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This page reproduces the title page of  
Cecil Alec Hewett's study of early British carpentry:

THE DEVELOPMENT OF CARPENTRY, 1200-1700 :

An Essex Study

CECIL ALEC HEWETT

DAVID & CHARLES : NEWTON ABBOT

1969

Also appended on the final page is a fragment,  
"Polsoe Priory, Devonshire",  
an anonymous report of the discovery of  
"an early scarfed joint" that dates to the 12th century.

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Printed in Great Britain in  
eleven on thirteen point Imprint by  
Latimer Trend & Company Limited Plymouth  
for David & Charles (Publishers) Limited  
South Devon House Newton Abbot Devon

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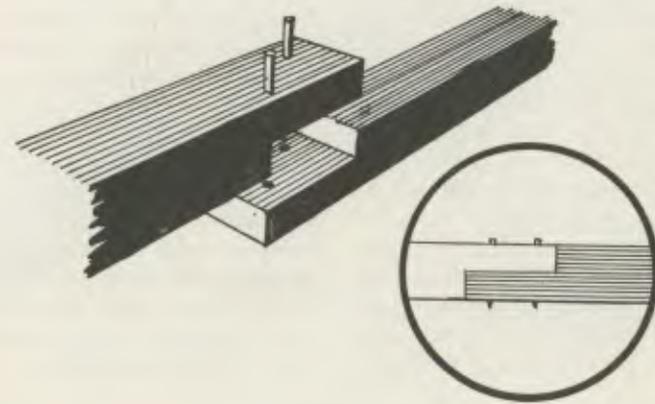
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## APPENDIXES

### ONE

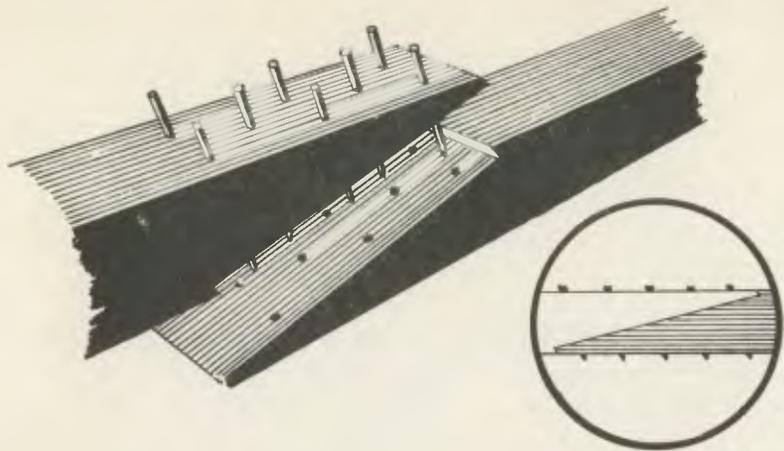
#### TABLE OF SCARFS, IN EVOLUTIONARY SEQUENCE



**Fig 71** Edge-halved scarf with square, vertical butts and two face-pegs.

This scarf is used for the main-span top-plates in the Barley Barn at Cressing Temple, in which there are four examples which combine six lengths of timber. This joint is carbon dated to *c* 1200, but may be considerably earlier, in view of the 'plateaux' described in Fig 21 (p 56). Other examples of this joint are known, most

of them combining re-used timbers and all of them, apparently, belonging to the thirteenth century. Considered as a scarf it can only be efficient in a structure that submits it to neither winding, nor lateral, nor extending stresses—the latter are absent from the Cressing barn. It had, presumably, some eventual influence upon the course of development of these joints, since edge-halving with complex butts was to become general later.

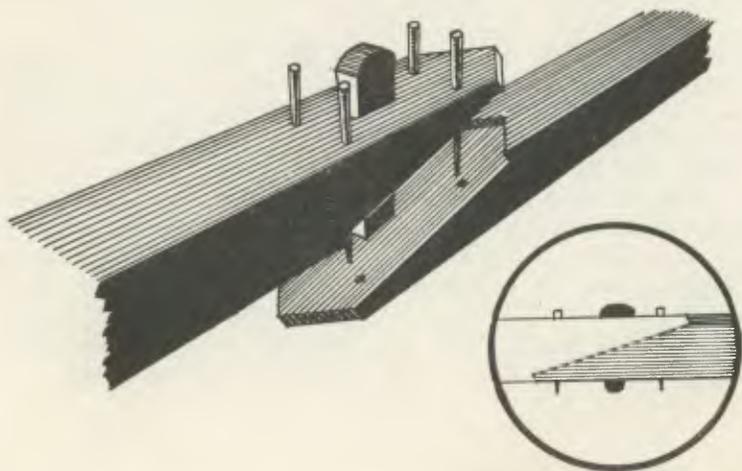


**Fig 72 Stop-splayed scarf with under-squinted butts and eight face-pegs.**

This is the scarf used for the outshot and mainspan top-plates in the surviving barn at The Hall, Belchamp St Paul's, Essex. The barn, in view of its extreme antiquity, has been frequently rebuilt and, at one time, early in the seventeenth century, a few feet of new top-plate were inserted, with two bladed-scarfs. The principal-posts are mainly of equal, or greater age, than the Barley Barn at Cressing; since the

outshot measurements are the same as those cited by H. H. Hale<sup>33</sup> in his *Doomsday of St Paul's*, in which the measurements are quoted from a lease of the eleventh century.

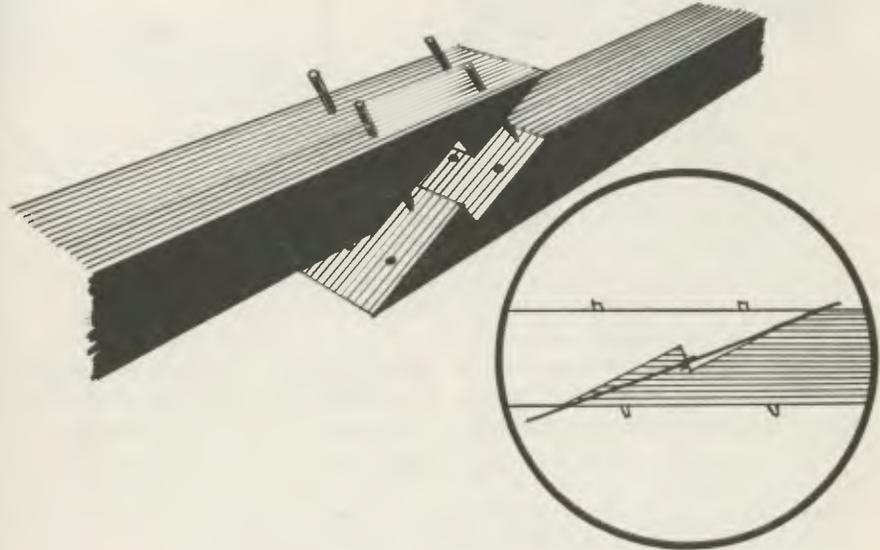
It is a most interesting scarf, since it clearly seeks to resist all stresses, but the resistance is mainly given by the large number of face-pegs; while the under-squinted butts combat both 'hogging' and 'sagging' tendencies. The probable period of use for this scarf is between *c* AD 1000 and *c* AD 1225, in high quality works.



**Fig 73 Stop-splayed scarf with under-squinted and sallied butts, four face-pegs and one face-key.**

This is the joint used for the mainspan top-plates of the great barn of Great Coxwell in Berkshire, which seems to be of *c* 1200-1235.<sup>34</sup> This dating depends entirely upon the stone corbels in the barn. It is a joint of

some efficiency, and is fairly short in terms of the edge-depths of the timbers so jointed. I know of no keys, either face or edge, earlier than those of *c* 1250 at Cressing; yet those may not be archetypal, and logically scarfs of this type could have appeared shortly after that in Fig 72.

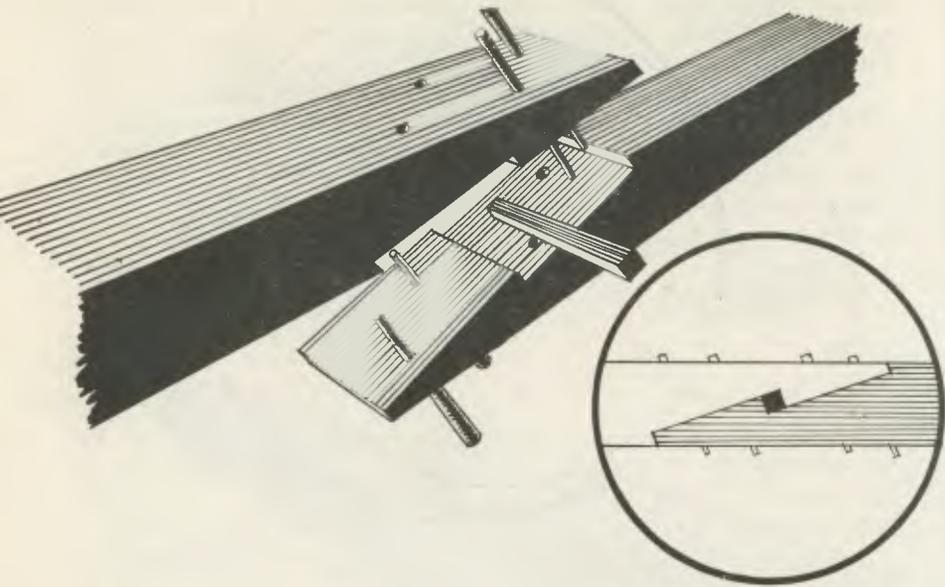


**Fig 74 Through-splayed and tabled scarf with four face-pegs.**

This joint was anciently known as the *Trait-de-Jupiter*, in view of its resemblance to lightning. In the example, shown in the inset, the two tables are not in-line.

The joint was used for the bridging-joint in the early thirteenth-century

floor of the stone 'wing' of Little Chesterford Manor House, Essex. It is, in this instance, fully supported by a post with a braced-transom upon its head; without such direct support this joint would be unable to achieve its end. It offers direct mechanical objection to any extending stress to which it is subjected but is otherwise weak.

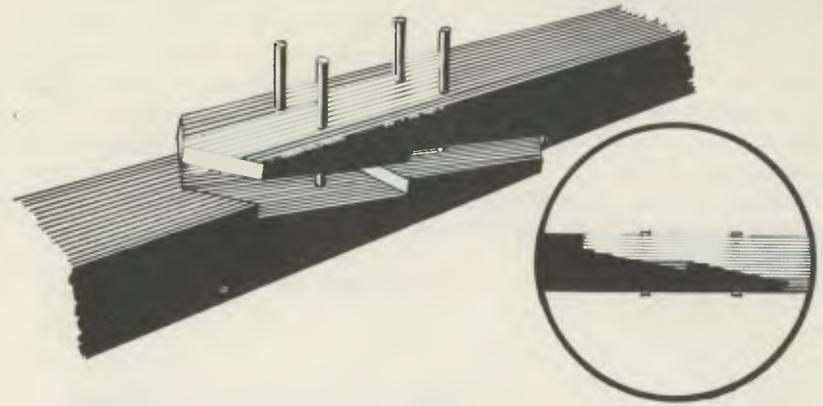


**Fig 75 Stop-splayed scarf with under-squinted, square butts, transverse key and four face-pegs**

This is the joint used for both out-shot and main-span top-plates in the Wheat Barn at Cressing Temple, which is carbon dated to c AD 1250.

This, it is suggested, is a scarf belonging to the post-Romanesque phase of English carpentry, where it is found in conjunction with the secret notched-lap joint. It is mechanically an excellent scarf, since the driving of its key separates the twin-tables with a primary mechanical force and closes the under-squinted butts with enor-

mous pressure. To this is added the security of the four face-pegs, 'to make assurance doubly sure'. It is a joint of great mechanical efficiency and, in the building cited, it eluded detection for seven years since it is so accurately cut as to be virtually invisible. The decay of the key would, of course, destroy this scarf. It is able to resist 'hogging' and 'sagging' stresses very well, and can also resist 'winding' stress—such as is common in a top-plate. The sole disadvantage of these scarfs was the great lengths of oak which they necessarily used—at least two feet on each timbers' end.

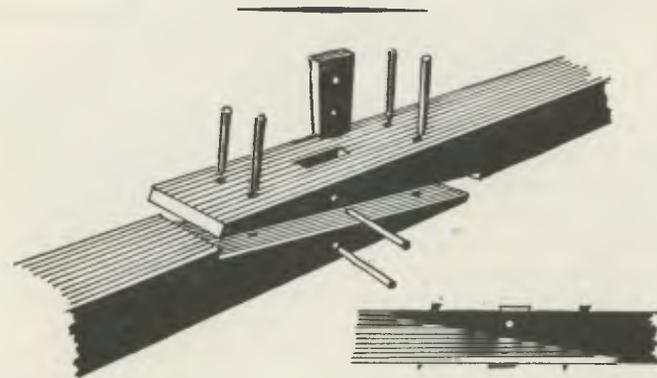


**Fig 76 Stop-splayed and tabled scarf with under-squinted and sallied (or taced) butts, and four face-pegs.**

This scarf is used for main-span top-plates of the house at Purton Green, just inside Suffolk, at Stansfield. I consider that it dates from c AD 1285-1295, since no notched-laps are used in the building.

Several features of the Purton Green building are difficult of explanation and, indeed, some of the

scissor-bracing in the high-end frame performs no function; it may well be vernacular post-Romanesque carpentry. The scarf is quite good, but would have been vastly improved by keying between the tables. In all respects, compression, winding, extension, hogging and sagging, it is a substantial improvement on the scarf at Belchamp Hall, but it is curiously incomplete without a key. Its use would probably have been confined to about thirty years.

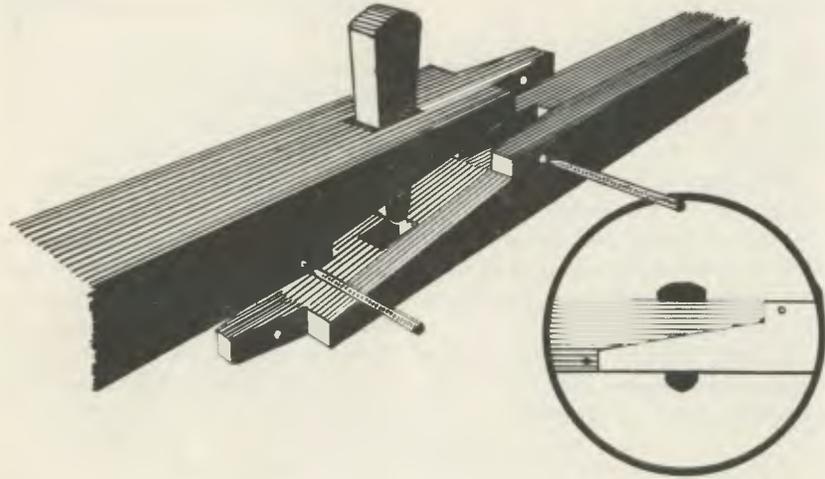


**Fig 77 Stop-splayed scarf with under-squinted square butts, four**

face-pegs, and one face-key which is twice edge-pegged.

A rare and complex scarf which can only be considered a recessive example, since its length, measured in edge-depths, is extreme, and its mechanical efficiency is low. A great number of man-hours were expended on the cutting of these; two exist in

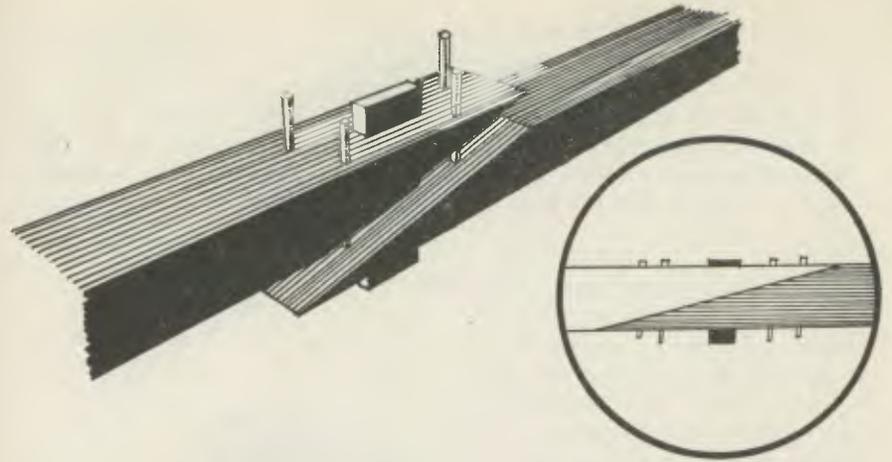
the house in Sudbury, which I consider must date from the first half of the fourteenth century. In view of the great lengths of valuable oak used by these joints—about twelve feet of timber for two joints three feet long—it must either be recessive, and vernacular in origin; or earlier than ascribed.



**Fig 78 Stop-splayed scarf with diminished, bridled-butts, two edge-pegs and one face-key.**

This is the scarf used for the main-span top-plates of the barn at Widdington. It is derived from the splayed scarfs of preceding centuries, and is clearly able to offer greater resistance to lateral stresses than were all the earlier scarfs excepting those

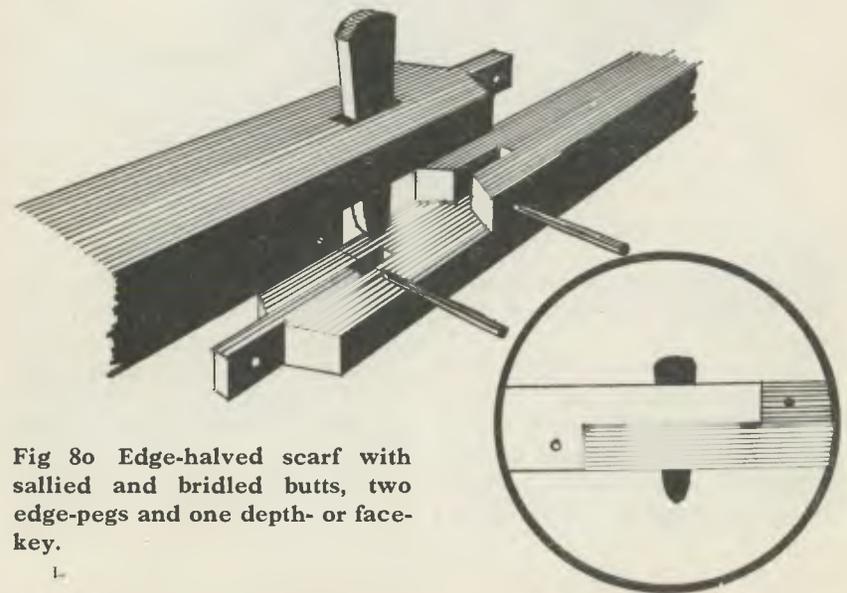
with sallied, under-squinted butts. It is relatively short in terms of edge-depths; and may have been used until about the third quarter of the fourteenth century. I know of two examples other than this one, neither of which is keyed; I consider that this Widdington example may date from c AD 1340.



**Fig 79 Through-splayed scarf with four face-pegs and one face-key.**

This scarf is used for the main-span top-plates of the barn at Fairstead Hall, Essex. The barn is evidently of the fourteenth century at the latest, but has been very much rebuilt and

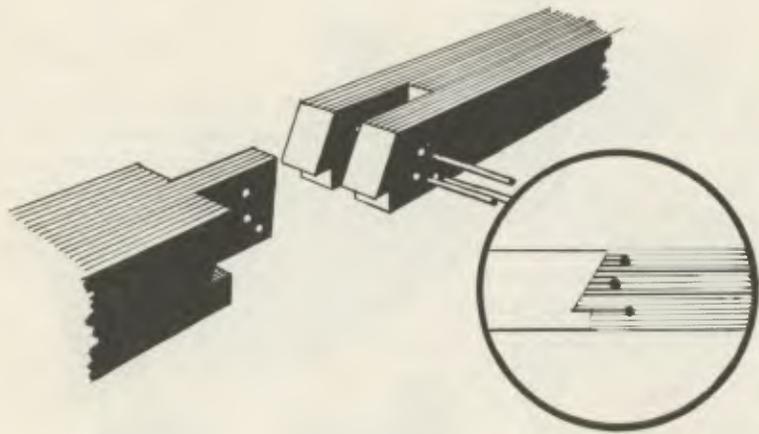
its date is uncertain. The greater part of it was fully repaired in the early seventeenth century, when Kentish-style shores were fitted to its posts; the oldest part has passing-braces and down-braced crown-posts, possibly of c AD 1330.



**Fig 80 Edge-halved scarf with sallied and bridled butts, two edge-pegs and one depth- or face-key.**

This is the scarf for the main-span top-plates in the barn at Bradwell-juxta-Coggeshall Hall, Essex, and dates from the first half, or the middle, of the fourteenth century. It is used at Bradwell solely of necessity; that is, it seldom occurred over the head of a

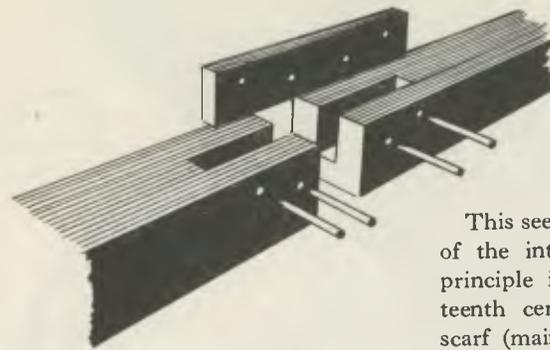
post. This indicates that the carpenter had full confidence in its ability to resist the normal stresses although it is evidently better adapted to resist winding and lateral pressures, than either hogging or sagging. It is relatively short in terms of edge-depths.



**Fig 81 Scarf with squint-butts, inline bridling, soffit-lip and three edge-pegs.**

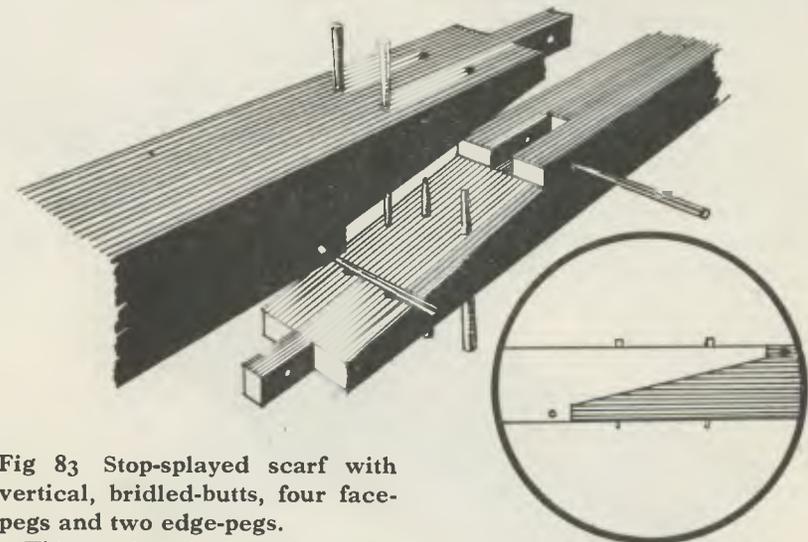
This joint is used on the top-plates of building number three, in order of construction, on the Paycocke's site at Coggeshall. It is rare, and the only comparable joint of which I am aware is on the top-plates of the Prior's

Chamber, at Prittlewell, Essex (Fig 29, p 80), which dates from *c* AD 1300. It is not a good scarf, but in both cases is used in a frame so stable that it has endured intact. A similar, but not identical, scarf is used for the top-plates of the second-floor of the White Tower, London, which is supported on series of posts.



**Fig 82 Fished-scarf with face-housed fish-piece and four edge-pegs.**

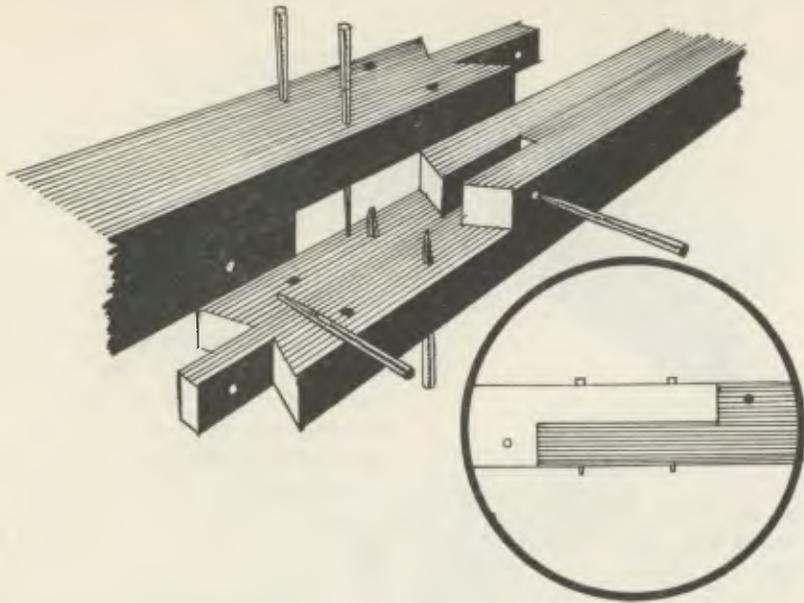
This seems to be a solitary example of the introduction of the 'fishing' principle into scarfing, in the fourteenth century. It is the top-plate scarf (main-span) of the building at Fressingfield, plate, p 72, which I consider must date from the two central quarters of the fourteenth century. It is not a good scarf, and requires a very stable position in a very stable building.



**Fig 83 Stop-splayed scarf with vertical, bridled-butts, four face-pegs and two edge-pegs.**

This scarf, carbon dated to *c* AD 1350, is used for the main-span top-plates of St Clere's Hall (Fig 32). It is an example of the scarf used at Wid-

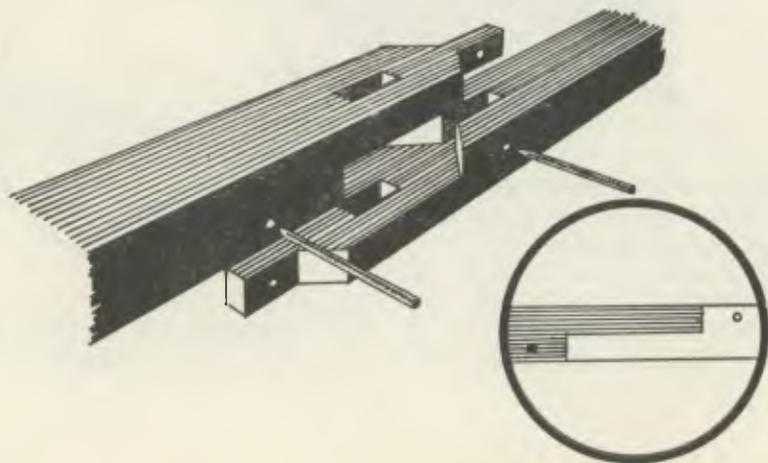
dington (plate, p 71) after it had entered into decline. It is less efficient in every way but has survived intact.



**Fig 84** Edge-halved scarf with bird's-mouthed bridled-butts, four face-pegs and two edge-pegs.

This is the scarf used for the main-span top-plates of the barn at Netteswellbury and that at Hall Farm, Black Notley; both are believed to date from the first quarter of the fifteenth century. One further example of this

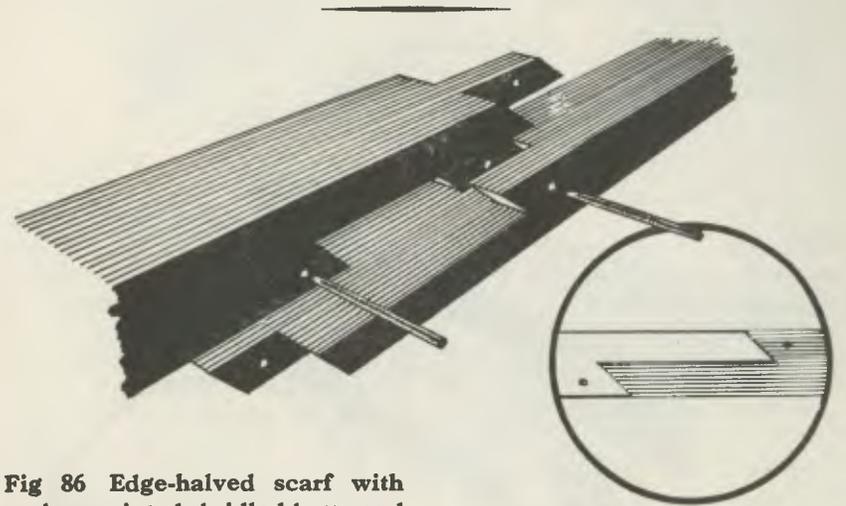
scarf is known to exist on the front of a 'wealden' house at Kersey in Suffolk. It is a very good joint, though evidently most expensive to cut. As a result of this, it was soon simplified; its use, therefore, was probably confined to the first half of the fifteenth century.



**Fig 85** Edge-halved scarf with sallied and bridled-butts, two edge-pegs and a central face-mortise.

This scarf is used for the outshot top-plates of the barn at Netteswellbury farm. It is invariably placed over the outshot wall-posts, and the face-mortise is to receive the top tenons of

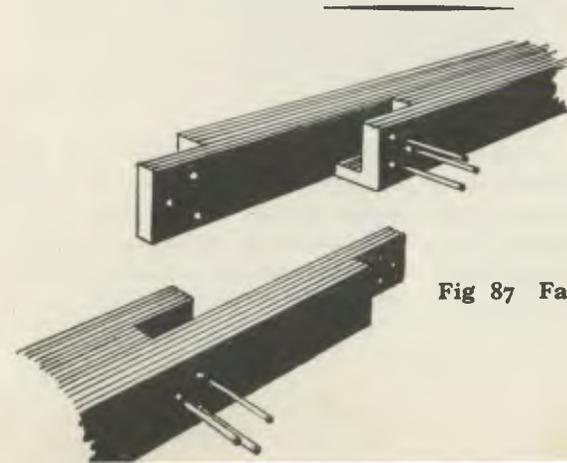
these posts. No other examples are known to me, and why this joint was used in the same building as that shown in Fig 84, is difficult to explain. The relative efficiencies of the two must be approximately equal, and the use of lavish funds and sustained thought are indicated by their use.



**Fig 86** Edge-halved scarf with under-squinted, bridled-butts and two edge-pegs.

This is the joint used for the front top-plate of the Old Rectory at Headcorn, Kent. No similar examples are known at present; the use of face-pegs

could not, at the time of examination, be ascertained but they probably exist. This example dates from *c* AD 1450. It is particularly strong against both hogging and sagging stresses.

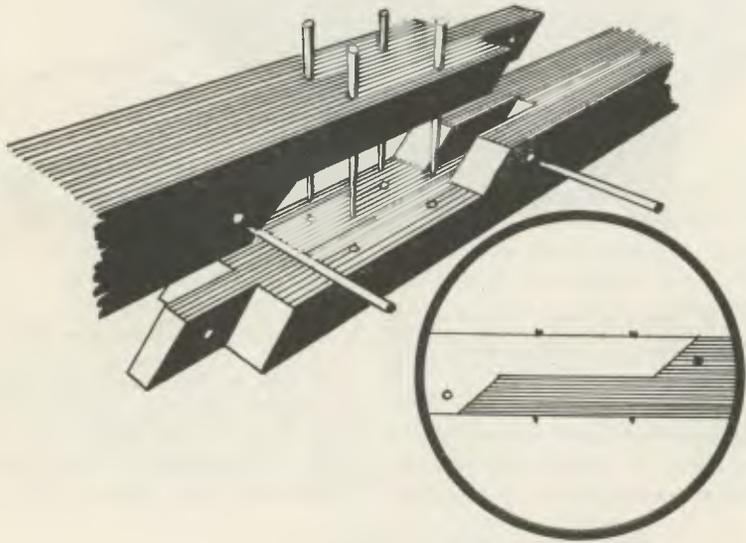


**Fig 87** Face-halved and bladed

**scarf with one blade housed, and six edge-pegs.**

This joint is clearly the form in which the face-halved scarfs were first introduced; it is of great length and expensive to produce. This example exists on the top-plates of the Granary at Rookwood Hall, Abbess Roding,

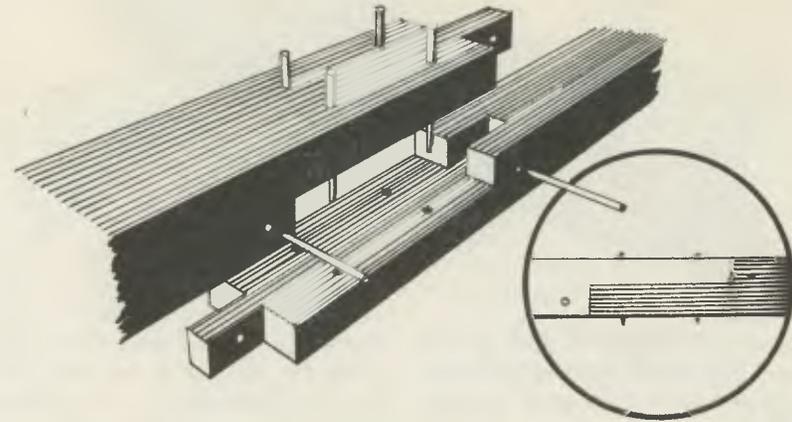
Essex. It is well adapted to meet hogging, sagging, winding and compressive stresses. I know of no other examples of this joint and it could possibly be the innovation of this scarfing-method. Probable date: c AD 1440.



**Fig 88 Edge-halved scarf with over-squinted, bridled-butts, four face-pegs and two edge-pegs.**

This scarf is used for the top-plates of the house at Olives Farm, near Roydon, Essex. It is complementary to

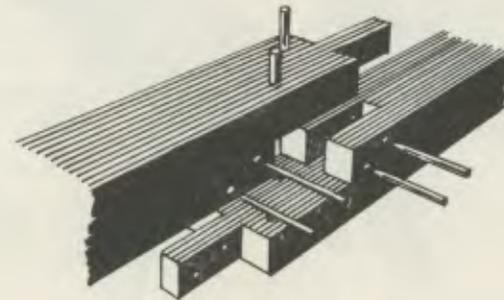
the joint at Headcorn (Fig 81), but is obviously very weak if subjected to hogging or sagging stresses. Its use is probably confined to the first half of the fifteenth century.



**Fig 89 Edge-halved scarf with bridled-butts, four face-pegs and two edge-pegs.**

This is the scarf used throughout the barn at The Hall, Upminster, Essex. In these cases it is of great length, which indicates either a super-abundance of suitable timber at

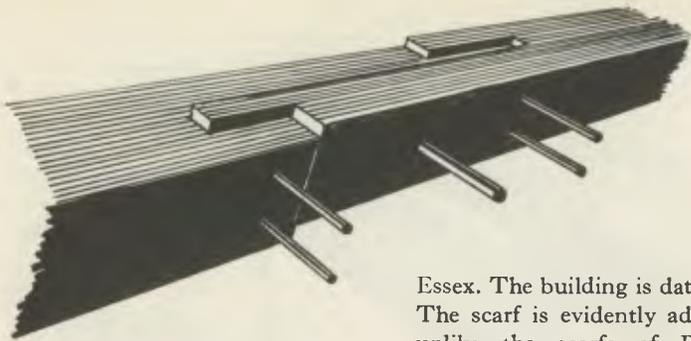
the time of building, or a date very close to the opening of the fifteenth century. With variations in both length of halvings and in the number and distribution of the face-pegs, this is the principle scarf-joint of the fifteenth and sixteenth centuries.



**Fig 90 Edge-halved scarf with bridled-butts, two face-pegs on halving's diagonals, and two edge-pegs on bridlings' diagonals.**

This scarf, used for the top-plates of the barn at Bretts Hall, Tendring, Essex, is a late example of the

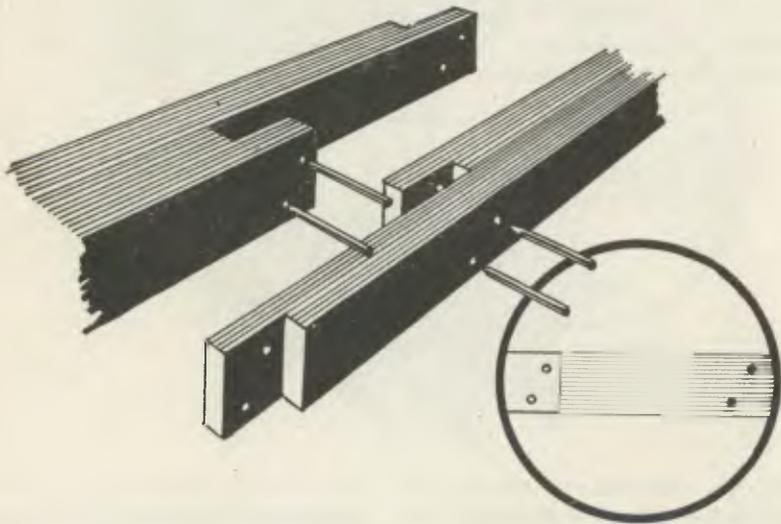
joint shown in Fig 89. It is contracted in length, and is probably of equal efficiency; it would date from the close of the fifteenth century and possibly continue in use until the general advocacy of bladed scarfing.



**Fig 91** Face-halved and bladed scarf with thick, central halving-peg and four edge-pegs through blades.

This scarf is used for the top-plates of the Granary, Cressing Temple,

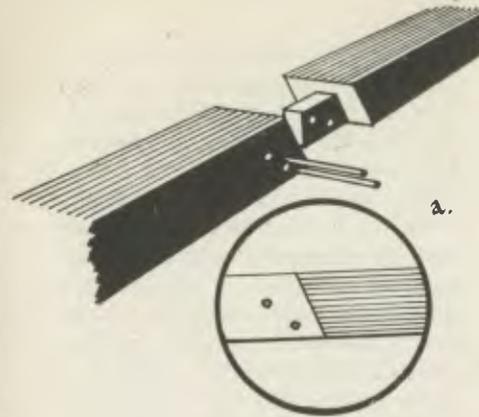
Essex. The building is dated AD 1623. The scarf is evidently adequate but, unlike the scarfs of Romanesque periods, it does not integrate the ends of the two timbers it combines. It is the type-scarf of all the declining years of carpentry for top-plate purposes, and examples continue until recent times.



**Fig 92** Face-halved and bladed scarf with four edge-pegs.

The scarf most generally found on the top-plates of buildings throughout the seventeenth century. Shortened examples of this joint were evidently

introduced, but the only one of these I have seen is on the top-plates of the Boardman House, Saugus, Massachusetts, which is now dated to *c* AD 1686.<sup>55</sup>

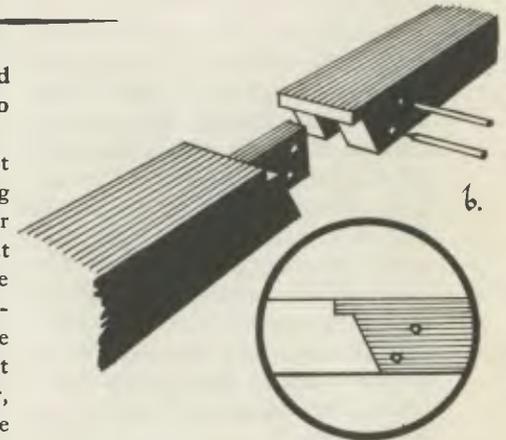


**Fig 93a** Squint-butted scarf with secret bridle and two edge-pegs.

This is the scarf used for the ground-sills of the older barn at Cressing, in *c* AD 1200. It was also used, at the opening of the fifteenth century, for the sills of the barn at Netteswellbury. It is not particularly good for its purpose, since water may enter between the butts.

**Fig 93b** Face-lipped squint-butted scarf with secret bridle and two edge-pegs.

This joint replaced that shown at 93a, the lip across the upper face being designed to prevent the entry of water into the bridle. It was calculated that neither of the butted ends would be able to subside under weight independently of the other, since the squint-butt which was uppermost could not subside without the lower, while the tongue, or 'bit' of the bridle prevented the lower butt from subsiding. Sidewise alignment was equally well maintained. This joint was used for the purpose of ground-sills, or plates, throughout the whole of the



medieval, and sub-medieval periods; it obviously required no improvement since it was never varied.

#### THE DEVELOPMENT OF SCARFING

So far as Essex is concerned, there is little evidence for a native school of carpentry which could have flourished before the Conquest, and either have been entirely superseded by—or mixed inextricably with—Norman

carpentry. I have avoided certain structures deliberately, such as the nave of Greensted-juxta-Ongar church, since I can trace no coherent course of development which would include these very early examples. Other than these, all the earliest carpentry discussed shows strong, if not

total, Norman influence and, as such, merits the term Romanesque, since the technology involved probably did derive from Rome at the outset. One exception to this generalisation could well be provided by the 'reversed' barn, in Fig 43, p 112, since it appears to be a representative of a tradition so archaic that it might be a final example of an indigenous carpentry, older than Norman influences. It is tragic that the barn did not contain an example of a scarf, for had it done so, an alternative sequence for this joint could have been deduced.

Taking *c* AD 1200 as the starting date for this history, the scarfing certainly begins with splayed scarfs, those having diminishing edge-halvings; this was the category of scarfs excavated in the Lake Villages at Glastonbury. These joints possibly derived from Roman culture, since they did apparently reach us via Europe. The oldest scarf cited is undoubtedly that shown in Fig 72, which is stop-splayed with eight face-pegs, while the same barn at Belchamp St Paul's Hall has an even more archaic scarf on its outshot top-plates, which is through-splayed and face-pegged. These are in the category of scarfs that were perfected between *c* AD 1100, and *c* AD 1325. By AD 1225, at Little Chesterford, a tabled example exists but this is a poor joint if compared with later specimens. These scarfs did not, in fact, achieve any merit for general purposes until they were stopped and under-squinted, tabled and keyed, as noted with regard to the Cressing Wheat Barn; at this point the possibilities of this scarf type

were exhausted. In my own view, subsequent developments frequently fell short of the excellence of the Cressing specimen, but radical changes were at that time imminent.

The Widdington barn is, unfortunately, not dated by anything other than its scarf-joint, and this joint apparently bridges the gap between the numerous splayed scarfs and the equally numerous edge-halved scarfs of the Late Medieval period. This was effected by 'tonguing' or 'bridling' the ends of the splays, which, as a result, became 'butts'—it being accepted that a through-splayed timber has no end that can be butted. As is shown in the Fairsted scarf in Fig 79, the timber diminishes to a knife-edge which can only be overlaid. The Purton Green scarf, in Fig 76, with its sallied, under-squinted butts, must have achieved all that the Widdington scarf achieved so far as resisting 'winding' and lateral stresses were concerned. But carpenters, being craftsmen of a high order, could not repeat indefinitely any technique, even if it were of proven value; they had to make a contribution to their craft. It was this obsession that prevented perfected forms of joints from continuing in use as recognised limits to the possibilities that existed.

That the Widdington joint was an innovation is supported by the alternatives found up to the next sure date, *c* AD 1350, at St Clere's Hall. These alternatives include an entirely different category of scarfs which introduced the 'fish-piece', a third member used to unite the first two, with the object of avoiding timber-waste by

overlapping the ends of the pair to be joined. It was, apparently, a period of much experiment, as witness the curious scarf at Prittlewell, shown in Fig 81, which relates closely to that in the White Tower and another in the Paycocke's group. None of these variants were functionally adequate enough to be adopted as prototypes for the next category of scarfs to be exploited—those with edge-halvings that were parallel to the faces of the timbers. If correctly dated, these scarfs were forecast by the barn at Bradwell Hall containing the joint shown in Fig 80. This is a joint much influenced by the Widdington specimen, retaining the face-key and the edge-pegged and bridled butts; it had been realised, though, that the bridled-butts should use half the depth of available timber—the maximum possible quantity in a scarf—if they were to be fully effective. I think it probable that scarfs with splaying-halvings and bridled-butts were predominant in the years between *c* AD 1325 and *c* AD 1375, when they would have been used invariably for works other than Royal, or similarly grand undertakings, throughout Essex.

The wide variety of scarfs with parallel edge-halvings, presaged by the Bradwell example, seem to have monopolised the thought of carpenters from about the end of the fourteenth century until about the end of the sixteenth century; it must be assumed, therefore, that in actual practice these were found most efficient relative to their cost of production. The drawings from Fig 80 to Fig 86 give some idea of the ingenuity

applied to the exposition of this category's merits; but in general, and in the majority of humble buildings such as houses, only a plain form is to be found with butts both square and vertical, plus a minimum of pegs. At Fig 87, the germ of a new scarfing idea was introduced, and ascribing this joint to a date is most difficult, but it is unlikely that it occurred before the middle years of the fifteenth century.

With the next certain date, AD 1623, to which the granary inscription at Cressing testifies; this new category of scarfs is, it seems, confirmed in use. During the eighteenth century, these were known to the building trade as 'bladings', as a result of which I have suggested they be termed bladed-scarfs, to avoid chances of confusion with other halved varieties of the joint. They are, of course, face-halved scarfs with 'tongued' or 'bladed' butts and a varying number of edge-pegs. Their peculiar merits are not visually apparent, but these were to supersede all other scarfs for the remainder of my period. The earliest buildings in New England show variations of this scarf, and I have seen one in a barn dated AD 1823, at Asheldham in Essex.

Scarfig, in the best sense, was apparently exhausted by *c* AD 1700, when bladed joints were still in rural use.

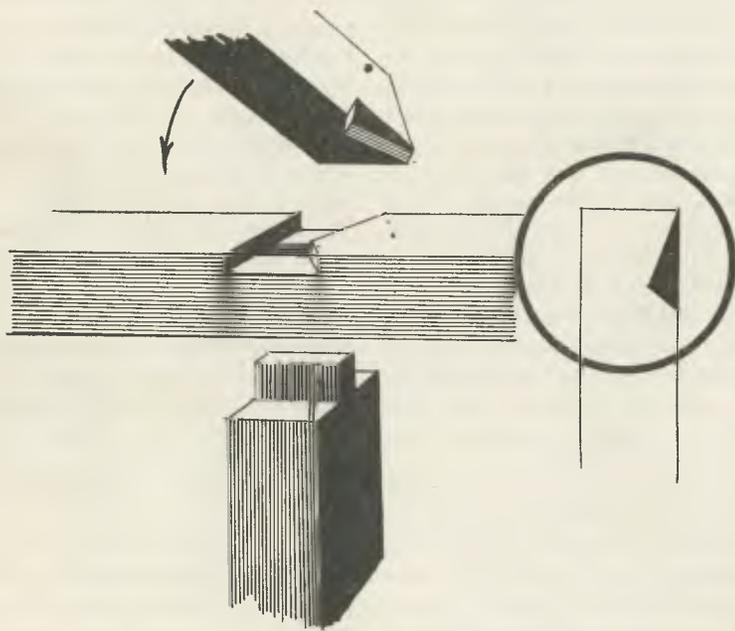
The text-books for builders and carpenters which abounded, during the eighteenth century, show that iron plates and bolts were then introduced to carpentry; the medieval ethic that a carpenter or a mason

should solve all his problems in his own material was discredited. In my own view, timbers cannot be scarfed with iron plates and nuts and bolts, as obviously this does not constitute carpentry; but the eighteenth century

thought that it did, and even specified this in instructive text-books. I consider, therefore, that carpentry terminated, and was forgotten, after the end of the sub-Medieval period.

## TWO

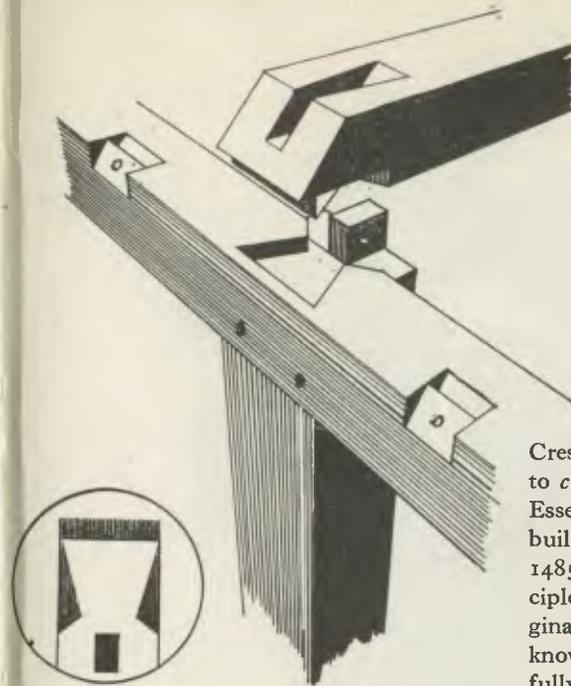
### TABLE OF TYING JOINTS



**Fig 94 Bare-faced lap-dovetail with entrant shoulder.**

This was the tying joint used for the main-span of the roof to the Barley Barn at Cressing and has been carbon dated, by the very latest equipment

and analysis, to *c* AD 1200. This is a highly efficient joint for the purpose, and in the barn it has only failed as a result of decay in the top-plates. No other examples of this joint are known at the present time.



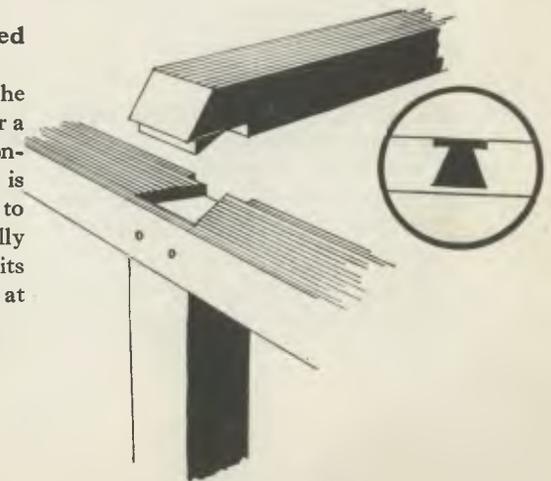
**Fig 95 Lap-dovetail with entrant-shoulders.**

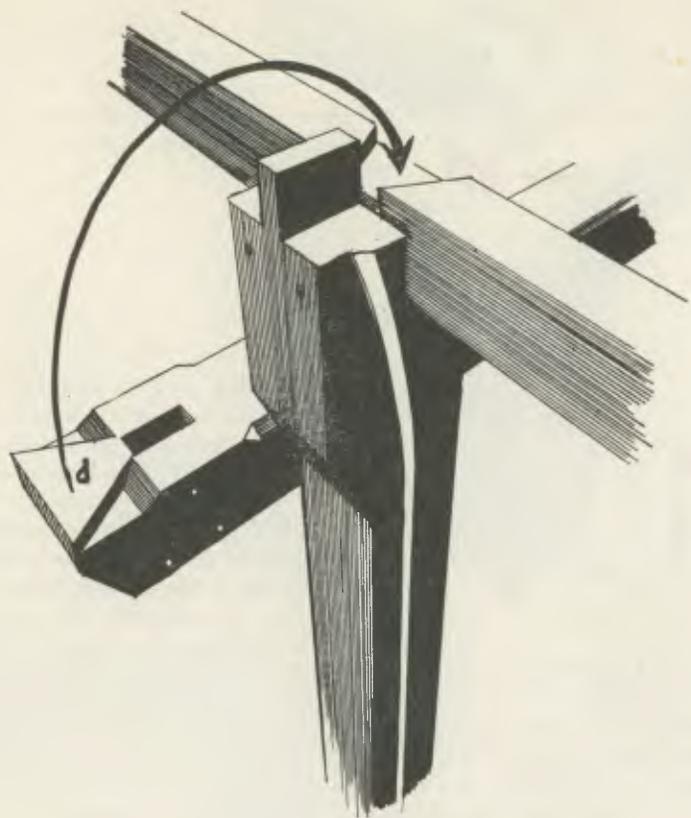
The tying joint of the post-Romanesque period of carpentry. It was used for both main-span and out-shot tie-beams of the Wheat Barn at

Cressing, and has been carbon dated to *c* AD 1250. It continued in use, in Essex, until at least the time of the building of the Blackmore belfry, in *c* 1485. With it, at Cressing, the principle of jowls was apparently originated, since no earlier examples are known at the time of writing. It is a fully efficient joint for the purpose, and is clearly derived from that in Fig 94. The object of cutting entrant shoulders was to avert the display of a gap, should the lap partly withdraw after many years of strain. This gap is an unsightly feature of old lap-dovetails that have so withdrawn.

**Fig 96 Lap-dovetail with housed shoulders.**

A tying joint which is used at the house at Purton Green, *c* AD 1290 or a few decades later, but I do not consider that it could be earlier. This is another joint which is designed to show no void, should it partially withdraw. It is fully efficient for its purpose, but was much improved at Southchurch Hall.

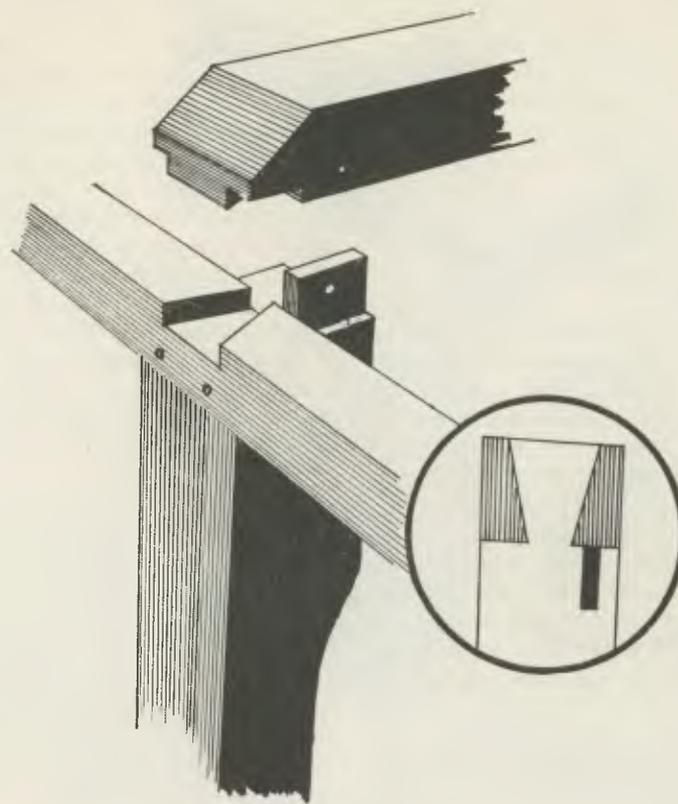




**Fig 97 Lap-dovetail with over-squinted shoulders.**

This is the tying joint used for the soffit-cusped tie-beam at Southchurch Hall (Fig 23). It is an excellent joint, which is today in perfect condition. In Fig 97 it is shown arranged so that each component may be clearly seen. This is the finest joint for the tie-

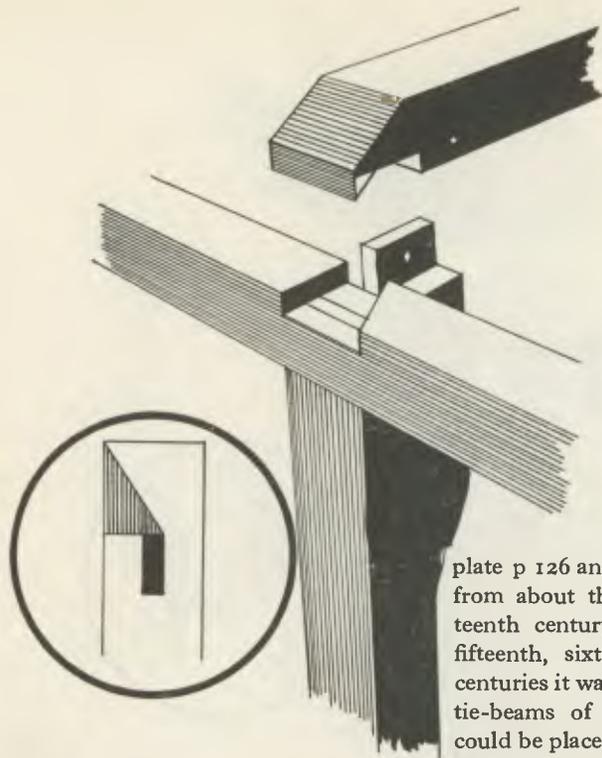
beams that I have ever seen, but it possesses one slightly archaic feature which assists in its dating; the 'set'—or angles of divergence—given to the 'tail', at **a**. This degree of set continued to be used throughout ensuing centuries until the middle of the fifteenth century, when it was reduced.



**Fig 98 Lap-dovetail joint.**

This tying joint is used for the Cressing Granary, and is also the tying joint which became invariable for the remaining years of carpentry; the tail has a 'set', or divergence-angle, of one-in-seven inches. This moderate set had less tendency to damage the matrix, but it requires a high degree of accuracy of fit to achieve the necessary unwithdrawable character desired of the joint. This

type of tying joint is seen throughout the seventeenth-century buildings of New England, and it will normally be found in plates that have bladed scarfs. An interesting and very important development, which is clearly shown in the inset, is the moving of the jowl-tenon to one side of the tail; in this position it does not detract from the central fibres of the tail, which happened in all earlier forms of this joint.



**Fig 99 Bare-faced lap-dovetail.**

This is the joint used for tie-beams throughout the belfry at Margareting,

#### THE DEVELOPMENT OF TYING JOINTS

The only primitive tying joint among those cited, was that which formerly existed in one of the barns at Belchamp St Paul's Hall; here, in the totally 'reversed' barn, the top-plates were laid into trenches cut from the upper faces of the tie-beams. Two carbon 14 analyses produced closely spaced dates, AD 1353 and AD 1413, and so a really early ascription for the building had to be abandoned, but it

plate p 126 and was quite widely used from about the middle of the fourteenth century onward. During the fifteenth, sixteenth and seventeenth centuries it was invariably used for the tie-beams of gables, since the 'set' could be placed away from the ends of the adjacent top-plates. The example drawn is from the barn at Thurrock's Farm, Clavering, Essex, and is probably of *c* AD 1400.

remains a fact that this method of construction is the most archaic seen, and I assume, therefore, that this barn stood at the end of a long and ancient tradition. So far as the range of this work is concerned, tying joints begin with the Cressing Barley Barn, the joint for which is shown in Fig 94. This is an entrant-shouldered lap-dovetail which has proved amazingly efficient for its purpose. The barn has stood for 767 years and these joints have not been replaced; a few have

been augmented with fish-pieces, cut to a very similar joint that has a square shoulder.

The Wheat Barn at Cressing is tied with a joint that is the most logical development possible from that at the Barley Barn on the same site. This is a lap-dovetail with entrant-shoulders, shown in both perspective and plan in Fig 95. Some of these joints have failed, but their failure seems to be attributable solely to the great age of the timbers in which they are worked. It is interesting to see that, at *c* AD 1250, the 'set', or divergence-angle, of these joints is as subtle as shown in the plan drawing; it was going to be some centuries before 'tails' returned to such an effective 'set' as this. The object of the entrant-shoulders can only have been to avoid showing gaps, when, as was inevitable, the tails withdrew slightly from their matrices; and for this purpose they have been highly successful. These I regard as extremely fine joints and, as already noted with regard to the Rookwood Granary and the Blackmore belfry, they continued in use for superlative structures until almost AD 1500.

The tying joints at the Purton Green house are very similar, in that they also are cut to avoid shoulder-gaps when the tails slightly withdraw, as they necessarily would during the settling-down period of a timber frame constructed of green wood. The shoulders in this case are housed (Fig 96); a method equally effective and possibly a little superior, since the length of effective 'set' to the joint's lap is enhanced a little by this means. The comparable joint at Southchurch

Hall, Fig 97, is a lap-dovetail with over-squinted shoulders; evidently designed with the same end in view. The 'set' of this 'tail' is archaic by comparison with those at Cressing, and the jowl-tenons' mortises cut right through the fibres comprising the narrow, root, portion of the lap—the joint is, in this respect, a weak one. The importance of the sequence so far, is the fact that continuing perfection was the aim of the craftsmen, rather than immediate perfection which could not long endure.

The tying joints during the years between *c* AD 1280, when Southchurch Hall may have been framed, and the opening of the seventeenth century followed the type of dovetails noted at Southchurch, but invariably with uncompromising and square shoulders. In buildings of either the fourteenth or the fifteenth centuries, it is common to see gaps at the dovetails' shoulders, caused by slight withdrawal of the 'tails', but expense presumably precluded the cutting of elaborate shoulders that obviated these defects. As suggested previously, the fourteenth century was evidently a time for the trying of new ideas, and during this period some crown-post roofs were framed without any tying joints—they being calculated to stand like opened umbrellas. One such roof, which was built on a grand scale, formerly covered the barn at Malbrooks Farm, Mountnessing, Essex; like the barn at Belchamp Hall, this has now been demolished. The tie-beams had only rebates at their ends, were fitted between the top-plates, and were capable only of maintaining

the span constant against inward pressure from outside. Since this barn was intact until demolished, it must be assumed that its design and joints were correct, and functioned as designed.

Lap-dovetails were, however, the normal tying joint during the fourteenth, fifteenth and sixteenth centuries, and were applied to numerous points in timber frames that might be subjected to extension. One point in jettied house-frames to which they were variously applied, was the crossing of ground-floor top-plates by the binding-joists of the jettied first-floors. One example of this is shown in Fig 58, p 142, which illustrates the crossing of such a jetty-joist in the house formerly known as 'Makrons' in Ingatestone High Street. This house was certainly built late in the sixteenth century, and it is interesting to note that the dovetail illustrated has housed-shoulders, similar to those of the late thirteenth century at Purton Green. It can evidently be assumed that a minority of discerning customers were prepared to pay for efficient jointing in their houses throughout the history of carpentry.

During these centuries many barns that were outshot on both sides, had to be reinforced at the points where the outshot-tie-beams joined the backs of the principal-posts; at this point, lap-dovetailed fish-pieces were commonly applied. A minority of carpenters, like the man responsible for the Margaretting belfry, preferred the lap-dovetail in bare-faced form, although this joint is rather difficult to defend, structurally. Such a tying-

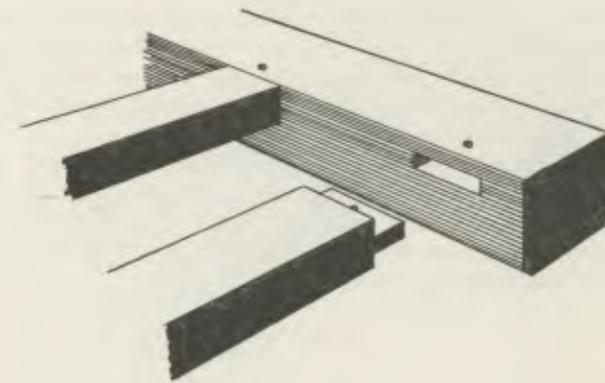
joint is illustrated in Fig 99 which shows the joint used to tie the main-span of the barn at 'Thurrock's' in Clavering. As may be seen in the circular inset to this drawing, the fibres forming the root of the tail are continuous, and undamaged by the chopping of the jowl-tenon's mortise; and it may well be that the joint was preferred for this reason.

The ultimate form for this tying-joint is shown in Fig 98, and this joint is taken from the granary at Cressing, dated AD 1623. It has, in this case, been realised that the root of the tail should not be cut by the jowl-tenon mortise, and this mortise has been chopped to one side accordingly; the complex of post, plate and beam therefore had been almost perfected at this point. The final improvement, the use of a pair of single tenons, one each side of the tail-root, has been seen in two buildings which are not illustrated: the post-mill at Aythorpe Roothing, and the barn—now demolished—at Cranes Farm, Basildon, and in the barn at Walkers Manor House, Farnham, Essex. It is possible that tenons used in pairs were the method peculiar to a school of long duration, since these occur in the belfry at Laindon of *c* AD 1300, the barn at Ladylands, Good Easter, of *c* AD 1400, as well as in the three structures just mentioned.

Tying-joints can tell little, therefore, concerning the date of a building, but they have varied considerably and if these variations are carefully interpreted, with proper regard to all other features, they can help greatly to avoid an ascription that is outlandish.

### THREE

## TABLE OF FLOOR-JOIST JOINTS



**Fig 100 Central tenon and mortise, pegged.**

This is the joint used to fit the common-joists at Priory Place into the bridging-joists. It is considered that this must date from *c* AD 1300, plus or minus a few years. It is, of course, basic, and has no claim to mechanical efficiency, since the strength of the joist is effectively reduced to the strength of the tenon. Should the joist

'rive', it is liable to tear close to the centre-line of its depth. Furthermore, the compression timber of the bridging joist is cut away by the mortise; thus both timbers are substantially weakened. This joint seems to have been used until the middle years of the fifteenth century, and occasionally appears concealed behind expensive façades.

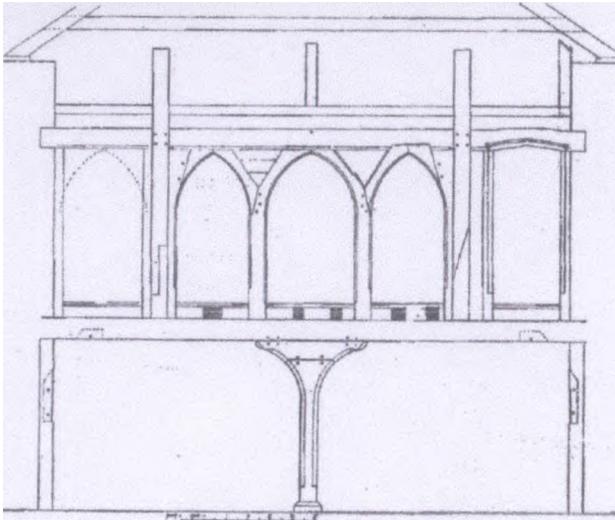
Fragment from the Journal of the Royal Institute of British Architects, 21 July, 1934, page 917 (Please excuse some infelicitous errors that crept into the reproduction.)

## Polsloe Priory, Devonshire

### AN EARLY SCARFED JOINT

Mr. A. W. Clapham, the secretary of the Society of Antiquaries, has forwarded some correspondence he has received with reference to an old wood screen in Polsloe Priory, about two miles north-east of Exeter, where a number of interesting discoveries have recently been made, including the foundations and a fragment of a twelfth-century church and a considerable portion of the building supposed to have been the guest house of the Priory attributed to the thirteenth or early fourteenth century.

At the south end of the guest hall on the upper floor is an oak screen of five openings (Fig. 1), the centre three of which are flanked by two of oak posts, which, in addition to supporting the screen, helped originally to hold the roof timbers immediately above them. The interesting thing about these posts is that when they were erected it was found necessary to lengthen them by 1 foot 3 inches in one case and



(Ftc. t)

2 feet 6 inches in the other. It is difficult to determine what made this necessary, because the original length was not over 8 feet, and there should have been no great difficulty in obtaining single timbers of that size.



)



ft.)

(Fits 2)

The joint of the two pieces that go to form each post is the most interesting thing about the screen, and is the earliest example of which we have record of a double splayed and halved scarf. It would be interesting to know if any member of the Institute has come across an earlier example, and if anyone can show when this scarf developed into its later and more perfect form, as shown in Fig. 2 (b), in which the feather ends are cut back to make a shoulder capable of hearing some of the weight.

Mrs. Rose-Troup, who has drawn Mr. Clapham's attention to this work, writes that "an effort is being made to preserve this specimen of domestic architecture, which is particularly interesting, as there have only been three nunneries in the county (Devon)—Canonsleigh, Cornworthy and this one.... The destruction of the remains of the Priory is threatened ... in order to build cottages on the site, so an effort is being made to persuade the City Council of Exeter to purchase the land upon which the building stands to be used as a park in the somewhat crowded area of Pinhoe." Our thanks are due to Mr. A. W. Everett, of Exeter, who has been responsible for most of the excavation and research, and who made the drawings which are reproduced here.