A Welsh Cruck Barn and the Study of Vernacular Architecture in Britain

by

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The term 'vernacular architecture' gained wide currency from 1951 onwards after its use in Fox and Raglan's Monmouthshire Houses, *probably the single most influential book yet published on that subject. In the same year the first re-erected building in the first major British open-air museum was completed. This paper examines the link between the writing of* Monmouthshire Houses *and the re-erection of the Stryt Lydan cruck barn at the Welsh Folk Museum, and shows them both to be part of the early impetus given to the study of vernacular architecture by the National Museum of Wales.*

Festival of Britain Year, 1951, was a good year for the fledgeling study of the lesser domestic buildings of the British Isles. It was the year in which the term vernacular architecture gained wide currency after its use in the preface by Dr D Dilwyn John (Director of the National Museum of Wales) to part I of Sir Cyril Fox and Lord Raglan's *Monmouthshire Houses,* probably the single most influential book yet published in the field.[1] During the same year, the first re-erected building in the first major open-air museum to be established in Britain was opened to the public. These two events have more in common than merely the year in which they happened and are actually closely linked.

The late 1940s and early 1950s were formative years for the study of the traditional buildings of the British Isles and culminated in the formation of the Vernacular Architecture Group in 1952, when also the first volume of the current series of these *Transactions* was published. The year 1946 had seen the re-publication of Iorwerth Cyfeiliog Peate's seminal study *The Welsh House,* which originally appeared in 1940 as volume XLVII of *Y Cymmrodor,* a publication of the Honourable Society of Cymmrodorion. Peate was Keeper of Folk Culture and Industries in the National Museum

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of Wales, where Cyril Fox (Sir Cyril from 1935) was Director from 1926 to 1948. From 1941 until his retirement Fox had been deeply involved in a detailed study of the lesser domestic buildings of Monmouthshire. This he undertook jointly with Lord Raglan, a well-known writer on ethnological matters, later to be President of the National Museum. Both Cyril Fox and Iorwerth Peate regarded an open-air section as a prerequisite to the full development of the National Museum of Wales, a dream that began to be fulfilled in 1946 when the Earl of Plymouth donated St Fagans Castle near Cardiff to the Museum for that purpose.

The new branch was dubbed the Welsh Folk Museum and Peate was made Keeper-in-Charge and later Curator. St Fagans Castle was opened to the public in 1948 and the search immediately began for suitable buildings to re-erect in the one hundred acres of grounds. The members of the Folk Museum Committee had no doubt been carefully chosen for their expertize and usefulness, and one of their number, Lord Kenyon, then Vice-President of the National Museum, soon proved his worth by offering a timber-framed barn to the new institution. The barn was located at Stryt Lydan farm near Penley (SJ 434 396) on Lord Kenyon's

Fig. 1
Dismantling the Stryt Lydan cruck barn, January–February 1950. The cruck barn with its later brick gable is in the foreground, the box-framed additions in the background. The break in the roof-line indicates the location of the drift-house.
National Museum of Wales: Welsh Folk Museum

Gredington estate in Maelor Saesneg, the detached portion of the old Flintshire that projected into Cheshire (Fig. 1).

Peate travelled to Penley to see the barn on 29 July 1949 and that evening wrote to Fox's successor as Director, Dr Dilwyn John: 'I visited the barn at Penley, Flints today and met Lord Kenyon. The barn is most interesting—crucks in one half and post-&-truss in the other. The panels between the timbering are brick-filled, and most of the old brick can be used again. The pine end is also of brick, but should have a pair of crucks. The roof is slated but if re-erected it should be thatched. I am of the opinion (as is Lord Kenyon) that it would make an excellent exhibit—and cruck barns are now rare [in 1949, a subjective assessment hardly borne out by later research]. The juxtaposition of the two techniques in the same building would be most instructive. Lord Kenyon wants it cleared to start building there at the end of the year. That ought to give us ample time (the demolition would not be a long job—?a couple of weeks—and if we sent up our carpenter to supervise, Lord Kenyon will provide labour'.[2]

The barn was a long, low building of timber-framed panels infilled with brick or in a few cases covered by weather-boarding, and with a slate roof. One gable wall was of brickwork, as were most of the foundations. In fact, the barn was three separate structures: a fairly large three-bay cruck barn, an open drift-house in which loaded waggons could be sheltered overnight, and finally a box-framed structure against the rear of which was a brick lean-to. Parts of both buildings were lofted. On 2 September Peate reported the results of his visit to the Welsh Folk Museum Committee, and concluded, 'I strongly recommend that the Vice-President's offer be accepted and that he be warmly thanked'. This was done.

Two days later Peate received a letter from Lord Raglan, a letter that proved to be the first in a long correspondence concerning the Stryt Lydan barn. 'Dear Peate', he wrote, 'I shall not be with you on Friday, as it is the only day Fox and I could fix up to go through the draft [of Part I of the forthcoming book]. Lord Kenyon has been kind enough to give me an opportunity of examining his barn. I was there yesterday, and give you the results of my examination for what they are worth.

'I should date the cruck part about 1550, the rest of the barn about 1650, all the brickwork except the gable about 1750, and the gable recent. The barn stood originally on a plinth of soft stone. This crumbled and was faced or replaced with brick. We prized away a few bricks, and found the remains of the plinth behind them.

'Both parts of the barn were originally wattled. The holes and grooves for the wattle are visible in a number of places. They are like those in Monmouthshire with this difference that whereas in Monmouthshire the holes are always at the top and the grooves at the bottom, in this barn the holes are on one side and the grooves on the other.

'Any doubt about the lateness of the brick is removed when one notes that the whole cruck building has a cant, and that the brick filling is later than the cant. The blocks of brickwork, that is to say, are not rectangular but rhomboidal. In some places, too, brickwork replaces a missing piece of timber.

'The floor in the cruck part is a late insertion, but unfortunately I failed to study the floor in the other part.' (4 September 1949)

The cruck barn itself is *c.* 14m. long by 5.4m. wide and is divided into three bays of equal size by the crucks. There would originally have been four pairs of crucks, but that at the weather-end of the building had decayed and been replaced by brick, probably in the late eighteenth century. The three surviving cruck trusses are some 5.8m. high and are of fairly crude appearance. The two internal frames are basically similar open trusses, while the surviving original gable has a fully-framed cruck. The feet of the cruck blades are set on sill beams which rest on low sleeper walls of stone: they are pegged to the wall-posts and connected to the wall frames at a higher level by spurs. The tie-beams are located above the level of the wall-plate, in contrast to the reverse assembly of most cruck buildings. The purlins do not rest directly on the cruck blades but on packing-pieces pegged to the blades; they are of the same length as the individual bays. The purlins are further connected to the packing-pieces by windbraces which, like all barn windbraces, are plain. The ridge purlin is continuous.

Ridge beams or purlins are normal in cruck buildings and in buildings in western Britain generally, most of which are thought to derive from cruck structures in some way. Ridge purlins are alien to the box-frame technique of southern and eastern England. The ridge has to be supported in some way by the frame or truss, and the various forms of cruck apexes and the way they support the ridge have been shown to be distributionally significant by N.W. Alcock in his cruck catalogues.[3]

The apexes of the three surviving cruck trusses in this barn are all different. The easternmost cruck, here called II (cruck I would have been the missing gable cruck), has the two blades only barely meeting at the apex: they are held together by a yoke. This is a variant of Alcock's Type A, of which nearly 350 examples are known. The type is concentrated in three areas, namely the Severn

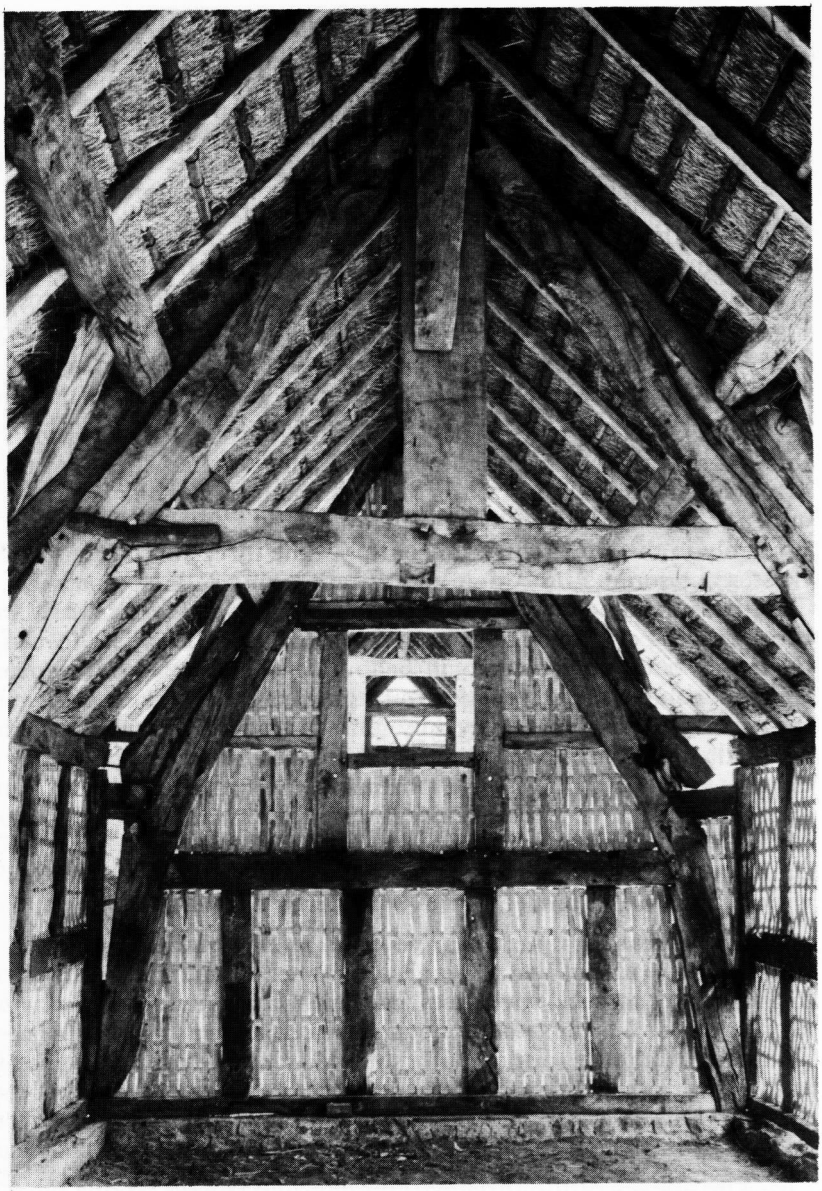

Fig. 2
The barn re-erected at the Welsh Folk Museum, showing the apex of Cruck III and the windbraces supporting the purlins.
National Museum of Wales: Welsh Folk Museum

valley, south Yorkshire and Derbyshire, and Lancashire and Cheshire. The next cruck has the blades jointed together diagonally: the joint is supported by a king-strut which rises from the collar (Fig. 2). A later piece has been added to strengthen the king-strut. Apexes jointed in this fashion (but without the king-strut) are the most common type. This Type E is common in western Britain and there is a strong scatter throughout Wales. The third cruck is again different, being a combination of the first type where the blades barely meet and another type where the blades meet on a king-post rising from a collar; here there is only a king-strut. The king-post apex is only common in north-east Wales and the northern Welsh Marches where twenty-five examples only are known. All three apexes thus conform to what might be expected of north-east Wales. Why different apex types can occur together in the same building has, however, never been satisfactorily explained.

As already noted the two partition crucks are open, that is they have no framing members below the tie-beam. Cut-outs and peg-holes in the members, however, indicate that both crucks at one time presented a different appearance. The easiest to interpret is Cruck III. The evidence here shows that there was a light partition consisting of a rail held up by five posts, rising to 1.3m above ground level. Three posts then rose from the top of this to the tie-beam. This framing is clearly not original, for otherwise it would have been jointed to the cruck frame. It was presumably inserted as an afterthought to help restrain the contents of the bay beyond it from spilling over the threshing floor. In the nineteenth-century planking was applied to this framing. Cruck II, on the other side of the threshing floor, did not have a partition but had instead two curved braces rising from the sill-beam to meet the cruck blades at wall-plate level. It is clear that these braces were original, although they were considered to be later at the time of the barn's re-erection and were not reinstated. Partitions and braces like these were much more common in early barns that was thought in 1950. Carpenters' marks are few on these crucks: none are found on the wall frames.

These crucks were the subject of considerable correspondence between Iorwerth Peate and Lord Raglan. *Monmouthshire Houses* was to include a totally new assessment of how crucks might be produced from a tree. This is how Fox and Raglan saw the problem: 'The pattern formed by the annual rings of the oak in our cruck blades has been examined wherever possible, and in every such case it is certain that the characteristic curve at a point one-third from one end of the blade (to be seen in any of our illustrations), follows the natural grain of the wood. Oak trees which had the right curve at the right point then, were always chosen by the blade makers. But so far as we could judge, trees conforming to that curve, and having one limb at least of great thickness, straightness, and

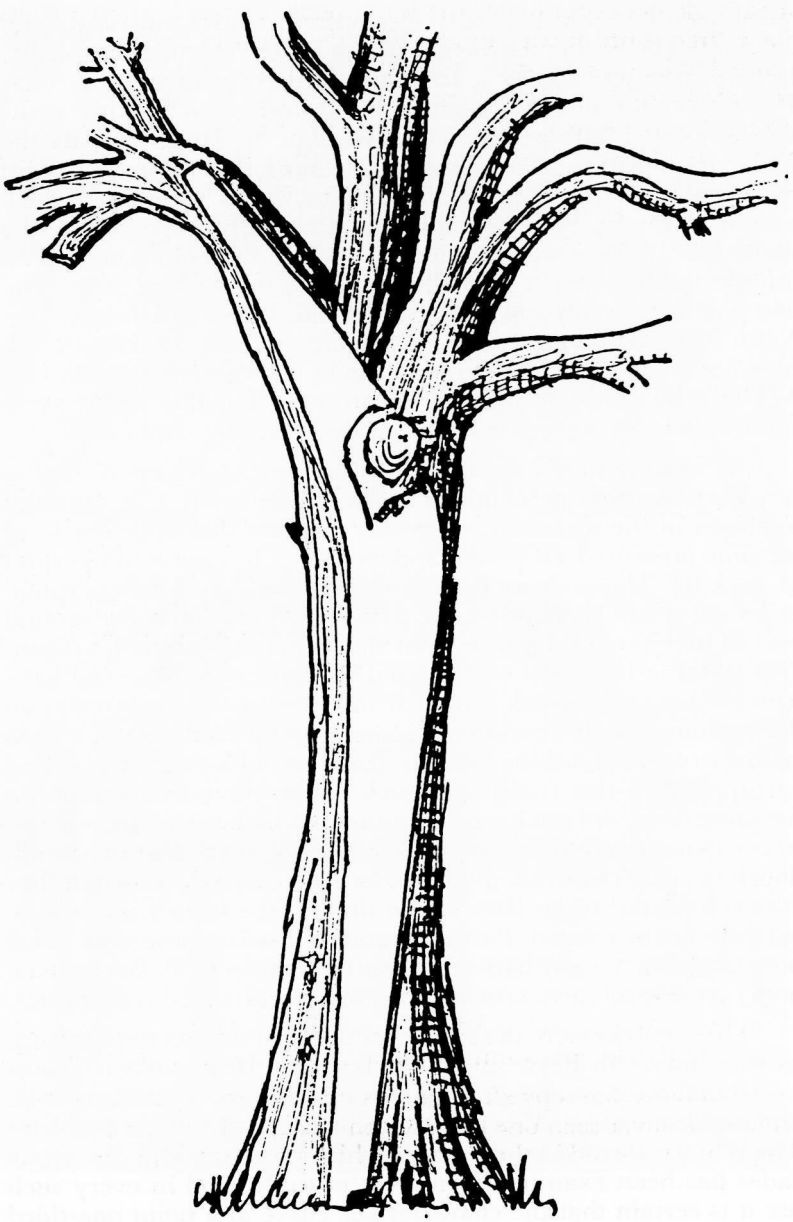

Fig. 3
Fox and Raglan's theory of how a cruck blade might be fashioned, as drawn by Fox (from *Monmouthshire Houses*).

length, do not occur in our modern woods. There the matter rested for a time, until it was noticed that the knots in the cruck blades tended to be massed at the curves. Now forest oaks generally have straight trunks, and branch in several directions 15 or 20ft up. The straight portion then might, in some cases at least, be from trunk not branch! The woodsmen could, we argued, fell the tree, cut off all the branches but the one selected, and then saw a good pair of crucks out of the log-with-an-angle. Knots would thus tend to be concentrated at the angle. The shorter leg of the cruck blade would be slenderer than the longer leg, being branch, not trunk; and the butt end of the tree would have to be at the ridge of the roof, not at the sill. The suggestion is illustrated diagrammatically in Figure 17, a blade taken from one of our drawings being shown unshaded.'[4] This was the view put forward by Raglan in his letters to Peate (Fig. 3).

Peate and his foreman carpenter, R. Albert Jones, mulled over the problem and came to the conclusion that, in the case of the Stryt Lydan barn at least, such a method was unlikely. Raglan replied: 'I don't understand what your man means by saying that crucks *couldn't* be made in the way we suggest, as they obviously could. Whether they were so made is another matter, but I have no doubt that those in Lord Kenyon's barn were so made, that is set upside down. One can see the ragged edge of the branch.' (10 October 1949)

Peate was not convinced: 'Thank you for your letter. The point about crucks in my letter was that the drawing left here by Sir Cyril showed crucks as being produced upside-down from a tree and branch. We take the view here that crucks would not be so obtained but would be produced with the branch end up and not upside-down. I look forward with interest to examining the crucks in Lord Kenyon's barn. The only point of difference in our theories is that we believe the base of the cruck to have come from the base of the tree while Sir Cyril's drawing shows the base of the cruck coming from the branch and not trunk. I am not prepared, of course, to be dogmatic either way but I think in individual instances the matter can be settled by an examination of the crucks.' (11 October 1949)

Lord Raglan replied: 'I have examined a great many oak trees, and have never seen one from which a cruck of our size and shape could be produced in the manner which you suggest. On the other hand many trees would produce a cruck by the upside-down method which we suggest. We did not arrive at this method until repeated examination of both trees and crucks had demonstrated the impossibility, or at least the extreme improbability, of any other.

'We have found cruck houses, cruck barns, a cruck outside kitchen, and other crucks used in outbuildings [in Monmouthshire],

and have come to the conclusion that *c.* 1500 all farm buildings were normally constructed with crucks. If this was so, a farmstead would need at least twenty pairs of crucks, and a method must have been used by which crucks could be made out of any ordinary tree. Trees such as your theory required, though I dare say they exist here and there, are far too rare for such requirements.' (12 October 1949)

Peate remained unconvinced: 'The argument of our men here rests on the fact that even a stake made from a tree must have the original bottom end down. When it is turned upside down it is weaker and the pointed end splays and is blunted. And there are instances where crucks are made from *whole* trees, with the thick ends of the balks at the bottom. It is certainly a tradition among country craftsmen (as my father, who was a carpenter, always impressed upon me) that if you use a 'tree' more or less vertically in construction, it must 'spring from the ground' as it did when it grew and you will remember that Sturt in his book (*The Wheelwright's Shop*) is most respectful of the 'natural growth' of timber. I cannot believe that all this is merely baseless legend: in my father's case it was based on years of hard experience in building.

'One of the photographs in your book (I cannot remember its number) shows a tree which would give an excellent pair of crucks the right side up. There must have been hundreds of them in the 15th–16th centuries. However, let us suspend judgement until we have more information. Both theories may be right!' (13 October 1949)

Contents apart, today one cannot but be impressed by the speed with which these letters were delivered between Raglan's Monmouthshire home and St Fagans! Fox and Raglan's theory is not commented upon in the standard works on cruck buildings: it was probably ignored as a result of the controversy surrounding Lord Raglan's other claim, that crucks were peasant versions of the Gothic arch, a claim that he put forward in the 1950s but which has not found acceptance.[5] Examination of the cruck blades of the Stryt Lydan barn in the company of experienced carpenters makes it clear that, in this particular case, at least, Lord Raglan was incorrect in his supposition. It is certain that each of these blades has been used in the same way as the tree from which it grew. The growth rings around the knots are compressed more tightly together at the top, and the considerable amount of sapwood and bark left on the apexes enables the thickness of the branch to be easily calculated: these two factors are conclusive (Fig. 4).

True to his word, Lord Kenyon supplied the labour to dismantle the barn. On 24 January 1950 Peate and his deputy, Francis Payne, travelled to Penley with their foreman carpenter

Fig. 4
A close-up view of Cruck III with the gable cruck, IV, in the background. Notice the packing-pieces under the rafters and the internal brace to Cruck III, together with a redundant (but still secondary) cut-out in the tie-beam. The waney edge of the tree is clearly visible along the outer face of the cruck.
National Museum of Wales: Welsh Folk Museum

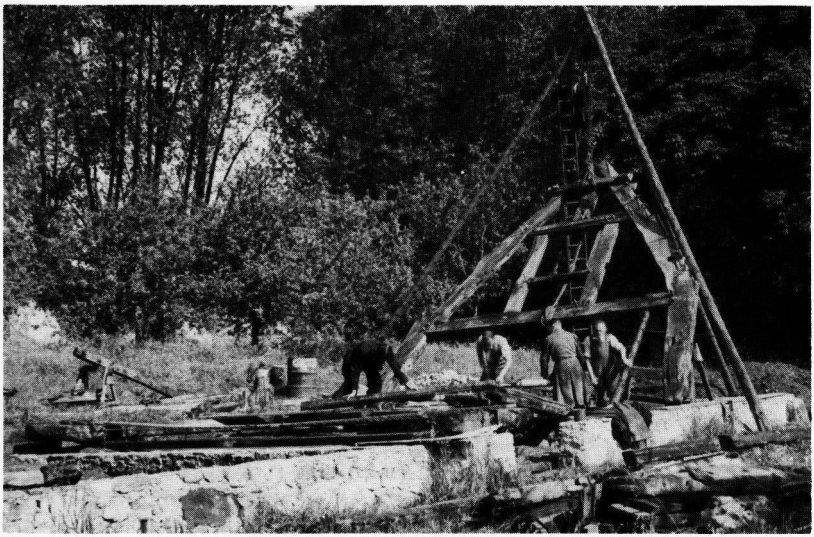

Fig. 5
Raising the first cruck on to the stone plinth with the aid of wooden shear-legs, summer 1950.
National Museum of Wales: Welsh Folk Museum

Fig. 6
A corner of the box-framed addition, showing the careful introduction of new timber and the oak laths which gave so much trouble.
National Museum of Wales: Welsh Folk Museum

and spent two days recording the building. Their plans, unfortunately, do not appear to have been preserved, but the photographs they took show the dismantling to have been carried out with snow on the ground. Lorries were ordered to transport the barn timbers on 9 February, but heavy rain followed the snow and the actual move was delayed until 14 February. Between 15 and 20 tons of timber were moved, the largest items being two wallplates 37′ (11.3m.) long.

The re-erection of the barn started immediately after it was decided to revert to the building's original appearance (Fig. 5). The existing slates were replaced by straw thatch, with the work carried out by T.J. David of Cowbridge at a cost of £330. The later brick nogging was replaced by undaubed wattle formed from hand-riven oak laths. Obtaining these laths, 75mm. (3″) wide and 3mm.–5mm. (1/8″–3/16″) thick, proved to be a major problem in late 1950 and early 1951. Peate wrote dozens of letters to potential suppliers, but the typical response was that of a Wiltshire firm: 'Unfortunately the trade is almost gone and it may be difficult to obtain the services of one of our old renders'. Finally, F.W. Barker, Spale Oak Basket Maker of Backbarrow, near Ulveston in Cumbria, agreed to undertake the commission, though the extreme shortage of the prime oak required made the task a most difficult one. 'Up till December we were liberally supplied with good quality oak from the Forestry Commission: we've not had a grain of sawdust even in 1951', wrote Mr Barker in June. Additionally, 'the fuel crisis means that rural craftsmen take a back seat while firewood kings get all available materials, so we are behind'.

A flagged floor was laid throughout the building, but this was a concession to the public and would originally have been of earth. Very little new timber was used in the re-erection, and no attempt was made to hide what had been replaced (Fig. 6). Indeed, it was regarded as a central principle that the Museum should be totally 'honest' in its approach to re-erection and renewal. The policy of using as little new timber as possible received a fillip from the fact that all purchases of new material had to be licenced by the Ministry of Works, who because of post-War shortages urged that as much original material as possible be re-used. Several of the cruck blades, however, required strengthening and this was provided by metal plates, some of which had already been inserted before the barn was donated to the Museum. Several of the doors were made anew, as were the massive wooden hinges that held them. A mystery persists regarding the original location of the doors on both sides of the threshing floor: before the barn's removal both doors were sited immediately to the east of where they are now, and it is not clear if this was simply a mistake or whether there was some

evidence (now lost) to indicate that this had been their original location (Fig. 7). The doors are held in place by heavy wooden hinges looped through the stile of the door, into which a hole is cut, a not uncommon arrangement in barns of this period in Wales. Regrettably, however, the brick wall which presumably replaced the vanished weather-gable cruck was rebuilt in local limestone.

In their correspondence, Peate and Raglan did not refer to the later structures added to the cruck barn. In their way, however, these structures are just as interesting. Added on to the barn is a 9m.-long box-framed building. This part is separated from the barn proper by a 3m. wide covered way or drift-house where waggons could have been unloaded by pitching the corn through the gable cruck frame directly into the nearest bay had one of the panels been left unwattled, as was assumed when the building was re-erected. Waggons could also be accommodated overnight here without being unloaded if such a course was dictated by either time or weather.

The box-framed part of the building is a two-bay structure, one bay being considerably larger than the other. It is clear that parts of two separate structures were re-used in building this section: the evidence indicates that both structures were moved to this location rather than that one existed on the site and was added to.

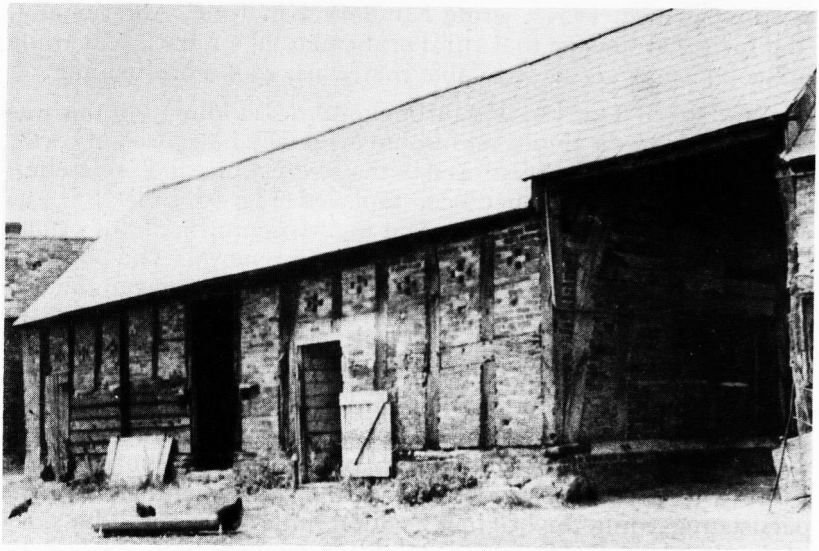

Fig. 7
The cruck barn before dismantling, showing the doorways and brick infill.
National Museum of Wales: Welsh Folk Museum

The timber-framed structure of the end bay is set on waist-high stone walls: the internal partition wall is a full-height frame. It seems likely that this originally formed the other gable of this structure since, like the existing gable, it has a pair of very characteristic diagonal braces, designed to stabilize the structure. The four walls of this small building are notable for their numerous carpenters' marks and include a considerable quantity of re-used timbers. The southern wall-frame has its upright members numbered in sequence, I to V, followed by VII. Number VI is missing, perhaps indicating that the building had been somewhat larger before it was moved to its site close to the cruck barn.

The bay between this part and the drift-house differs in several respects : the walls are of full-length timber-framing, the carpenters' marks are of a different nature, and the roof has wind-braces, unlike the roof of the end bay. On the evidence so far presented, it might be thought that the logical conclusion to be arrived at regarding the sequence of building here is that this bay was simply added to the pre-existing end bay, but this is not so: clear proof that both were joined together at the same time is provided by the wall-plates, which are of two pieces scarfed together just inside the end bay. The lap of the scarf joint is such that the whole frame and truss would have had to be dismanted in order to achieve it, an event

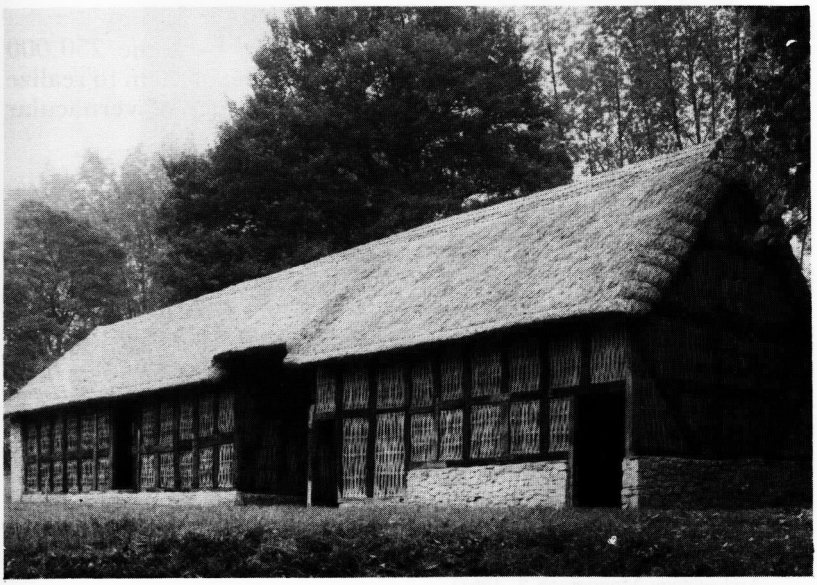

Fig. 8
The completed barn, clearly showing the three separate sections of the building.
National Museum of Wales: Welsh Folk Museum

that would never have been contemplated were a bay simply to be added to an existing one. It is clear, therefore, that this little building was put up on the Stryt Lydan site in one operation but using parts from two existing buildings. When this was done is not known, but the high stone sills under part of the building—which must also have been present at the structure's original location—would probably imply a date in the eighteenth century. The drift-house would presumably have been erected at the same time.

This may also have been the time when the wattle infill to the panels of the barn was replaced by brick nogging: the smaller building may never have been wattled after it was added to the barn. This cannot be proved, however, and wattling has been replaced in the wall panels. The wattling is made of cleft oak woven between oak staves. It is more usual to have the staves upright and the cleft pieces running horizontally than to have the wattle disposed as here, but this is a technique recorded in other barns in north-east Wales. When the barn was dismantled a loft existed in this end building, but it was clearly not original and was not replaced. Indeed, it is difficult to be certain of the original purpose of this structure: the enclosed nature and small size of the bays make it impossible to use as a barn, and its ground-floor location implies that it can never have been a granary. The doors are too small for stock apart from calves, but it may well be that these bays were, indeed, used for holding young stock.

The Stryt Lydan barn is currently seen by some 250,000 visitors a year (Fig. 8). This note may help some of them to realize its significance in the development of the science of vernacular architecture in Britain.

References

1. Sir Cyril Fox and Lord Raglan, *Monmouthshire Houses. A Study of Building Techniques and Smaller House-plans in the Fifteenth to Seventeenth Centuries. Part I: Medieval Houses* (National Museum of Wales/Welsh Folk Museum, 1951); *Part II: Sub-Medieval Houses, c. 1500–1610* (1953); and *Part III: Renaissance Houses, c.1590–1714* (1954).
2. The items of correspondence concerning the barn are quoted from Welsh Folk Museum Accession Correspondence file 50.102 by kind permission of the Curator.
3. N.W. Alcock, *A Catalogue of Cruck Buildings* (Phillimore, for the Vernacular Architecture Group, 1973); *Cruck construction. An introduction and catalogue* (CBA Research Report No 42, 1981).
4. *Monmouthshire Houses, Part I* (1951), p. 38.
5. See footnote 3 and F.W.B. Charles, *Medieval cruck building and its derivatives* (Medieval Archaeology Monograph 2, 1967).