

# Some Clay Dabbins in Cumberland: their Construction and Form Part I

by

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*This paper, of which Part II is to be published in Transactions, 34 (1990), summarizes the results of field studies of a number of cruck-framed and clay-walled houses on the Solway Plain in Cumbria, carried out between 1979 and 1982. Part I considers the clay wall, the cruck-frame, and the associated rafting and roofing system. New material is presented, confirming the Cumbrian approach to structure and roofing, now uniquely embodied in the buildings of the Plain, as firmly within recent highland tradition, with the possibility of wider connections. The detailed relationship between mass clay wall and cruck frame is explored and the historical and functional primacy of frame over wall demonstrated. Part II will present a number of individual case studies of building plan and section, will consider the way in which these changed with time and will conclude with a brief survey of the wider structural, material and plan-form context of the tradition.*

That everything might be done in order, and without confusion, a particular piece of work is assigned to each labourer. Some dig the clay, some fetch it in wheelbarrows, some heave it upon the walls. The rustic girls (a great many of whom attend on the occasion), fetch the water, with which the clay is softened, from some neighbouring ditch or pond. When the walls are raised to their proper height, the company have plenty to eat and to drink; after which the lads and the lasses, with faces incrustated with clay and dirt, take a dance upon the clay-floor of the newly-erected cottage.

Robert Anderson, *Cumberland Ballads* (1804)

## INTRODUCTION

The image of the vernacular architecture of much of the rural north of England is that of the rugged lime-mortared or carefully-contrived dry-stone wall and the roof of heavy stone slabs. But as with the hedged or stone-walled fields of the enclosures, for many parts of the region this appearance of long-established immutability in the form, is an illusion. The thatched roof, the boarded, daubed or thick sod or mud

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J.R. Harrison, an architect employed as a Conservation Officer in Kent, was first drawn to the study of clay buildings some years ago whilst living in Cumbria. His continuing research on the clay dabbins has been accompanied by the study of clay building techniques in other regions.

wall were once the common currency of northern builders—as they mostly remained of south country builders also—taking their place alongside the ‘clay’ mortared rubble wall and the dry-stone wall. Indeed it is only in relatively recent historical times that some of these, to us now strange materials, have disappeared in the North, vanishing in the face of changing living standards and attitudes. A classic description of their supplanting, involving not only a switch from one material to another but, by implication, the development into greater use of the production and constructional skills of ‘professionals’, from a former rather more all round self-sufficient mode of operation, is offered in an account of the buildings of the Leagram Estate near Preston in Lancashire in 1822:

There were still ‘rattle and daub’ houses and outbuildings existing . . . They were rudely constructed, when wood was still abundant, built of oak trees, resting on large stones, the tops being united by a ‘chilly-beam’. The roof was thatched before the walls were built, to protect the ‘daub’ from the weather. The living rooms were open above to the roof, with rafters overhead . . . The barns were often large open church-like structures . . . entire oak trees springing from a low wall, and meeting in the centre in a pointed arch . . . These were the days of oaten cakes, when farmers grew their own corn . . . After discontinuing the cultivation of corn, it became necessary to purchase meal in the market . . .

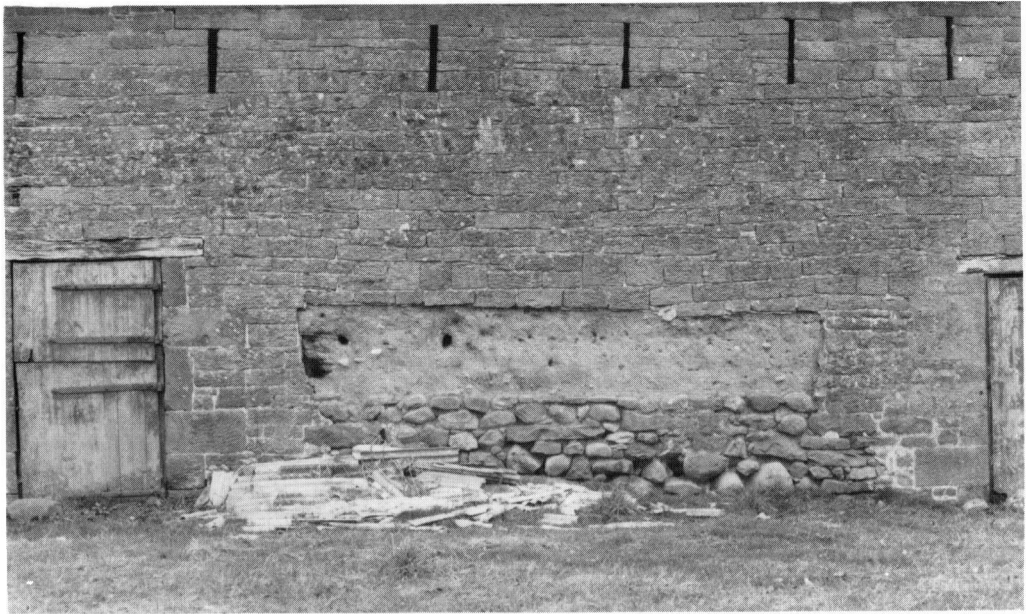


Fig. 1

Building materials succession on the Plain. Part of a barn wall in the south-east of the region, probably dating from the nineteenth century, and made of blocks of quarried sandstone. The stone has been built around, and has protected, a remnant of earlier mud walling. The roughly-coursed split fieldstone base of the mud is in contrast to the regularity of the later walling. Cumbrian sandstone is readily worked compared to the cobble off the glacial till. At the time of its construction the squared stonework must still have been expensive enough to justify the recycling of even this small part of the earlier walling

The thatched roofs rapidly disappeared, being replaced in the first instance by heavy stone slates, and afterwards by the better slate of the Welsh quarries. In most cases their supporting walls had to be taken down, the roofs often being unnecessarily extended . . . A storm of unprecedented violence . . . in November 18-- , effected a revolution in the roofs of the district. Every thatched barn and building was more or less stripped, and there being no straw to renew them, all repairs were made with the more serviceable material. In Leagram at least thatched cottages disappeared from that date.<sup>1</sup>

The year of the storm was 1839. The effects of this hurricane, which struck first across Ireland, were long remembered. On the Yorkshire Wolds window glass was encrusted with a film of salt thought to have been carried from the Irish Sea.<sup>2</sup>

Having drawn attention to a former general coincidence between north and south in the matter of building material usage—a once commonly-held understanding of daub technique and the use of thatch, for instance—this essay will concentrate on some significant differences from southern and midland practice that were embodied in northern rural peasant building tradition before the advent of the ‘improvers’ and ‘improved’ ideas of construction in the eighteenth and nineteenth centuries (Fig. 1). That such an investigation is possible, even on the very limited and selective scale attempted here, is due to the survival in north-west lowland Cumberland of buildings that never suffered the drastic eighteenth- and nineteenth-century remodelling and reconstruction that is such a feature of the countryside in many other parts of the north. Only the mud wall is dealt with here. This has its better known equivalents in midland, southern and south-west England as well as in other regions of the British Isles. The form is international. A mass wall, typically some 1ft. 10in. to 2ft. 0in. thick (to a degree dependent on height and load), is made entirely of clay-bound sub-soil material, dug up and mixed with water and usually straw, piled up and allowed to dry into hard walling.<sup>3</sup>

The geological map of north-west Cumberland shows a coastal strip of raised beach along the Solway Firth backed by deposits of peat, alluvium and river gravels, then come beds of Keuper Marl and Stanwix Shales, surrounding an isolated surfacing of the Lower Lias, all lost in low-lying places beneath more alluvial and peat deposits (Fig. 2). From the line Wigton–Thursby–Carlisle southward, lie the Kirklington and St Bees Sandstones and Shales. Over most of this area extensive superficial deposits of Boulder Clay combine with the alluvium, gravels and peat to create a lowland radically different in character from the Lakeland uplands to the south. The broad effect of the drift and other surface deposits on the landscape lessens as one passes south, and upward, over the sandstones and shales, where the underlying geology begins to make itself felt. It is in the area of the Solway Plain, westwards from Carlisle to the coast and southwards as far as these Sandstones and Shales, with their soft underlying deposits recalling Midland geology and its mantling of Boulder Clay and alluvium, that the great majority of the remaining traditional mud buildings of Cumberland are to be found.<sup>4</sup>

The extent to which overlying deposits blot out the solid geology in the lowland of the Plain can be seen from the map of their occurrence west of Carlisle. There is little relation between the surface deposits and underlying solid geology. The map defines areas of Boulder Clay, drift six feet or more deep, much of which has been rasped from the surrounding highlands and deposited on the lowland during the Pleistocene. The sub-soil derived from the drift, used to make Cumbrian mud walling,

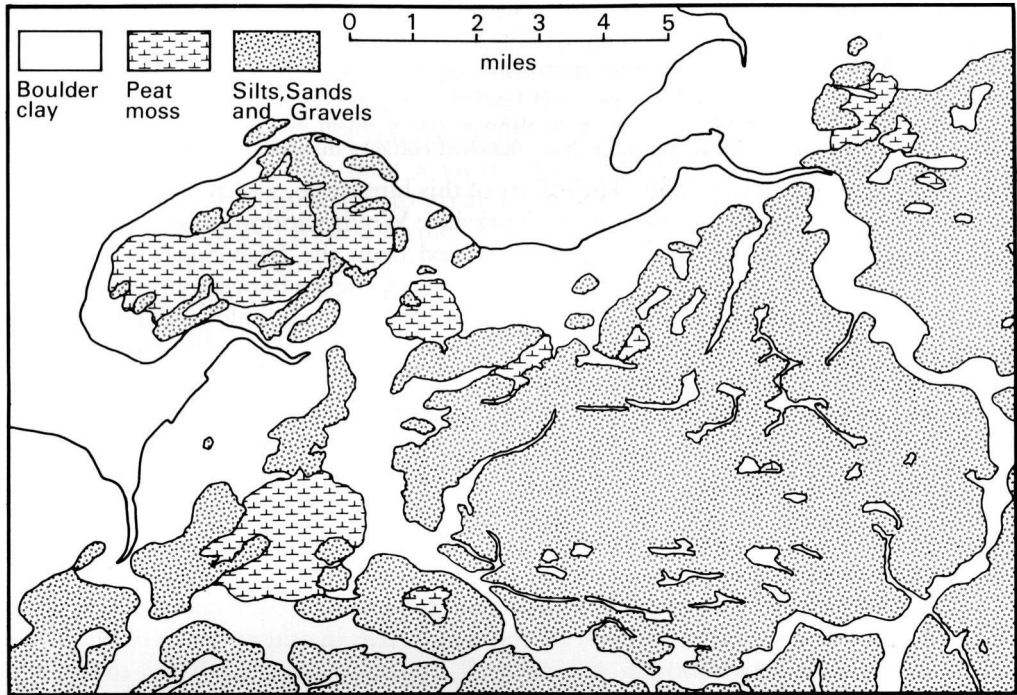


Fig. 2  
The superficial geological deposits to the west of Carlisle

is red in colour and contains sand and stone as well as clay proper. One factor that influenced the continuing use of the mud wall on the Plain until the nineteenth century was the ready availability, over a wide area, of this raw material in which all the necessary ingredients were present in the right sort of proportions. A further reason for the survival of the walling technique here until quite recent historical times is that, for the peasant builder, the intractability of the stone found within the drift—ice and water-rounded cobbles and boulders—made mud by far the easier option. Judging from the built evidence stone only came into general use on the Plain in the late eighteenth and nineteenth centuries (Figs 3 and 4). A corollary to the difficult building properties of the field stone from the drift was the lack of good local quarried stone. The latter had to be carried from a distance, from the fringe of the uplands, and was thus beyond the means of the ordinary farmer on the Plain until quite recent times. Stone House Farm in the village of Moorhouse, dating from the early years of the eighteenth century, shows by its name that quality stone construction was still a rarity in the region then (Fig. 5). Brick, made locally, finally ousted mud as a major walling material in this part of Cumberland, coming in at vernacular levels to a small extent in the eighteenth century, and then universally during the nineteenth century.



Fig. 3

Mud, cobble, red brick, stone slab and slate-roofed farm buildings near the shore of the Solway Firth. A standard oak in the hedgerow completes the picture of local materials. The course-lifts in the cobble-work of the barn are some 12in. (300 mm.) high in the side walls and are higher in the gable. Lime mortar, to bond cobble walls of this sort, had to be transported from the fringe of the Plain. The most expensive material, brick, was reserved for quoins and for use at the upper levels to give maximum stability there. In the domestic accommodation brick has been employed to raise part of the original building from one to two storeys



Fig. 4

Another example of the later tradition which produced buildings rich in textural quality and colour through the use of grey cobbles and soft red bricks and red sandstone



Fig. 5

Stonehouse Farm in the village of Moorhouse; sufficiently unusual in the early eighteenth century to be known by the material from which the street frontage of its domestic section is constructed (information from Dr R.W. Brunskill). A former cross-passage house (see Part II, forthcoming), it has been altered in at least three stages. Raising of the wall height and refronting in ashlar stone of the original lower and certainly mud, house, began at the far left of the illustration. It ran initially to the front door where a construction joint can be seen. Refronting and raising of the rest of the house must have followed soon after. Gable wall and chimney stacks have been rebuilt in brick and the centering of the stacks about the ridge suggests considerable alteration to the original cruck frame within. The barn also, though retaining its original mud walls, has almost certainly been altered, through the raising of its side wall head. The two purlins per side, whose ends are visible in the gable wall, are a later structural development resulting from the introduction of the heavy sandstone roofing slab in place of thatch. The barn ridge is at its original height. The house is roofed in grey slate, the barn retaining the heavier sandstone slabs of either usage. The building presents an assemblage of typical development characteristics, the detail of which is reviewed for the region as a whole in Part II (forthcoming)

The picture is very different in the adjoining uplands where workable stone, because it was readily available, is the dominant vernacular walling material.

Apart from mud, other walling materials were certainly once used on the Plain, as no doubt in other parts of Cumberland, notably sod and wattle and daub. Sod must have been eventually superseded by mud, which the record tells us could here last 150 to 200 years, a fact the existing buildings amply confirm. There must be a question mark over daub. There is a relationship between the internal timber frames—the ‘cruck’ structures—of the older vernacular buildings of the region and their mud walls, which suggests the introduction of heavy mud into a pre-existing framing system (Fig. 6). Looked at another way, the northern cruck frame with which

we are dealing here, was fundamentally related to the timber-fabricated wall, but was everywhere amended and modified for use with other wall types. This may have happened on the Plain long before the seventeenth century, which is the period from which the earliest datable mud houses survive there. It is certainly significant that the local name for the mud house is 'clay daubin' or 'dabbin', a name not applied to mud buildings in any other part of Britain. Daubed internal partitions can still be found in some of the buildings.

In other areas of the North, crucks now occur within stone walls but daub as a cladding for cruck houses was still remembered on the Yorkshire Wolds in the early nineteenth century (Fig. 7). It was said there, that, when the wattle and its 'clay' covering decayed, '... they were replaced from time to time by chalk stones, cemented with grit.'<sup>5</sup> Various forms of quite thick external mud walling containing timber armatures have been found in cruck-framed houses on the Fylde Plain of Lancashire. Such combinations contrast strongly with Cumberland where as far as is known the arrangement has yet to be recorded with certainty.<sup>6</sup>

Mud walling as an alternative to wattle and daub was once widespread in Britain. Remnants probably survive in west Cumberland but the author has not personally investigated these.<sup>7</sup> The mid nineteenth-century historians Turner and Parker comment on the Northumberland vernacular of their time:

Of the earliest cottages, we cannot expect to find their walls of turf and roofs of straw. The oldest to be found have the couples united to short legs which rest upon the ground; the walls are of clay or of rubble work, without sufficient strength to support the timbers of a roof. The roof is thatched.<sup>8</sup>

Captain Cook was born in a mud house at Marton, Cleveland, which is now part of Middlesborough.<sup>9</sup> In Holderness, another lowland area formed on extensive Boulder Clays, the mud house was still quite common in the nineteenth century.<sup>10</sup> The father of the wood engraver Bewick had an 'earth built ludge' at the entrance to his pit at Cherryburn outside Newcastle in the late eighteenth century.<sup>11</sup> All these northern traditions and others like them, including an exact equivalent in terms of structure and wall, across the Solway Firth in Dumfriesshire,<sup>12</sup> are now more or less completely gone. That of the Solway Plain is the major significant survivor in the north of England, of a consistent mud walling system concealing numbers of timber-framed, cruck, structures. It is of prime importance for our understanding of the attitudes, expectations and craft skills of a long-gone rural society. It is a great pity that what is left is so little regarded in the region, that buildings continue to be lost year by year. Within the last year a Listed Building Consent Application for demolition, lodged with Carlisle City Council in respect of a Grade II listed mud and cruck barn in Burgh by Sands, has been granted while at Moorhouse (Figs 9 and 10), a much bigger Grade II\* listed clay barn of regional importance, and it has to be said, unique to the North, has been allowed to collapse.

This study looks first at some of the detail of the mud-walling method and the buildings of the Plain and then at house plans, in particular the hearth backing on the entry ('Statesman') plan-type, and their relationship to structure. Although the study concentrates on the houses, mud walling was also used in all sorts of buildings in the region; numbers of barns and smaller structures survive alongside the dwelling

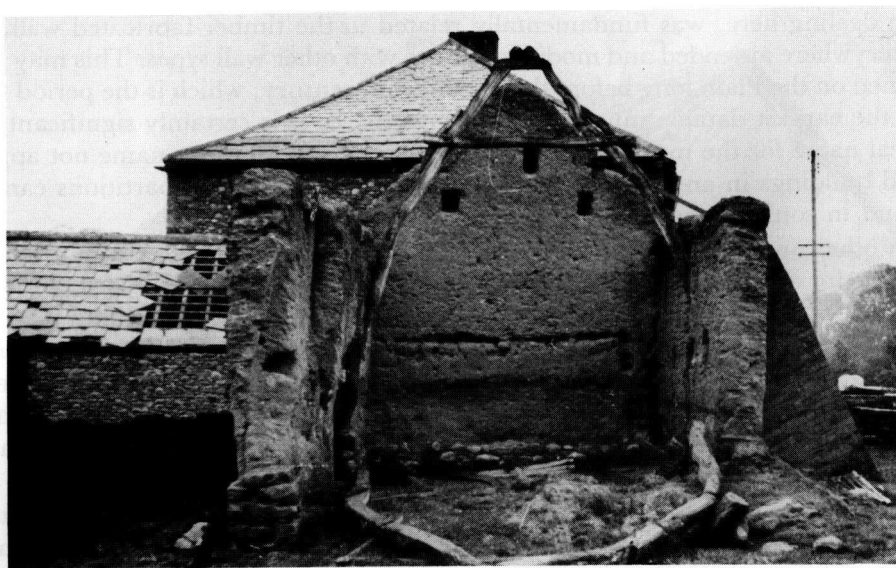


Fig. 6

Cruck frame and mud walls in a barn at Durdar  
*Miss Alice Smith and the Ralph Cross Archive*



Fig. 7

Thatched cross-passage house, barn and stables at Fimber on the North York Wolds, destroyed in the late nineteenth century. The walls of this house were originally daubed on split oak wattling  
*Kingston-upon-Hull City Museums and Art Galleries*





Fig. 8

Lamonby Farm, Burgh by Sands, Cumbria, undergoing repair and reconstruction in 1982. From the left of the illustration are the barn entry, byre entry, cross-passage entry, house and 'cottage'. The whole was at that time mud walled. The buildings were originally thatched throughout  
*Miss Alice Smith.*

houses. Mud for building was known as clay in Cumberland and in some other parts of northern Britain. In what follows, therefore, the term clay wall is preferred to mud wall as being more regionally specific. There is in fact no difference in meaning between the two terms.

Comment is made on the basis of the author's own fieldwork, and that of other workers, rather than from local documentary research. The survey is largely architectural and constructional. The author was able to undertake the study at a critical time when the local vernacular was at just about the right stage of decay. The Grade II\* listed clay house, Lamonby Farm (Fig. 8), in Burgh by Sands, had reached the end of its life as a steading, was derelict and about to become the home of a new kind of owner, committed to saving what he could for posterity, when the author arrived on the scene in 1979-80. Lamonby Farm had been recorded and described and the background given, by Messrs Hodgson, Bouch and Bulman.<sup>13</sup> Their paper stands as a key reference, alongside Brunskill's pioneering general survey of the mud building tradition of the region,<sup>14</sup> Dixon's paper on Paddock Hole, Burgh by Sands,<sup>15</sup> and Brunskill's *Vernacular Architecture of the Lake Counties*.<sup>16</sup>



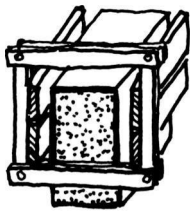
Fig. 9

The barn at Moorhouse, 1980, now tragically destroyed. This building, unique in terms of its great size and numbers of crucks, was of mud throughout. The walls and roof had probably been raised to carry slate. This structure, listed grade II\*, was allowed to collapse in 1988



Fig. 10

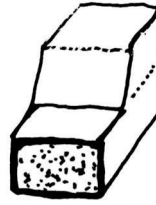
The former village bake-house at Moorhouse, 1980. This small mud structure still survives (1988) adjacent to the site of the great barn



shuttered  
clay



clay placed  
by hand



clay placed  
by tools



clay formed into  
pre-dried blocks

Fig. 11

Diagrams of some 'soft' wall-building techniques once current in Britain

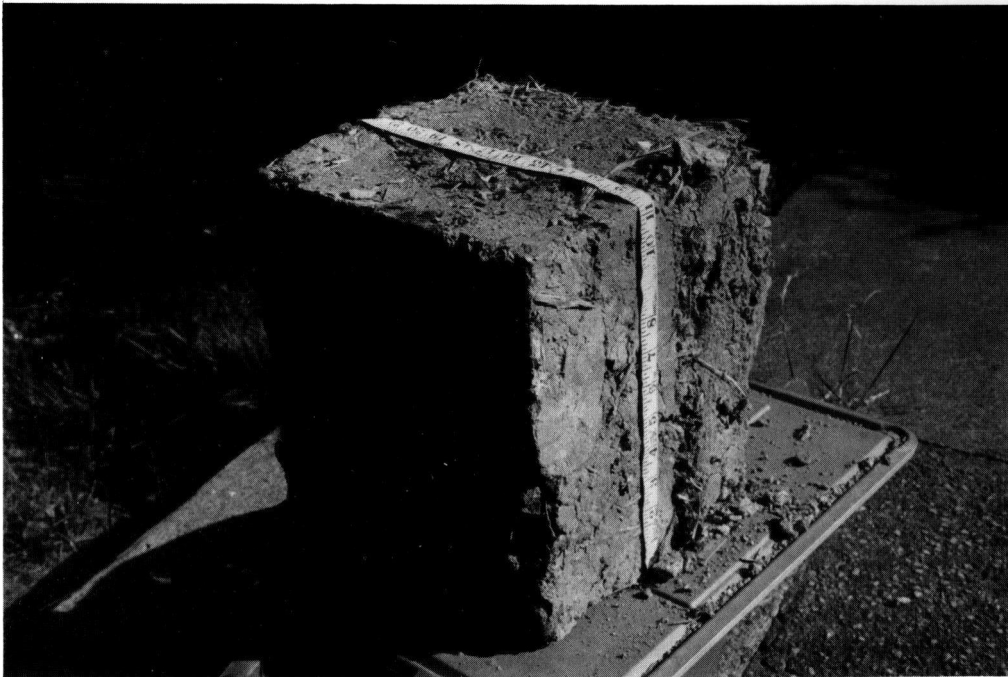


Fig. 12

An experimental 'cube-foot' (300 mm. x 300 mm. x 300 mm.) of Devon 'cob' produced in the early 1980s by the Devon builder Mr Alfred Howard

## THE CLAY WALL

*But and he couthe through his sleight  
Do maken up a tour of height,  
Nought rought I whethir of stone, or tre,  
Or erthe or turves though it be.*

Fourteenth century, *The Romaunt of the Rose*

As figure 11 shows, clay walls were made in various ways in Britain—from pre-formed wet-moulded air-dried blocks, from wet, free-built mass material put into the wall in layers, using tools, from similar material, but placed in position by hand (a very common method in Africa), and from similar mass material placed between shutters and sometimes rammed down a little. There is dispute as to whether this last was laid wetter or drier than the free-built sort. Perhaps it was, at times, done in both ways.

Though there has been a suggestion that the Cumbrian work was shuttered,<sup>17</sup> examination of fair-faced walls shows that it was usually free-built. This was the process most commonly used in England. Figure 12 shows a cube foot of the material, from Devon, when dried and hardened. Walling clay and its relative, daub, share the same

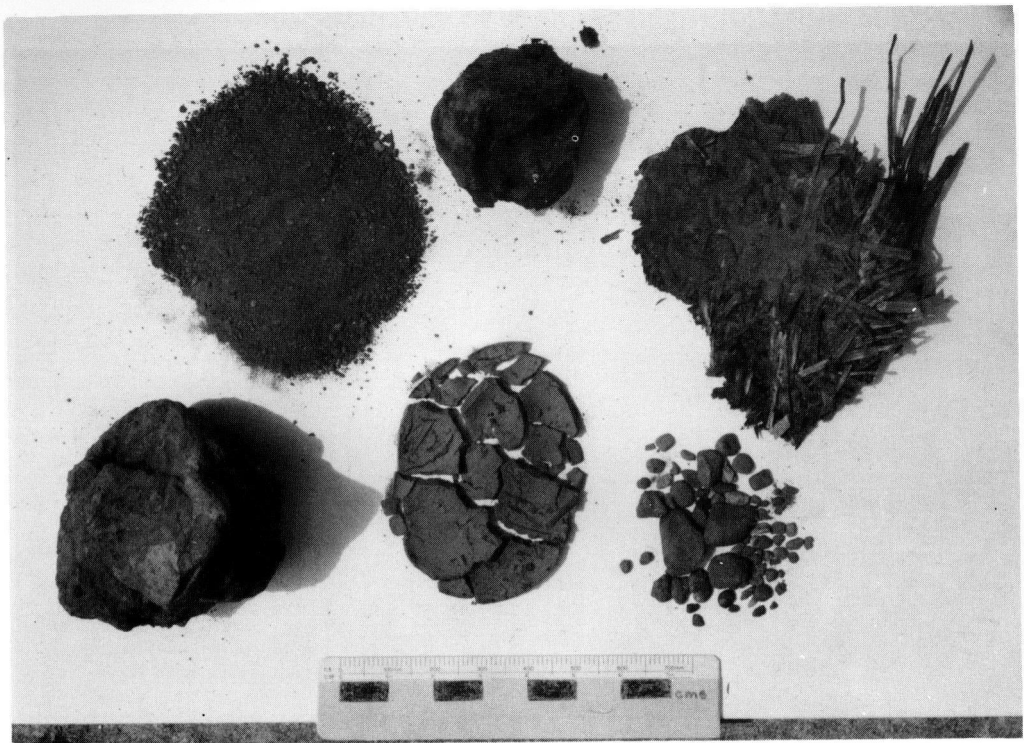


Fig. 13

Constituents from a 'clay' wall in Cumberland: stone, gravel, silt, sand, clay, dung and straw

basic constituents—clay-mineral, silt, sand and fibre (straw, hair, etc.). To these may be added, in the appropriate locality, calcium carbonate, or chalk. Some 'mud' walls are in fact made from almost pure crushed chalk. Dung was also often added and sometimes lime as well. Clay-work contains the further 'bulking' ingredients of gravel and stone. The size and quantity of these depend on location. Obviously these larger hard ingredients would not go well in daub, which must be smooth in consistency to allow easy throwing, to adhere satisfactorily and to produce a plain surface when smoothed and dried (Fig. 13).

A preliminary discussion of material and technique has already been published,<sup>18</sup> and it is not necessary to go far into the matter here, but while the true clay-mineral fraction in the mud or daub mix binds together all the other ingredients (except dung which is also a binder), the propensity of clay to shrink as it dries out works in the opposite direction, producing cracking. Traditionally, this has always been countered firstly by adding fibre, which helps spread the shrinkage evenly through the wall, reducing the cracks to hair-line failures, and secondly by reducing the true clay-mineral fraction present to the bare minimum. The northern name 'clay' walling pin-points the significant ingredient, the binder for the bulking materials, just as cement binds a sand and gravel aggregate to make a modern concrete wall. The ingredients found in a clay wall from the Solway Plain are clay, fine silt and sand, small stones, larger stones, straw and dung. A Cumbrian builder tells how an alternative regional name for the clay wall was dung wall, a name not found in use anywhere else.

Clay walls were generally built using forks—even hay forks sometimes. The most sophisticated, purpose-made, forks which we know come from the West Country and Buckinghamshire. In Cumberland it is recorded that the common byre fork<sup>19</sup> was used, as in many other places. Walling was normally built up in courses, by the forkful, then beaten and stamped into place on the wall head. Workers often stood on the wall, moving backwards and producing diagonal striations in the wall-face as they put each forkful into place, as shown in figure 14. Gowan Ditchburn, shown in figure 15, working on a Hampshire wall, had once built shuttered mud walling in Devon. Material was built up overhanging the base. When dry or partly hardened, it was pared back to a plain face, either with a spade or some other sharp tool from above, or by hacking from the side. Many different tools were used at this stage, even axes. In Cumberland we are told that it was again the byre fork which was used for paring, suggesting that the wall was still in a pretty damp state when the operation was carried out.

The building process began with mixing, when water and straw were added to sub-soil excavated from as near to the building site as possible. More or less attention was paid at this stage, depending on the intrinsic quality of the raw material. In Devon turning and treading on the ground two or three times while watering and mixing in the straw, all immediately after excavation, might prove sufficient. By contrast one Cumbrian report says the clay was soaked for a while before it was mixed with the straw;<sup>20</sup> this was common practice with daub, as with lime and sand mortars.

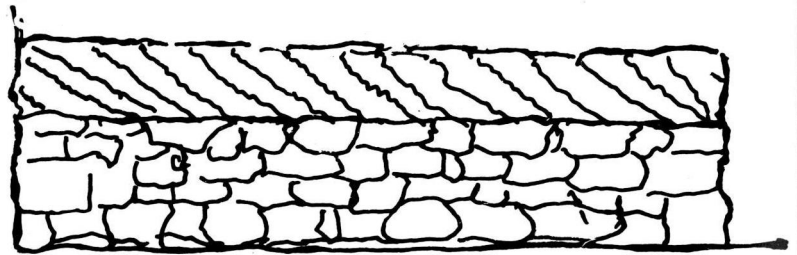
Using the fork, lumps of the mixture were transferred to the wall. Through the use of special long handled 'tridents' considerable height could be gained. Usually, when a certain height was reached, adding material became more difficult and might



Fig. 14

(a) (*left*) Mud boundary wall in Whittlesey, Cambridgeshire, 1979. Signs of diagonal layering, running from upper right to lower left can be seen in the wall face

(b) (*below*) Diagram from Clough Williams-Ellis, *Cottage Building in Cob, Pisé, Chalk and Clay*, showing method practised in the Dunsford district of Devon



cob course, or scar, showing diagonal layers

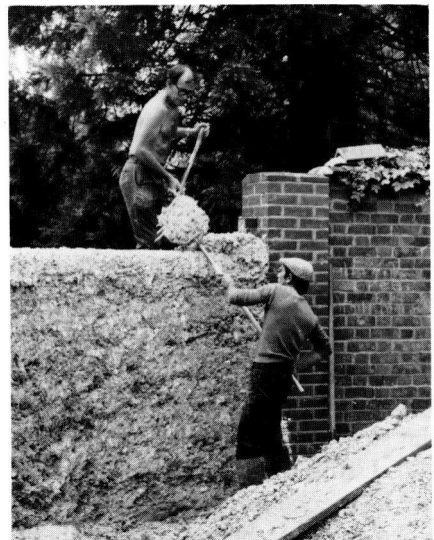


Fig. 15  
Rebuilding a chalk-mud wall at Andover, Hampshire,  
1982

*Eric N. Lane*

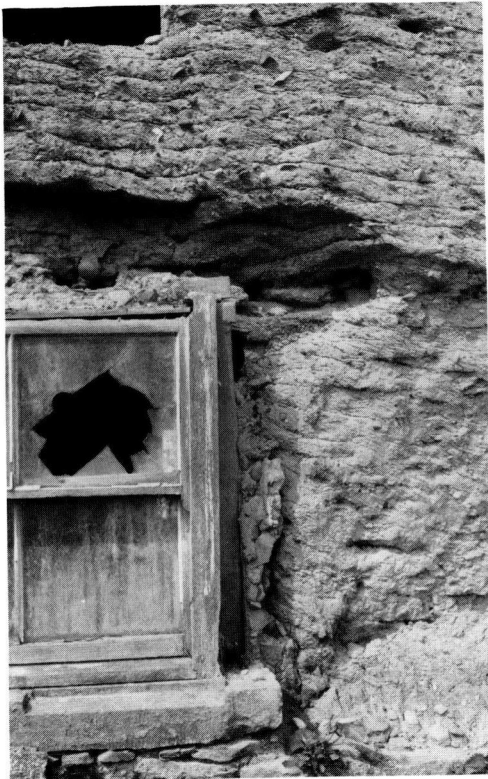


Fig. 16

Conventional deep-course walling in a cottage at Green Lanes, Dalston, Cumbria in 1980. Note the vertical striations made by the paring tool, as well as the 'block' form of shrinkage cracking within courses

also become dangerous, the wet wall starting to 'slip' or to 'swag'. If that happened work stopped for a time while the mass hardened sufficiently to take the next course. At this point paring-down was often done. When work continued—after some days, or a week or two—a tell-tale lift line was left behind where it had stopped. The depth of a lift or course could vary greatly from one region to another and from one building to another. Figure 16 shows quite deep courses in the gable of a Cumbrian cottage—some 1 ft. 6 in. to 2 ft. high. Much more common in Cumberland is the very thin course, as in figure 17, which shows a now demolished house at Kelsick on the Solway Plain. The stones in the mix can be clearly seen in the close-up, figure 18.

If we are to believe the record these thin courses do not represent the end of a stint where work stopped for the wall to harden. We are told that, even as recently as the early nineteenth century, clay walls in Cumberland and neighbouring Dumfriesshire were built continuously 'in a day'.<sup>21</sup> In walling such as that at Kelsick each thin layer of clay is separated by a bed of straw extending right through the wall thickness. As was suggested in an earlier paper,<sup>22</sup> it is possible that this arrangement—a thin clay layer with a straw bed—was a technique by which quick construction was achieved. Perhaps the combination of clay and straw, with the former in a wet state, when placed in the wall, acted like an old-fashioned cider press; the



Figs 17 and 18

A farm house at Kelsick on the Plain, 1979, since destroyed. The typical thin beds of clay are separated from each other by layers of straw. There is no evidence of the sort of horizontal 'block' shrinkage to be seen in figure 16. However, major differential settlement failure is visible extending as a crack, vertically, from the jamb of the front door to the eaves. The face of the clay wall to the right of the lower window has sheared away as a result of the settlement. The fixed and rigid nature of the stone door-jamb has been a major factor contributing to these failures. Such stonework is an introduction into the local tradition



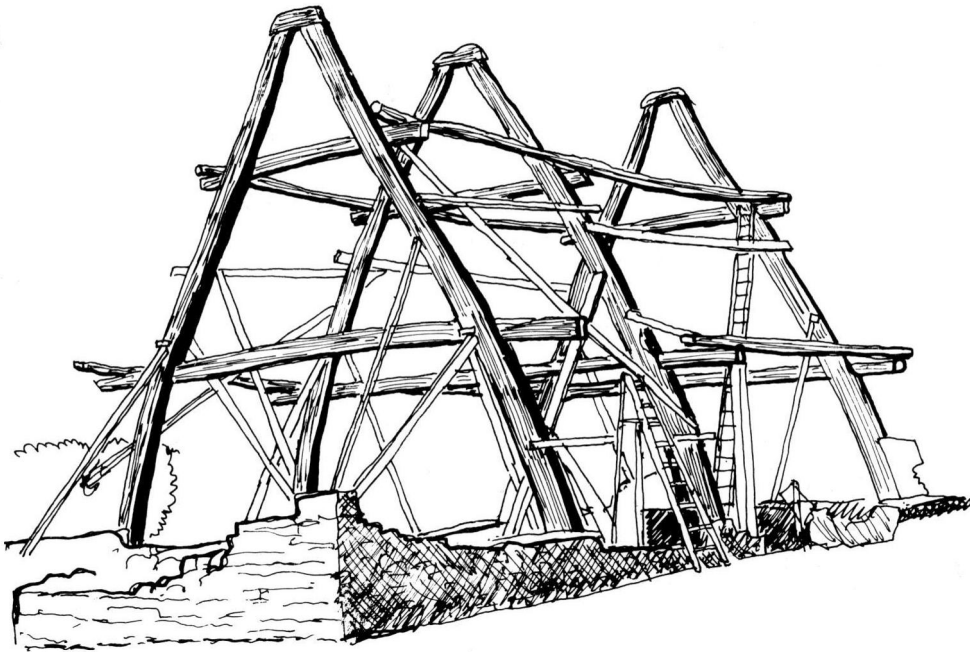


Fig. 19

Crucks after 'raising' at the open air museum of building at Hutton le Hole near Pickering, North Yorkshire. The structure is that of Harome Hall, probably of sixteenth-century date, which was rebuilt on the museum site. This was the earliest, and simplest, surviving type of framework employed also on the Plain

*Drawing after a photograph in the Ryedale Folk Museum Handbook*

mass weight of the layers as they rose, squeezing out water at each straw bed, stabilizing material, although it remained damp.

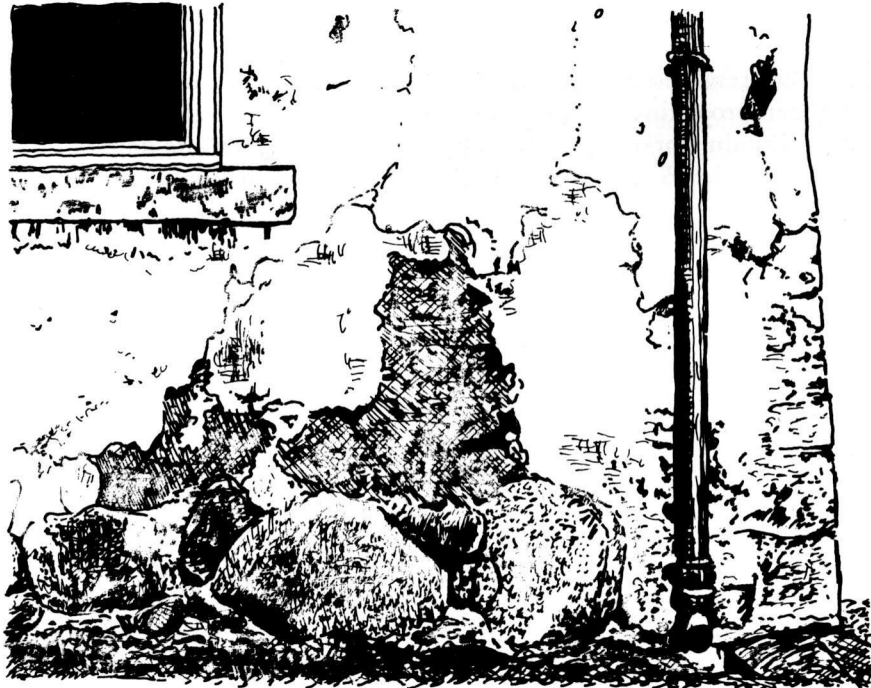
One would expect this process to be possible only up to a certain height. The record confirms this assumption, an early nineteenth-century description noting that high gable walls had to wait until the mass below was stable enough to carry them.<sup>23</sup> Gables in mass construction in any case presented a difficult problem for vernacular builders with limited resources. When built in clay the apex becomes progressively more difficult to compact as it rises and thus may not stabilize properly when dry.

The interest of the Border system lies not only in its detail but also in the social structure which was the means of its application. To construct mass walling up to six or eight feet high all around the perimeter of a substantial building, in a day, calls for team effort. Nineteenth-century reports show that large groups of people came together to get over quickly what the observers called a 'dirty and disagreeable' task. The job was 'flooded with labour', sometimes up to twenty or thirty workers, it is said, with some three or four of the most skilled actually laying the clay—dressing



Fig. 20

Details of boulder and cobble wall-plinths on the Plain. (a) shows, nearest the camera, the (later) barn at Lamonby Farm. Fig. 20(b) shows smaller stones used in the base of a house at Kelsick. Fig. 20(c) and (d) relate to other buildings in Burgh by Sands. The huge projecting boulder at (c) clearly proclaims its purpose which is to protect the corner of the building. By contrast the battered mud wall corner at (d) is protected by squared masonry



and trimming the walls—the rest mixing and handling.<sup>24</sup> Excavation would already have been done and the stone foundation plinth—if used—built and the cruck frames reared, all prior to wall building (Fig. 19). This joint walling work was ‘boon labour’ and at the end, as Dr Brunskill has written, things were rounded off with eating and drinking festivities laid on by the recipient of the aid. Similar traditions, relating to the building of conventional mud walling, survived in Breton villages until recently as Professor Meirion-Jones shows.<sup>25</sup> Some others in this country relate to sod building. In Ulster in the last century the Clachan gathered for the same operation, first erecting the ‘couples’ and then laying on ‘. . . the first course of sods by proper hands . . . and so continued building to knot on the timber’.<sup>26</sup> Of Goole, Humberside, before the nineteenth-century improvements, we are told that ‘the houses were built with sod walls at the expense of the occupiers . . . twenty or thirty men on a Sunday (better day, better deed) set to when a house wanted erecting and finished it off the same day’.<sup>27</sup> Perhaps the genesis of the northern quick-build clay wall lies in the adaptation of sod wall-making practice—communal practice—to the more substantial material. We know that in the Borders during the raiding period, the homes of the ordinary people were pretty insubstantial, quickly destroyed and just as quickly re-erected. The thin clay wall-course is found in other parts of Britain and it is said that continuous construction was also practised in Devon. But only in Cumberland and Dumfriesshire is a connection between the two so explicit; only in these areas is the thin ‘bed’ tied to quick building by the historical record.<sup>28</sup>

The clay walls of the surviving buildings are invariably built on stone plinths, raising the mud wall above the ground. Height of plinth varies and is discussed later. The probably older form involves the use of field stone, cobbles and boulders, mud-mortared together, sometimes with the larger stones running right through the wall (Fig. 20). Often, very large boulders, needing to be moved by sledge and put in position with levers, were reserved as support for the feet of the cruck blades. On occasion these can be seen projecting from the wall face externally, marking cruck positions. Other plinths contain worked sandstone; this often indicates a late date of building.

Clay walls on the Plain may be found built with each face plumbed vertical, though the tapering section found elsewhere is also quite common. In better work the wall-heads were given rounded tops internally, as we shall see later. Corners occur in both the square and the rounded forms. Where the wall is hidden externally beneath render, as it commonly is, a square corner cannot therefore automatically be taken to mean that the structure is of masonry build rather than of clay. A more reliable guide to the existence of clay walling is a slightly wavering vertical corner profile, now and again combined with the batter mentioned above; this is a feature the local work shares with parts of the wider tradition.

The formation of openings in the walls was an intrinsic part of the building process nationally. One early nineteenth-century report records that the clay first had to ‘condensate’, the lintels for the openings being laid in place as the material rose, and when solid enough the windows were cut out from beneath them.<sup>29</sup> This tradition surfaces again and again in other parts of Britain; it would have been good sense in Cumberland, given the particular quick method of construction. It was said that the door frame was set in position before the walls were begun and this would have

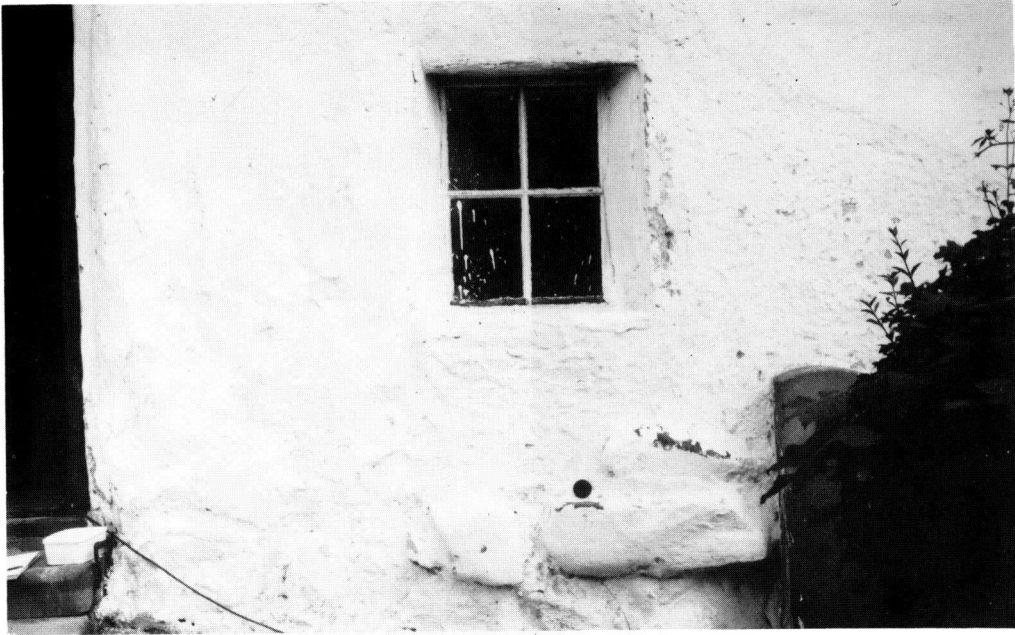


Fig. 21

Limewashed plain lime-and-sand render on a west-facing clay wall

given the necessary access to the interior of the building as work progressed.<sup>30</sup>

When complete and dry and the roof added, the face of the clay work was protected from the weather by a coating of stronger-wearing material. In Devon more than a year was allowed to elapse before this was done. Figure 21 shows external finishes of limewash painted over lime and sand render applied to the clay; an alternative was to apply limewash straight on to the face of the wall. Examples of this latter finish can still be found, in very sheltered positions, on buildings in the area. It is a simple means of protection (Figs 22 and 23). The disadvantage of limewashing, to which the builders never found an answer, is that over many years a thick skin is produced, as coat is laid upon coat, and in the end this tends to pull away under its own weight. With the initially thicker and heavier lime and sand render coat, the best way of making the material stick to the clay—always a difficult matter—was probably by throwing it, i.e., by ‘harling’ (Fig. 24). The question of protective finishes to clay-work deserves very detailed examination. Unfortunately space precludes such an exercise here.

#### WINDOWS, SILLS AND LINTELS

The form taken by window sills and lintels can offer some help with general dating. The oldest detail in figure 25 is that at (a). Such sills were quite without the drip



Fig. 22  
(left) Coats of limewash applied to a pre-smoothed  
clay wall-face

Fig. 23  
(below) Limewash coats over an unregularized  
clay wall on a low, sheltered, easterly elevation  
beneath overhanging thatched eaves



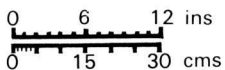
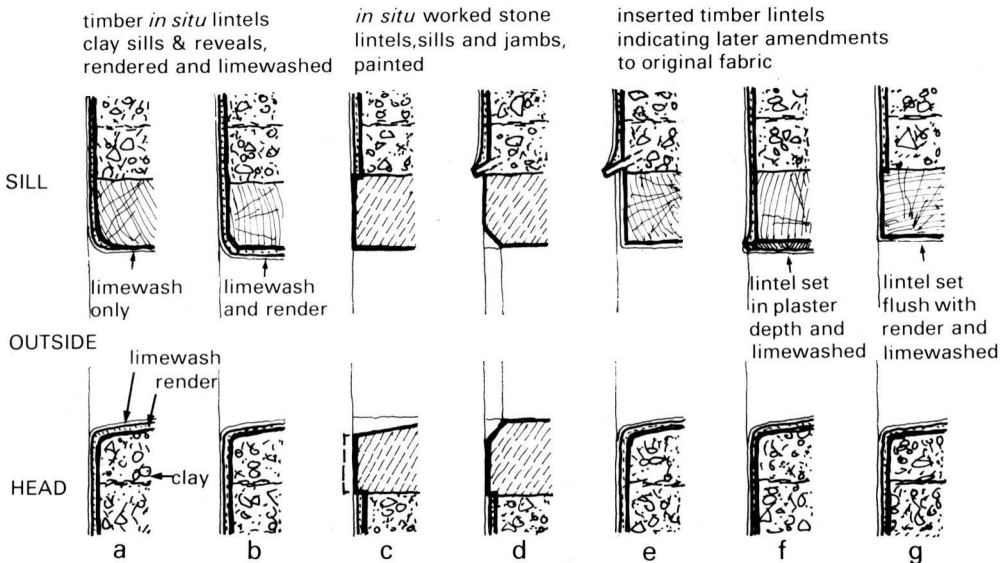


Fig. 24

(right) Very hard (probably) Victorian cement rendering, 'dashed' with gravel and small stones. The material is however so 'strong' that it has bowed off the wall in one piece

Fig. 25

(below) A variety of openings details in clay walls; vertical sections taken through the outer part of the wall only



channels that are today regarded as good practice. It is remarkable how such arrangements have survived. The reason is, of course, because of regular re-coatings of limewash. Sections (c) and (d) of figure 25 show stone outer lintels, jambs and sills, all about six inches square. These stone lintels are backed by timber ones. This combination must be an introduction from stone building practice with early use of the more expensive material, a matter of status and fashion rather than function. After all, limewash continued to protect the mud-work into which the stone was set. Surrounds like this seem to have been in use in the North quite early. There is a late seventeenth-century north-eastern Scots reference to a mud-walled manse where they were required.<sup>31</sup> As in medieval stone-building tradition, there may be no drip channel to the associated stone sill.

The three window head sections at (e), (f) and (g) of figure 25, all from early buildings, are of nineteenth-century date or later. That at (f) may be a re-cladding of an earlier detail but the other two are insertions, betraying alterations to the elevation.

Figure 26 shows various lintel arrangements at Lamonby Farm, the two on the right, the cross-passage entry and 'fire window', being original, the central window being a late addition to light a modern toilet, and the other door, set at a lower level than the 'cross-passage' entry and giving access to the byre, showing signs of alteration at the head. This particular combination of entrance and byre is discussed in detail later. Figure 27 shows the render coat simply rolled over the lip of the window sill—without doubt the earliest detail—in a house in Longburgh, while figure 28, of a now-destroyed house in Burgh by Sands, shows the degree to which render may conceal earlier window dispositions. Figure 29 shows a chamfered window-surround with a simple drip stone above.

Figure 30 shows comparative details of three window openings from mud buildings on the Plain. The sections and elevation at (a) are of a ventilation opening excavated through an earlier wall, probably without a lintel, in the first half of the nineteenth century. The elevation and sections at (b) are based on those of the house at Longburgh, referred to above, and are the most structurally apt for the buildings. Those at (c) are from a now-destroyed house at Kelsick. Here the stone jambs were simply set up on the stone sill, the mud walling built up around them and the head added. Straw was laid across the top of the lintels before the wall was continued above. An alternative possibility here is that the stonework was inserted when the building was brought up to date, a very common practice. Building stonework jambs into mud walls as they rose would have called for considerable familiarity with, and confidence in, the performance of the wet material. The job would have needed to rest at lintel level while the mud 'solidified', otherwise differential drying-shrinkage, where window jamb and lintel meet, would have fractured the wall. It is clear that the inflexible stone window jamb is essentially foreign to the clay-walling technique. It is also a theoretically unstable arrangement since the jambs cannot be fixed to the mud in any way; many examples nonetheless survive.

An illustration of houses at Moorhouse and Longburgh (Fig. 31) shows the strong stylistic difference between those buildings where the window surrounds are highlighted, paint often being applied to the type of stone surround described above,





Fig. 26

Openings in the west wall of the house and byre, Lamonby Farm. The steps lead to the cross-passage, the ground falling away from here to left and right, along the face of the building. The door on the left leads into the byre. The 'fire window' is on the right (see Part II (forthcoming) for discussion of these features)



Fig. 27

House at Longburgh, 1979, since re-rendered. Evidence for the 'raising' of the side walls is visible above the windows



Fig. 28

(above) House at Burgh by Sands, now destroyed. The siting of the chimney stacks forward of the ridge confirms a cruck-framed building. The original, blocked, 'fire window' can be seen behind the man standing centre; this window, lacking a stone surround, must belong to the first phase of development. In contrast, the blocked window to the left of the door has a surround suggesting a perhaps second stage of development. The even bigger window still further to the left belongs to a final phase of change, at a time, probably in the early nineteenth century, when full elevational symmetry was sought. Of particular interest is the way the wall area above the door has been handled. Mud was here placed as a unit separate from the walls to each side. This combatted the sort of differential shrinkage shown in figures 17 and 18. The use of raking sided jointing as here, to marry one area of mud to another, can be seen in traditional mud repair elsewhere in Britain (information from Mr G. Pearson)

*N. Redfern*

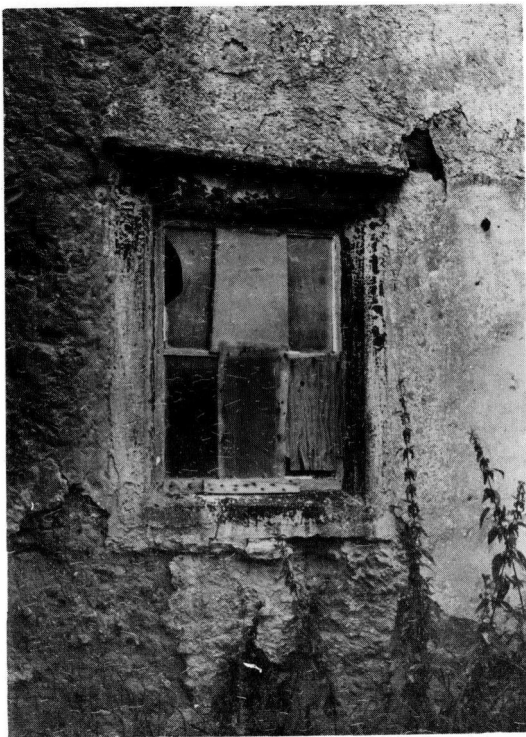


Fig. 29

(left) Chamfered window-surround with simple functional dripstone above. The latter is needed to prevent water running back round the chamfer into the window

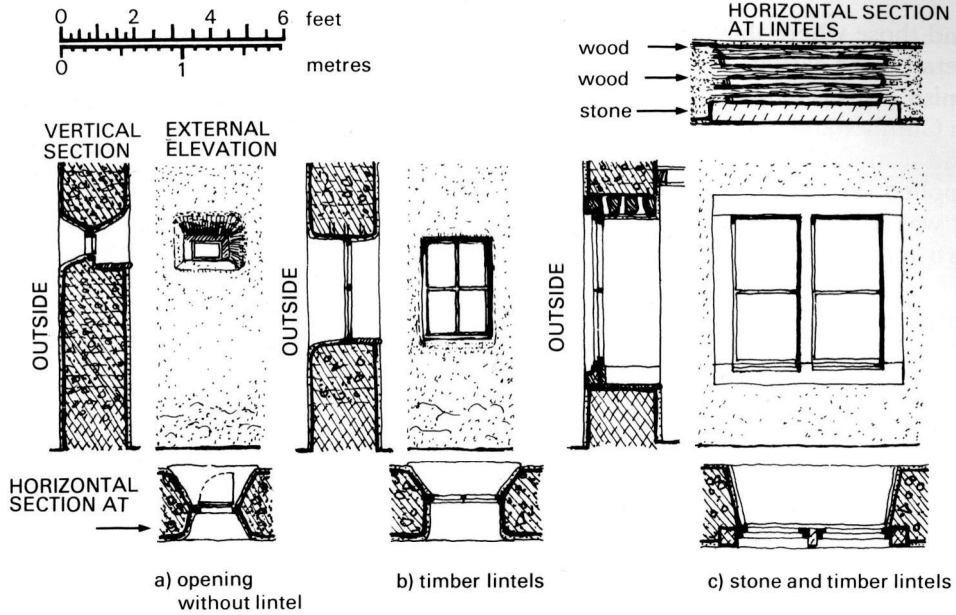


Fig. 30  
Window details from houses on the Plain



Fig. 31  
Houses with and without window surrounds. Both have had their side walls raised (Moorhouse and Longburgh). The surrounds are in the one case here painted blue, more usually they are black

and those where they are not. Both styles co-exist on the Solway Plain; the simpler detail is the earlier. Figure 32 illustrates brick casing, quite another form of external finish. This is found quite often in other mud-building areas but it is not very common in Cumberland. In this example, it has been added to conceal out-of-fashion mudwork and it might be thought to give a better wearing wall-face than render traditionally applied. However, such a skin does not prevent water working in behind, unseen. It was as a consequence of water penetrating at the wall-head, down between the two materials, that a mud wall was discovered here when a gable collapsed.<sup>32</sup>

#### THE TIMBER FRAME

The siles and the gavel forks were the most important part of the construction, and by them the building was described. This combination of siles and gavel forks occurs in many . . . documents of the fourteenth century, relating to the North of England. In all the buildings there are always two gavel forks, whatever may be the number of the pairs of siles. The dialects show that siles were crucks . . . Evidently the 'gavel' was the gable end and the gavelforks were upright posts with a forked top set in the gable wall.

C.F. Innocent, *Development of English Building Construction* (1916) (p. 60)

We can now turn to some other aspects of construction and materials, starting with the main structural element, the timber frame. The great majority of mud-walled vernacular buildings in Britain today belong to the same basic structural tradition in which the ridge is seen by the builders as the basis of stability. Figure 33 shows a number of cross-sections of mud structures, those at (a) and (b) from Cumberland and Devon, being of the ridge-structure category. The Buckinghamshire case (c) is slightly unusual and relatively recent in conception. It has a non-structural ridge-board, purlins and a wall-plate. Figure 33 (d) illustrates a sophisticated clay-lump building from East Anglia. This is a nineteenth-century 'Improver's' design with minimal timbers, cross-wall construction and a plate acting as a ring-beam on top of a very thin mud-block wall (blocks 9in. x 6in. x 1ft. 6in). This is all well outside vernacular practice and more like a modern engineered design. Note the differing wall-thicknesses representing varying qualities of local raw material and levels of local technology.<sup>33</sup>

The Cumbrian wall is rather thick in relation to its height. Here much of the roof load can be seen to be taken by the frame, the crucks transferring a large part of the weight to the wall-base via the feet of the blades, which sit within the mudwork at intervals. For the earlier buildings of the Solway Plain this appears to have been the standard method of construction. Mud gable end, occasionally, compartment walls were also enlisted for purlin and ridge support where appropriate. In Devon too this was the early method. By the eighteenth century confidence in material and skills had allowed the builders there to raise crucks up the wall and evolve them into wall-head 'A' frames, the mud wall becoming fully load-bearing. But the tell-tale ridge and purlin persisted as evidence of this evolution as can be seen from section (b) in figure 33.

#### ROOF-SUPPORT STRUCTURE

As both Charles and Innocent have pointed out, in a frame of the Cumbrian type the rafters 'depend', i.e. they hang, from the ridge and theoretically close inwards on the wall-head.<sup>34</sup> The principle is shown in figure 34 which is based on a cross



Fig. 32

Victorian yellow brick facings to a house with mud walls, Burgh by Sands

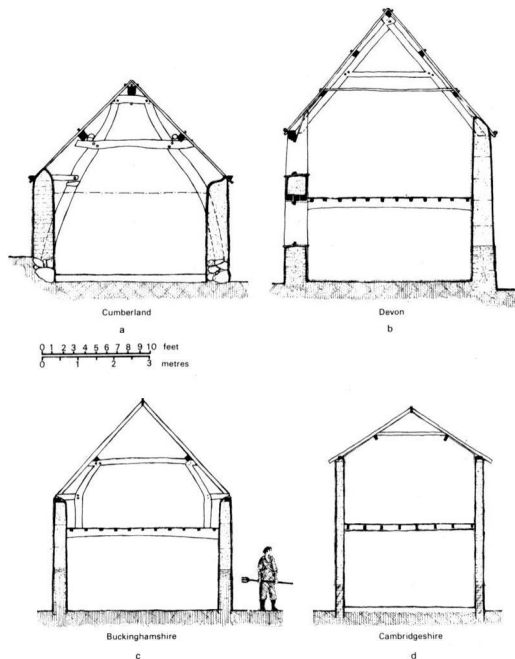


Fig. 33

Cross sections through mud buildings from Cumberland (possibly eighteenth century), Devon (eighteenth century and perhaps earlier), Buckinghamshire (eighteenth century) and Cambridgeshire ('lump', nineteenth century)

'The builders believed that the ridge-tree bore the weight of the roof, and its sufficient support was their solicitude', Innocent, C.F., *Development of English Building Construction* (1916), p.31

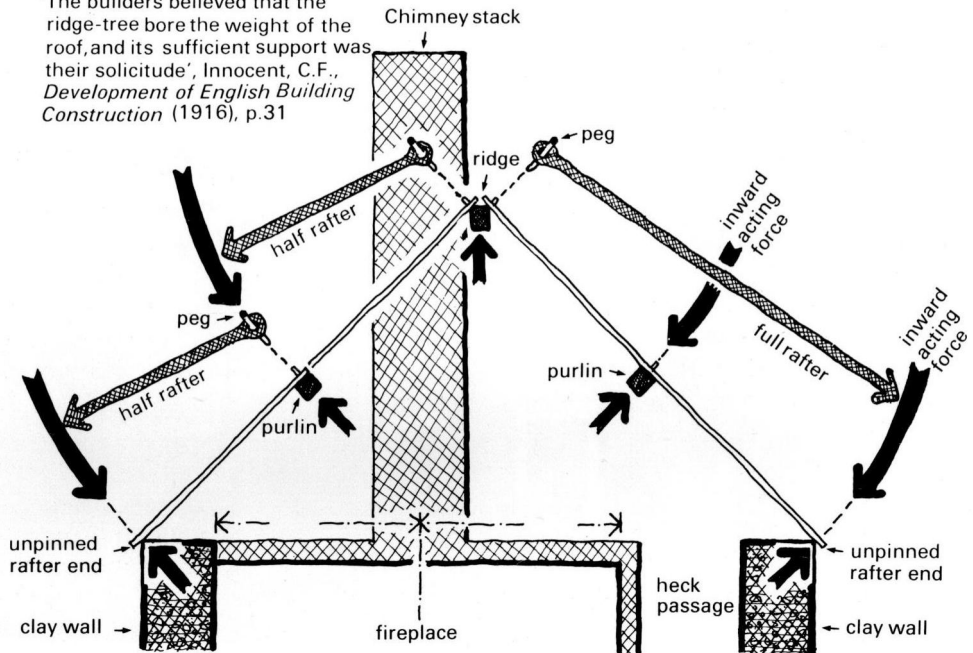


Fig. 34

Diagram of basic structural system, roof, wall, fireplace, etc., relationships, Cumberland, Solway Plain

section of part of Lamonby Farm. The rafters, which in Cumberland can be either full or half length, are pegged at ridge and purlin. At the wall-head they simply rest on the outside edge of the mud wall which, through its thickness and weight, resists their inward pressure. At intervals along the wall this pressure is further resisted by short timber 'cruck spurs' returning the load to the main trusses, i.e. to the crucks. The chimney, when it was introduced, had to be set to one side of the key element, the ridge. This forced the centre line of the hearth to one side which in turn allowed the formation of the 'heck' or 'hallen' passage alongside the fireplace. This short corridor gives entry to the living room from the main cross-passage. All this is typical of the 'Statesman plan' of the Solway Plain, which will be considered in detail later. In the paramouncy accorded to the ridge, the framing system of the clay dabbin shows an earlier, and purer, stage of structural development than that of contemporary stone-built Statesman houses of the region. In the latter the chimney-stack centres on the ridge which, thus interrupted, becomes discontinuous.<sup>35</sup>

The cross-section of Lamonby Farm from which figure 34 is derived, is shown in figure 35. The cruck-blades here are not matched. There are other cases locally where they are exactly paired and others again where the truss is even more asymmetrical and where the timbers show even less 'carpentering'. The regional range of cruck quality and form is quite wide and deserves detailed study (Fig. 36). The Lamonby

Farm section is the simplest type to be found on the Plain. There are others where, for instance, the outer ends of the cruck spurs link with outriggers extending from the backs of the cruck blades to produce a flatter roof pitch suitable for stone roofing slabs. The detail of this important later development awaits research; it is not considered further here.

Some points to note from the cross section of Lamonby Farm are: the mud walls were, in the best work, finished square on top and then 'beam-filled' to beneath the rafters to give a beautiful rounded internal detail; the wall is raised on a high stone plinth of minimally worked field-stones of the kind described earlier; cruck ties across the building are rare; some or all the timbers are re-used; there are no signs of smoke-blackening of the timbers; cruck spurs sometimes extend into the wall head, sometimes into the beam-filling; rafters are of riven oak, thin and laid flat; and lastly there is no sign of wind-bracing, though it does sometimes occur elsewhere (Figs 37, 38 and 39). When compared to heavy-timbered southern vernacular tradition this is a building system of great economy of means, rationally stripped to the bare essentials—one of considerable elegance.

As noted above, there is often no wind-bracing, i.e., bracing within the roof plane along the length of the building, between one cruck frame and another. Horizontal racking of the frame along the length of the building is resisted by sinking the lower part of the crucks into the mud-work, by further stabilizing them above by the extension of the cruck spurs into the wall, by the friction and shear-resistance in the single-pegged joints at ridge and purlins and by the self-weight of these latter heavy horizontal timbers. A modern designer would find such unbraced design wanting. But the mere survival of the buildings confirms that their structures have met all the requirements put on them. Frame failure due to horizontal racking does not occur in the way sometimes seen in southern coupled-rafter roofs.

In only one part of the buildings at Lamonby Farm was there anything resembling a wall-plate. This was in the barn, later in date than the house, where two ventilation slots had to be bridged at eaves level. Figure 40 shows the general arrangement. Recent collapse of part of the wall here has revealed more timber-work and the drawing should be taken as diagrammatic only. Basically the cruck spurs support lintels which once supported the ends of the rafters (which had been stripped at some previous date). The window grille was formed from thin riven oak splints; similar arrangements for ventilating barns can be found elsewhere in Burgh by Sands. As we shall see in more detail later, similar, if sometimes rather thicker, riven oak formed the rafters where these survived. The type of riven 'grillage' to mud barn openings on the Solway Plain is reminiscent of some of the split timber armatures used elsewhere in England as foundation for daub in 'mud-and-stud' and 'clam-staff-and-daub' walling.

Figure 41 shows the junction between cruck blade and collar. The squared vertical timber is a modern temporary prop. Figure 42 shows some junctions between truss and purlins, and purlins and collars. Much amendment of basic construction detail was employed by the carpenters when re-using timbers. Further ridge and purlin details from Lamonby Farm are shown in figure 43. The rafters were pegged at just under 12in. centres. One purlin was turned, showing a double row of similarly-spaced holes on its undersides, relating to former use as a ridge. Differing parts of the frame

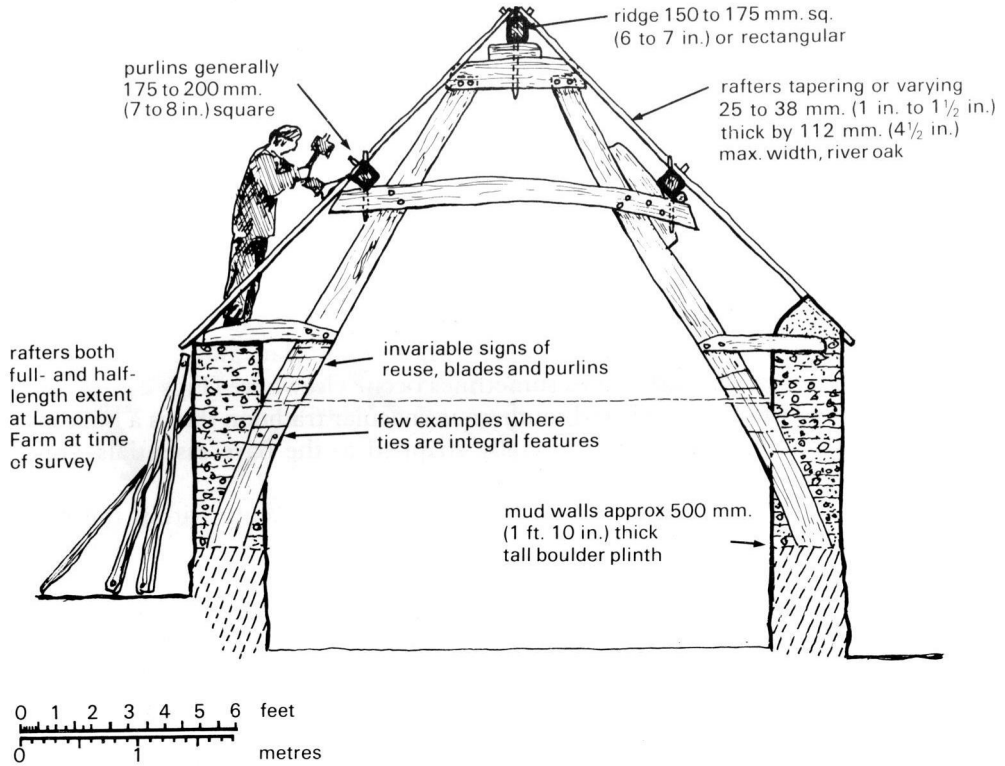


Fig. 35

Lamonby Farm, cross section through the cottage attached to earlier farm house. Details of first floor construction are omitted for clarity

Fig. 36

Three-dimensional diagram of frame and wall system used on the Plain →



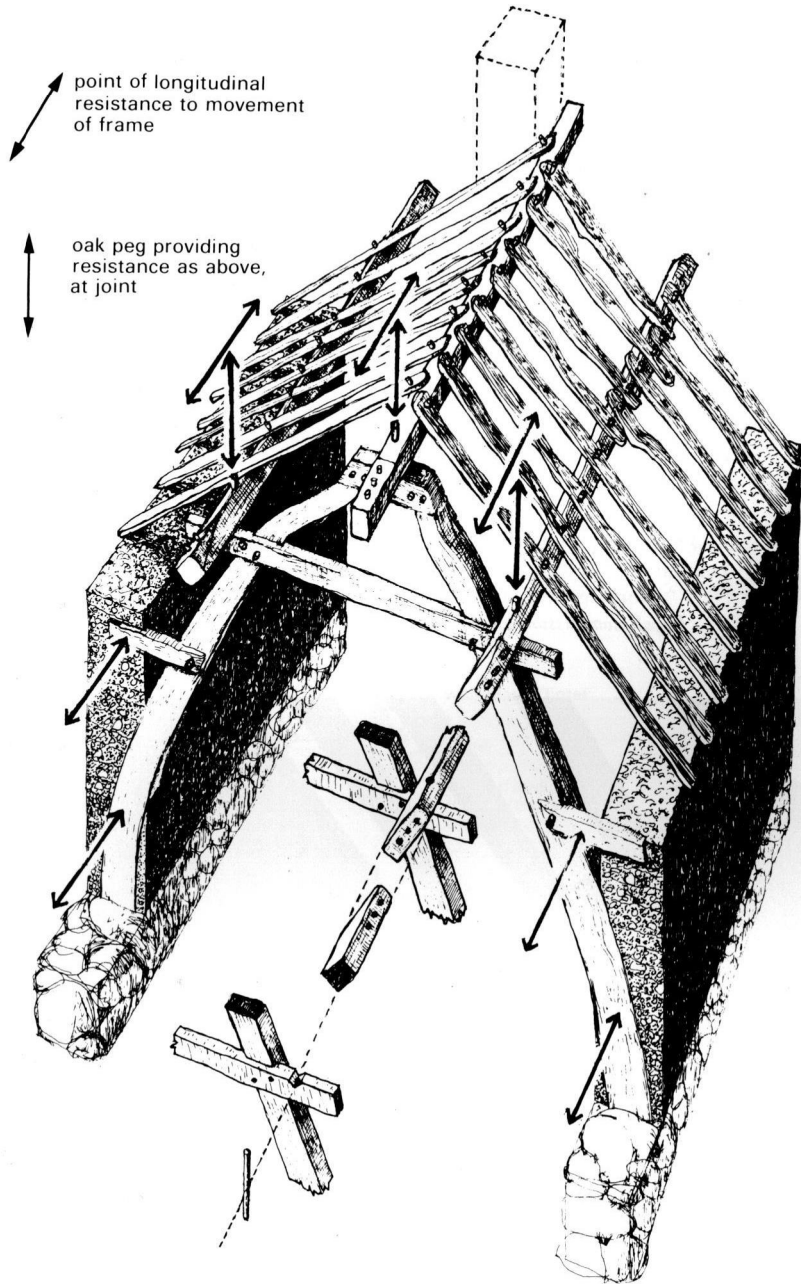




Fig. 37

Interior of attached barn at Lamonby Farm. Workmanship and finish is poor when compared to that of the earlier house. The view is towards the clay north gable, and was taken in the early 1980s  
*Royal Commission on the Historical Monuments of England*



Fig. 38

Round-topped 'beam filling' to the head of a mud side wall, Lamonby Farm. The rafters and wall plate are modern, part of the reconstruction of the early 1980s

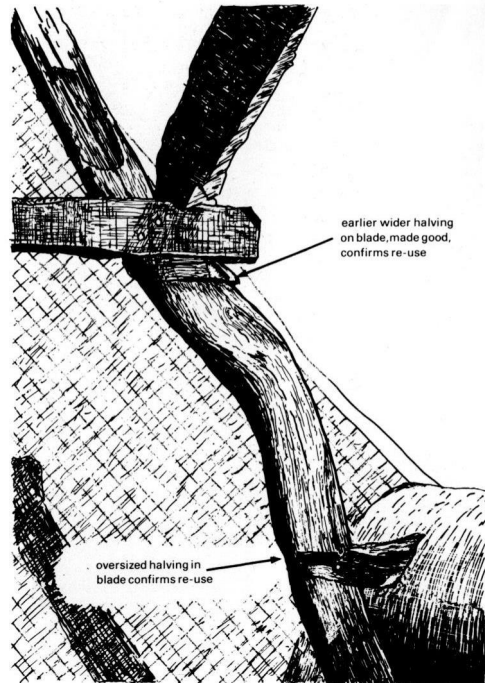


Fig. 39  
Evidence for re-used cruck blade at Lamonby Farm, house section

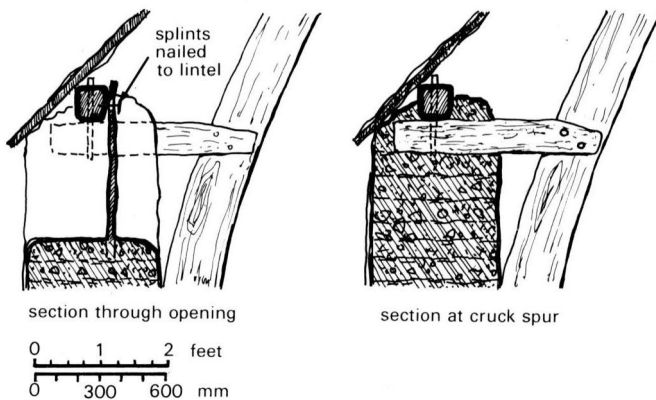
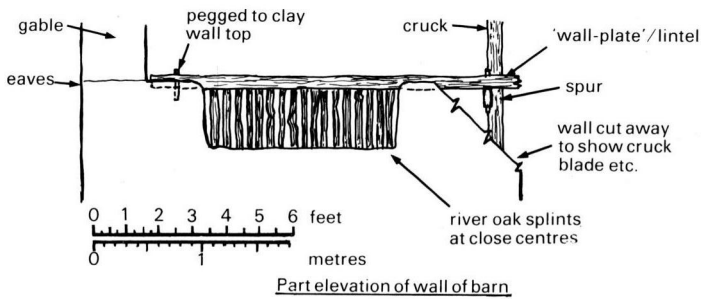


Fig. 40  
A cruck-spur providing a fixing point for a wall-head lintel over a ventilation slot in the attached barn, Lamonby Farm

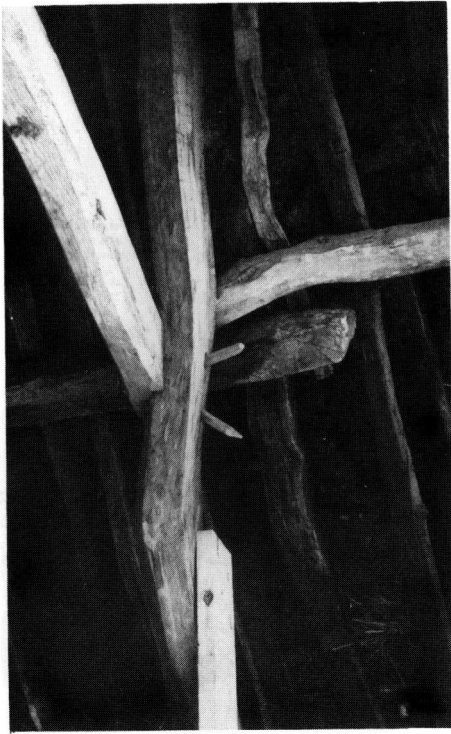


Fig. 41

The junction of cruck collar, blade and purlin, the house section, Lamonby Farm. The original purlin, to the left, may have had its end cropped. A substitute length of rough branch rests above it and extends to the adjacent gable about four feet (1200 mm.) away. Typically, the collar is halved over the blade and is fixed to it by means of two oak pegs driven at different angles to keep the joint tight. The purlin carries split oak rafters which in turn support grass sods

might thus be interchangeable over time, to a degree. On top of the cottage gable at Lamonby Farm, now lost, was the delightful crutch device shown in figures 44, 45 and 46. Possessing no strength at all longitudinally, it served literally to cradle the end of the ridge. Its delicacy and symmetry contrast with the robustness and wiry quality of the rest of the timber frame. Its use appeared to result from the truncation of the mud gable at purlin level. The fact that the roof was not hipped back here, in the south-country manner, is evidence of the importance the builders put on the ridge. The arrangement allows for the simple raftering system to continue right to the gable. The peak of the latter was almost certainly omitted in mud because of lack of confidence in material, construction and stability. The little ridge crutch was not unique; it can be seen in a mud barn nearby, where the gable triangle formed around it remains open. Used in the same way, it is also found at the gable of at least one stone-built barn in the south-east of the Solway Plain. The principle of supporting the ridge on a short vertical strut is also known in other parts of the north. The gable crutch embodies in both its siting and its forked head the essential characteristics of Innocent's long-lost 'gavel forks'. However, it was probably not the only means employed to terminate a truncated gable wall locally. Evidence for half, and possibly full, hipping at the gable is to be found in the roof of another Solway Plain dabbin, to be described later.

Fig. 42

Sketches of three cruck and truss blade to purlin junctions. (a) shows the typical detail with the purlin set on the diagonal to follow the roof slope and resting in a shallow 'V' notch on the collar end, fixed in place by a single long peg (Lamonby Farm). (b) shows that re-use of timbers obliged the builders to adopt various expedients as here where because the recycled purlin was too short, angled pegging directly into the back of the cruck blade was necessary (Lamonby Farm), while (c) shows the purlin apparently resting on the back of the truss blade, merely supported below by a peg to the blade (Meadowbank Farm, Curthwaite)

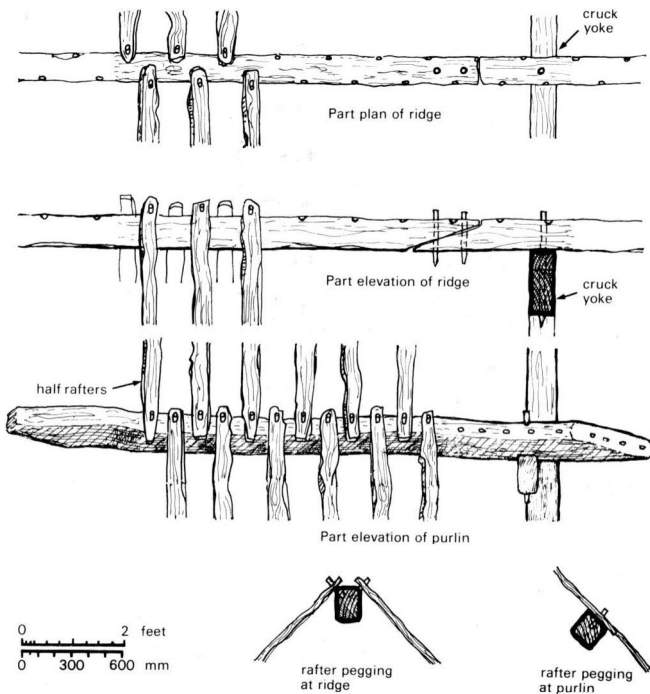
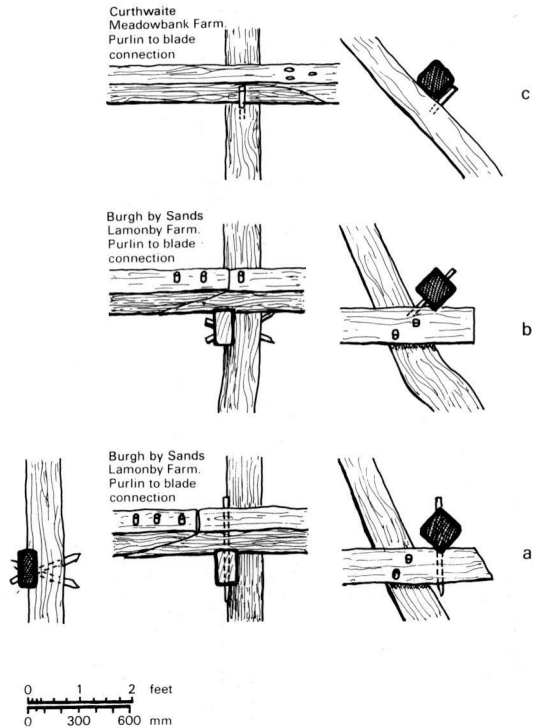


Fig. 43

Ridge form and the relationship of rafters to ridge and purlin (Lamonby Farm). Unlike the purlins, the ridge is invariably set flat side down onto the top of the cruck yoke. A square ridge-setting relates in Devon to earlier cruck-framed houses. Only later were ridges there set up on the diagonal. Information given by John Thorpe, Vernacular Architecture Group Winter Conference 1988

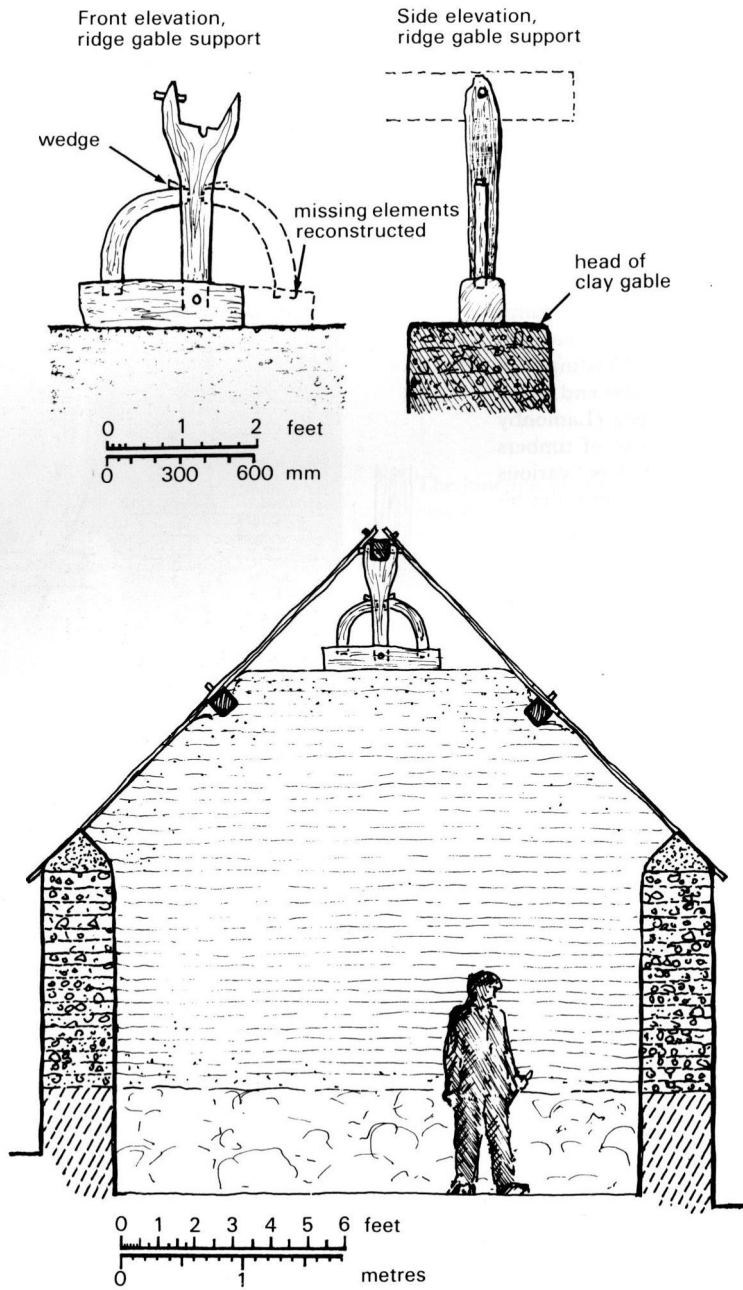


Fig. 44

Ridge-end support at a clay gable. Contrary to recent comment in a work on the buildings of the North York Moors, clay gables on the Plain are commonly found to be load bearing to some degree

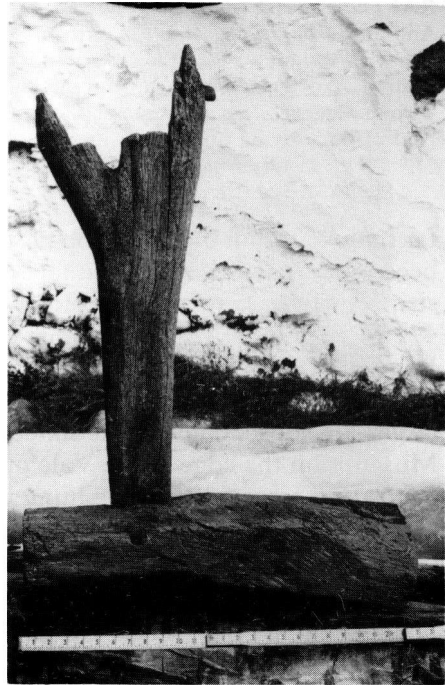


Fig. 45  
Photograph of the 'gable-crutch' at Lamonby Farm,  
lost during reconstruction (Lamonby Farm  
'Cottage')



Fig. 46  
Similar ridge-end support in a  
stone-walled barn at Ratten  
Row, Durdar, 1988

## RAFTERS AND ROOF COVERING

And they brought flags and stones from the Fall of Clainach, and they were passing them from hand to hand. And on the inch they were cutting cabers and the taobhan—the long rafters, smooth and flat from the Wood of Caoranach. And she was saying without pause, 'One stone on the top of two stones. Two stones on the top of one stone, sharp sticks, turves, wattle, pins from every tree but the wild cherry. And in the graying of the day, there was turf over the ridge and smoke out of it'.

From the tale of 'Glaistig Lianachan', I.F. Grant, *Highland Folk Ways* (1961), p. 147

The rafters of Lamonby Farm were of great interest (Figs 48 and 49). They were far removed from the collection of rough branches and sticks that might perhaps have been expected and that did in fact come to light on another building whose roof was stripped at the same time, a cottage at Green Lanes, Dalston. This is shown in figure 47. In their relative quality and in the care with which they had been fitted the Lamonby Farm rafters were reminiscent of those still to be seen on part of the roof of an older and bigger northern cruck-framed building, Harome Hall (Fig. 50). This large hall-house, dated to the sixteenth century, has been rebuilt at the Ryedale Folk Museum on the edge of the Vale of Pickering in eastern Yorkshire. There, flat split oak rafters were found to be hung by single pegs from the ridge, extending unfixed elsewhere, to the eaves.<sup>36</sup> The flat, riven and pegged oak rafter is also to be found on the roofs of stone-walled barns in the Lake District where it is used to support slates hung on oak laths<sup>37</sup> (Figs 51 and 52).

At Curthwaite, at the landward edge of the Solway Plain south-west of Carlisle, another mud house, Meadowbank, has split flat-raftering with the ends of its fixing pegs hooked loosely over, rather than driven into, the purlins (Fig. 54). The owner—a skilled cabinet-maker—describes these rafters as an economical use of short branch ends where these meet the trunk. Figure 53 gives the general arrangement. The part of the house shown is unusual in that peaked mud compartment-walls alone support the roof, in place of the usual crucks. Their scale is less than that of the mud gables at Lamonby Farm. There are certain to be other examples, but the only similar raftering arrangement known to the author is Danish, from the island of Fünen (Fig. 55). It involves the use of heavier timbers, but the principle of hung construction is the same.<sup>38</sup> In the roof structures at Curthwaite and the more main-stream cruck-framed system of the Solway Plain, as exemplified by Lamonby Farm, we see roof-support methods tailored to bear the economical lightweight, almost lath-like and springy oak rafter with the minimum of complexity. It is tempting to imagine these rafters to be one and the same as those in I.F. Grant's recounting of the Lochaber folk tale, which are described as 'long, smooth and flat', not characteristics of the raftering of immediate pre-improvement Scots peasant houses, to judge by the record of the early nineteenth-century Reporters to the Board of Agriculture.

In 1980, at both Lamonby Farm and Curthwaite, galvanized corrugated iron protected thatched roofing over the house parts at least (Fig. 56). This was subsequently stripped at Lamonby Farm and replaced by an entirely new and different roof. During removal of the galvanized iron and stripping of the original thatch found beneath it, straw and sod under-thatches, overlaid with further wheat straw, were revealed. The principle of the use of an under-thatch is explained in figure 57. The straw version of the under-thatch, attached to the rafters in the traditional way by straw ropes, was almost certainly a relatively recent replacement, one system of thatching coming





Fig. 47

The roof structure of a 'cottage' at Green Lanes, Dalston, 1981. The roof finish was straw over sods. The sods can be seen heaped-up

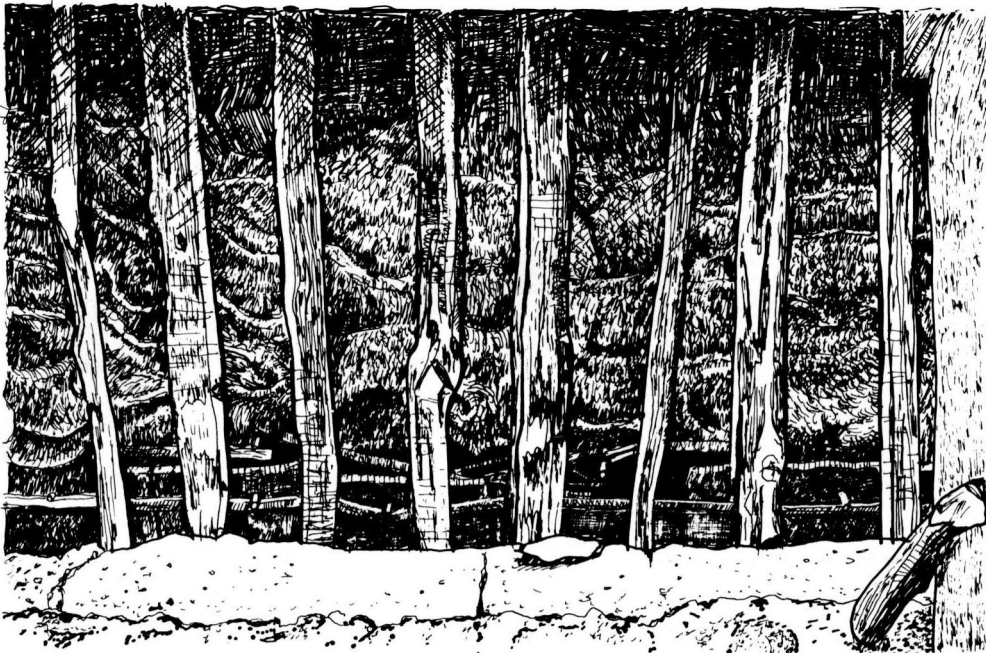


Fig. 48

Detailed sketch of the underside of the house roof at Lamonby Farm showing the wall head, split oak rafters with sods above them, and at low level, split lath (broken) supporting stone slabs at the eaves



Fig. 49

View of the underside of the roof of the house, Lamonby Farm, exposed by the removal of the ceiling, 1981



Fig. 50

Harmone Hall, North Yorkshire, in its original location. Note the very heavy timber wall-plates  
*Royal Commission on the Historical Monuments of England*



Fig. 51

Split (halved) sapling rafters on a cruck-framed, formerly thatched and sodded, barn in Wharfedale, North Yorkshire 1982 (Drebley Barn)

in to oust another. A 'wimble' or 'thraw-crook' for winding the straw ropes still hung in the stable at Lamonby Farm in 1980. Figure 58 shows the original thatching system, which conformed to northern lowland practice. Small bunches or 'stapples' of straw were knotted at one end and thrust between overlapping grass sods, laid grass-side inwards, loose, to the rafters. Three or four horizontal oak laths pegged to the rafters at intervals prevented the sods slipping (Fig. 59). Stapples had also been thrust into that part of the roof carrying a straw under-thatch, to give it too a thick outer coat. A tool for inserting the stapples was found lying among the debris on the floor of Lamonby Farm's attached barn.

At eaves level the straw and sod roof-covering had been replaced by sandstone flags. Wind uplift is potentially damaging at this point and this may have been the reason for the use of the slabs. It will be remembered that the rafters were not pinned down at the eaves and the extra weight given by the slabs must have helped hold them in position. The slabs seemed to be a later introduction; the original thatch in this position might have been roped or weighed down in some way, as it still is in parts of Scotland and Ireland. The region is noted for its westerly gales; the flank of the house faces more or less due west. The short section of ridge that was examined



Fig. 52  
Rafters at Lamonby Farm Cottage in long view and close-up, 1981



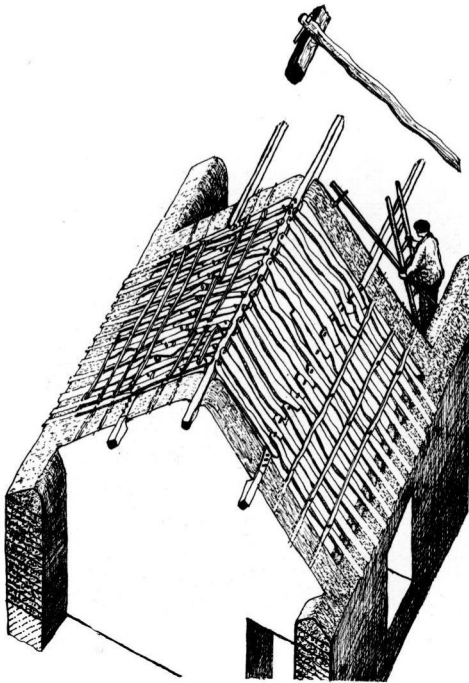


Fig. 53  
The roof structure, Meadowbank Farm,  
Curthwaite, Cumbria

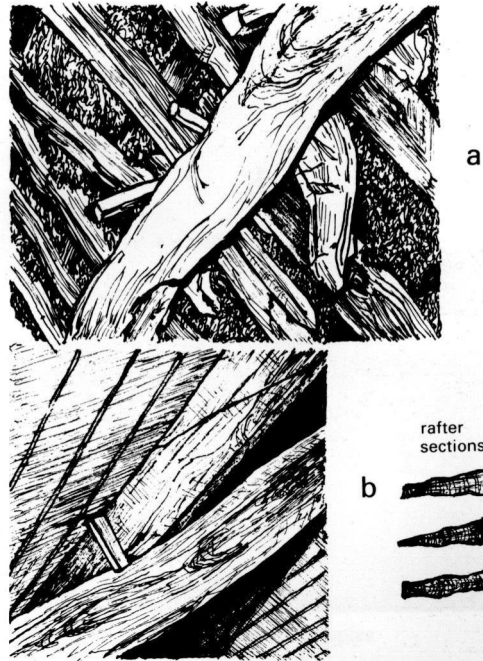


Fig. 54  
Details of the underside of the roof structure at  
Meadowbank Farm. Rafter peg-ends hooked  
over the purlin can be seen at (a), while at (b)  
is a view of the junction shown in figure 42(c)  
*Sketches based on photographs taken by Mr I. Laval,  
owner of Meadowbank Farm*

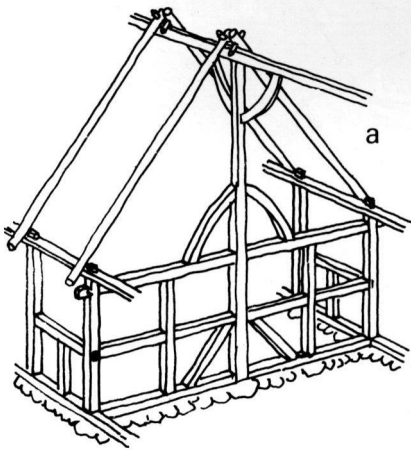


Fig. 55  
(a) Danish loose-hung rafters on a building from Fünen at the Frilandsmuseet Open Air Museum  
*Illustration after material in the 1962 Guide to the Museum*  
(b) Ridge of a Fünen house seen from below. The peg ends at the ridge are clearly visible  
*Drawing after a photograph in the Frilandsmuseet Guide*



Fig. 56  
Lamony Farm, fully roofed in galvanized iron, prior to rehabilitation in 1979

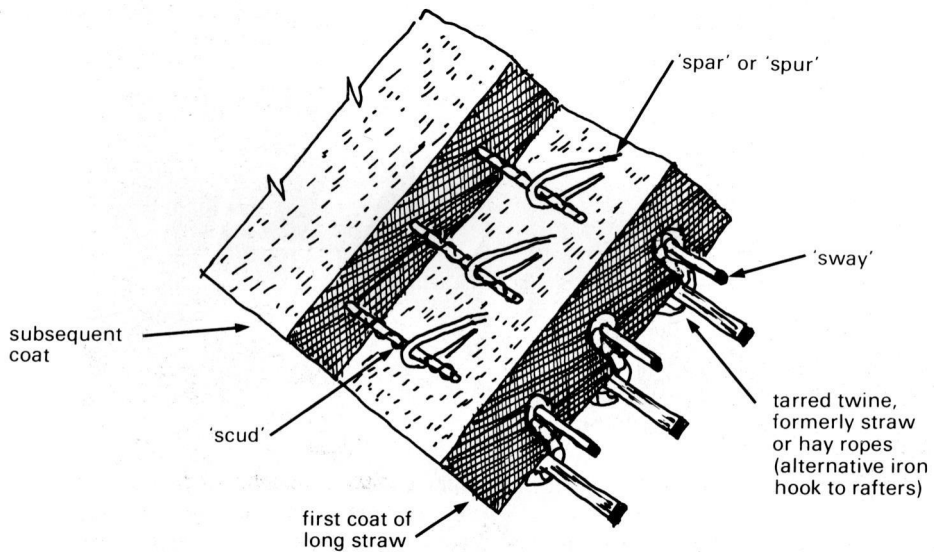


Fig. 57  
The principle of under-thatch, or the first coat of thatch



Fig. 58

The roof of the 'cottage', Lamonby Farm, showing rafters partially stripped, battens, ridge and stapple system of thatching. The first coat of stapples, which was thrust between the sods, has been overcoated many times with further stapples



Fig. 59

The ridge at Lamonby Farm, partially stripped. One way of keeping a ridge from blowing off was to weigh it down with mud. In Northamptonshire the technique survived until recently in the form of ridge copings of cement and sand. Here, on the Solway Plain, the ridge-mud would presumably have been built up as a peak over the top course of sods. It appears to have been overcoated with straw fixed in part by means of substantial wooden pegs. These can be seen in the photograph, sticking out of the mud

was weighted with masses of straw and mud with the odd stapple actually pegged into it in a way that was difficult to interpret precisely. It was not, unfortunately, possible to examine the gable verges of the original roof before it was destroyed.

Figure 60 illustrates two different eaves details, one for the house and the other for the cottage at Lamonby Farm which forms a row comprising barn, house and cottage in line. The detail to the house wall-head is the older of the two. A key feature here is the substantial oak tilt-fillet which was pegged to the ends of the rafters. As in all building where pitched roofs are involved, a tilt-fillet provides the upstand upon which the lowest part of the roof-covering is raised up. In this case it probably originally helped to prevent the sods sliding off the roof as well as tilting-up the end of the lowest course of thatch. In the later cottage, technique had advanced with the realization that the mass wall-head could be built up over the rafter, encasing it, to produce a similar result (Fig. 61). This also helped to anchor down the rafter ends. The Sandstone flags were also laid differently here. In the raising up we see a move away from timber-framed tradition into that of masonry. A common mud-wall head-detail in Devon involves the pitching of the rafters from the top of the inner wall-face so that the full wall-top forms the tilt fillet. Devon thatchers were, and probably remain, adept in the use of clay (cob) in the repair of such wall-tops when preparing them for the thatch, which might be sparred directly into the cob. Survival of the tilt-fillet helps to confirm the structural genesis of the earlier part of Lamonby Farm. Its disappearance in the cottage may also point to a continuing decline in the availability of good-quality building timber.

Stapple thatch was clearly very much more a handyman's system than English thatching as it is known today (Fig. 62). It was also a suitable method for partial roof repair, or 'patching'. In fact its last use in the Vale of Pickering in east Yorkshire was for just this purpose. The tool used there was called a 'swallowtail' locally.<sup>39</sup> The method was once widespread, as the distribution of tools shown in figure 62 demonstrates. The 'thatching iron', recorded by Innocent in 1916, was in use for patching as far south as Leicestershire and Warwickshire. It was recently known in Cardiganshire and parts of Scotland, as well as in eastern Ireland.

Figure 63 shows an unusual very heavily-knotted handful of straw—a substantial stapple—with a peg through it for further stability, from a roof at Green Lanes, Dalston, on the Solway Plain. This may have come out of a section of ridding. As has previously been noted, stapples could be inserted into different 'backgrounds'. The sod under-thatch 'background' at Lamonby Farm is shown in figure 49. Figure 64 (a) illustrates what could be considered to be one ancestor of the stapple-thatch system, a very simplified French version from the Massif Central region. A stapple-end typical of the kind found at Lamonby Farm is shown in sketch form in figure 64 (b). Three other systems of thatching in use very recently in Britain—there were yet others but these are the principal ones employing straw—are shown in figure 65. Figure 65 (a) shows the present southern English form. Here, long straw and Devon Reed (combed wheat reed) and water reed, are fixed by horizontal 'sways' which are pinned or sewn to the rafters. Overcoating old with new straw effectively turns the former into an under-thatch, and this has been common practice. Ideally all these forms require roof pitches from fifty degrees and upward for maximum efficiency,



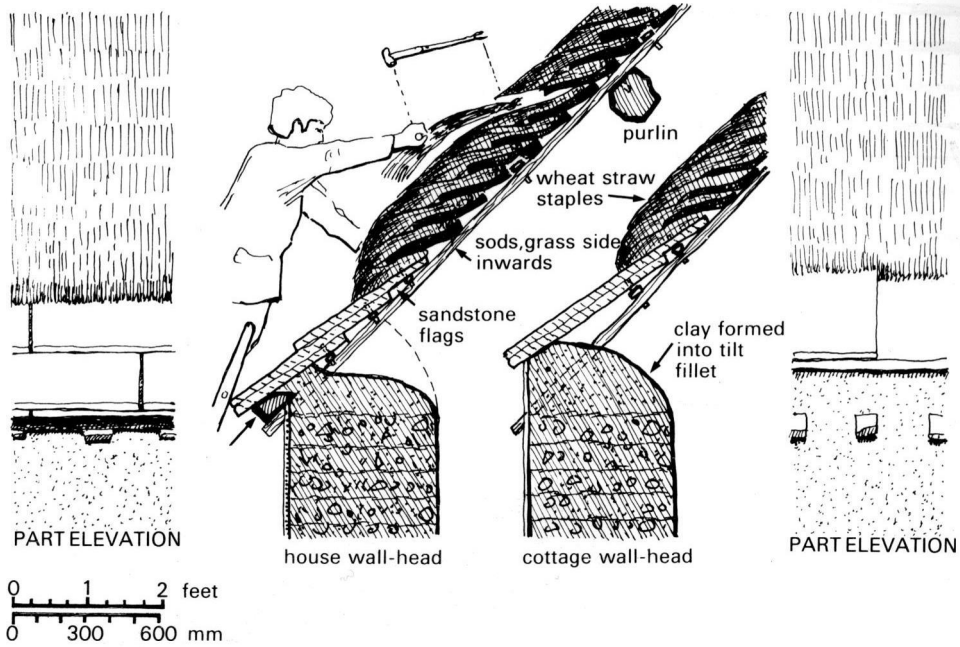
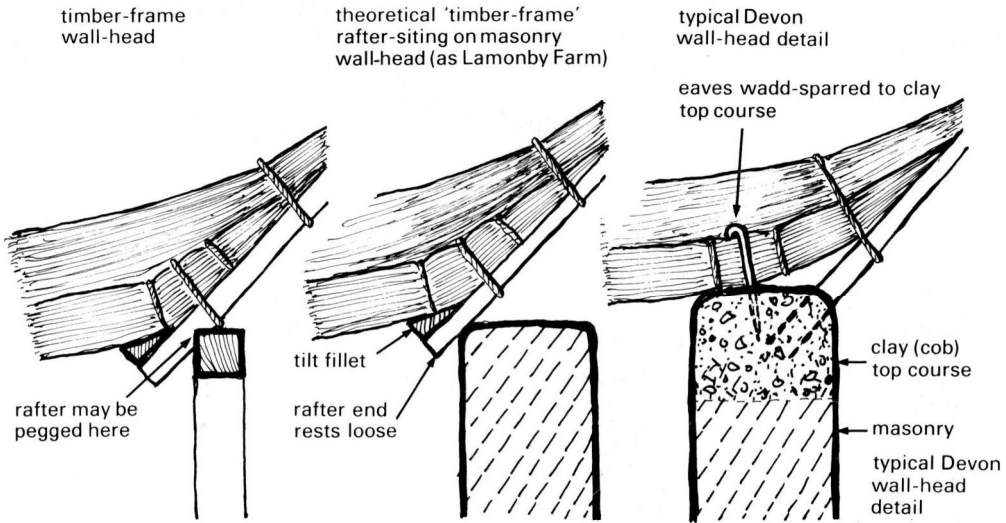


Fig. 60  
Two differing eaves details found at Lamony Farm



All details shown as for Devon Reed thatch

Fig. 61  
Evolution from wall-frame roof support to solid-wall roof support

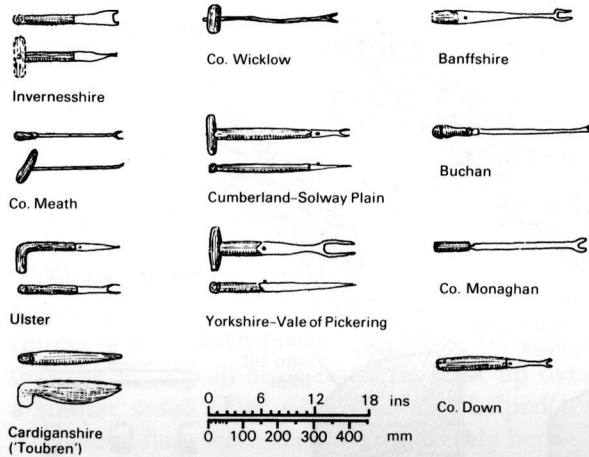
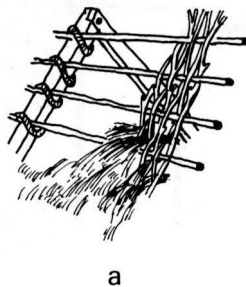


Fig. 62  
A selection of staple thatching tools recorded in the British Isles since the 1940s

Fig. 63  
Heavily twisted and therefore unusual, pegged, stapples probably from the ridge. Green Lanes Cottage, Dalston, 198



typical staple head arrangement, Lamonby Farm (wheat straw)



bunches of hither or green broom trapped by the stems between tightly interlaced chestnut branch ends. France, Massif Central

Fig. 64  
(a) Primitive stapple system from France  
*After N. Vallery-Radot*

(b) Basic configuration of a stapple from the main roof of the house, Lamonby Farm. When the stapple ends were removed from between the sods, they remained bright yellow

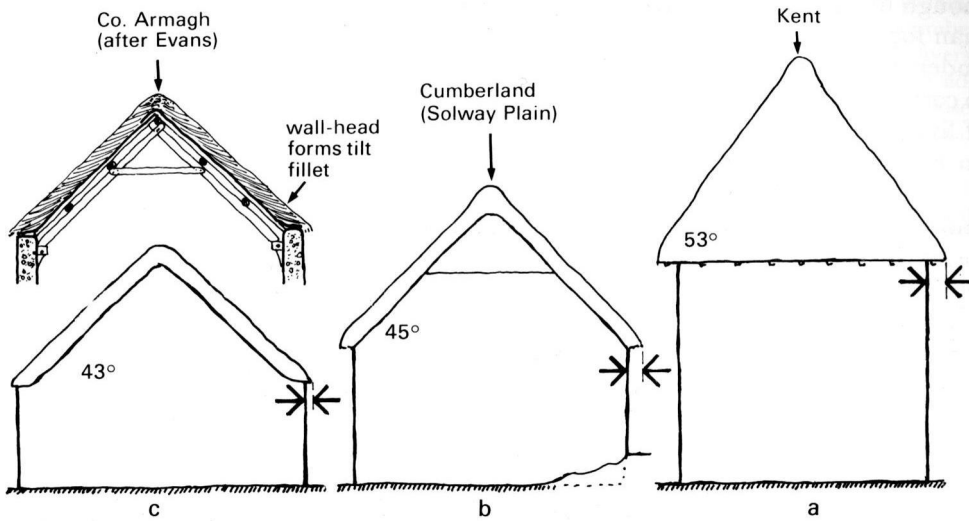


Fig. 65

A comparison of the roof pitches relating to some thatching systems in the British Isles

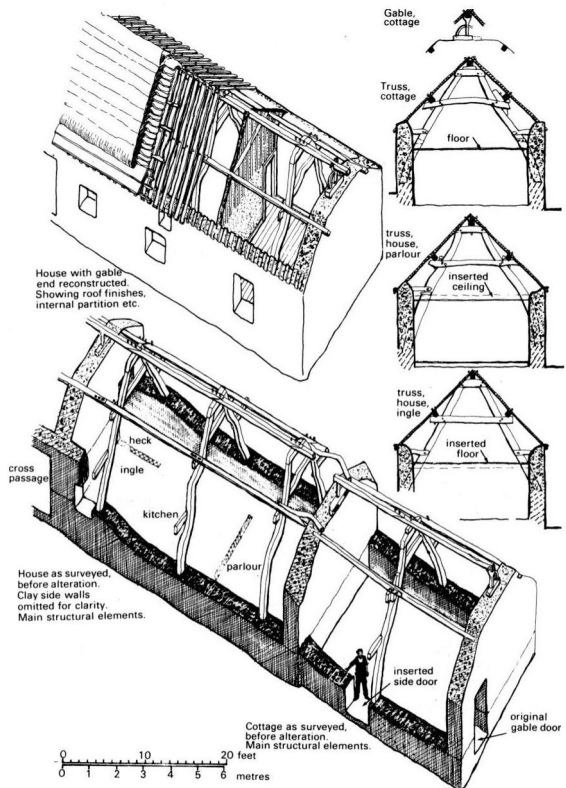


Fig. 66

Record drawing of the structure of part of Lamonby Farm prior to alteration in the early 1980s, with conjectural reconstruction of ridge support arrangement at former gable to house

though in Devon pitches can be lower. More straw is needed for a roof of steep pitch than for one of lower pitch. More straw is also needed when it is employed as both under-thatch and final roof finish. Such arrangements therefore belong most logically to corn growing regions of Britain. They were also most applicable where the standard of living of the peasantry was such as to permit quantities of straw to be expended on roofing.

Figure 65 (b) illustrates the Cumbrian, Solway Plain, system. For economy the under-thatch is formed of something other than straw, the latter being reserved for the surface of the roof only. Here, because the under-thatch is of unanchored sods, laid like tiles, which might slide at a steeper pitch, and because the optimum use must be made of the limited supply of available straw, the roof pitch is as little as forty-five degrees. Although less than the ideal pitch, this has proved adequate to protect the clay wall-head from damp.

A variation on the roofing system found at Lamonby Farm (Fig. 66) and on a number of other surviving clay dabbins on the Solway Plain is to be seen at Meadowbank Farm, Curthwaite. Here the undercoat, visible from below in one part of the house, is of heather sods, betraying the upland location of the steading. An Irish thatching technique is illustrated in figure 65 (c). 'Long-sods' form the under-thatch, strips of 'turf' continuous from ridge to eaves. Into these the straw overcoat is often pinned by means of the 'broaches' and 'sways' found in the type of southern English practice described above, an interesting combination. Note how here, in a case recorded by E.E. Evans, the top of the mud wall has itself become the tilt-fillet, in the way described earlier.<sup>40</sup>

#### REFERENCES

1. Weld, J., 'A History of Leagram: The Park and the Manor', *Cheetham Society*, N.S., vol. 72 (1913), 91-2.
2. Mortimer, J.R., 'A Victorian Boyhood on the Wolds' (ed. J.D. Hicks), *East Yorkshire Local History Society* (1978), 17.
3. For further information about the tradition nationally see Harrison, J.R., 'The mud wall in England at the close of the vernacular era', *Transactions of the Ancient Monuments Society*, N.S., 28 (1984), 154-74.
4. For the only published distribution survey of clay houses on the Plain see Brunskill, R.W., 'The Clay Houses of Cumberland', *Transactions of the Ancient Monuments Society*, N.S., 10 (1962), 57-80.
5. See Smith, W., 'Yorkshire domestic architecture' *Old Yorkshire*, N.S., 2 (1890), pp. xx, 313. Part of the description of 'Ancient Houses in Fimber' reads, 'Of the seven old farmhouses which once stood on the village green, but one now remains . . . Two strong curved oak "forks" were reared from the ground, the width of the intended house, nearly meeting at the top, where they were fastened together with short cross pieces of oak, firmly bolted with oak pins. Other similar forks were raised, at intervals of about 10ft., according to the length required. On the top, in a slight hollow, was laid the "roof rig", bolted with oak pins to the cross-pieces. Massive oak beams, resting at either end on oak uprights, were then bolted across each pair of forks the height of the chamber floor, the ends slightly projecting and a set of lighter beams a little below the "rig". "Side-wavers" were then fastened to the beam ends at the point where the thatch was to come down to and oak spars laid from the roof rig to the side wavers . . . The spars were covered with thin strips of oak, fastened with oak pins, on which was laid the straw thatch some 15in. thick . . . A sort of latticework of oak was then constructed, outside the line of the uprights, but inside the ends of the forks, and covered with clay mixed with straw for a foot in thickness. This formed the outer walls.' There are now no such houses at all at Fimber. The erection sequence described is incorrect in terms

of the fixing of the cruck cross ties but is otherwise convincing. The general principle of the framing system is typical of cruck construction everywhere in the North, though on the Plain the number of main framing members is reduced, i.e., there are no wall posts, eaves purlins (side wavers) or, usually, ties at first floor level. The wall post and eaves purlin relate directly to daubed side walls. A thickness of a foot for the daub is more than that required purely for screening purposes and contrasts with normal south country usage. This description should be compared to that in 'A Victorian Boyhood on the Wolds', cited in (2) above.

6. See Watson, R.C., and McClintock, M.E., *Traditional Houses of the Fylde*, Centre for North-west Regional Studies, University of Lancaster (1979), for some information on thick-armatured daub and mud walling.
7. See Williams, W.M., 'The farmhouses of south-west Cumberland, a preliminary survey', *Trans. Cumberland and Westmorland antiq. archaeol. Soc.*, 59 (1954), 248-64, in particular, page 255 where it is noted that in the first quarter of the seventeenth century around Gosforth, 'most of the . . . farmhouses were almost certainly "clay daubins" . . . , i.e., thatched buildings, the walls of which were constructed by applying mud to a wattle framework and allowing it to dry . . . The interior walls of Andrew Ground (dating from the late 18th century) are excellent examples of this work and in Low Bridge Petton, Gosforth . . . part of one of the main walls of the dwelling-house, about two feet in thickness, and bearing the inscription "R.A.F. 1697", has been constructed by this means'. On the evidence of the methods of the Plain, two foot thick clay-based walling may as well have been solid mud as daub. Further investigation is required. The author goes on to illustrate a thatched 'clay-daubin' at Hall Senna, destroyed in 1882, which is clearly of the hearth backing on the cross-passage plan, typical of the Plain.
8. Turner, T.H., and Parker, J.H., *Domestic Architecture in England*, II (1853), 200-1.
9. Kippis, A., *The Life of Captain James Cook* (1788).
10. Addy, S.O., and Summerson, J., *The Evolution of the English House*, 2nd ed. (1933). Reprinted 1975. D. and V. Neave have collected various eighteenth- and nineteenth-century references to mud-walled dwellings in Holderness and the Wolds. Eighteenth-century cottages in the Wolds are described as 'mud walled and thatched roofed about six feet high' by Woodcock, H., *Piety among the Peasantry* (1889). A poem 'The Sailor' written by E. Anderson in 1811 comments thus:
 

*Since I came home, as I this country view  
The towns, the fields, now everything is new;  
The old thatched cottages have ta'en their flight,  
And new til'd houses now appear in sight;  
But when the town of Kilham first I saw  
The walls were mostly clay, and thatched with straw*
11. Bewick, T., *A Memoir of Thomas Bewick, written by Himself* (1862), New Edition, Oxford (1975), p. 30, 'the Ludge (or earth-built hovel) close by my fathers pit . . .'
12. See Fenton, A., 'Clay Building and Clay Thatch in Scotland' in McCourt, D, and Gaily, A. (Eds), *Studies in Folk Life*, Ulster Folk Museum (1970), pp. 28-51. Evidence for the tradition throughout Scotland is presented and reference made to that of the south-west of the country, specifically Dumfriesshire. A very full description of clay building in the region in the late eighteenth century comes from the Dumfriesshire parish of Dornock.
13. Hodgson, K.S., Bouch, C.M.L., and Bulman, C.G., 'Lamonby Farm: a clay house at Burgh by Sands', *Trans. Cumberland and Westmorland antiq. archaeol. Soc.*, New Series, 53 (1954), 150-9.
14. See (4) above.
15. Dixon, P., 'Paddock Hole. A Cumberland house with a lower-end Parlour', *Trans. Cumberland and Westmorland antiq. archaeol. Soc.*, New Series, 71 (1971), 139-50.
16. Brunskill, R.W., *Vernacular Architecture of the Lake Counties*, London: Faber (1974).
17. See Grainger, F., 'Agriculture in Cumberland in Ancient Times', *Trans. Cumberland and Westmorland antiq. archaeol. Soc.*, 9 (1908), 122.
18. See (3) above.
19. Letter to the Earl of Mansfield concerning his Annandale estates, from his factor Joseph Smith, 1810. Mansfield Muniments, N.R.A. (S) 0776. The information contained in this letter was the

- subject of discussion at a Scottish Vernacular Buildings Working Group Conference in 1979. It had been transcribed by Bruce Walker.
20. Ibid.
  21. Pennant, T., *Tour in Scotland*, (1772), p. 76, referring to the parish of Canonbie, Dumfriesshire, describes the practice as follows: 'the person who has building in view, prepares the materials, then summons his neighbours on a fixed day, who come furnished with victuals at their own expence, set cheerfully to work, and complete the edifice before night'.
  22. See (3) above.
  23. The letter from the Earl of Mansfield's factor (see 19 above). Other issues touched on in this document relate to the lack of building by contract locally, the soaking of the clay before use, the use of oat or barley straw in preference to wheat straw in the clay mix, the optional use of stone wall plinths, and the erection of the door frame before walling work began. Prior erection of the main structural frame is not mentioned. Wall building is described as a shared community activity with tasks carefully apportioned. It is said that lintels were built in as the wall rose, and the windows were cut out from beneath them later. If it took longer than a day to complete the work, then the group re-assembled as necessary to finish it.
  24. The description of the building process for Dornock, Dumfriesshire, from the *Statistical Account of Scotland II* (1791-9), p. 22 reads:
 

In the first place, they dig out the foundation of the house, and lay a row or two of stones, then they procure, from a pit contiguous, as much clay or brick-earth as is sufficient to form the walls and having provided a quantity of straw, or other litter to mix with the clay, upon a day appointed, the whole neighbourhood, male and female, to the number of 20 or 30, assemble, each with a dung fork, a spade, or some such instrument. Some fall to working the clay or mud, by mixing it with straw, others carry the materials; and 4 or 6 of the most experienced hands build and take care of the walls. In this manner, the walls of the house are finished in a few hours; after which, they retire to a good dinner and plenty to drink which is provided for them, where they have music and a dance, with which, and other marks of festivity, they conclude the evening. This is called a 'daubing' and in this manner they make frolic of what would otherwise be a very dirty and disagreeable job.
  25. See Meirion-Jones, G.I., *The Vernacular Architecture of Brittany*, Edinburgh: John Donald (1982), p. 49. Group dancing on the raw material to mix it is mentioned here. Particularly popular was the *foulerie de place* where all the young people of the village and among them the best singers, were invited to dance down a new earth floor, with the help of freely circulating *pots de cidre*. This was known as 'hanselling' the floor in Scotland. Gohel, L.M., 'La construction de terre en Haute-Bretagne. Histoire et techniques', *Arts de L'ouest: études et documents*, Rennes, 1 (1976), 35, mentions that all the *village* helped in the construction of a new building or the repair of an old one.
  26. Gailey, A., The housing of the rural poor in nineteenth-century Ulster, *Ulster Folklife*, 22 (1976), 34-58.
  27. From the Journal of Robert Sharp of South Cave, 20 May 1829. The author is indebted to Mrs V. Neave for this reference.
  28. From the few examples quoted it is clear that echoes of the community of action embodied in the approach of the Cumbrian mud wallers are likely to be found in many parts of Europe. E. Estyn Evans brings together some more examples in *Irish Folkways*, London: Routledge and Kegan Paul (1957), p. 57. Speaking of Irish peasant building he notes that the erection of such simple houses did not call for the services of specialists and quotes Lord George Hill on the subject of Donegal before the Great Famine, as follows 'the custom on such occasions is for the person who has the work to be done to hire a fiddler, upon which all the neighbours joyously assemble and carry, in an incredibly short time, the stones and timber upon their backs to the site, men, women and children alternately dancing and singing while daylight lasts, when they adjourn to some dwelling where they finish the night, often prolonging the dance to dawn of day'.
  29. Op cit., Mansfield Muniments.
  30. Ibid.
  31. Fenton, op. cit., p. 28, refers to the Manse at Tarves, Aberdeenshire in 1684. This building contained 'masonwork, dry-stone work, mud work, cassie work (cobbling), fail and divot work', i.e., sod work.
  32. Information from Mrs Susie Polley, Burgh by Sands.

33. This drawing appeared in Harrison, J.R., *Transactions of the Ancient Monuments Society*, see (3) above. The argument concerning it is developed further here.
34. Charles, F.W.B., 'Medieval cruck building and its derivatives', *Soc. for Medieval Archaeology, Monograph Series*, no 2, London (1967). See figure 9, p. 45, and the comment, p. 44, that 'a pair of rafters hung from a ridge piece would close up like a jack-knife'. The evidence that 'a tie-beam could add nothing to the stability of the completed truss' (p. 46) is plainly, if in Charles' terms, crudely, displayed in the Cumbrian buildings.
35. Information from S. Denyer.
36. Hurst, J., *The Story of Harome Hall and its Reconstruction*, Ryedale Folk Museum (1972). 'The rafters were secured to the rigg tree, nowhere else, an oak peg 1in. in diameter being used for this purpose'.
37. Information from S. Denyer.
38. Illustration 59(a) is based on a drawing in the 1962 *Guide to Frilandsmuseet*, the Danish Open-Air Museum, while 59(b) is based on a photograph in the 1980 guide. Comment in the 1962 *Guide* is as follows:  
The use of wall framing carried up above the tie beam to act as a ridge-post . . . is known to date back a very long way . . . The old traditional uprights of this kind had a Y-shaped top to carry the ridge beam, later, however they were mortised.
39. Information from the staff of the Ryedale Folk Museum, North Yorkshire.
40. Sketch, Fig. 65(c), based on E.E. Evans, op. cit., p. 50. Cross-section through an old house at Maghery, Co. Armagh.