 3 in) high in places (see fig.2). The building was aligned north-west to south-east, falling to the south-east. Around it was a spread of collapsed stone and turf superstructure. There was an entrance towards the north-west end of the more northerly long wall, and there was a marked change in level in the south-east half of the building, representing a step down. There were also traces here of a central drain. Initial field observations interpreted this south-east half as a possible byre, with the higher north-west part of the building being a small farmhouse.

The building was formed by a low random rubble wall that presumably formed a base for a turf superstructure, given that there were insufficient levels of rubble present around the building to suggest that the walls stood to its full height. The construction of the northern part of the building differed slightly, with the wall containing large orthostats (large stones set upright), while the south-west-facing external wall of the byre had been built with more formal squared rubble.

Figure 2. View of Cairniebottom during initial survey, looking south-west.

To the north-east of the building was a low, spread bank roughly 42 metres (138 ft) long and up to 1.1 metre (3 ft 7 in) wide, which could be traced further to the north as a well-built drystone wall. It petered out to the north and its full course could not be identified. Inspection of the area around the site, bounded by a former open-cast area to the south and where the ground fell away sharply to form the valley of the Ponesk Burn, did not identify other features, such as field systems, enclosures or rig and furrow, that may have related to Cairniebottom.

Excavation

The excavation was fairly small scale with three hand-excavated trenches placed within the building and across the associated enclosure (see fig.3). A trench was placed in the centre of the

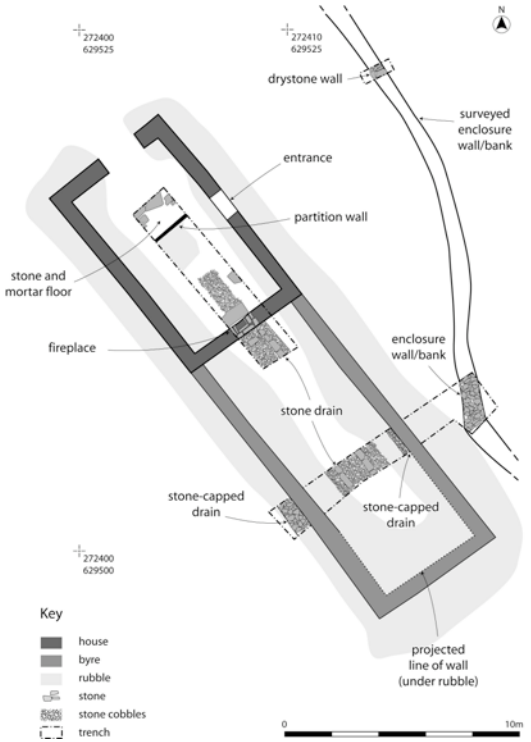


Figure 3.
Plan of Cainiebottom following excavation.

farmhouse in order to locate the hearth (if present) and to investigate the drop in level within the building noted during the initial survey. The north-west end of the trench revealed a floor surface, comprising a mixture of large flagstones, lime mortar and cement mortar, which was present to the north of a narrow internal wall. To the south-east of this was a spread of stone rubble likely to be collapse from the adjacent wall (see fig.4).

Beyond the rubble spread was a cobble surface, roughly 2.2 metres (7 ft 2 in) by 1 metre (3 ft 3 in) in extent, which abutted a large rectangular flagstone set next to the end wall of the farmhouse. This wall was 0.7 metre (2 ft 3 in) wide and was constructed of squared rubble bonded with coarse lime mortar and stood to a height of 0.4 metre (1 ft 4 in). Several of the larger stones had tool marks on the surface. Within this end wall was a brick- and stone-built fireplace, 0.6 metre (2 ft) wide and 0.5 metre (1 ft 8 in) deep; the bricks had not been frogged (the indentation on one of the longer faces that reduces the weight of the brick and assists laying and adhesion) and displayed no maker's mark. The drop in elevation, noted in the initial survey, was shown to be where the byre abutted the end wall of the original farmhouse. On the south side of the farmhouse wall, in the byre, was the drain noted in the initial survey. This comprised two parallel lines of large

Figure 4.
View of the house end of Carniebottom, looking south-west.

rectangular stones flanked on the outside by a 0.4-metre-wide (1 ft 4 in) cobbled strip forming a channel 0.9 metre (3 ft) across and 0.1 metre (4 in) deep. The base of the channel was also lined with cobbles.

The trench placed across the putative byre exposed both walls of the building, showing them to be built of random rubble, bonded with rough lime mortar (see fig.5). The south wall stood to a height of 0.8 metre (2 ft 7 in) and was 0.7 metre (2 ft 3 in) wide, with the lower 0.3 metre (1 ft) projecting from the wall face. This was built partially over a stone-lined drain that ran down the outside of the building and had been capped with tightly packed stones. The north wall shared the same random rubble and lime mortar construction, but was narrower with a width of 0.6 metre (2 ft), and stood to a height of 1 metre (3 ft 3 in) in order to compensate for a drop in ground level. Another stone-capped drain was present next to the interior face of this wall. The drain noted in the trench to the north also continued into this part of the byre (see fig.6).

The eastern end of this trench also exposed the enclosure bank associated with the farmstead, showing it to be 0.8 metre (2 ft 7 in) wide and constructed of unbonded stone. It was also exposed in the small trench to the north where it consisted of a more formally constructed drystone wall that was 0.56 metre (1 ft 10 in) wide and 0.43 metre (1 ft 5 in) high.

Some artefacts were recovered from the topsoil during the excavation and are typical finds one would expect from this type of site. They comprised various sherds of nineteenth-century redware and whiteware ceramics, glass (bottle and window) and corroded iron objects.

Generally the findings of the archaeological investigations are consistent with the layout of an early nineteenth-century small-holding, comprising a two-roomed house and contiguous byre, set up on marginal land at a time when agricultural holdings were in great demand. The archaeological evidence suggests a two-phase build, the house being the primary structure and the byre some time later. This is quite typical, since the house needed to

Figure 5.
View of collapsed enclosure bank (foreground) and external wall of the byre, looking south-east.

Figure 6.
View of stone drain in the centre of the byre.

be ready for the tenant and his family to occupy whilst he set up the rest of the smallholding in accordance with a pre-arranged agreement. The work required to be executed would include enclosure of property; water supply; drainage; preparation of arable land and garden; housing for livestock; midden stance and so on (see fig.7).

The construction of the house at Cairniebottom is consistent with the period and size of the farm (see fig.8). Walls were constructed with masonry and bound with mortar – normally of clay, but occasionally, in lime-producing areas, with lime mortar. These walls were normally built off the surface of the ground without any attempt at producing a foundation on the hard pan. In this case the walls appear to have formed a base on which a cuppilled structure – two timber cuppills (or crucks) equally spaced between the gables of the byre – would rest. The remainder of the walls up to an eaves height of 1.7 to 1.8 metres (5 ft 7 in to 5 ft 11 in) were normally constructed of mudwall, turf or in this case alternating stone and turf.

The cuppills supported a roof comprising a roof tree or, quite often in this part of Scotland, three roof trees making a platform at the ridge, pans (purlins) resting on the inclined surfaces of the cuppill siles at intervals between ridge and wallend. These in turn carried the sub-strata of the roof – a panel of stake and rice, wattle, or a series of cabers spanning from eaves to ridge. A layer of turf usually laid grass-side down would have been used as a base for a stob thatch, or a double layer of turf, the lower layer grass-side down and the upper layer grass-side up, as a base for a laid-on rush thatch. Stobbed thatch was particularly common in south-west Scotland, the best and most frequent recorded example being Robert Burns's cottage in Alloway, Ayrshire. Early images of this cottage show an angular roof, the pitch being more or less parallel to the pitch of the cuppill sides, but as a result of continuing repairs each season saw an increase in height over the ridge, a natural result of stob thatch repairs. By the time Sam Bough painted the house at the end of the nineteenth century there must have been at least 2 and possibly 3 metres (6 ft 6 in to 9 ft 10 in) of thatch on the ridge,

Figure 7.
Reconstructed plan of Cairniebottom.

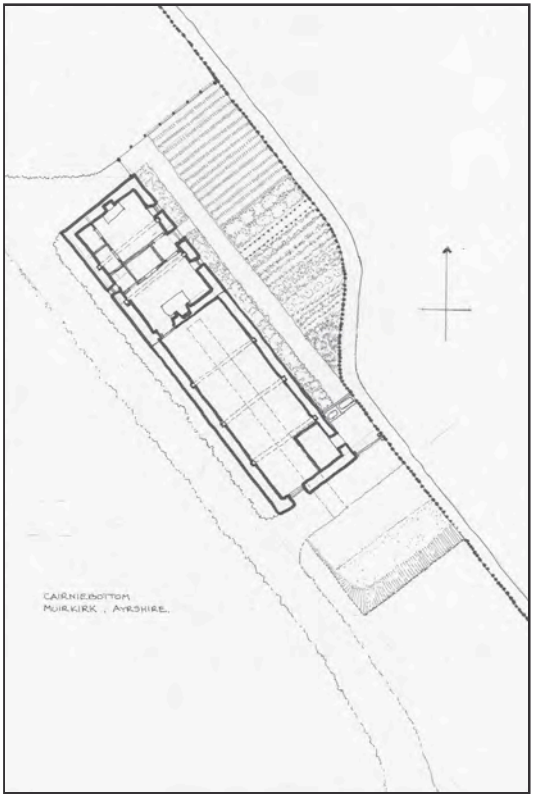
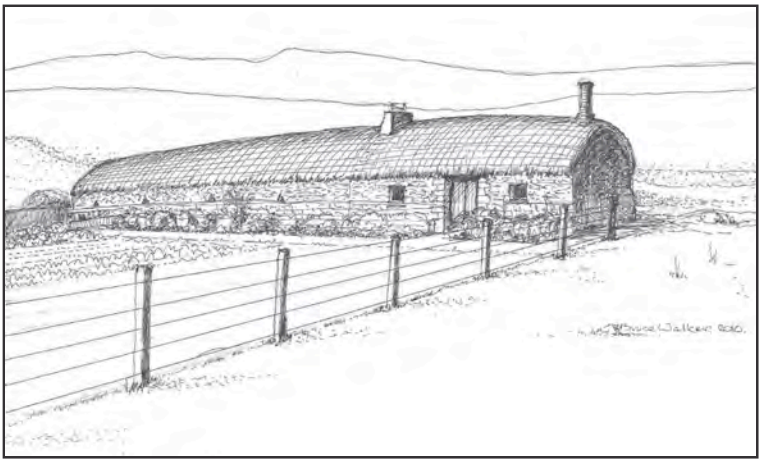


Figure 8.
Reconstruction of Cairniebottom.



changing the outer roof pitch from about 45 degrees to at least 60 degrees. The Sam Bough painting is owned by the Glasgow Museums and Art Galleries.

The house and byre were always built to predetermined sizes, based on the size of the holding rather than that of the occupying family, and although built by the tenant, remained the property of the estate. The ownership only included the building envelope, devoid of doors and windows in early leases but including these items later on. The exact date of the change cannot be defined, but tends to be linked to when the estate employed outside contractors to build new farm buildings. The interior, including internal partitions, ceilings, furnishings, chimney hoods and so on, fell under the category of 'tenant's timber' which could be removed at the end of a lease provided there was no danger to the integrity of the structure. It did not include cuppills, pans and ridge trees provided by the estate, as has been suggested by some building historians.

Cartographic and documentary evidence

Historic maps were consulted prior to the archaeological work at Cairniebottom in order to determine an approximate construction date. Although Roy's Military Survey (1747–55) and Thomson's Atlas of Scotland (1832) show farmsteads nearby, Cairniebottom is not present. The earliest cartographic evidence for Cairniebottom comes from the 1st Edition Ordnance Survey map, surveyed 1852–9, where it is depicted as a single building. The building is not present on the OS 2nd Edition map, surveyed in 1895. The map evidence suggests, therefore, that Cairniebottom was constructed after 1832 and was abandoned some time prior to 1895.

The documentary evidence for Cairniebottom is scarce and a search of the National Archives of Scotland failed to yield estate plans depicting the farm. However, it is mentioned briefly in the work of the Muirkirk poet Thomas Floyd (1858–1933), who writes:

> A hundred years ago Muirkirk Parish contained a number of farm houses and one or two notable

> places that have long since succumbed to the ravages of a century of time. Some are standing in ruins, while others have disappeared and left only their names to tell they have been.
>
> In the Greenock Water district Hallsmuir, Cleuchheid, Cairniebottom, East Braeheid, West Braeheid, the Old Manse, Lamonburn, Harwood, Burnhoose, and Shawknowe have all gone west.

The phrase 'have all gone west' is intriguing in that, though it most likely simply means these farms were abandoned for various reasons, it may literally be the case that the occupants emigrated to North America in search of a better life.

Conclusions

While optimism in the early nineteenth century was high and a large number of settlements created at this time survived, in situations as inhospitable as Cairniebottom, all too many failed. Cairniebottom's elevation above sea level, its bleakness and the obvious wetness of the ground would put this site at a distinct disadvantage as a viable agricultural holding, but such was the demand for farms created by the agricultural improvements breaking up the multiple-tenancy 'ferm toons' that estates were prepared to set aside land for new agrarian settlements. These were based on pendicles; that is, the estate and tenant both recognised that the tenant would require secondary employment in order to make an adequate living.

Many pendicles were occupied by key estate workers such as millers, carpenters, masons, blacksmiths and the like, and their secondary occupation was easy to recognise in the layout and detailing of the byre buildings. These tenants were normally allocated good sites close to the centre of the estate where they could service all the main farms. Poorer sites such as Cairniebottom tended to be allocated to dikers, ditchers, peat cutters, foresters, quarrymen, roadmen and shepherds, who required no special equipment in the byre.

The only occupation that tends to entail a different layout to the house is that of the weaver. In the weaver's cottage, the room to the north would be set aside for the loom, and this room would lack a fireplace and have an earthen floor. This was intended to retain dampness in the air, improving the workability of the fibres. At Cairniebottom, lack of evidence at the north gable precludes a definite interpretation, so the more common sleeping room interpretation has been shown in the reconstruction.

Cartographic sources and references

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Acknowledgements

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A HISTORY OF THE THATCHED HOUSE AT LONBAIN, APPLECROSS, WESTER ROSS

Andrew P K Wright

Recent surveys have confirmed the extent to which the traditional thatched houses of the northern Scottish mainland and Hebrides are in inexorable decline.[1] The National Trust for Scotland owns some of the most important surviving examples, and among its more recent possessions is a thatched house at the remote community of Lonbain on the Applecross peninsula which it acquired in 2006.

The property had survived in a substantially unaltered state, largely because of the remoteness of the site (the public road around the peninsula from Shieldaig, avoiding the giddy heights of the old drove road through the Bealach na Bà, was not completed until 1975), and also because of the obdurate nature of

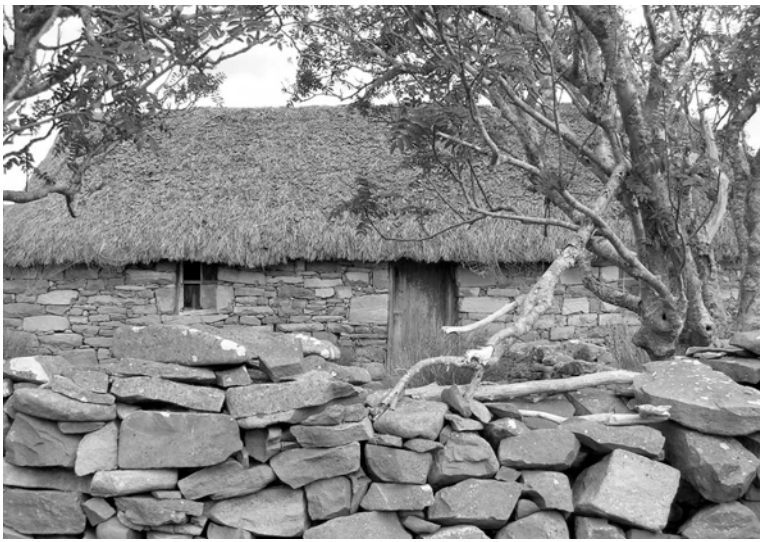

Figure 1. The thatched house at Lonbain.

Figure 2. Duncan ('Dunacan') Mackenzie in his thirties. (Reproduced courtesy of the Applecross Historical Society)

its inhabitant. Shy and retiring, Duncan Mackenzie (see fig.2), known locally as 'Dunacan', was born in the property around 1901 and since 1944, when his mother died, he had endured a life of enforced solitude with the population of the township declining in the years following the Second World War. Dunacan had eked out a living as a crofter in the traditional manner using only hand implements, and it was only after his health failed in his late eighties that he was finally persuaded to leave the house and spend his last months in a care home in Easter Ross. He would always be well dressed when he left the house, and would be seen occasionally on the road returning on foot from Applecross with his bags of shopping, a round trip of around 12 miles.

Situated towards the end of a long row of cottages, the undeniably picturesque appearance of his house proved irresistible to tourists whose fascination became a source of constant irritation to Dunacan. A distinctly unwelcoming 'NO PHOTOS' notice was posted up outside the property, and only very rarely would anyone

be allowed in to witness how he had survived in such primitive circumstances without sanitation, or indeed services of any kind. The attractions of Lonbain lie not only in the rare survival of a traditional thatched house, but in the open location of the distinctive linear settlement superimposed on the landscape from which the row of houses looked westwards across the Inner Sound to Raasay. The linear layout of the crofts is derived from one of a number of surveyors' plans for estate improvements (see fig.3) prepared most probably after 1810 when there was a change in the family succession, although it has been claimed that the plans could have been drawn up as early as the 1790s. The plans heralded the dispersal of tenants from the nucleated villages of huts which were in uncomfortable proximity to the handsome mansion house of the Mackenzies of Applecross. The linear form seemed well adapted to the old coastal path around the peninsula which passed directly in front of each of the cottages. There had always been strong bonds between the laird and the tenants of the estate and, although the estate was not immune from emigration in the late eighteenth century, it does not appear to have been encouraged, or forced even, despite the mounting problems of unchecked population growth in the parish.

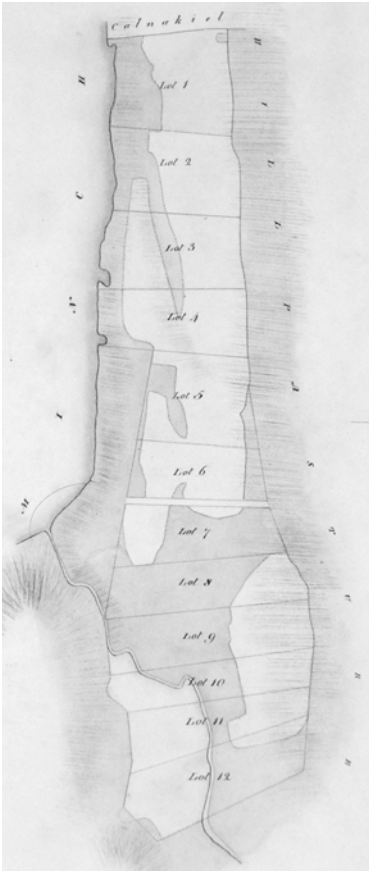

Figure 3. Surveyor's plan of the township at Lonbain, probably after 1810, from a series of plans held at Applecross House.

The 6th Laird, Thomas Mackenzie of Highfield, inherited the estate in 1774 and, continuing the paternalistic attitude of his forebears, he took the unprecedented step of granting certainty of tenure with 25-year leases. All was to change for the worse when his son, John, inherited the title to become 7th Laird. He gained a particular notoriety among the tenants for having embraced the spirit of agricultural improvement, for which his reputation was tainted by being associated with the drifting tide of emigration from the parish. Rentals were increased by up to fourfold once the original leases granted by the 6th Laird had expired; and during the first decades of the nineteenth century, attitudes towards the Applecross lairds changed and hardened appreciably. In general, Highland landowners were exposed financially after the 1820s with the collapse of the staple industries of black cattle and kelp, and the parish minister noted in 1836 that 'some of the rents are irregularly and ill paid'.[2] Sea-ware was used extensively for manuring the land on the coastal plains and, more than any other of the parishes of the West Coast, reliance on the potato as the principal crop had grown to an estimated 66 per cent of the total output in a parish noted for being grazing country rather than fertile cornlands. Thus the effect of the famine years in the late 1840s from the repeated failure of the potato crop was devastating, and meal had to be imported from as far afield as Caithness, Aberdeen, Banff, Buchan, Moray and Greenock, but this was no new event for Wester Ross.[3] Although white fish and herring were potentially a lucrative market, fishing was never a mainstay of the parish economy, due to a shortage of suitable beaches for drawing up the smaller fishing boats and the lack of investment in building local harbours.

There had been a settlement of some sort at Lonbain before the plots of the new linear township were laid out to the surveyor's carefully drawn and coloured plan. The size of the community that existed before is unknown, and may have taken the form of a nucleated hamlet to the north of the present site. According to the plan, 12 plots were to be laid out and while there may have been some subdivision of the plots in later years, perhaps for cottars,

records suggest that around 12 or 13 leases was the norm. The plot sizes were calculated between 2.5 and 4 acres, and at the midpoint a track led inwards to the common grazings and to the summer shielings where around 18 shieling huts were scattered below the 600-foot (200-metre) contour.

Given the remoteness of the township, the archaeology of the site reveals the extent to which it had been self-sufficient. Animal pens are found near the foreshore, roughly built of rounded field stones, while nestling within the boulders above the shoreline are the remains of a corn kiln. Each of the plots appears to have a kailyard to the front of the dwelling and a midden to the rear. None of the houses appears to have been built as a byre dwelling

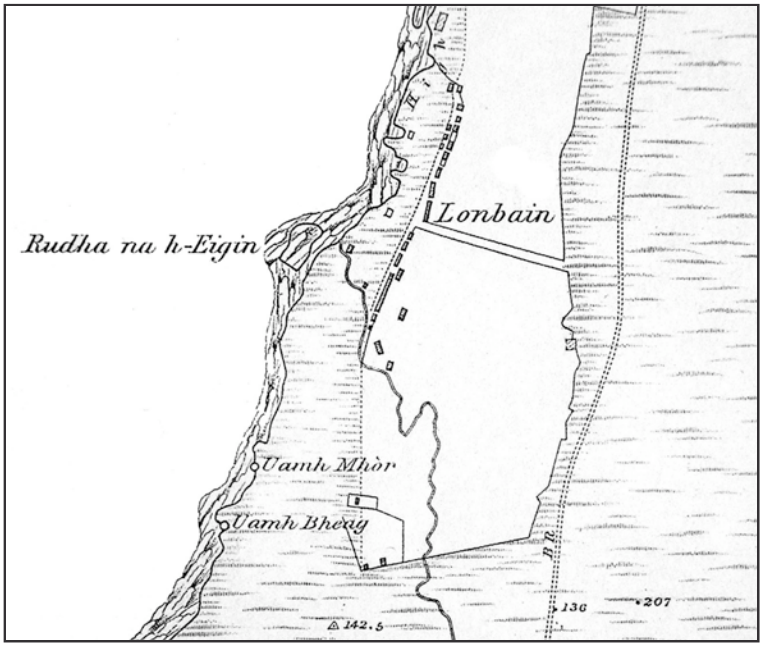

Figure 4. Extract from the 1902 Ordnance Survey map, showing the extent of the cultivated ground at this time and the bridal path on the higher ground, replacing the earlier coastal footpath to the front of each of the houses of the township. (Ordnance Survey, 1:10,560, 6 inches to the mile, Ross and Cromarty (mainland) sheet XCIA*, revised 1902, published 1905; reproduced by permission of the Trustees of the National Library of Scotland)*

and in some cases extensions were added to the gables of the cottages to form byres. Smaller buildings were erected to the front of the houses, built normally in a similar manner, and would be used as barns, store-houses for agricultural implements or for fishing gear, and possibly also as animal byres. The settlement at Lonbain was not always so deprived of aspects of modern life – by the end of the nineteenth century one of the tenants was a postman, and a red cast-iron Royal Mail postbox arrived around this time built into the gables of one of the houses of the northern range. All of the evidence points to the fact that this distinctive linear settlement was occupied first in the mid-1820s, and even at this date the estate was well ahead of its neighbours in encouraging agricultural improvement on any scale. The immediate neighbour of Mackenzie of Applecross, the paternalistic 12th Laird of Gairloch, Sir Francis Mackenzie, had inherited his estate in 1823, but died some 20 years later from a brain fever brought on by having failed to find effective solutions to the land management problems engulfing his tenants.

The external shell of the last surviving thatched house has been built like no others in the row. It is of drystane construction, with an almost imperceptible batter to the front and rear walls. Not only is the masonry of an exceptional quality, of unforgiving Torridonian sandstone which has been roughly shaped and coursed, but the infill in the form of the snecks, or slivers of stone at each of the joints has been elevated here almost to an art form (see fig.5), and will have contributed to the longevity of the structure when compared with the other houses on the site. Where the gables are carried up to meet the thatch they describe the pitch line of the roof perfectly, with stones carefully cut to the profile. The core of the walls has been filled with angular chips of stone from the facework. Incorporating rounded fieldstones, the rear wall is slightly less well constructed; the reason for this may lie in the fact that it was less vulnerable to water penetration through being protected from the prevailing wind, and the raised bank would have afforded further protection. It is inconceivable that work of this standard could have been carried out by a farmer or fisherman with little, or no, practical

Figure 5. Finely executed masonry to the front wall of the house, shaped from Torridonian sandstone.

Figure 6. The south gable of the barn to the front of the house.

building experience and the work has to be that of a skilled mason. Dunacan had remarked to Geoffrey Stell on one occasion that he had been told that a mason from the adjoining township at Kalnakill had built the house.[4] That being so, how the mason would have been reimbursed for his efforts – in cash, in meal, or in kind – can only be guessed at. Internal comfort levels were achieved initially from the application of a thin coat of a weak lime plaster over a rudimentary clay and straw binding mortar.

An oddity is that the north gable – probably for much of its lifetime sheltered by the gable of the building of the adjoining plot – is of pegged turf, of which Dunacan had stated that the material had never been replaced over his lifetime, at least as far as he knew. The use of turf would have improved the insulating properties of the wall against which a hanging chimney (hingin' lum) and fireplace were placed, and would have avoided the effort involved in shaping the unforgiving stone at the head of the gable. Turf gables were found across the whole of the North and North-West of Scotland – the author has seen remnants surviving in Caithness, and the National Trust for Scotland possesses two thatched houses at Culloden with this form of construction, at Old Leanach and King's Stables Cottage.

The architect Colin Sinclair, in his seminal book with the quaint title *The Thatched Houses of the Old Highlands*, set out three types of thatched houses which he described from his extensive travels, mainly of the Hebrides and the Western Seaboard, an odyssey which began in the 1920s.[5] His journeys never took him into the North Highlands, where he would have encountered yet another typology based on the traditional longhouse, but quite different in appearance and construction to the longhouses of Lewis. That is not, however, to deny his achievement, or the value of his short book on the subject. One of Sinclair's three typologies is the Skye type of thatched house which, he noted, would be found commonly in Kintail, Morar, Lochaber and Ardnamurchan, in addition to the Isle of Skye. The house at Lonbain fits his description and drawings reasonably well in most respects, but not in others, suggesting that there is a further typology – or a hybrid

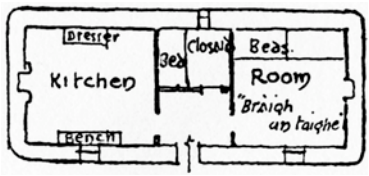

Figure 7. Plan of the 'Skye type' of thatched house. (From Colin Sinclair, The Thatched Houses of the Old Highlands*, Oliver & Boyd, Edinburgh, 1953)*

of the typologies he gave – in Wester Ross, in which rounded corners are uncommon and the roofs are not normally hipped. The Lonbain plan is remarkably close to this, having rooms at each end with fireplaces, and a central door and entrance lobby leading to a *clòsaid*, or closet, illuminated by a small window on the rear wall at the heart of the plan. The house might also be considered a hybrid in the evolution of the improved Highland cottage of which the origins can be traced to the Southern Lowlands and further afield in the last quarter of the eighteenth century, characterised by having a measure of basic classical symmetry with paired windows around a central doorway.[6] In its final development the improved cottage had flues within the thickness of the walls of the end gables, with matching chimneyheads to maintain the symmetry of the frontage and a slate roof.

An extract from Sinclair's description is given below, as it is remarkably close to what has survived at Lonbain:

> The plan is simple, consisting of a kitchen to one side and a room on the other, with a small apartment (*clòsaid*), sufficiently large to accommodate a bed placed between them. A fireplace is formed in one or each of the end walls, having a short chimney often barely reaching the level of the ridge of the roof, a feature which imparts a certain distinction to the design. Sometimes the principal fireplace is arranged on one side of the internal cross walls, assuming the form known as the *similear crochaidh*, or hanging chimney, which is a square wood box vent expanded to form a hood over the hearth and fixed against the wall. The top emerges through the thatch, which is dressed and bound around it.[7]

At Lonbain the thatched house has two fireplaces, one at each gable. The detailing of the fire surrounds is, however, far from primitive, having the appearance of a traditional model with projecting mantelpiece supported on curved brackets, but with the fireplace jambs possessing the unusual feature of being splayed from the continuation of the framing timbers which taper inwards towards the head of the flue. The internal surfaces of the flues at both gables are parged with a mortar of clay and straw, bound with hessian to reduce the fire risk and the smoke escaping into the living spaces, a feature which appears to have been largely unsuccessful as the roof timbers are heavily smoke-blackened.

Close similarities exist also with Sinclair's description of the internal structure of the dwelling which also matches that of the barn, the only difference being that there are three sets of crucks in the house, and two in the barn, where the precision with which the masonry has been shaped in forming the pocket in the wall can be witnessed. This form of construction is not without sophistication, as Sinclair suggests:

> The couples are of the 'collar-beam' type, with the *maide tarsuinn* (cross-piece or collar) fixed rather higher than halfway up the roof. The purlins, usually three on each side, are squared or round timber, pegs

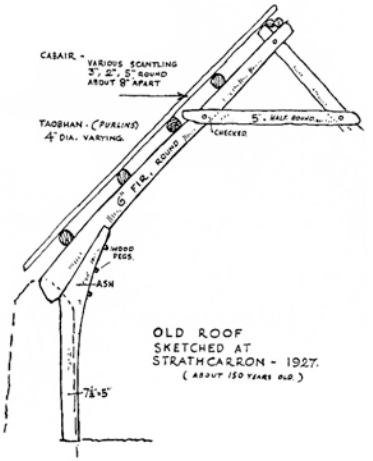

Figure 8. Sketch of a roof with cruck blades and posts at Strathcarron c.*1820, recorded in 1927. (From Colin Sinclair,* The Thatched Houses of the Old Highlands*, Oliver & Boyd, Edinburgh, 1953)

*Figure 9. Detail of the pegged joint between the cruck blade and stub post (*crup*).*

> of wood (*crann tairgnean*) forming the fastening to all the members. As in the Hebridean house, light branches are laid closely together over the purlins from wall to ridge, to carry the turf which forms a bed for the thatch.
>
> In many instances, particularly on the mainland, the feet of the rafters of the couples are connected to vertical posts (*crup*) inserted in the wall and extending to within a few feet of the floor. The connection or fastening between the rafter and this member often displays some degree of carpentry.[8]

Although there is evidence that in the 1970s the roof had been thatched in straw, heather appears to have been the preferred thatching material historically for the Applecross peninsula, and oral history from the adjoining township of Kalnakill suggests that heather for thatching had been brought by boat across the Inner Sound from Raasay.[9] Heather required considerable skill in

drawing the shoots from the moorland and would have necessitated a special trip having to be made by the men and boys of the community. Skill was needed also in laying the material, but the main advantage was its longevity, matched only by fern thatch in Wester Ross. Ropes would have been originally of heather, fixed to iron rods in the masonry joints on the gables, a tradition which had died out by the 1950s when the use of wire netting became widespread. The present roof has been thatched in heather by the late Duncan Matheson of Dornie.

Alterations were carried out around the turn of the twentieth century, no doubt with the intention of improving the living conditions for the growing family into which Dunacan had been introduced. The old, thin plaster finish was lined out with vee-jointed boarding, which was extended to provide rudimentary

Figure 10. Photograph of the south room of the house taken in 1991.
(© Crown Copyright: RCAHMS. Licensor www.rcahms.gov.uk)

ceilings, the majority of which have now either collapsed or been dismantled. Where the linings failed over time, crude attempts at renewal were made as though almost in desperation, using whatever pieces of wood came to hand including what appear to have been lengths of timber from old fish boxes. With customary Highland pragmatism the rooms were made more comfortable by applying successive layers of newspaper and wallpaper, giving the interior a certain charisma in its advanced state of decay. One of the early-nineteenth-century windows has survived, as has a fixed light of six panes in which original glass is set within finely detailed astragals.

Sadly, many of Dunacan Mackenzie's few possessions were dispersed after his departure from the house, and some damage was inflicted upon the interior of the property before it came into the possession of the National Trust for Scotland. However, it is fortunate that two pieces of important Highland vernacular furniture have survived, and will be conserved. One is a three-legged stick-back chair with five 'comb-back' stays (fig.11), found typically in the coastal areas from Wester Ross to Kintyre, and the other a plain bench, or settle, of solid planks with gently curved endboards (see fig.10).[10] There had been a wooden bed in the house which must have been destroyed.

Figure 11. Three-legged 'stick-back' chair.

Figure 12. The linear character of the township structures, built from materials of the land, has been compromised by the erection of new buildings and from extensions where the buildings have continued in use.

The iconic image of the linear township, with the shells of the old houses running out across the landscape in an unbroken straight line, has been violated in recent years, perhaps not so much by structures which have been erected out of alignment with the original plan, but by the new houses built upon the original plots which are of a different scale and of contrasting materials. There has also been the visual damage from the incremental growth of sheds, conservatories and polytunnels which have sprung up around them. Damaging as this might appear, in truth the desecration of the site only began when the shells of the old houses adjacent to Dunacan's house were turned into a filmset for Bill Bryden's portrayal of the last days of the community on St Kilda, *Ill Fares the Land*, released in 1982 for Channel 4 and starring Fulton Mackay. Makeshift thatched roofs were erected to create the illusion of the filmset, for which the wallheads and gables of the houses were rebuilt indiscriminately with an internal concrete block skin applied. In the majority of cases these have

Figure 13. A collapsed gable showing the damage from rebuilding the walls of the shells of the old houses with concrete blockwork as part of a filmset in the early 1980s.

collapsed during the worst of the gales, leaving blocks strewn around the interiors of the shells, and as a consequence permanent damage has been caused to the archaeology of the site. It is hard to conceive how the last remaining tenant at the end of the row coped with the assault on his secluded privacy from the film crew and actors. It is hard also not to form the view that the special character of this unique place should have been protected by an appropriate designation under historic environment legislation.

While exhibiting traits relating them to the family typology of thatched houses on Skye, the thatched houses of the Applecross and Gairloch parishes of Wester Ross have their own identity and traditions. There would be merit in examining them in more detail as a group from the evidence that has survived – and, perhaps more poignantly, while it is still there to be examined.

Acknowledgments

I am especially grateful for the assistance given by the Applecross Historical Society in the preparation of the conservation plan for the National Trust for Scotland (2009), upon which this article is based.

Notes

[1] Stuart Bagshaw, fieldwork undertaken throughout the Western Isles on behalf of the Scottish Civic Trust for the Buildings at Risk Register, 2008; Andrew P K Wright, *Caithness Redundant Buildings Inventory Report*, 2008; Stuart Bagshaw Associates and Andrew

P K Wright, conservation area appraisals for Ruisgarry (Berneray) and Howmore (South Uist), 2009.

2 Revd Roderick McRae, entry for the Parish of Applecross in the *New Statistical Account of Scotland*, Vol.XIV, 1836, p.102.

3 Revd Daniel McIntosh, entry for the Parish of Gairloch in the 'Old' *Statistical Account of Scotland*, No.VII, Vol.III, 1791–9, p.40.

4 Quoted by Geoffrey Stell and Elizabeth Beaton, 'Local building traditions', in: Donald Omand (ed.), *The Ross and Cromarty Book*, Northern Times, Golspie, 1984, p.209.

5 Colin Sinclair, *The Thatched Houses of the Old Highlands*, Oliver & Boyd, Edinburgh, 1953.

6 See Daniel Maudlin, *The Highland House Transformed: Architecture and Identity on the Edge of Britain, 1700–1850*, Dundee University Press, Dundee, 2009.

7 Sinclair, *op.cit.*, p.35.

8 Ibid p.36.

9 Stell and Beaton, *op.cit.*, p.209.

10 For comb- and stick-back chairs, see: R Ross Noble, 'Highland vernacular furniture and context', *Vernacular Building*, Vol.30 – *Furniture and Fittings in the Traditional Scottish Home* (2006), pp 43–62 (pp 46–8).

CLAY THATCH ROOF AT 35 MAIN STREET, NEWMILL, KEITH, MORAY

Nick Brown

In 2009, a clay thatch roof finish was uncovered in the village of Newmill, Keith, during a small-scale project to convert a non-listed 'smiddy store' for domestic living purposes. Since the proposal involved losing the original roof materials in favour of a slate finish, this article is a record of the findings.

Historical background

Newmill was founded in 1759 by Viscount Macduff, Earl of Fife and became Keith's fourth parish.[1] In the early 1750s, both the Earl of Fife and the Earl of Seafield independently laid out two planned towns – 'Fife Keith' and 'New Keith' – to add to the existing 'Old town of Keith'.[2] The Earl of Fife's latest planned venture was known as the 'New town of Newmill' and, in the 1770s, it was noted that '[n]ear the top of the opposite hill [to Old Keith] a new town is built containing a hundred houses'.[3] It was said to then

Figure 1. Photograph from 1962 showing the smiddy almost centre picture – the tiny building next to the one-and-a-half-storey house with bay dormers. (Courtesy of the owner of the smiddy)

contain 330 inhabitants, of whom there were 'very few weavers, who are the only manufacturers; the rest, excepting 5 or 6 families, consist of very poor people who have fixed their abode there'.[4] Near it was 'Newmill', an earlier settlement with only 65 inhabitants.[5]

The Earl of Fife's planned town of Newmill was sited halfway up a hill on the north-east side of Keith and the River Isla, and was stretched out with a southerly aspect along the contours of the hillside. The village is now centred upon a fine Square with an impressive memorial clocktower (1923) and the two principal roads, which form a cross pattern, respectively run along the hill and at right angles to it.[6] The buildings, which are either terraced or semi-detached, are generally single- or one-and-a-half-storey cottages. Early twentieth-century photography of the village shows that most of the properties were built of stone and slate, although one or two were still rendered and thatched.[7]

Despite its ambitious foundations, and some steady increase in population throughout the first half of the nineteenth century, 'Newmill never really prospered, although close to peat deposits'.[8] The 1868 Ordnance Survey map of Newmill shows the village

Figure 2. Extract from the 1868 Ordnance Survey map, showing the new and old towns of Newmill. (Ordnance Survey, 1:10,560, 6 inches to the mile, Banff-shire sheet XIV*, surveyed 1868, published 1871; reproduced by permission of the Trustees of the National Library of Scotland)*

little different from today, except for the 500-seat, now-converted church (1871),[9] the school (1874 and 1989), twentieth-century council housing, and the Carnegie Library and Newmill Institute (1905), 'which did much to develop a real sense of community in the parish'.[10] In 1878, there were 157 families within 151 homes in the village, providing a population of 614 people.[4] Its most famous son, James Gordon Bennett, left the village for America and founded the *New York Herald*.

Throughout the nineteenth century, the Earls of Seafield and Fife both remained 'very interested in the people and the burgh, but unfortunately their interests did not survive World War One'.[11] The Second World War was also unkind to village fortunes and population decline saw the closure of the school in 1965, and then the church in 1985.[12] However, by the 1990s, Newmill was very positively described as 'certainly looking up, with local businesses based in the village, old houses being modernised, and a new school, it is again becoming a village full of variety and interest'.[13]

Number 35 Main Street (National Grid reference NJ 4335 5235) is cited in its deeds (1901) as 'Feu No 70' in the 'Baron

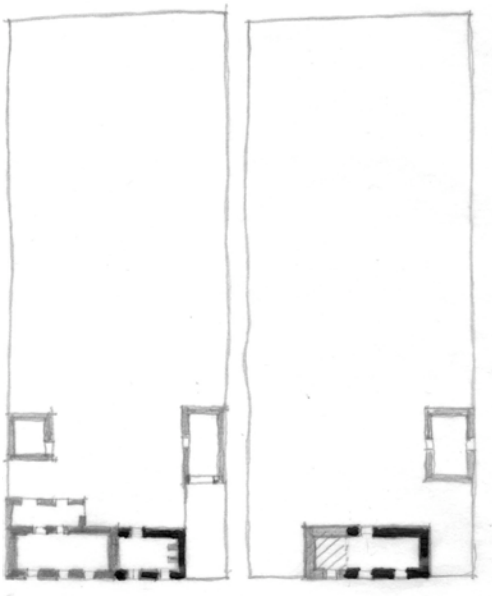

Figure 3. Feu plan sketches showing the existing buildings at 35 Main Street (left) and their possible early development (right). The smiddy store is shown in solid black. The right-hand sketch conjecturally shows the store in the form of a traditional cottage, with its now-truncated area hatched, and a rear outbuilding or separate dwelling unit. The left-hand sketch shows the main house with its modern rear extension, the smiddy store, a small outbuilding and a garage.

Burgh of Newmill', and the deeds show the property laid out much as it is today. The current owners took over in 2001 in the knowledge that the annex building facing the main street was a former store containing a small-scale twentieth-century forge.

Discovery of thatch roof

In 2009, the current owners decided to increase the accommodation at 35 Main Street to incorporate another bedroom. After careful consideration about how best to enlarge the property sensitively, their plans involved converting the former smiddy store into a family living space, as well as creating a ground-floor bedroom in the main property.

For at least two decades, this 'smiddy' was used as an external store to the main house. Prior to conversion, the building was a single-storey appendage to a one-and-a-half-storey house facing the main street in the village, but entered from the rear garden side. Its 600-millimetre (23 ½ in) local stone and lime-mortared

Figure 4. The former smiddy building from the west, at the moment when the tin roof was removed and the thatch roof exposed for the first time in decades. Also visible is the curiously small window in the front wall, which appears to have been formed by blocking up a larger opening.

Figure 5. The tin roof in the course of removal. The previous straw thatch finish is visible, although now pressed down into a corrugated pattern. The turf divots below are most clearly seen between the tin roof battens along the lower section of roof. The substantial front stone wall has been extensively pointed using a cement-based mortar and then lined out. Note the slightly unusual 8-pane sash-and-case arrangement of the eastern window.

flush-pointed walls were low-level on the street side, due to the internal floor being 450 millimetres (17 ¾ in) below ground level. This small masonry structure had a brick chimneyhead to its eastern gable and corrugated tin roof. Access to the interior of the structure was very limited, due to the amount of storage material, but it was clear that the internal structure was of considerable age.

When building work commenced in 2010, removal of the tin roof revealed remnants of a thatched roof finish, so the owners, and contractors, kindly agreed to a rapid measurement survey and photographic record being undertaken.

Survey findings

With the store now cleared out internally, it was evident that the solum had been stone cobbled, although much concrete-patched and repaired, and that the east gable incorporated a significant

later fire opening and chimney breast. The roof was supported on eight A-frame trusses, or 'couples', utilising *c*.180-millimetre-deep by *c*.90-millimetre-wide (3 ½ in) rafters with irregular, peg-jointed tie beams. Some trusses also had additional tie beams at high level to strengthen the apex. The rafters were roughly hewn with an adzed finish, and rested upon a much-deteriorated 200-by-15-millimetre (8 x ½ in) wallplate, with stone beam filling. The rafters were half-checked and overlapped.[14] Upon them, running parallel to the walls, were a series of roughly sawn sarking boards (some with the bark still remaining) of variable size in depth (150–225 millimetres (6 –9 in)) and thickness (30–80 millimetres (1 ¼–3 in)), with spacings of 10–50 millimetres (4–20 in) between each board.

Bruce Walker documented a similar roof construction to support a heather thatched roof in Perthshire in the late 1970s with 'slabs of timber, cut from the outside of logs when squaring the

Figure 6. The rear roof shows few remnants of the straw thatch finish, although the turf divots are clearer to view. The partial collapse of the sarking battens and their sods provides glimpses of the varying thicknesses of sarking. Also recorded here are the later brick chimneyhead and the rather fine stone skews.

Figure 7. Interior view looking south-west (after clearing out and the creation of a new door opening to link to main house). The substantial main roof trusses at wide centres are constructed using irregular timbers, which is most clearly seen in the lack of straightness in some of the tie beams. Several of the trusses have small tie beams near their apex, and all are beam-filled at their wallhead ends. The irregular sarking battens are clearly visible, as well as the base of earth and clay material which was applied from above between their spacings.

timber and used with the bark still intact, positioned side by side approximately 2.5cm [1 in] apart'.[15]

Above these boards were rows of turf divots *c*.50–75 millimetres (2–3 in) thick laid in overlapping fashion, before being covered in a mixture of clay and straw (although most of this material had either been removed, or had deteriorated by the fitting of the corrugated tin roof on timber battens).

During the 1970s, Sandy Fenton documented that in north-east Scotland, '[a]n important thatching medium, however, was the combination of straw and clay, which in the early 1800s, was recorded in this area [Nairn, Moray and Banffshire] on outhouse roofs'.[16]

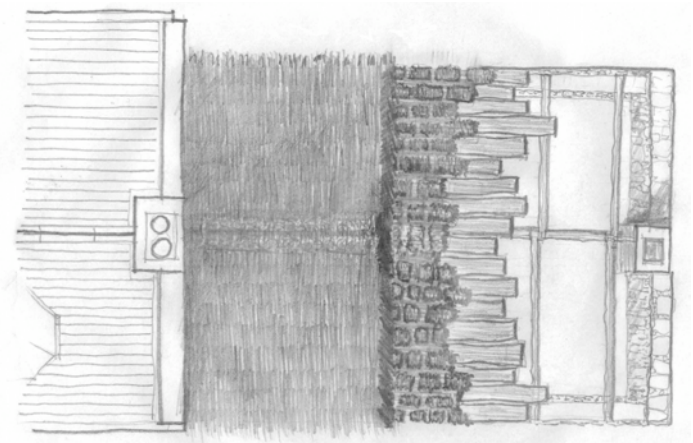

Figure 8. Roof plan sketch. This sketch, with the various construction elements peeled back to reveal the building sequence, shows (left to right): the slate roof of the later one-and-a-half-storey house; straw and clay thatch finish; turf divots; sarking boards; trusses; stone gable with brick chimney.

Figure 9. Cross section through former smiddy looking north-east. The section shows the straw and clay thatch roof on turf sods supported by variable-thickness sarking battens on A-frame trusses. The trusses sit on stone and lime walling and the floor is cobbled. Note that the floor is below ground level and that the steps down to the rear access door are constructed in concrete. The large concrete and brick forge/fireplace is shown on the north-east gable.

Some curious anomalies

There are several curiosities making analysis and overall interpretation of the property less straightforward. For example, the relationship between the former smiddy store and the main house is unclear, in that the mutual gable appears to belong to the main house, despite the smiddy being seemingly of an earlier date. The reasons for the smiddy floor being below ground level are not self-evident, and it is also not obvious why access was only provided at the rear. The small window opening on the west side of the front elevation appears to be an alteration, as is the large internal fireplace at the eastern chimney.

Speculative conclusions

With a lack of documentary evidence to confirm the chronology of the properties, it can only be speculated (by the extant architectural features) that the smiddy building is older than the main house. It does appear that the two buildings are structurally independent; so either the smiddy's gable was taken down and replaced in situ, or the smiddy building was truncated and reduced in size. The altered window on the front elevation appears to have been a doorway, in which case the building could pre-date the laying out of the main road in the mid- to late eighteenth century. Consequently, the property may have been a larger cottage, or outbuilding, facing south-east down to the River Isla from the early to mid-eighteenth century.

Impact of conversion

The need for conversion of the smiddy store was driven by the client's desire for modern living standards. The work was carried out on a limited budget, and the property was neither Listed nor within a Conservation Area. Although historic in local vernacular terms, the roof structure was in very poor condition for reuse, and a restoration of clay thatched roof was out of the question for various reasons. Consequently, the property has now received a new timber roof with a slate finish that matches the rest of the street. The masonry features have been retained, although an additional

rear window has been created on the back wall overlooking the garden area, and the store now functions as a family living space.

As a consequence of the client's co-operation, the general structure has been conserved as a main house appendage, and lost architectural features have been documented for future generations.

Acknowledgements

This article would not have been possible without the contributions of Rod and Fiona Lovie, Ian McKenzie, the staff at Keith Library, and Graham Wilson of Moray Local Heritage Centre.

Notes

1 Anon, *Banffshire Year Book*, Banffshire Journal, Banff, 1878, p.22.

2 J Sinclair (ed), *Statistical Account of Scotland* (hereafter *OSA*), Vol.16: 'Banffshire, Moray and Nairn', 1795, pp 247–63.

3 Anon, John Weasley's Journal (1776), cited in *Banffshire Journal*, 28 May 1904, p.8. The local newspaper records the interesting and, at times, somewhat amusing public 'spat' between various local historians regarding confusion over historical records for 'New Keith' and 'New Mill'.

4 *OSA*, p.254. *Circa* 1700, the 'House of Newmill' was owned by George Gordon of Glengarock. Spalding Club, *Antiquities of Shires of Aberdeen and Banff*, 1867, s.v. 'Parish of Keith', p.242.

5 There are still a few cottages at the foot of the hill to the east and south-west, i.e. near to the River Isla and one of its burn inlets.

6 C McKean, *The District of Moray: An Illustrated Architectural Guide*, RIAS Publishing, Edinburgh, 1987, p.144. 'Like most plantations, but most similar to Archiestown, it consists of a main street leading into a central square, dominated by a 1923 War Memorial clock tower and decaying Art-Deco garage. A Gothic church lies just to the east.'

7 Ibid.

8 M Seton, *Keith Past and Present*, Moray District Council, Elgin, 1987, p.40.

9 *Banffshire Herald*, 29 September 1990, p.6. The Church is said to have been built on the site of the House of Glengarock (see note 4).

A doocot, presumably a relic of this House, was sited in a field just to the west, but was lost *c*.1960: N A Brown, *Doocots of Scotland: Moray*, SVBWG, Edinburgh, 2004, p.83.

[10] Revd F McCaskill, *Third Statistical Account of Scotland*, Vol.10, 1961, s.v. 'Keith District', p.324.

[11] Ibid, p.309.

[12] The school was demolished in 1988, and the church was converted into a house.

[13] *Banffshire Herald*, 1990, op.cit..

[14] Compare with other timber trusses in SVBWG publications, such as those in: P and A Newman, 'Roof types in the traditional buildings of Orkney', *Vernacular Building*, No.16, 1992, pp 39–55 (p.40).

[15] B Walker, 'Report on a cruckframed cottage at Drumdewan, Dull, Perthshire', *Vernacular Building*, No.5, 1979, pp 12–22 (p.16).

[16] A Fenton, 'Thatch and thatching', *Building Construction in Scotland*, SVBWG, Dundee and Edinburgh, 1976, pp 39–51 (p.44). For more detailed information on clay thatch, see: A Fenton, 'Clay building and clay thatch in Scotland', *Ulster Folklife*, Vol.15/16, 1970, pp 40–50.

SHORTER ARTICLES AND NOTES

Building condition updates

Robin Callander

In 1995 I measured a corrugated-iron building in Gaodhail, Glen Forsa, Mull (NM 6100 3855) and my report was published the same year in *Vernacular Building* 19 (pp 50–53). The structure, possibly an estate school, lies near the boundary of two properties. Sadly, in spite of local efforts to save this interesting structure, it is now ruinous (see fig.1). This shows all too clearly how soon and how completely a structure deteriorates once the roof starts to 'go'.

Another structure I reported on in an earlier issue of *Vernacular Building* has happily met with a more positive fate. In 1998 I measured and described a hearse house at Parkgate, Dumfriesshire (NY 023 883), and my report was published in

Figure 1. Corrugated-iron building at Gaodhail, Glen Forsa, Mull, in a state of disrepair.

Vernacular Building 22 (pp 11–12). It may be of interest to readers to know that this structure is still in use. With its roof repaired, and having been given a new door, it is now a garage for a new house built nearby.

Horizontal Mills

John Hume

As always I enjoyed receiving and reading the last issue of *Vernacular Building*, particularly the articles on horizontal mills by Ted Salthouse ('The horizontal water wheel', pp 21–8) and Geoff Leet ('Some observations on horizontal mills', pp 61–2).

When I was engaged in fieldwork for my book *Industrial Archaeology of Scotland: The Highlands and Islands* in 1976 I spent a considerable amount of time identifying surviving remains of horizontal mills in Shetland and Lewis. There are several references to, and illustrations of, such mills in my book, and Industrial Archaeology Survey Cards for all the sites I visited in the RCAHMS collection. When Graham Douglas was working for the Scottish Industrial Archaeology Survey at Strathclyde University he revisited many of these sites, and produced measured site sketches of many of them. These are now also in the RCAHMS collection.

With specific reference to Geoff Leet's article, I found three Shetland mills with concrete-centred tirls. Of the three mills at Huxter (HU 173 572), the top and bottom mills had tirls of that type. The bottom mill's tirl had nine paddles. The polygonal centre was 12 inches (30.5 cm) across and 15 inches (38 cm) deep, and the exposed parts of the paddles were 13 inches (33 cm) long. I did not measure the dimensions of the tirl in the top mill. At Troswick (HU 407 169), the only roofed mill, refurbished in the 1920s, had a concrete-centred tirl (see figs 1 and 2). The centre was cylindrical, 14 inches in diameter and 14 inches (35.5 cm) deep. The exposed parts of the paddles were 11 inches (28 cm)

Figure 1. Exterior of horizontal mill at Troswick (photo taken in 1976). (© RCAHMS. Reproduced courtesy of J R Hume. Licensor www.rcahms.gov.uk)

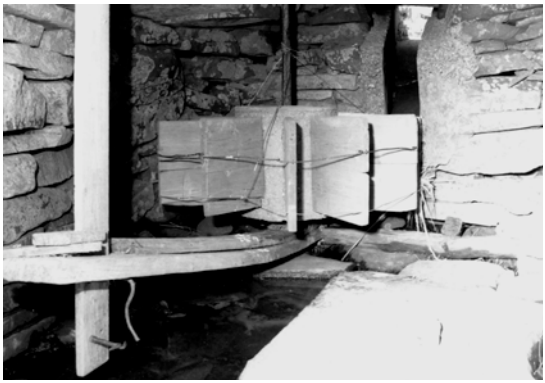

Figure 2. Interior of horizontal mill at Troswick, with concrete-centred tirl (photo taken in 1976). (© RCAHMS. Reproduced courtesy of J R Hume. Licensor www.rcahms.gov.uk)

long and 12 inches (30.5 cm) deep. The centre was dated 11 January 1929. There were bands of steel wire wound round the edges of the paddles to keep them in place, as there were in the Huxter mills.

At Gord (HU 206 574) there were the walls of a horizontal mill, made of poured concrete.

The negatives of the photographs I took of these features are in the RCAHMS collection, and scanned images should, I believe, be on Scran (www.scran.ac.uk). My reference numbers are:

Top mill, Huxter, tirl, H76/54/2;
Bottom mill, Huxter, tirl, H76/54/7;
Concrete mill, Gord, H76/56/2;
Mill, Troswick, tirl, H76/73/14,15;
Mill, Troswick, general view, H76/73/13.

With reference to Ted Salthouse's article, I append a photograph I took in Portugal in 1970 (fig.3). This was taken from a moving train on the railway from Lousada to Fafe, north of Oporto. The mill was between stations at Negrelos and Guimarães; I cannot be more precise than that.

Figure 3. A Portuguese horizontal mill (photo taken 1970).

SVBWG CONFERENCES AND MEETINGS

2011 Autumn Day Meeting and AGM Loudon Hall, Ayr, 5 November

This year's autumn event will combine the SVBWG's Annual General Meeting with a presentation by a representative of the Ayr Township Regeneration Initiative and a walking tour of Ayr.

With its castle built in 1197 and the burgh declared in 1205, Ayr grew to become a hive of activity. Its industry – initially based largely around woollen textiles and hide, and later expanding to incorporate shoe-making – generated a lively import and export

trade; the town boasts what are reputedly the oldest wine vaults in Scotland, built to house imported wine. A 'Newton' was established on the north side of the river in the fourteenth century, and by the fifteenth the burgh's wealthier citizens were building their homes in stone rather than wood. The town continued to flourish through the sixteenth, seventeenth and eighteenth centuries, and – like most Scottish burghs – was subject to an extensive programme of rebuilding in the nineteenth century, which included construction of its exceptionally fine civic buildings, designed by Thomas Hamilton in 1830.

Loudoun Hall, where the talk and AGM are to be held, is one of the oldest houses to survive in the town, first mentioned in 1534 when it belonged to the Sheriff of Ayrshire. Highlights of the walking tour will include the late fifteenth-century Auld Brig; the Auld Kirk, the building of which in 1654 was funded by Oliver Cromwell; and the remains of the Church of St John the Baptist, used by Cromwell as an arsenal and restored in 1914 by the Marquis of Bute.

A full report of the day will be included in the next issue of *Vernacular Building*.

2012 Spring Conference
Brechin and Montrose, Angus

Our Spring Conference in 2012 is due to be based in Angus, taking in the Cathedral City of Brechin, Montrose, and a number of farm buildings in the area. Details will be published on our website and circulated to members in due course.

REVIEWS

Edited by Veronica Fraser

Handmade Houses and Other Buildings: The World of Vernacular Architecture

John May. London. Thames & Hudson. 2010. 192pp. £14.95 hardback. 978-0-500342-58-9.

This is a book with a message; as well as presenting a selection of vernacular buildings from around the world, it also outlines the lessons that can be gained from them in terms of sustainability and energy efficiency. A brief introduction stresses the importance of vernacular structures, which form 80 per cent of the world's buildings. They are defined by the geology, ecology and climate of their locality, as well as myth and tradition. They are built by the community using traditional tools, and blend with the landscape. In having a gentler environmental impact, they are good for the climate-change era. Besides its message on sustainability, the book also presses for conservation of vernacular buildings and the skills used to create them.

The introduction is followed by a gallery of excellent colour photographs illustrating the use of different building materials: wood; stone; earth and clay; poles, posts and covering; bamboo; reed; recycled materials; and snow. The main part of the book is a series of chapters, each devoted to a continent, where an inevitably partial selection has been made of vernacular building types, at most ten per chapter. One therefore has a glimpse of the variety of building types throughout the world and of the skills and ingenuity which have gone into their construction. British examples include blackhouses, cruck-frame houses and cob buildings, but the wider range beyond the familiar is fascinating. The incredible energy efficiency of the igloo is highlighted beside the buildings of Iranian desert towns which use a unique system of air traps, ventilator

ducts and a water reservoir to form natural air conditioning. Some structures house many families, such as the Tulou of China, and some can take many years to build; the Great Mosque of Djenné is an example. Others, such as Mongolian gers, can be transported, while still others are even more temporary, as in the case of Australian Aboriginal shelters.

Each building type is described, with its materials listed, and cross references made to comparable buildings elsewhere in the book. Drawings and, in some cases, photographs illustrate appearance and construction details; unfortunately dull black-and-white photographs and sepia-toned drawings do not make these pages particularly attractive.

Following on from the continent chapters, the modern vernacular is discussed. The sprawling squatter settlements of large cities in Latin America and Asia are a result of global urbanisation; while some commentators see in them an efficient lifestyle where people work from their homes, the health and social issues cannot be avoided. Modern vernacular is also illustrated by structures built from recycled materials, natural materials such as haybales, and revivals of construction types such as the cob house. A growth in these construction types is desirable as part of a development in 'green architecture' in order to begin to adapt the built environment as the world progresses through the climate-change era.

Reviewed by Veronica Fraser

Building Scotland: Celebrating Scotland's Traditional Building Materials

Edited by Moses Jenkins. Edinburgh. John Donald in association with Historic Scotland. 2010. ix + 196pp. £25 hardback. 978-0-859767-10-1.

This informative and lavishly illustrated book is a most useful introduction to the significant materials traditionally used in Scotland's buildings. As its strapline states, it is a celebration of

the materials rather than a definitive text on their extraction, use and conservation; by presenting an overview and selected examples of usage it fulfils this role.

The building materials presented are timber, stone, brick, earth, clay, iron, lead, glass, lime, pantiles, thatch and slate; also included are the potentially more decorative plaster and paint. A chapter, each by an individual author, is devoted to each material. While there are stylistic differences between the chapters, each follows a similar pattern of studying the history of the material, its sourcing, manufacture or extraction, its usage and regional variations, and where relevant its decline, revival and conservation. Unique properties such as durability, accessibility and flexibility are stressed. The different ways in which materials shed light on the history of a building are outlined, for example timber through dendrochronology and thatch analysis. The earth chapter contains a case study on several recent conservation projects. As the materials were used in conjunction with each other, and in the case of lime, led to plaster, they are not dealt with in isolation. Therefore one learns how stone, brick, earth and clay would complement each other, how lime would provide a finishing for other materials, how a timber building would sit on a clay-mortared masonry base and how thatch would be used on the same roof as slates. Thus an informative narrative is created. Throughout, several different themes appear and help to shape one's understanding of Scotland's building materials. One sees some materials were once only used by the wealthy, and then how mass production allowed all to share in their advantages, glass being a prime example. The development and improvement of transport systems are also crucial to the use of materials: it could allow export which would lead to a flourishing of an extraction process, and would also enable the import of other materials which would signal the end of the use of traditional ones.

The book is beautifully illustrated, mostly with specially commissioned photographs, though a few historic images to illustrate usage and extraction are included. Frustratingly, not all of the locations of the images are given; while one understands

that their primary function is to illustrate the appearance of the material under discussion, one is always curious to know at what one is looking. Perhaps this fact could be corrected in a second edition, along with some unfortunate typographical errors.

Attention is paid to historic examples of the use of each material. Most have been used since prehistory, and in the case of early stone structures they still survive. Some materials historically went into abeyance; for example, lime and glass were not used after the early third century AD until a revival several hundred years later. Others, such as pantiles, had a later introduction before becoming a local industry and an instantly recognisable element of Scottish townscapes. Industrialisation created a different scope in the treatment of wood, stone and brick. Building booms in nineteenth-century cities, agricultural improvements, legislation, war and technical developments all affected use of materials. Some materials – for example, timber – continue to develop and find new uses. The use of iron in buildings has a shorter history than some, but within that history it developed from decorative features to providing a structural framework for substantial urban and industrial buildings, as well as forming common roofing and prefabricated structures. Technical developments allowed profound changes to how buildings appeared as, for example, the increased capabilities of glass meant larger windows. One can also trace the replacement of one traditional material with another; thatch would be superseded by pantile, slate or corrugated iron. All these themes and more are expanded upon throughout the book.

One is continually struck by the versatility of some materials. For example, timber is used for flooring, internal framing, roofing, panelling and for fixed or semi-fixed furnishings. It would be used in a small cruck-framed building, or in a royal hall. It would also be used in the construction process. Like stone, it can bear decoration, or support as substantial a structure as a railway viaduct. Brick can be used to create large industrial buildings, internal supports, a heat-retaining garden wall, or simply provide a window surround. Some of the most interesting chapters focus on materials which may have been overlooked in the past; they

have been perceived as a necessity born of poverty, for example earth construction, which in addition can often be concealed behind a lime render. The humbly regarded clay formed an integral part of substantial structures such as country houses, harbour walls and the Megget dam. One of the materials which features in most forms is lime, which can be a core building medium as well as a basis for sophisticated plaster finishes for both interior and exterior that are tough and durable but flexible and breathable. Lead, through its flexibility, lends itself to a variety of non-load-bearing uses such as roofing and drainage, though it can also be used as a cushion between load-bearing elements. Pantiles could be used for roofing but their manufacturing could be combined with that of tile drains.

Regional variations are more obvious with some materials than others. How Scotland's unique geology provided a wide variety of materials is defined: limestone outcrops in Fife, Argyll, Lothian and Dumfriesshire meant that these areas were the focus of limestone and quarry workings; granite is synonymous with the north-east, and flag with Caithness. Slate had its centres at Ballachulish, Easdale and Macduff. Brick, not always thought of as a traditional Scottish building material, was produced where there was a deposit of clay and a demand for its versatility, with its main focus in the central belt. Regional variations in non-geological materials are also clear, as thatching materials and techniques varied throughout the country.

Some of the technical processes relating to the materials' extraction and properties are dealt with in depth, in particular paint, lime, thatch and slate. The extraction and processing of building materials led to distinctive vernacular structures in their turn: workers' cottages, lime and glass kilns, brick and tile works, iron foundries and smiddies, and beam engines for mines.

Recent years have seen a resurgence of some traditional materials. With the demand for sustainability, timber has found new favour, and the superiority of lime and clay mortars has been recognised. Conservation efforts have given earth buildings a new lease of life. Throughout this book, the continuing relevance of these materials, some used since prehistory, is stressed.

Reviewed by Veronica Fraser

The Highland House Transformed: Architecture and Identity on the Edge of Britain, 1700–1850

Daniel Maudlin. Dundee. University of Dundee. 2009. xiv + 194pp. £16.99 paperback. 978-1-845860-18-9.

In this book, Daniel Maudlin examines the effects of agricultural improvements and the Scottish Enlightenment on particular aspects of Scottish building, namely the development of the modern Scottish farmhouse and the phenomenon of the planned village in the Highlands. He observes these as physical manifestations of a changing way of life and identity as longstanding traditions gave way to early modern agribusiness. In addition, he discusses how emigrants from Scotland to the north of America – in particular Nova Scotia – took this new identity with them.

The book is primarily a study of the relationship between domestic architecture and social change during and following a time of great upheaval. The effects of the political events of the time can be seen coupled with changes in agricultural methods; events such as the Jacobite Risings and their aftermaths, the Highland Clearances and the Scottish Enlightenment caused changes in the structure of society and the agricultural landscape which resulted in a different building type. There was a keenness to demonstrate that the Highlands were as modern as the rest of Britain, a country that reflected the thoughts of Adam Smith and David Hume. One way of doing this was to build in the style of the Adam brothers or James Craig.

Prior to the period under discussion, the most recognisable dwelling of the Highlands would be the blackhouse (this term is used throughout the book to describe the archetypal thatched longhouse dwelling with accommodation for both people and animals). Some would be lived in by significant members of society, as Samuel Johnson discovered when he visited a well-appointed and richly furnished interior; it was only as he retired for the night that he realised that the bed stood upon the bare earth. It was this type of house that would be replaced by another

archetypal house of the Highlands and north of Scotland: the plain white symmetrical Georgian box.

Though the blackhouse would continue to be lived in by crofting communities through to the twentieth century, the evolving middle class would begin to favour an initially less distinctively Scottish style. They felt that this style would demonstrate their knowledge of national rather than local fashion with restrained classical detailing shown in published pattern books, and, most importantly, reflect their elevated social status. This reflected landowners' increased desire to be seen as part of modern British, rather than merely Scottish, society. In addition, as landownership systems were restructured, many new tenants would not be from the society which had lived in blackhouses, as farmers were brought in from elsewhere in Scotland and beyond. Thus a change in identity occurred in house types. Maudlin is at pains to point out that the new building style was singularly badly suited to withstanding the elements. The blackhouse was regarded as unhygienic but it was perfectly designed to create a warm living environment. Travellers and compilers of the *Statistical Account* would comment that the countryside looked more cheerful with new farmhouses demonstrating the rules of classicism, but with their thin stone walls, large areas of glazing and small individual fires rather than a central heat source, the new houses would have provided cold comfort.

While a generic housing type was being developed in the Highlands, there were some variations, especially in the large estates where particular masons were employed. Thus the Sutherland housing which was particularly uniform would differ from that in the Argyll lands. Statistical analysis of features on listed buildings demonstrates building patterns throughout the region. Estate owners and tenants would also provide cottages, perhaps a more direct replacement for the blackhouse, for their workers. The landowner's desire to demonstrate his good taste extended to the homes of his workers. Paternalistic building regulations were enforced as uniform two-roomed cottages without external space for self-sufficiency were established. This phenomenon was expanded in the planned villages of the

Highlands: before the main period of the Clearances there was a desire to discourage emigration, so settlements were created to accommodate those moved off the more profitable land. It was also intended that these towns would improve the Highland economy and enable social reform. Thus towns such as Inveraray, Fochabers, Thurso, Ullapool, Tobermory, and most admired of all, Pultneytown at Wick, were developed. Within a grid plan, there would be housing, a church, inns, storehouses and, where viable, a harbour. The modern professional was emerging, therefore architect Robert Mylne was employed by the Duke of Argyll at Inveraray, and engineer Thomas Telford at Pultneytown.

Despite the Highland building boom, emigration gathered speed, and the buildings of Nova Scotia are included in this study to demonstrate the transfer of building styles. A ready supply of timber meant that most settler houses were constructed from wood, and featured the same restrained classical detailing which had been introduced in the new Highland house in Scotland. This was a style which had spread northwards from New England. Pictou, Nova Scotia, features some stone-built houses from the period, and a building there traditionally called 'The Longhouse', as well as some others elsewhere in Nova Scotia, show evidence of construction methods used in Scottish blackhouses. In the new timber houses, the central chimneystack, as in the blackhouse, was retained. However, for the most part, Maudlin notes that those travelling from Highland Scotland were content to adapt the style that they found being used in Canada, and made the transition to similar modern buildings without attempting to re-create the blackhouses they had left behind, while preserving a cultural identity through the means of language, literature, music and dance. Whether this was a conscious rejection of their housing past, or a response to materials and conditions in their new continent, is a point to consider.

This book is an interesting analysis of a time of change and development in the Highlands when the area was considered to be entering the modern world.

Reviewed by Veronica Fraser

Scottish Burgh Survey Series:

Historic Govan

Chris Dalglish and Stephen T Driscoll. Edinburgh. Historic Scotland. 2009. xvi + 173pp. £10 paperback. 978-1-902771-62-5.

Historic Whithorn

R D Oram, P F Martin, C A McKean and T Neighbour. Edinburgh. Historic Scotland. 2010. ix + 160pp. £10 paperback. 978-1-902772-82-3.

The latest volumes in the Scottish Burgh Survey series examine Govan and Whithorn. In so doing, they follow in the footsteps of the previous volumes in offering invaluable guidance on the archaeological resource present in Scotland's towns, as well as providing for the more general reader a summary of the history and buildings of the individual burghs. As with other volumes in the series they are extremely well illustrated, with informative topographical views, mostly from public archives. Each volume contains a broadsheet which allows a map of the area to be reproduced to a useful scale and provide additional information. They also continue the format of an historical summary of a burgh, highlighting which areas would benefit from further research, whether individual areas from excavation, building survey, or work on historical documents. Their primary purpose is as a tool in the planning process, and they are aimed at local authorities, developers and residents of the areas. They are not intended to be comprehensive histories but, rather, a distillation of information to provide an introduction and overview. They include substantial bibliographies to assist with deeper research, as well as useful glossaries.

Govan and Whithorn present an interesting comparison in showing how various factors can affect the development through history of a particular burgh. Both were important religious centres from early stages in the Christian era, which is demonstrated by

their individual corpus of medieval stones, and they both had royal connections. Govan was a centre of royal power during the Viking age and Whithorn was a focus for royal pilgrimage particularly around 1500, though the Reformation had a profound effect on the burgh's prosperity. Govan sits on the River Clyde near the junction with the River Kelvin, and Whithorn was served by the important harbour at the adjacent village of Isle of Whithorn, therefore both burghs took advantage of waterborne trade and transport. However, it was the significance of this facility which was to spell a change in their fortunes. The Clyde was deepened and Govan's excellent position for shipbuilding developed to raise it to the epitome of heavy industry in Scotland, whereas Isle of Whithorn's limitations as a harbour able to deal with developments in shipping became evident throughout the nineteenth century and maritime trade declined. Govan became the fifth largest burgh in Scotland before it was merged with Glasgow in 1912; Whithorn is not much larger now than it was in the medieval period. The respective histories of the burghs are told in the volumes through the evidence of archaeological excavations and standing buildings, as well as the meticulous research into documentary and map resources.

Another similarity between the burghs is illustrated by the low level of survival of early buildings. Whithorn of course retains its priory and Govan important archaeological remains, but for the most part the main survivals are from the nineteenth century. The historic layout remains in both burghs, as one can see in Govan with the area around Govan Cross, and at Whithorn with George Street where the medieval spaces survive. Whithorn's lack of industrial development has meant a higher level of survival of its nineteenth-century buildings; many are built in the distinctive local greywacke sandstone, with granite used for lintels, dressings and quoins. Robbed sandstone from the priory appears in buildings throughout the town, and other individual features include painted rusticated edge-pilasters to the buildings, often signalling the boundary of an individual property. Excellent pictorial records of earlier buildings in Govan are used to demonstrate the variety of

structures once present in the burgh. These include an important survey of old houses in Water Row, possibly used by weavers, which was carried out in 1911 prior to demolition and published in the *Transactions of the Glasgow Archaeological Society* in 1916. Though some of the topographical illustrations of the burgh could contribute to the idyllic reputation that Govan has been given by some historical writers, the authors of the Burgh Survey are at pains to point out that this impression was never true; Govan was always a dynamic developing settlement which exploited its position as a communications nexus and its natural resources which allowed the use of water power.

As part of the series' brief, the volumes indicate how the archaeological resource could be further exploited to increase knowledge of the areas. In Govan the full story of the past would only be found through large-scale excavations which would have to be combined with any major urban development. In Whithorn, individual buildings, such as those with cylindrical outshoots, and the rigs and back-dykes may contain further information on the dates and development of the burgh.

In common with the previous volumes in the series, *Historic Govan* and *Historic Whithorn* shed light on the histories of their respective burghs, and contribute to a greater understanding of Scotland's development.

Reviewed by Veronica Fraser

The Rise and Fall of the Scottish Cotton Industry, 1778–1914: 'The Secret Spring'

Anthony Cooke. Manchester. Manchester University Press. 2010. xiv + 237pp. £60 hardback. 978-0-719080-82-1.

'The industrial revolution had its origin not only in women's labour, but in women's wants and desires for fashionable light-weight and easily washable fabrics.' This is just one of the many insights given by Anthony Cooke into cotton as the 'secret spring'

that propelled the industrial revolution in Scotland.

The account is well told of the heady days and high hopes, all too-often dashed, of the early investors. The precise 1778 start pinpoints the first cotton mills at Penicuik, Rothesay, Barrhead and Busby, large factories modelled by means of industrial espionage on Arkwright practice. Richard Arkwright was effectively father of the factory system, not only for his several inventions in cotton spinning but for the way he assembled and managed a production system in Derbyshire in 1771. In 1785–7 he personally created several Scottish partnerships (Stanley, Woodside and New Lanark) to counterbalance the growing strength of Manchester, and to secure patrons with influence in Court. That such rapid growth was possible depended on an already-existing network of linen merchants and manufacturers into which cotton could be insinuated. But the closing date of 1914 is perhaps debateable: the tide had already turned, and 1914 was halfway through the long retreat of the industry.

The more recent period covered by the book must in part retread the ground paved by W W Knox in his *Hanging by a Thread: The Scottish Cotton Industry* c.*1850–1914* (1995). The key turning point was the American Civil War cotton famine from which Scotland did not bounce back in the way that Greater Manchester did. Whereas in 1841 one in four of the UK cotton workforce was Scottish, by 1891 this had fallen to 1:33. In 1861 Scotland had 100 cotton-spinning firms, and in 1914 there were nine. Down but not quite out, the biggest mills carried on well past the 1914 cut-off date. New Lanark closed in 1968, Stanley (by then spinning acrylic) in 1989, and finally Coats and Clark, Anchor Mills, in 1992. Finishing and twisting in Crofthead Mill, Neilston continued for just a little longer under successors to Arkwright the English Sewing Cottons Co Ltd. These apart, the collapse of the cotton industry in 1860s Scotland meant diversification into more lucrative spheres, often at the same premises and drawing on the infrastructure created for and by cotton.

Chronological chapters lead on to discussions on technology, the workforce and the bosses. This is very good social and

economic history, but what can it offer students of vernacular buildings? The answer is, as Cooke says, that industrial history cannot be written purely from business records. They are very patchy and most of the earliest firms had extremely short lives. Therefore physical evidence takes its place with other sources of information. Mill construction drew from local traditions, plus a mantle of genteel Georgian Palladianism. But to them were applied ground-breaking technological advances – by definition not vernacular, so not discussed in this review. Paternalism, represented in achitecture by the provision of day schools and sabbath schools, was especially a factor in mill villages, and some of these buildings can yet be identified.

The late eighteenth and early nineteenth centuries mark the point at which a substantial part of today's built environment begins to reflect ordinary lives. So the fact that some communities were overwhelmingly dependent on the cotton industry means that the history of that industry matters to those who study and conserve those places.

By 1791 total employment in cotton was 181,753. Set against the 1801 census, and a total Scottish population of 1,608,000, more than one in nine Scots were employed in the cotton industry in the late eighteenth century. But only 14 per cent of these actually worked in mills. Twenty-five thousand were in the 39 spinning mills using Arkwright's water frame, and also in hand-powered mule and jenny shops. Another 38,815 were weavers, and 12,938 were winders for those weavers, and with 105,000 'tambourers' and needleworkers, worked in domestic workshops. Later assessments did not include such large figures for domestic outworkers, and give 31,099 in 125 mills, making the average workforce per mill significantly larger in Scotland than in England.

Twenty per cent of Scottish mills provided some housing. Our own Munro Dunn ('Housing in cotton factory and iron-works villages of the late 18th and the 19th centuries', *Vernacular Building*, Vol.18 (1994), pp 13–26) has compared the provision made at iron- and cotton-working settlements in Scotland, and found reason for reservations about the quality of some of the housing at Blantyre

and New Lanark. *VB* has escaped the otherwise assiduous research for this book. Yet Cooke usefully challenges us to recognise the homes of cotton workers. If the archetypal 'weaver's house' – the mullioned windows seen in the Pennines – is not found in Scotland (Fintry apart), can it be that those English buildings are not cotton weavers' houses, either? Should researchers look instead into basement and ground-floor loomshops, as J G Timmins has done in Lancashire?

Typically the 'Wee Cork' in Anderston had a 'small kailyard and a six-loom shop reared close to and forming part of his dwelling house, and there, while he plied the shuttle himself, his journeymen who occupied the other loomsteads of the shop, paid him a shilling a week for them, and if he took an apprentice for instruction, the earnings of such apprentices were equally divided between the master and the said apprentice'. Does this explain the weavers' houses in Kilbarchan, and the even bigger loomshops in Kirkintilloch? With this book, the field work can begin in earnest to track down the premises of the 'Wee Corks', and add to the corpus of knowledge on the industrial revolution.

Reviewed by Mark Watson

CONTRIBUTORS

Paul Bishop is a Professor in the School of Geographical and Earth Sciences at the University of Glasgow. His principal research is in the evolution of landscapes over thousands to millions of years, with subsidiary interests in the interactions between people and the environment. He is currently investigating mills and limekilns around Baldernock, near Milngavie, along with the history of Dougalston Estate, which was owned in the eighteenth century by John Glassford, the Glasgow Tobacco Lord.

Nick Brown is an architect and town planner. Having worked in both the public and private sectors across Aberdeenshire and Moray, he now runs his own consultancy practice based at Cullen in Banffshire, specialising in conservation, urban and rural ecological design, regeneration and community development.

Anne Crone has worked in Scottish archaeology for 25 years, initially as a freelance field archaeologist. Since completing a PhD at the University of Sheffield in 1988 on 'Dendrochronology and the study of crannogs', her work has focused on the study of wood assemblages from archaeological sites and historic buildings. She currently works as a Project Manager for AOC Archaeology and pursues her research interests in crannogs and the development of tree-ring chronologies for Scotland.

Thorsten Hanke is an architect and building archaeologist who works in Scotland and Germany. His current work focuses on the survey and conservation of historic buildings, and he is particularly interested in historic building technology and its impact on architectural design.

Coralie Mills has worked in Scotland since 1988, after completing a PhD on Exeter Cathedral's dendrochronology at the University of Sheffield. Initially Historic Scotland's environmental archaeologist, she joined AOC Archaeology in 1992, becoming Executive Director in 1997, and maintaining throughout research projects in dendrochronology and environmental history. She left AOC in 2009 to pursue research more fully, as an Honorary

Research Fellow, University of St Andrews and as a consultant dendrochronologist. The history of Scottish native woodlands and their timbers are particular interests.

Ross Murray has worked for Headland Archaeology (UK) Ltd in Edinburgh since 2001 and has over 10 years' experience in commercial archaeology. He has worked extensively across Scotland and Northern England on a wide array of projects, including housing developments, windfarms and motorway construction. Though specialising in the later prehistoric period, he has excavated and reported on archaeological sites from the Early Neolithic to modern industrial.

Bruce Walker is a trained architect who, prior to his retirement, worked as a District Architect for Historic Scotland and subsequently as a senior lecturer at Duncan of Jordanstone School of Architecture, University of Dundee. He has been a leading light in the study of vernacular buildings for many years and is Vice-President of the SVBWG, having been one of the Group's founder members. He has extensive knowledge of Scottish building traditions of all types and has published widely on the subject in both national and international journals.

Andrew P K Wright OBE has been based in Forres for over 30 years and is an accredited conservation architect and an architectural historian. He writes conservation plans and acts as a conservation adviser to Building Preservation Trusts, and in recent years he has been engaged by the National Trust for Scotland to prepare conservation plans for three of the thatched houses in its care. He is the author of the Caithness Redundant Buildings Inventory report, published in 2008.

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 VB35, 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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For membership application forms, please contact:

Hugh Fearn
Tigh an Aigh
High Street
Rosemarkie
Ross-shire IV10 8UF

For details of publications, please contact:

Frances and Munro Dunn
6 Hillview Road
Edinburgh EH12 8QN

For general enquiries and *Vernacular Building* submissions, please contact the Honorary Secretary:

Veronica Fraser
c/o RCAHMS
John Sinclair House
16 Bernard Terrace
Edinburgh EH8 9NX


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