

The medieval peasant building in Scotland: the beginning and end of crucks

Das mittelalterliche Bauernhaus in Schottland:
Der Beginn und das Ende der Krümmelingsbauten

Début et fin de l'usage d'armatures en bois fourchues
dans la construction des maisons en Ecosse

Piers Dixon

Introduction

Until the 1980s our knowledge of the architecture of medieval peasant buildings in Scotland was limited by a lack of data. Where work had been done the evidence was post-medieval. This included documentary reviews of 17th century rural housing in lowland Scotland (Whyte 1975); surveys of surviving rural buildings, mainly of the 18th and 19th centuries, by the Scottish Vernacular Buildings Working Group and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS); and excavations, such as those by Horace Fairhurst at the deserted townships of Rosal, Sutherland and Lix, Perthshire during the 1960s (Fairhurst 1969 and 1971). Only in the Norse areas of northern Scotland, where a number of structures dating from the period c. 850-1350 AD had been excavated, have medieval buildings been located and explored (e.g. Hamilton 1956). Deserted medieval villages have proved especially hard to find, since few medieval villages have left any trace in the Scottish landscape mainly due to the efficiency of the agricultural improvements of the late 18th and early 19th centuries (Dunbar - Fairhurst 1971). Consequently it has only become possible to address questions relating to medieval buildings comparatively recently.

The highland clearances produced many townships deserted in the late 18th and 19th centuries, such as Glen Lui cleared in 1776 (RCAHMS 1995); but excavation has yet to demonstrate that any of the visible ruins, or house-sites, are earlier than the post-medieval period. In southern Scotland excavations at upland farmsteads like Lour and Glenochar have revealed 16th and 17th century towers, and bastles (fortified farmhouses), surrounded by buildings of the 17th and 18th centuries, but none seem to date to an earlier period (Dunbar - Hay 1960-1; Ward 1998).

This bleak prognosis has begun to change with the discovery and excavation of medieval rural sites in both the lowland arable areas of Scotland, as well as in the Highlands. In the light of this our understanding of medieval peasant buildings in Scotland has developed and may now be synthesised. The 1980s and 1990s

have seen the excavation of medieval peasant buildings at Springwood Park, Kelso, Roxburghshire, and at Rattray, Aberdeenshire; while early medieval buildings have been investigated at Pitcarmick, Perthshire (Dixon 1998; Murray - Murray 1993; Barrett - Downes 1994). These sites can be evaluated in the context of what we know from standing survivals of peasant houses, documentary evidence and archaeological field-survey. On the basis of this it can be argued that cruck-framed buildings succeeded earthfast-post buildings as the norm throughout lowland Scotland in the 13th and 14th centuries, and that this tradition was, in turn, replaced during the 18th and 19th centuries. The evidence for medieval byre-houses, i.e. a house that combines a dwelling for humans and animals under one roof, can also be assessed in the light of these discoveries.

There are three Scottish peasant-building traditions that provide a solution for the support of the roof in the post-medieval period: the cruck house, the blackhouse and the creel house. Since roofs having the principal rafters supported on load-bearing walls are primarily found in aristocratic housing and churches, they will not be considered here.

The Cruck House

The cruck-framed house - the term is an English one - is described in the documentary sources of Scotland as a building with 'couples', or 'siles'; or just occasionally as one with 'forks', or 'gavel forks' for the end-walls. In a cruck-framed house the lower end of the principal rafters rest on the ground (e.g. Fig. 1), or a base course of stone. The walls are not necessary to support the roof, which is carried on the cruck-frame. The walls were an infilling to keep out the weather and may be built of stone, clay, turf or wattles, or even a mixture of all these. The distribution of cruck-framed houses is essentially confined to the mainland, but includes the Inner Hebridean islands of Mull, Islay and Jura, but not the Northern and Western Isles. The last survey of cruck houses in Scotland produced 220 examples of buildings having some evidence for cruck construction either as slots

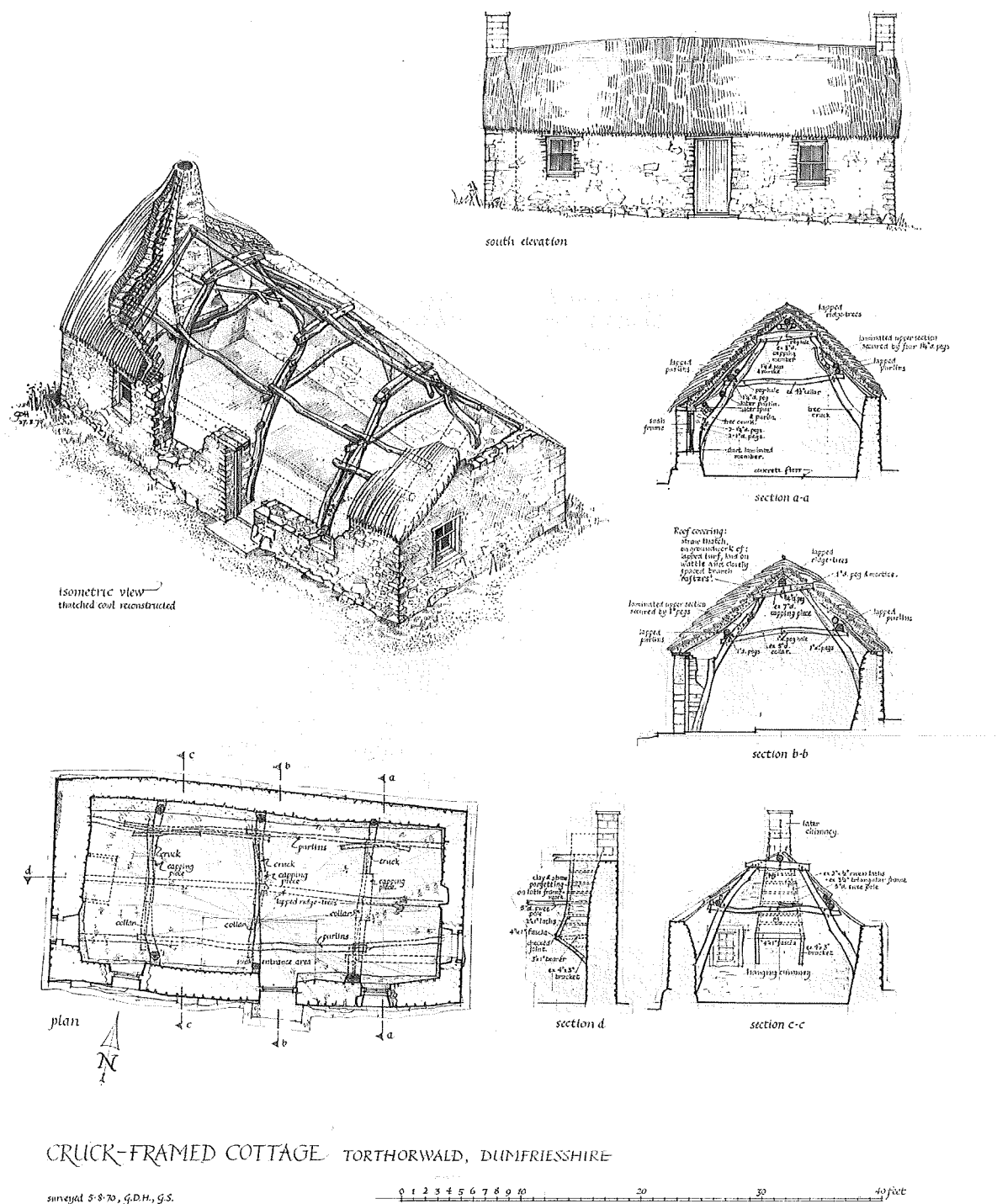


Fig. 1. A drawing of the cruck-framed cottage at Torthorwald, Dumfries-shire, showing a typical cruck-frame construction with an isometric view. Crown Copyright RCAHMS.

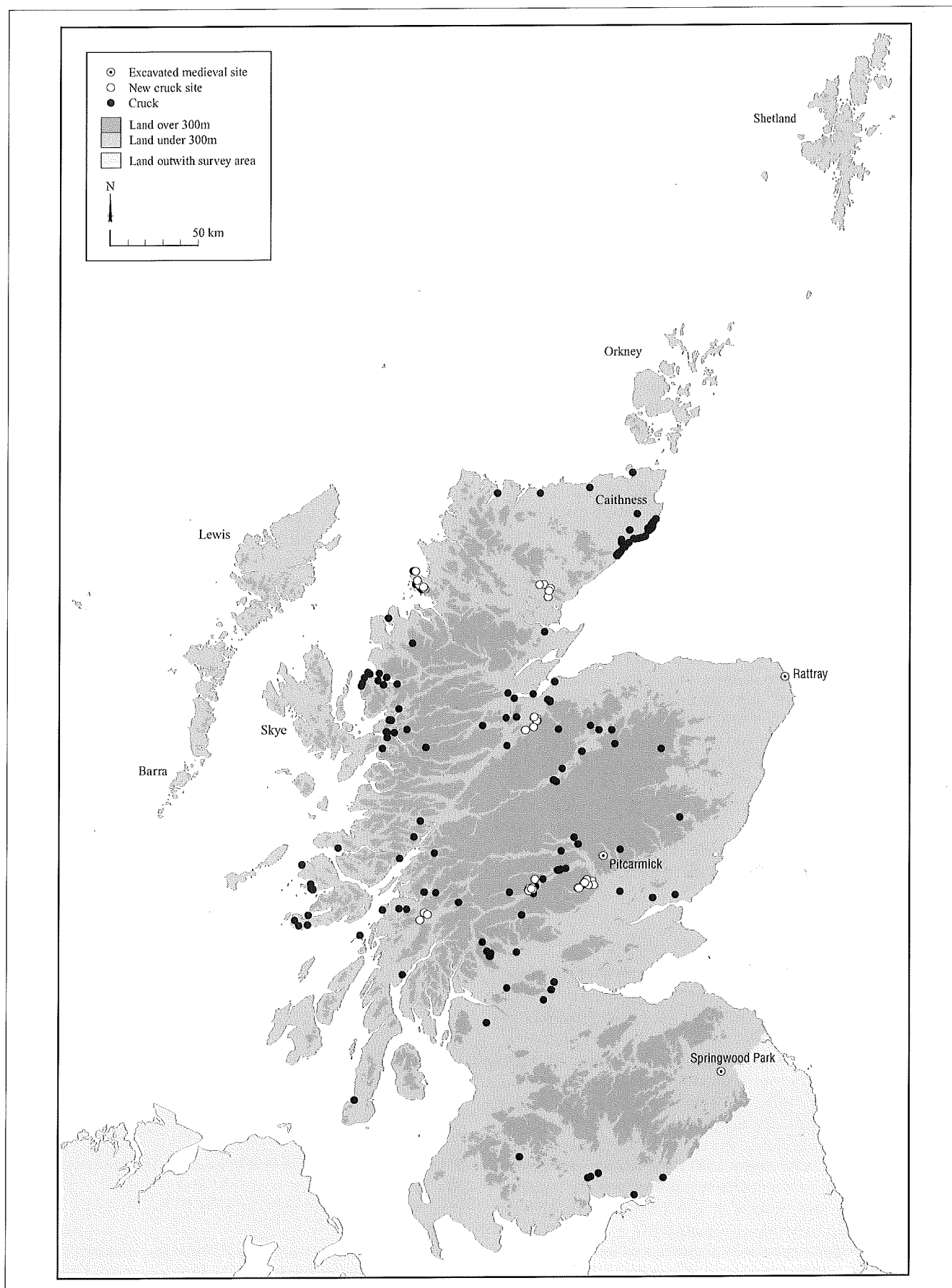


Fig. 2. Map of Scotland showing the distribution of cruck-framed buildings and some recent additions from field-survey. This is not an exhaustive map. The location of excavated medieval rural sites on the mainland are also indicated. Crown Copyright RCAHMS.

or fragments (Stell 1981). This distribution has been filled out by recent field-survey, but it has not extended it significantly into new areas. Some buildings on Skye have jointed crucks, often set high in the wall, which is an indication of the substantial thickness and load-bearing qualities of the walling and the limited access to wood. However, they have not been accepted unreservedly as crucks, because of the way they were set in the walls, and do not appear on the distribution map (Fig. 2). South-east Scotland has not produced any surviving examples, although Whyte has suggested that documentary sources record their presence in this region during the 17th century (Whyte 1975). However, field-survey has shown that the clay-bonded stone walls of the late 16th century 'peelhouses' of Slacks and Mervinslaw, Roxburghshire, once stood to two-storeys and supported a rafter roof. Whether this applied to the houses of the ordinary peasant may be doubted, but it does show that a stone wall without lime mortar could be sufficiently load-bearing to take a rafter roof. However, in the Border counties the early introduction of improvements in agriculture from the mid-18th century, led estates to take on the responsibility for the construction of better farm buildings, and this has resulted in few earlier survivals. Moreover, it is thus very rare to find any buildings of 19th century date which were built in traditional ways. Nevertheless, a stone-walled cottage at Midlem, Roxburghshire has been recorded with coupled rafters forming bays, the trusses of which are analogous with the crucks in Dumfriesshire (Stell 1972) - the apex of the rafters joined by a collar, as in an open-cruck truss, and strengthened by a lower collar-beam. The feet of the rafters appear to be set high in the wall and it is not certain from the photographic record whether it is an example of a cruck-truss the feet of which have been cut-off, or of principal rafters resting on load-bearing wall. Either way, the paired rafters form a couple that would have satisfied the description given in the 17th century estate documentation quoted by Whyte (1975).

The Creel House

Although there are no known examples of this type of building, the documentation suggests that it was recognised as being of a different build by travellers to the Highlands in the 18th and 19th century (Fenton - Walker 1981). The word 'creel' is the same as that which is used to describe a modern lobster cage or trap - an open wicker-work structure: wattle without the daub. The documentation is not entirely clear, but it appears that the creel formed the structural element in the walls of the house and would have been quite visible to its inhabitants. A visitor to Argyll in the 18th century described how the stakes of the wattles were driven into the ground to support a wall-plate at 1.2-1.5 m in height upon which the roof-couples were set (Robertson 1768). Other authorities also describe creel houses, but without giving much information about the roof-support - the earliest being an early 13th century 'great house of wattles' at Kilpatrick in Dunbartonshire

(Dunbar - Fairhurst 1971, 242). An Ayrshire description of the early 19th century suggests that wattle walls, lined with turf or clay, were common in farmhouses until the 1740s, but crucks were used at this time to support the roof (Aiton 1811). It is, of course, possible that the wattles were generally supported by a cruck-frame as suggested by this Ayrshire writer, but the Argyll description suggests that this was not necessarily and it should be considered as a possibility that some creel houses were sufficiently strong to be load-bearing. The wattles were generally weather-proofed with thick turf ('feal') and the roof with thin turfs ('divot'), and a thatch of heather or straw; but there are descriptions of thin overlapping turfs being used to cover a wattle wall. In a barn where a draft was required, the wattles were left unlined to permit the air to circulate.

The Blackhouse

On the Western Isles from Lewis in the north to Barra in the south, and also on Tiree, in the Inner Hebrides, there are thick-walled buildings called Blackhouses, which were readily capable of supporting the weight of a roof. This did not preclude principal rafters, indeed these are visible in 19th century examples still standing on the island of Lewis in the Outer Hebrides, but it obviates the need for crucks, which was an important consideration in an area with very few trees. The Lewis blackhouse with its thick walls (1.5 m to 2 m), often described as double-walled, is faced inside and out with stone and filled with earth (Fig. 4); it is also notable for breeding subsidiary cells to provide stores and a porch for protection from the weather (Fig. 3). The roof was hipped and the principal or common rafters rested on the inside lip of the wall (Fig. 5). Although some were 'byre-houses' - combining human and animal occupation under the one roof - this term does not itself define a blackhouse, but rather the constructional techniques, which could be applied to buildings of any function or size.

The origins of the Blackhouse are still uncertain. Johnson noted that this method of construction was



Fig. 3. A blackhouse at Carlaway, Lewis with a subsidiary cell. Crown Copyright RCAHMS.



Fig. 4. The so-called 'double-walled' construction in section from a blackhouse at Carloway, Lewis, showing the earth core. Crown Copyright RCAHMS.

used for single storey 'huts' in 1773 on Lewis (Johnson 1775), but the term 'Blackhouse' was not coined until the mid 19th century (Fenton 1995). The antiquity of this type of house needs to be tested by excavation, since late medieval examples have yet to be recognised. Indeed, not all buildings in the Western Isles were of



Fig. 5. View of a blackhouse at Carloway, Lewis showing the hipped roof resting on the inside of the walls. Crown Copyright RCAHMS.

this type. A small 17th century boat-shaped house (4 m by 2 m internally) excavated at Loch Olabhat on North Uist, had slightly less substantial stone foundations which supported a turf and timber superstructure (Armit 1997). This could have been a shieling rather than a permanent house, although this was not the excavator's opinion (Armit 1997, 916-8). However, two blackhouses have been excavated on Barra, which have walls of a similar thickness to those at Carloway, Lewis, for example, c.1.5 m in thickness, and date to the late 18th and early 19th century (Branigan - Marrony 2000).

Standing Cruck Buildings

Standing buildings suggest a wide range of buildings used cruck-frames. At the upper end of the social strata, cruck roofs have been found in a castle and a tacksman's house, but they are also found in peasant byre-houses, barns, byres and the cottages of tenants and crofters ranging in date from the 17th to the 19th centuries. The gabled tacksman's house at Pitcastle, which dates to the 17th century, is one of the earliest recorded standing buildings that is known to have been roofed with crucks. Unusually, this was a two storeyed house, as befitted as a superior tenant, and the crucks were founded low down within the stone walls (Dunbar 1960). Also of 17th century date and from a high status site is the principal building in the Castle on the island in Loch Gorm, Argyll, which has three pairs of cruck slots springing from a point about 0.8 m above floor-level (RCAHMS 1984, No. 406). At the lower end of the social scale there are 19th century crofters' byre-houses in Caithness, which contain all the offices, the dwelling, the barn and the byre under one roof (e.g. Ramscaigs, Clais Cairn, Latheron), that have cruck-framed roofs (Stell 1982). And elsewhere there are outbuildings with cruck-frames, such as the barns at Fernaig, Lochalsh, Wester Ross (Fenton - Walker 1981, 47-8) and Corrimony, Inverness-shire (Hay 1973).

Two main types of cruck blade are to be found; the paired single blade: sometimes split from the same log; and the jointed or multiple-jointed blade. The cruck-truss may either be open or closed. It is closed if the cruck blades are crossed at the top to provide a seat for the ridge-tree, or open if the blades are joined to a collar yoke upon which the ridge tree sat, sometimes on a supporting chock. The length of the collar can be a device for broadening the width of the truss and hence the width of the house, particularly where longer timbers cannot be obtained. The feet of the crucks were founded either on a stone pad within the wall (e.g. Prior's Lynn, Dumfriesshire, Fig. 6), or on the ground, whatever the wall material.

An example of a closed single blade cruck is the croft house at Achcullin, Inverness-shire, where the birch blades cross at the apex to form a fork that supports the ridge (Fig. 7). There is also a fine example of an open cruck truss at Prior's Lynn, Canonbie, Dumfriesshire, where the oak blade of the crucks are

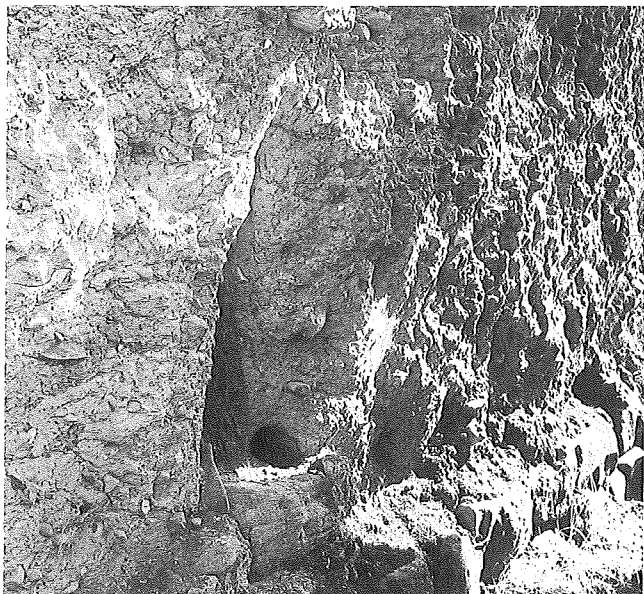


Fig. 6. A padstone foundation for a cruck within the clay wall of the cruck-framed barn at Prior's Lynn, Dumfries-shire. Crown Copyright RCAHMS.



Fig. 7. A closed single-blade cruck at Achcullin, Inverness-shire showing the crossed apex for the ridge-tree. Crown Copyright RCAHMS.

tenoned into a saddle collar that supports the ridge purlin (Fig. 8). This building was a clay-walled barn and store (Stell 1972). The byre-house at Torthorwald, Dumfriesshire, with three oak crucks has a similar style of cruck-truss (Stell 1972, and Fig. 1). Sometimes the collar is so wide that an additional upper truss is

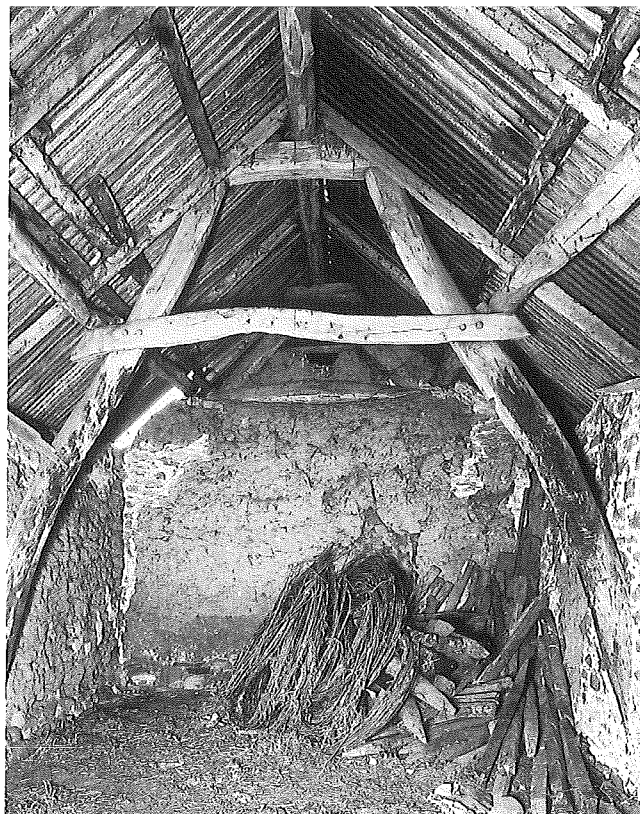


Fig. 8. The interior of the cruck-framed barn at Prior's Lynn, Dumfries-shire showing the open oak single-blade cruck construction. Crown Copyright RCAHMS.

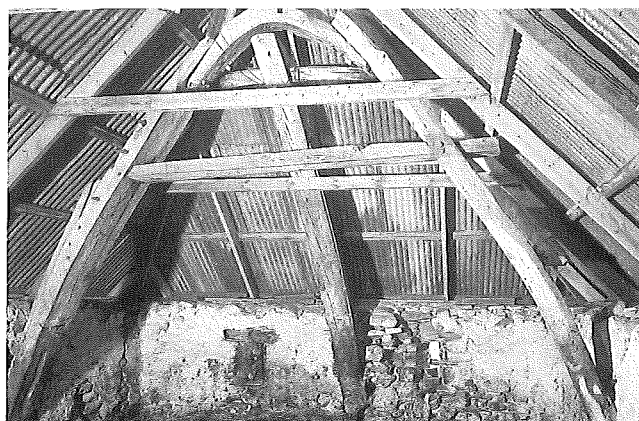


Fig. 9. The interior of the hipped cruck-framed barn at Corrimony, Inverness-shire showing the end cruck. Crown Copyright RCAHMS.

reared above it to take the ridge tree. This arrangement is found in a cottage at Morile Mor, Tomatin, Inverness-shire (Hay 1976). By contrast, the jointed cruck is found in many parts of the Highlands, including Wester Ross and Caithness (Hay 1976). These can be two timbers jointed with a pegged scarf joint, as found on Skye at Kilmuir (Walton 1957); or as at Ramsraig in Caithness, where several pegged and scarfed lengths of wood are used to make a blade (Stell 1982). However, the most impressive example of an open single blade cruck-frame is in the Corrimony

barn, Inverness-shire, which comprises cruck-trusses with an overall span of 19 feet (5.5 m) - the widest cruck span that is known to have survived (*Fig. 9*). The roof was hipped and was supported by a single cruck blade at each end (a 'gavel-fork'). In the original configuration, the roof purlins were supported on the projecting ends of the collar and the spurs jointed into the cruck blades lower down, while a sill-beam was pegged close to the foot of the blades. The present mortared stone walls are a modern replacement. Unusually, the heads of the crucks were scarfed to a curved, hairpin yoke, to create an architecturally refined example of a cruck building. The curvature of the crucks, the peg-holes near the foot of the cruck

blades and the short size of the spurs, suggest that the walls must once have sloped inward (*Hay 1973*). This could not be easily achieved with most building materials, and it is thought likely that it must have been a creel house with a light turf covering.

Documentary evidence for cruck roof construction

The documentary record not only provides some circumstantial evidence for the range of rural buildings types which probably used cruck-frames, but also the antiquity of the tradition. Owing to the

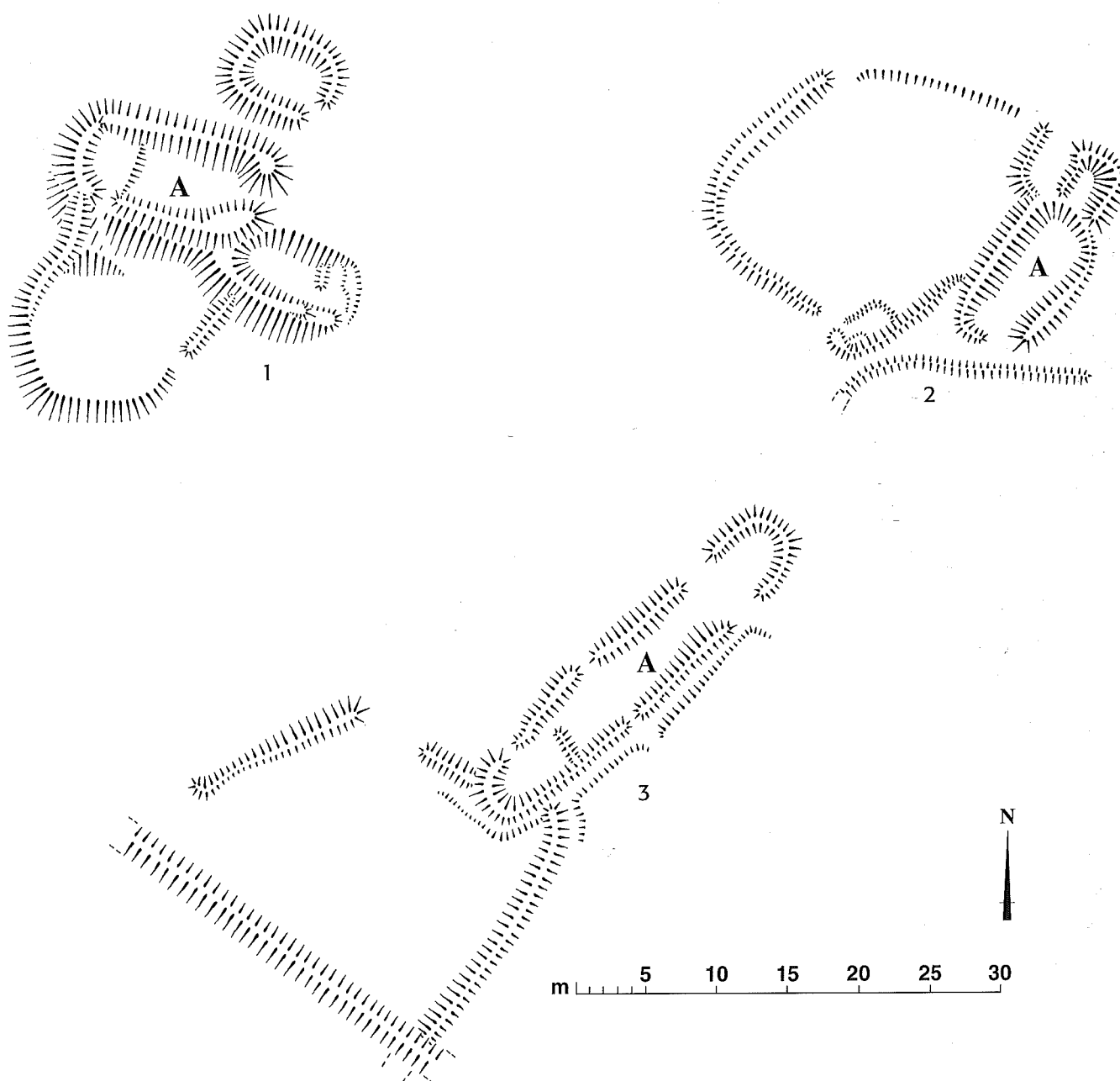


Fig. 10. Plans of the medieval farmsteads at Southdean, Roxburghshire. Note the outbuildings in two cases (1,2,) and at the third (3) a barn and byre-house under one roof. Crown Copyright RCAHMS.

strict control of woodland, the landowner usually provided the timber for the construction of his tenants' houses. In particular, he will have supplied the great timbers, such as the cruck-trusses, but he will also have included the smaller beams necessary for construction. In the estate records of the 17th and 18th century we find the use of technical terms such as 'couples' for a pair of crucks, 'siles' for an individual cruck blade, and occasionally 'gavel-fork' for the end cruck. Purlins and rafters were called 'pans' and 'cabers' respectively, while the ridge-beams were termed 'ridge purlins', or 'ridge-trees'. The term 'couple' can be traced back to the late fourteenth century, but references are rare on account of the poor preservation of medieval estate records. However, Stell has questioned whether the use of the term should necessarily be equated with a cruck truss exclusively. Indeed it could also refer to any form of coupled roof that comprised of a pair of beams resting on a wall-top. However, such trusses are more typical of aristocratic architecture in rural areas, where the walls are load-bearing, rather than in peasant housing before the mid-18th century.

Peasant housing in the lowlands was in the long-house tradition with animals and humans under the same roof space. The name for the section in which the family lived was 'fire house', with a barn and byre at the far end from the dwelling. Stabling for horses was usually found next to the byre and there are intriguing references to pigs, sheep and hens being housed in 'cots' - exactly the same term as that used for the cottage of a labourer.

The size of a building was determined by the number of roof couples, and the spacing between the trusses was anything from about 2 m to 3.3 m. The numbers of crucks in tenant houses ranged from one couple to more than five, but most contained two or three. This suggests about 6m to 10m for two crucks and 9 m to 13 m for three crucks - assuming the buildings were gabled rather than hipped. Cottars and sub-tenants had smaller houses, which were usually only one and two couples in length, although there are a handful of references, which suggest they could be longer. The implication of the single cruck houses is that these were gabled buildings and not hip-ended, since end-crucks (i.e. gavel-forks) are rarely mentioned. It also implies that the smaller buildings were only about 4 m to 6 m in length. The width of the buildings was between 4.25 m and 5.25 m (Whyte 1975).

The simplicity of the long-house arrangement starts to break down when the documentary evidence relating to the farms of the larger tenants are examined. As the agricultural improvements began to gather pace in the 18th century more farms began to have outbuildings to serve as barns and byres, not to mention peat stores, stables, and other storage facilities. However, the question remains open as to whether there were outbuildings in peasant farms before the late 17th century. The proliferation of outbuildings has been noted at Jarlshof in an early medieval context (Hamilton 1956) and there is no

reason to think this did not occur elsewhere in comparable steadings. Richer tenants and minor gentry had the necessary wealth in the medieval period, and there is evidence from field-survey that appears to support this from southern Scotland (e.g. Fig. 10; RCAHMS 1994). With the stratification of late medieval society the more substantial tenants (or husbandmen), were beginning to become relatively rich, so aspiring to the buildings of their social betters.

Peasant housing: the Evidence of Field Survey

Although many buildings reduced to grass-covered foundations have been recorded throughout Scotland, clear-cut evidence of their construction and function is meagre. Out of 4000 buildings examined over six years of fieldwork by the RCAHMS between 1990 and 1995 less than 50 can be defined as byre-houses on the basis of the distinctive drain or sump found at one end of a building. About 800 had signs of sub-division suggestive of functional differences, but not of the functions themselves. However, there is another group of buildings, which are found in Sutherland and Skye which may also qualify as byre-houses (RCAHMS 1993a; 1993b). They are built so as to lie down-slope, with the lower end having an opening in the middle of the gable wall - presumably to allow the waste to run-off from the cattle. Likewise, in the Cheviots and southern uplands there are byre-houses, which are levelled into the rising ground and display a hollow in one end of the building, or an opening in the gable-end to allow the outflow from a sump. Examples of these may be seen at Southdean and Liddesdale, Roxburghshire and in Eskdale, Dumfriesshire (RCAHMS 1994; Dixon 1997; RCAHMS 1997). Evidence of barns is more difficult to pin down. Some buildings with opposed doors have been identified which might fall in this category, including one example in Southdean, Roxburghshire which had two sets of opposed entrances and a partition - suggesting a dwelling, a byre and a barn combined in one structure. However, farmsteads comprising a main building and one or more outbuildings are much more typical of southern Scotland (Fig. 10).

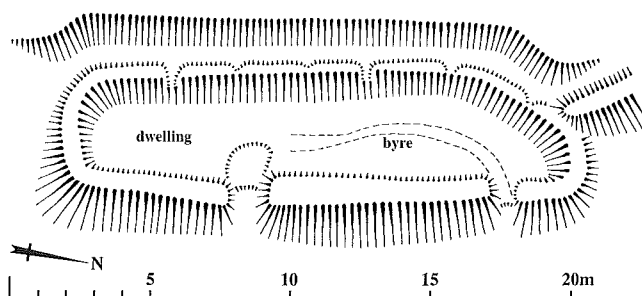


Fig. 11. The turf-walled byre-house at Quarterside of Lipney, Stirling showing the dips in one side wall, which may mark the location of cruck-slots. Crown Copyright RCAHMS.

Most buildings of pre-19th century date are reduced to grass-covered foundations. The materials used include clay, turf, alternating courses of turf and stone, stone bonded with clay, and clay on a stone foundation. Discriminating between these in the field is not easy. The buildings with stone wall-facings are the clearest, but this may represent the surviving remains of a stone wall, or the base of either a turf or a wattle and daub wall. Probing and the examination of exposures may clarify the matter. The disappearance of farms from the documentary records suggests that some of these sites may pre-date the 18th century. In the absence of excavation, this is the only method by which any sort of chronology may be placed upon them.

The evidence of roofing is confined mainly to the observation of cruck-slots and cruck-blades in unroofed ruins. In only one instance can it be suggested from the grass-covered foundations that crucks may have been used in a building. At Quarter-side of Lipney, near Stirling, a house that was terraced into the slope displayed dips about 2 m apart in the wall at the back of the platform, which still stood to c. 0.5 m high (*Fig. 11*). Such a gap between couples is not unusual in cruck-framed buildings; but generally, grass-covered foundations cannot display any hint of how a building was roofed (*RCAHMS 2001*).

Peasant Housing: The Evidence from Excavations

The evidence from three recently excavated sites in the lowlands and on the edge of the Highlands in Perthshire provide useful new evidence relating to the roofing of rural buildings and their functionality.

That in Perthshire is one of a number of buildings found in field-survey, characterised by their length at up to 30 m, their rounded ends, and a hollow in one end suggestive of a byre-drain, or sump. They are located in the same zone as prehistoric round houses - a distinction that marks them out from the pattern of post-medieval farms. The excavated building at Pitcarmick appears to be some form of byre-house (*Barrett - Downes 1994*). A curious amalgam of different constructional methods was used for the walls. One side wall took the form of a composite of earth-fast posts and sill beams, possibly with a turf or wattle and daub infill, while there was a clay or turf wall opposite. The end-walls were rounded, with a foundation of stone. It is difficult to reconstruct a roof, but it had to span a width of 4.5 m. Radiocarbon determinations suggested a date falling between the 7th to 11th centuries. A subsequent late medieval phase was built over one end, which was based upon stone foundations.

At Springwood Park, near Kelso, Roxburghshire, three house plots were excavated in a village bordering the River Teviot (*Dixon 1998*). These were arranged in a single row along the edge of an old river terrace. Excavation revealed that there were two



Fig. 12. View of the collapsed stone rubble aggregate from the clay walls of a 14th century house at Springwood Park, Kelso, Roxburghshire. Copyright Piers Dixon.

major reorganisations of the settlement between the late 12th and the early 14th century. On both occasions the alignment of the buildings was turned through a right angle. The 12th century buildings were constructed with earth-fast posts. The walls could have been built either with turf or wattle and daub. The best-preserved of these houses measured 10 m by 4 m.

The houses of the 13th and 14th century were based on stone foundations standing between 0.3 m and 0.75 m high. These were the foundation for walls, comprising an aggregate of clay and stone (clay-boule, *Fig. 12*). The roofs of the buildings were supported on crucks. About one-third of the way along the side wall of one of the buildings there was a broken slab set in the wall-footing at about 50 cm above the floor - a fortuitous survival of a stone plinth designed to take a cruck (*Fig. 13*). Several other cruck plinths were located which included one that was set in a post-hole on a flat stone (*Fig. 14*); another that was set in a shallow hole in the corner of a building; and a third set on a pad-stone laid directly upon the ground. However, almost the full range of methods for the foundation of crucks was located at this site, and cruck-framed houses may be reconstructed (*Fig. 15*).



Fig. 13. View of the stone plinth in the wall of a 14th century house at Springwood Park, Kelso, Roxburghshire. Copyright Piers Dixon.



Fig. 14. View of the post-hole founded padstone for a cruck from a 13th century house at Springwood Park, Kelso, Roxburghshire. Copyright Piers Dixon.

The interiors of the houses in the 14th century phase had certain features in common. They were all between 9 m and 11 m long by 3.5 to 4.5 m broad internally (that is 32 to 50 square metres of floor space). Their walls were constructed similarly, each with an entrance midway along one side, and each

house had a cobbled area at one end suggesting a sub-division of function (*Fig. 16*). While this section of the building could have been used as a byre, there was no open drain or sump. Although there was a stone covered drain in two of the houses, this suggests the stabling of horses - a finding that is supported by the discovery of horseshoes, and horse-shoe nails, and decorative horse-brasses. No hearths were encountered in this phase of occupation and it is therefore presumed that a brazier was used for cooking and heating. However, stone hearths and ash deposits were present in the earlier 13th century buildings, where there are no signs of any animal accommodation. At this time, the houses were divided by a timber partition.

The houses at Springwood can be compared with the buildings in the village of Rattray, Aberdeenshire (*Murray - Murray 1993*). Here the village tenements were spread out along a street about 500 m long between the castle and the church. The 13th century buildings were founded on earth-fast timbers with walls of turf. In the 14th and 15th centuries the only trace of the walls of the later houses was a spread of clay more than 1 m thick and up to 0.3 m high. Grass impressions in a burnt area of one building suggested a grass-tempered clay, while the scatters of stone at one end suggested a clay and stone gable to the excavators, but perhaps it was clay-boule, as at Springwood. The best-preserved of the Rattray buildings had opposed entrances about 1.5 m wide, suggesting a barn, and measured 3-4.5 m broad by up to 18 m in length. The entrances were flanked by a post-pit to take a door-jamb. A fire had preserved the charred remains of two roof timbers made of oak, 20 cm to 30 cm thick, possibly cruck timbers, to one side of the entrance. On the other side of the entrance there was a base for a timber partition. This was a building divided in function, but apart from the wide entrances, which suggest a barn, there is too little evidence to suggest what it was with any confidence.

In contrast to these, the late Norse or medieval farmhouses on the Northern Isles and in Caithness differed significantly (*Bigelow's* chronology is followed in his dating of Late Norse to c. 1100-1500, see *Bigelow 1985*). The Norse tradition of buildings on these islands has been summarised by *Fenton (1985)*. Those buildings at Jarlshof in Shetland and Freswick in Caithness included examples of apparently aisled rectangular buildings based on rows of posts set in holes in the floor (*Hamilton 1956* and *Curle 1938-39*). They also had substantial stone-faced walls in excess of 1.5 m thick, similar to those found in the 19th century Hebridean blackhouse. Whether these were load-bearing walls like a blackhouse is uncertain from the height of the surviving foundations. The internal width of some of the Jarlshof houses at c. 5 m makes a simple rafter roof less practical than the narrower buildings at Sandwick and Underhoull, where centrally-placed post-holes were excavated, which may have provided additional support for the roof in the primary phase of the occupation. Also both sites display the characteristics of a byre-house with a byre-drain at one end and

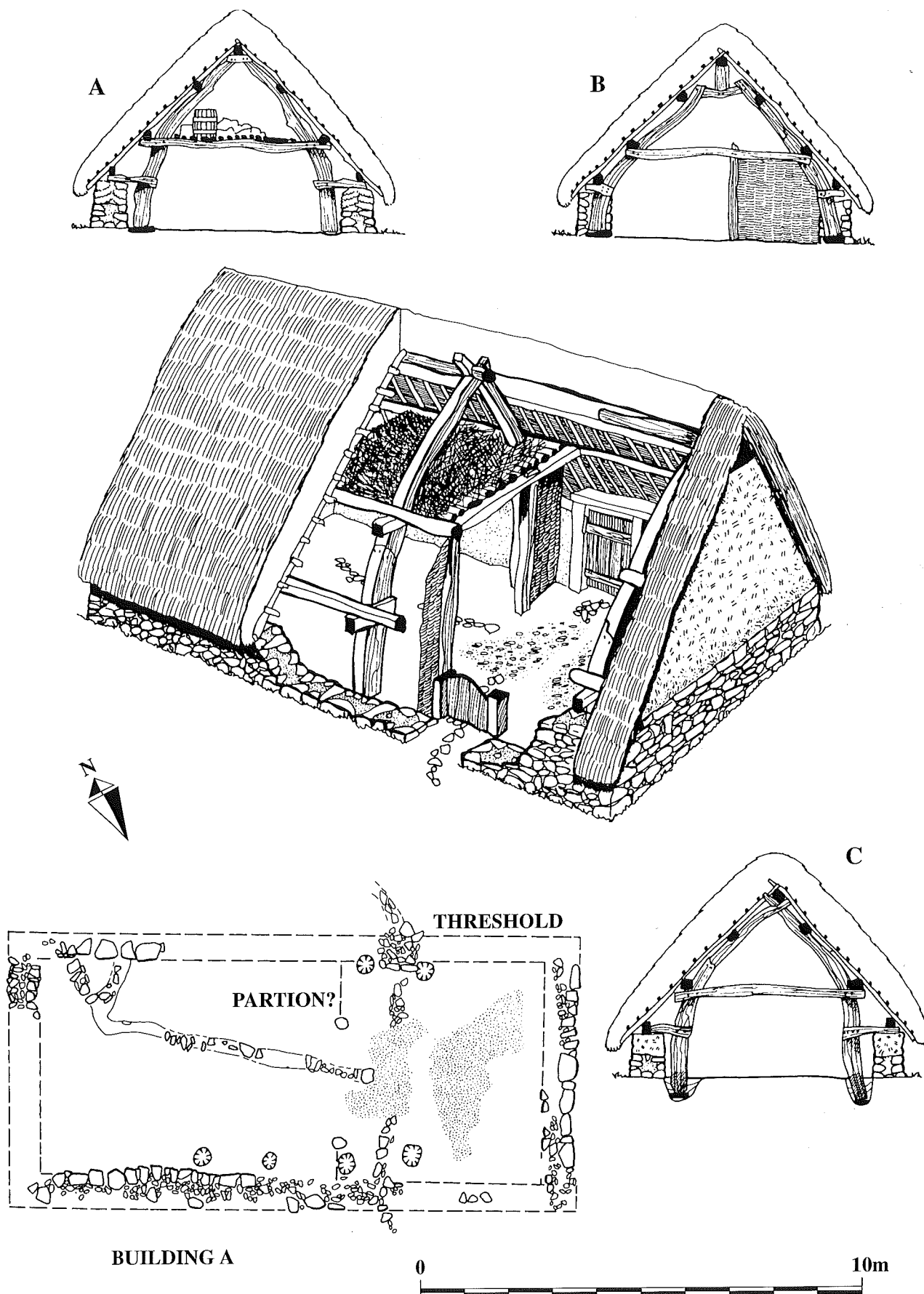


Fig. 15. Reconstruction of a 14th century house at Springwood Park, Kelso, Roxburghshire. Crown Copyright reproduced courtesy of Historic Scotland.



Fig. 16. A 14th century house at Springwood Park, Kelso, Roxburghshire showing the cobbled stand for horses. Copyright Piers Dixon.

living areas denoted by hearths elsewhere in the building (Bigelow 1985; Small 1964-66). There is clearly a different tradition of construction at work in the Northern Isles to that of the mainland under the influence of the Norwegian connection, and both byre-houses and farmhouses with separate outbuildings are to be found (e.g. the Jarlshof medieval farmstead, Hamilton 1956). On the west of Scotland the tradition of building with thick-walls to take the weight of the roof also has ancient antecedents. The round-ended subrectangular Iron Age building at Tungadale on Skye suggests that this type of construction is of great antiquity (Armit 1996, 131-3), while the medieval 'long-house' at the Udal with its thick stone-faced walls is another (Crawford 1988). However, there are many long gaps in the sequence between the blackhouse, the medieval farmhouse and the Iron Age house at Tungadale to be bridged if a continuous tradition is to be established. As has been suggested elsewhere, it is a method that probably has a variety of antecedents (Armit 1996, 214), but perhaps it is the response to a limited supply of timber that is the common factor.

Supply of timber

The paleo-environmental evidence from pollen samples in peat bogs and lake sediments points to a landscape cleared of trees by the late Iron Age. Thus timber was at a premium from the late Iron Age onward in many parts of southern and eastern Scotland and required management for the stock to be maintained. In the medieval period there is documentation for pannage, i.e. the grazing of pigs on the acorns of oak woods, in the 12th and 13th centuries, such as that of Paisley Abbey in the forest of Renfrewshire (Duncan 1975, 364-5), but this practice disappears from the record after that (Gilbert 1979, 107-8). Also there are references to assarts in the 12th to 14th centuries, although this should be equated not only with woodland clearance, but also with intakes of waste land in the hunting forests, where agricultural activity was strictly controlled (Gilbert 1979, 111).

The documentary evidence suggests that woodland was managed and under pressure. Hazel rods were collected from woodland in Perthshire, for example, suggesting coppiced woods (Duncan 1975, 363). The monks of Kelso Abbey tried vainly to limit access to woodland in the Bowmont Valley of the Cheviots (Duncan 1975, 418-9), and efforts were made at Campsie in Perthshire by the monks of Coupar Abbey in the late 15th century to get tenants to build dykes around their woodland to prevent their reduction by pasturage (RCAHMS 1992, 113). The attrition on lowland woods that is suggested may also have had an impact on the availability of building timber, so that wood for timber-framing and wattling became more expensive as the resources of coppiced wood declined. As a result, by the end of the medieval period, much of the timber for substantial buildings was being imported from Scandinavia. In the burghs where dendrochronology has been carried out, the dearth of building timber from the late medieval period is evident and most post-medieval cruck-framed buildings were built with young, and probably local, timber, which have not been very good for building dendro-chronologies (Mills - Crone 1998).

A transition from post-set timber buildings to cruck-framed buildings

At Rattray prior to the 14th century and at Springwood prior to the 13th century the houses were based on earth-fast timbers with no stone footing, but were probably clad with walls of turf, although a linear stain suggested a decayed timber sill-beam in one instance at Rattray, possibly to support a wattle panel. This form of architecture gave way in the 13th and 14th centuries to cruck-framing at Springwood and Rattray, and although the number of excavated examples is small, it is suggested that a trend has been identified in the lowlands at this period.

This was a technological change that required a higher level of technical expertise in joinery than was required in earthfast-post structures (Wrathmell, *this volume*). There is no inherently obvious explanation for the change. However, a cruck building did not require coppiced rods for wattles since the walls were built with stone, clay or turf, and the crucks were reusable. In an environment in which access to suitable building timber was becoming more difficult, and in particular rods for wattles, a change may have been forced upon the peasantry by the landlords. Such a shortage might follow the destruction or clearance of coppiced woodland and the failure to allow its regeneration. The evidence of the burghs also suggests that there was a shortage of suitable timber from the 13th century onwards (Crone - Mills 1998).

Conclusion

To sum up, the limited evidence from the excavation of medieval peasant houses suggests that we have a transition in architecture in the 13th and 14th

centuries from houses built with earth-fast posts to those constructed with cruck-frames in lowland Scotland. On the Northern and Western Isles, it is suggested that thick load-bearing walls supporting rafters, like those of the later 19th century blackhouse, may have their origins in the medieval period. Both methods of construction may have been a response to timber shortages, but that on the Northern and Western Isles was rather more extreme than on the mainland. However, the introduction of cruck-framing required a greater skill in jointing. It may have been an improvement that was brought on by the need for a more efficient timber-frame that could be easily reused, because it did not lead to the decay of the main timbers. There is still, however, a gap to bridge between these medieval sites and surviving standing buildings.

The demise of the cruck-framing technique outside the south-east may be attributed to the agricultural improvements of the mid-18th century to the late 19th century, leading to the construction of lime-mortared houses with load bearing walls that could support rafters set directly on the wall-top. Its abandonment in the south-east, it is suggested, may have occurred somewhat earlier, but more excavated examples are needed to establish this sequence of events.

The evidence for building function from excavations is often, at best, equivocal, but a greater variety is emerging than might have been expected. Certainly the early medieval building at Pitcarmick appears to have been a byre-house, as were some of the medieval buildings on Shetland. However, none of the Rattray houses can be said to be byre-houses, and the suggestion of a barn is tentative. The 14th century houses at Springwood appear to have had stables at one end and, it is presumed, domestic accommodation at the other, but the 13th century houses provided only domestic accommodation. Here also more excavation is needed.

Zusammenfassung

Die Ergebnisse von Ausgrabungen zeigen, dass sog. Krümlingsbauten im 13. Jahrhundert in Springwood Park, Kelso und dann im 14. Jahrhundert in Aberdeenshire aufkamen. Hinweise aus zeitgenössischer Literatur, Funde die in verlassenen Siedlungen aus der Periode vom 16. Jahrhundert bis zum frühen 18. Jahrhundert gemacht wurden und noch bestehende Krümlingsbauten aus dem 18. und 19. Jahrhundert deuten darauf hin, dass diese Bauweise in Schottland vor der Agrarreform weit verbreitet war. Das Aufkommen dieser Bauweise wird dem Zurückgehen von forstwirtschaftlich betriebenen Wäldern im 13. und 14. Jahrhundert zugeschrieben, wodurch ein Wechsel vom traditionellen Ständerbau mit Flechtwerk und Lehm zu Konstruktionen mit natürlichen gewachsenen Krummspannen und Torf-, Ton- oder Steinwänden erzwungen wurde. Das Verschwinden der Krümlingsbauten schließlich ist auf verbesserte Bauweisen zurückzuführen, insbesondere auf die Einführung von tragenden Wänden, die mit der Agrarreform ihren Einzug hielten.

Résumé

Des fouilles ont permis de mettre en évidence l'existence de maisons à armatures en bois fourchues au 13^e siècle à Springwood Park, Kelso et au 14^e siècle à Rattray en Aberdeenshire. Des sources documentaires datant de la fin du 14^e siècle, la découverte d'habitations abandonnées datant de la période post-médiévale ainsi que des constructions à armatures à fourche du 18^e et 19^e siècles concourent à indiquer un usage très répandu de deux armatures en bois fourchues dans la construction de fermes en Ecosse avant la Réforme Agraire. L'utilisation de bois fourchus est attribuée à la réduction des exploitations forestières au 13^e et 14^e siècles, qui aurait entraîné un abandon des méthodes traditionnelles de construction avec un clayonnage soutenant de la boue au profit de constructions dont l'armature faite de bois naturellement fourchu soutient des murs en tourbe, en argile ou en pierres. La disparition des armatures à fourche est due à l'amélioration, dans le sillage de la Réforme Agraire, des techniques de construction et plus particulièrement à l'introduction de murs porteurs édifiés avec du mortier.

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