



ASSOCIATION FOR STUDIES IN THE
CONSERVATION OF HISTORIC BUILDINGS
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ASSOCIATION FOR STUDIES IN THE CONSERVATION OF HISTORIC BUILDINGS

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The Association was formed in November 1968 to bring together the past and present staff and students of the Diploma Course in the Conservation of Historic Monuments at the Institute of Archaeology in London. It grew fairly rapidly to its present membership of just over 100 by inviting other practitioners in conservation (mainly architects) to become members. Meetings are held in alternate months, and a Newsletter is published in the intervening months. Transactions or occasional papers will appear from time to time, the aim being to make them an annual publication. It is hoped that this first volume of Transactions will provide the impetus for more papers to be submitted on actual repair work - techniques and methods of repair of an historic building - case histories - so that there is some printed record of the solution to the individual problems presented by each structure.

TRANSACTIONS OF THE ASSOCIATION FOR STUDIES IN
THE CONSERVATION OF HISTORIC BUILDINGS.

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This issue of the Transactions has been produced in the Department of Architecture in the University of Manchester by Donald Buttress; The cover design of part of the High Street in Lewes, Sussex is taken from a drawing made in 1970 as part of a town study by a Second Year student, John Forrest.

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CONSERVATION AND THE ARCHITECT
R.G. Wood, FRIBA.

It is a privilege to be asked to speak to my fellow Members of the Association for Studies in Conservation of Historic Buildings.

We would not join an association for Conservation without knowing exactly what we mean by conservation - but I wonder whether it means exactly the same thing to all of us? To me it used to have a very special, rather narrow meaning. I now find that it has other interpretations. And a gradual change of meaning is creeping in since the coming of the Civil Amenities Act.

The Oxford Dictionary says conservation is "the act of preserving, - guarding or protecting; preservation from loss, decay, injury or violation; the keeping of a thing in a safe or entire state: preservation".

So, conservation means preservation. But listen to this extract from "Official Architecture and Planning" for February 1970:

Conservation is not preservation: it is preservation plus. The point needs to be stressed because dictionaries do not make this distinction, but the Civil Amenities Act does".

"Preservation plus what"? you may well ask. To quote again, from the same source: "Preservation is not concerned with development, but conservation is. The Act does not require conservation areas to be 'frozen' into museum pieces; it does however require attention to be given to their enhancement and improvement".

Before we can get very far in this study of ours it is clear that we need to decide exactly what we mean not only by the word Conservation, but by the various other words we use. words like preservation, restoration, consolidation, renovation, rehabilitation, reconstruction and many more. Restoration is notoriously misused. Preservation is simple. I am not quite

so sure about 'preservation plus'. Do you mind if we look briefly at some of these words and their meanings before we go on?

Back to the Oxford Dictionary. Conservation in its widest sense, in the way I think we mean it in the title of our Association, means preservation. I suppose we could have used the word Preservation in the title of our association.

There are various ways of preserving a building. I don't have to tell you that the very best way is by proper maintenance. Day-to-day care to prevent decay. Mending leakages as they occur. Painting wood and metal regularly for its protection. Removing weeds and growth from stonework. Keeping moisture out of the fabric of the building, because moisture is the greatest single agent in the destruction of buildings.

Constant care is without doubt the right approach to the conservation of historic buildings and should be the first responsibility of every building owner, particularly owners of historic buildings. But owners are not always sensible enough, responsible enough or wealthy enough to maintain their buildings properly. Maintenance is often neglected. Buildings fall into decay - they need drastic treatment. They need repair and this is sometimes where the architect appears on the scene for the first time.

But repairs are not only needed as a remedy for neglected maintenance. They can be needed as a result of movements in the earth on which the building stands, or movements within the building itself, often caused by the overloading of floors or by alterations made without consideration for the structural pattern of the building. They can be needed as a result of inherent defects in the building itself. Repair usually involves replacement of materials when they have decayed beyond serviceability or been stressed beyond their strength. Great care is needed in the replacement of decayed materials or the introduction of new strengthening materials if the essential character of the building is to be retained.

Sometimes, as a result of collapse or violent damage such as fire, earthquake, bombing in wartime, something more than repair is needed. It is sometimes necessary to rebuild.

You may find it difficult to accept rebuilding as a part of conservation but you may concede that partial rebuilding after partial destruction or collapse may be justified in order to preserve a whole building. I am not referring to monuments of great antiquity of course, but to buildings of architectural merit, particularly those of classical proportions which would be quite unacceptable visually, and probably functionally too, if left in a partially collapsed condition. Some of the city churches in London were practically gutted and partly demolished during the war and they have been largely rebuilt since. Most of us would have to admit that we prefer this to the alternative of their replacement by new churches of modern design. The campanile of St. Mark's in Venice was entirely rebuilt to its original design after its collapse. We may not go along with an entire rebuilding of this kind but I think we must accept the need to rebuild when rebuilding is necessary to preserve an architectural entity.

I think we could also agree that an ancient building might, with some justification, be rebuilt after collapse if the stones were still lying on the site and if photographs or measured drawings provided evidence for an accurate reconstruction. But all this is much more in the nature of restoration.

Restoration is a word that is used by the man in the street, although to him it usually means the whole process of preservation. The dictionary says "to bring back, or attempt to bring back, (a building), to its original state by rebuilding, repairing, repainting, amending, etc."

Very few buildings remain exactly as they were originally built. Alterations are made to suit changes in use; new parts are added, pieces collapse through neglect or are demolished. These changes, over the years, may spoil a building architecturally or improve it, according to the manner in which they have been made, according to the taste at the time, - and to our taste now. But these changes tell a story; a story about the building and its occupants. Restoration implies taking away some of these additions and putting back other parts, formerly removed. We must consider very carefully the value of any part before we allow it to be removed. We must decide upon the relative importance of antiquity and aesthetics before we begin. The most difficult decision we will have to make is the period to which we shall restore.

Restoration when related to work on 19th century churches can often be interpreted only as remodelling. I recently received a report upon a church which read :

"A mediaeval church, most attractively restored in 1880-1"... It went on to say that the architect encased the walls of the nave in random stone.... added a north-west bell turret, ... added a niche above the west window - for which he was also responsible. He also changed the appearance of the church by raising a steeply-pitched tiled roof over the former flat-pitched lead roof. The chancel was entirely rebuilt... "more dignified than before".

As the report implies, the work done in 1880 - 1881 is of excellent quality. I quote it only to indicate the way in which we use the word Restoration. In this sense restoration frequently has a derogatory meaning, especially when the work has been badly done, or overdone.

We could spend a whole evening talking about restoration and the ethics of restoration. Perhaps we could do this at some time in the future, but for now I suggest that it is dangerous to use this word in any other sense than "to revert to a former state".

Sometimes, in order to save a building from total destruction, it is necessary to convert it to some other use. A large house, too large to be maintained as a private residence, must either perish or be turned into a school or

some kind of institution. A church, no longer required for its original purpose, might become a museum or a library. Conversion is surely therefore an essential part of preservation and, incidentally, one which taxes the architect's skill, ingenuity and good taste to the utmost. There is a perpetual conflict between, on the one hand, the architectural needs of the building, - the preservation of its detail and character - and, on the other, its new functional requirements. Difficult decisions have to be made constantly and if, in the end, the building performs its new role satisfactorily while preserving its original character and charm, then the architect can be congratulated, - provided he has not exceeded his estimates.

Closely allied to conversion is modernisation, by which I mean the introduction of modern lighting, heating, lifts, fire escapes, fire appliances, and all those things necessary to the continued use of the building in modern times even without the need for any change in layout or structure. These engineering intrusions can cause havoc in an old building if they are not introduced with infinite care and tact. Tact is especially required in dealing with the engineers who install the equipment because they are not always aware of the finer qualities in old buildings.

In talking about rebuilding, conversion and modernisation, we have strayed a long way from the word conservation in its narrow sense, - the sense in which I have been using it for many years, meaning: "adding nothing, taking nothing away, merely consolidating; preserving in a sound condition, arresting decay, stopping the clock etc."

The need for pure conservation of this kind, without any element of restoration, conversion or modernisation usually implies that the building or monument has reached the end of its useful life and is being retained as a museum piece because it is old enough, and interesting enough, to be preserved for posterity. The conservation of buildings in this narrow sense is a very specialised technique and some of you possibly came here expecting me to talk about it tonight, but there are other architects who could do this much better than I can. In practice I take it to mean consolidating walls, removing vegetable growth, strengthening a weakened structure, keeping out the weather, doing everything possible to stave off decay. Most of the architects engaged only on pure conservation of this kind are employed in the Ancient Monuments Branch of the Ministry of Public Building and Works. But that is not to say that conservation in this sense is not important to private architects or to anyone else involved in the care of old buildings. In this narrow sense it is an essential element in every one of the other treatments I have mentioned tonight. It is probably the most important ingredient. It expresses an attitude which the architect and the builder, and all who have to deal with old buildings, must adopt before they can do any of these things successfully. The jobbing builder, in maintaining and repairing old buildings, must think conservation. The architect, in restoring, converting or modernising an old building must think conservation. They must go about their work with the

full intention of saving everything it is possible to save, "adding nothing" that can be omitted, "taking nothing away" that can be left, "consolidating and preserving" as much as possible. This is not the way of many of the jobbing builders I know, and it is not the way of some architects who have not had the benefit of any special training or experience in this field. We could all tell stories of atrocities committed upon old buildings by unsympathetic and inexperienced builders, surveyors, and, I fear, architects.

Architects are trained to be creative. A man probably chooses to become an architect because he is, by nature, creative. But in work of this kind he must not express his creativeness - it is not wanted. It is dangerous. Someone else has created this building, a long time ago. Today's architect is its custodian, he must interpret the author's wishes. Bernard Fielden said of York Minster: "I feel much more like a conductor reading a score than the composer".

The average builder is brought up on straight lines. He is trained to use plumb-bob and spirit level to check everything he builds. When an old wall leans, twists or bulges he may want to straighten it up for you. Brought up on cavity wall construction and damp proof courses, he might well condemn any wall which is without them. So, for this kind of work we need a special kind of builder - one who is sympathetic to the buildings themselves and willing to recognise this essential element of conservation.

This breaking down of preservation into its several parts should help us, firstly, to agree upon our definitions. Secondly, it should help us to formulate some sort of agreed ethical code of procedure - under each of these headings - because you cannot possibly lay down a rule which is equally appropriate to the treatment of, say, a prehistoric monument and a 19th century mansion. And thirdly, it should help us to recognise these basic elements in every job we have to do. Work rarely comes to an architect neatly, in these separate parcels. Your repair will probably involve some rebuilding, your conversion will contain some element of repair and restoration.

The extent to which true conservation is thought and practised will determine the success of these operations. Whenever there is a failure in a restoration or repair you will probably find that this essential element, this attitude of true Conservation, is missing.

I have taken a long time and have come a long way round, but I hope I have now been able to express what I feel is important about conservation as it applies to old buildings.

STRUCTURAL CARPENTRY IN THE MEDIAEVAL HOUSE
C.A. Hewett.

It is uncertain at the present time what types of roof-framing preceded the scissor-braced, and secondary-raftered categories of roofs which are both undoubtedly common during the thirteenth century. It is equally uncertain how long the notched lap-joint was in use in England, but as a result of carbon¹⁴ dating at Cressing¹ we can be quite certain that such joints were well developed, toward a refinement of profile, by c.1200; and a possibility therefore exists that cruder forms of notched-lap were used during the twelfth century. Two of the earliest roofs reported to date² are framed with barefaced lap-dovetails, and have vee-struts above their collars, as a result of which any reasonably sure succession of roof-types and structural methods must, for the present, commence at the opening of the thirteenth century.

Hybrids, or combinations of these types, are always interesting inasmuch as that they tend to indicate the periods of transition from one to the other type, of either. Such a case was reported in 1965 when certain roof-couples were exposed in a hall complex in the Lower Ward of Windsor Castle, and these couples can be dated to between c.1220 and c. 1250, as stated in the publication cited. The fourteen rafter-couples were scissor-braced without collars and they were fitted by means of three different joints - for none of which the carpenters employed by Henry III showed any preference. This fact must be of great importance, but cannot be fully interpreted as yet owing to a dearth of roofs for comparisons. One couple from the Windsor roof is shown in fig. 1, and both notched-laps and barefaced lap-dovetails can be seen in the drawing; upon certain other couples in this roof full lap-dovetails were also combined with notched laps. The triangulation at the eaves is unsure with regard to this roof, and is omitted from the figure. A freedom to choose, or combine, three different lap-joints is demonstrated by this example, with regard to royal carpentry, during the second quarter of the thirteenth century.

The relationship between such scissored roof-couples, which are commonly found above stone walls, and secondary-raftered couples that are normally found above timber-framed walls has

also been a little vague so far as evidence is concerned, but the recent examination of the roof at Kersey Priory's Hospital proved these two types to have been contemporaries - since they are combined in that roof. This is illustrated in fig. 2, and the main couples which are paired have secondary-rafters while the common-couples are scissored, with collars; all the lap-joints being barefaced dovetails. During this same period of change and uncertainty, it seems, the scissored roof to the capella-extra-muros of Coggeshall Abbey was constructed, to the order of Abbott Benedict in c.1215-1220. One couple from this roof is shown in fig. 3, having 'secret' notched laps at the scissors' feet and barefaced lap-dovetails at their tops. This secret form of the notched lap appears to have continued in use until the penultimate decade of the century, when it was superseded by the chase-tenon on the rare occasions when scissor-braces were fitted - as at Bisham Abbey Hall⁴ - at this late date.

A timber floor belonging to this period, is that in the stone-wing of Chesterford Manor House, ascribed to c.1225 and illustrated in fig. 4. This example is lodged, resting upon a reduction in the thickness of the masonry, and its bridging-joint is mounted on a samson-post; above which is the scarf shown in fig. 5. This is the splayed-and-tabled scarf in its earliest form, lacking the transverse key, and therefore needing support from beneath. This is undoubtedly the floor-type that relates, historically, to the scissored varieties of raftering in roofs - unfortunately this oldest part of Chesterford Manor House was re-roofed in Tudor times and this probability cannot therefore be established. The final specimen of a secondary-raftered roof is that shown in fig. 6, over the open hall at Abbas Hall, Great Cornard, Suffolk. This roof was assembled with lap-dovetails which were barefaced, its top-plates were scarfed with the splayed-and-tabled joint; and it formerly possessed sole-bracing that was fitted with notched-laps. Over the service-doors, the voids for which are shown in fig. 7, a lodged floor was laid - extending only the single bay to the end-eaves. A likely date for this house is, in view of the capitals shown in fig. 7, c. 1275.

Secular, and domestic doors, dating from the last quarter of thirteenth century are very rare but the type of framing that might have been applied to such doors is shown in fig. 8. This comes, in fact, from the North door of Great Burstead Church; and although rather finely wrought for Manor House purposes it represents the top quality door of the Abbas Hall shape - and would not be too expensive for the openings shown in fig. 7. During the final quarter of the thirteenth century it seems that the double-framing of roofs was developed, either with side-purlins as at Cressing Wheat Barn⁵ or by means of a central, collar-purlin; as in the nave-roof of the church at White Roding⁶. With the introduction of the collar-purlin came the crown-post, examples of which are shown in fig. 9, which illustrates the complete frame of Priory Place at Little Dunmow, in Essex. The date of this building is entirely uncertain, but 1300[±] 25 years seems tolerably safe in view of the numerous structural archaisms of the framing.

In this building the purlins were carried by gable-studs to which they were braced, and the collars were thought to be rendered unnecessary by this development it seems. The very richly decorated frontage of this house is of great interest, as is its ground-plan of two bays, with a chimney-stack flanking the rear-wall; it was built to adjoin an earlier three-bay structure.

Place House at Great Bardfield in Essex was built for one William Bendlowes, a serjeant at Law to Elizabeth I, on April 15th 1554, as the inscription declares on one corner-post beneath a dragon-beam. The house is a little confusing in plan, since another building of uncertain date was incapsulated in it; the roof is 'ditched' as were a great many in this century and it is illustrated in fig. 31. The valley-plate is shown inset, and with it the perfect floor-joint used here for the first time known - the tenon with diminished-haunch. This is a joint entirely modified to improve its load-bearing qualities. In about 1575, or 1585 - only the five is legible upon the carved and fully-framed fascia of its jetty, Raven's Farmhouse was built. It had a crown-post roof, as shown in fig. 32, of the simple type which was the final phase of such posts; and serpentine-braces in the upper gable. These last were for decorative purposes alone, since cut across the grain of the timber and structurally weakened as a result. Such bracing flourished only during the last quarter of the sixteenth century, in Essex.

Moat Hall at Chevington in Suffolk, which is shown in fig. 33, was built, probably at this time - although its date is uncertain. Its chimney-stack was previously dated somewhere in the close of this century, and it could have been a stack of the first build. It is a house of rectangular plan divided into the three normal mediaeval areas, and having an open hall originally. In Fig. 34, are shown two sections, one an end-frame with the sixteenth century chimneys, and the other a section across the hall before it was laterally divided; but the most salutary feature of its frame is emphasized in fig. 35, which is its North elevation. As is indicated by the two sets of storey-posts shown in black, it had at the first, either a smoke-bay into which the stack was subsequently built, or a chimney-bay, which is marked by the double posts at the 'high' end of the hall. The scarfing used there could well indicate a date during the final decade of the fourteenth century, but no other features would substantiate such an ascription.

Uncertainty, upon the parts of both clients and carpenters, is apparent during the closing years of this century, and it persisted into the next for some time. In fig. 36, is shown a perspective of the frame of the Crown House at Newport; this was built or rather begun, with a view to a chimney-bay to contain its main-stack, but before the front-wall of the second storey was framed the idea had been dropped, as a result of which only the rear-wall had a jowled story-post on one side of the stack - and only the first-floor had bridging-joists each side of it. The roof was built in three bays. Ideas concerning house-plans had crystallised, however, at the time Doe's Farmhouse was built, at Toothill in Essex. The frame of

this is shown in fig. 37. Not only was it a two-part plan, with keeping-room and kitchen either side of a central stack; but it also had a stairs-wing, from the outset. It must date from c. 1590 I suspect, but proof is lacking. A door from this house is shown in fig. 39, it is formed with two planks having cymaplaned edges set one each side of a humped middle plank; the result is a prototype for the 'creased' or 'shadow'-planed door which was only to become general for about a century, but which was to be exported into the New World, where numerous examples survive. This technique must derive from earlier church doors, in which all the planks were commonly moulded, from the early fourteenth century onward.

The scarfing of these years was of the final type, face-halved and bladed, as shown in fig. 39, an example from the granary at Cressing Temple - a building dated by inscription to A.D. 1623. The framing of this building is shown in fig. 40, and it is an important building upon three counts; it has the bladed scarf already mentioned, it is precisely dated, and it has a spurred-joint for its floor-timbers. This 'spur' feature was another which was exported to The New World. The joint is shown in fig. 41. In this instance it is a tenon with housed shoulder, and a spur-bearing beneath the 'spur' is, of course, the pointed projection which involved the lower stria of the timber in the load-bearing function. This feature was what the noted French researcher, Henri Deneux, meant by his phrase: 'en réservant la "poulaine"', which occurs in his various writings upon this subject; although he noted the feature mainly in the context of 'waney' edges.

The next house illustrated is Bay Tree Farmhouse at Stisted, in Essex, it is of great importance being of two builds; that to the left of the drawing is late mediaeval with a crown-post roof, and that added to it, showing on the right, is a colonial prototype - for New England - having two bays with facade gables, and a side-purlin roof structure. The added build should date from sometime during the second quarter of the seventeenth century, and the earlier one from the final decades of the previous century. The type of house was introduced at about this time, c. 1650 perhaps, which had a storey-and-a-half in height - the attics necessarily being lit by dormer windows. The illustration of this example is fig. 43, Tinkers Green Farmhouse near Thaxted in Essex, and it is dated on the plaster to 1660. The use of prick-posts in its end-walls to support the main floor timbers, is another feature that occurred frequently in America; cases being e.g. the Blake House in Boston, Mass., and the Gedney House at Salem, also in Massachusetts State.

The principles of this type of house-framing were applied to some larger examples, such as Hyde Hall Cottages, shown in fig. 44, which are at Chatham Green in Essex. In this example the use of spur-ties occurs in the attic-rooms, to enable the provision of doors whose height passes the eaves-line of the roof. The outshot at the rear is, in this case, an addition of the early eighteenth century. Braintree's Old Manor House which is shown in fig. 45, is an example of high style in timber-building, and style deriving largely from

mediaeval precedents. Its date is unsure, but the third quarter of the seventeenth century is proposed for it. The knees beneath the jetties are carved on their outer faces with the helix-ornament, which became very popular at this time in both church and domestic framing. The joint used for its floor-joists was, in contrast, remarkable; it is shown in fig. 46, and can be defined as a soffit-tenon with augmented, or over-squinted shoulder. As a joint this is undoubtedly ingenious, but it is mechanically weaker than the preceding examples, since it removes the top arrises of the main-beam concerned. Examples of this joint are known in this locality until c.1740.

A frequent device in Connecticut and Massachusetts was the 'hewn' - jetty. An example of this technique is shown in fig. 47, from Reepham in Norfolk. The projection of the first-floor was, in these buildings, contrived by cutting the lower part of the storey-posts back from ground-sill up to the jetty-level. The building is not dated, but has a corruption of the perfect joist-joint, which is shown in fig. 49. This is the soffit-tenon with diminished-haunch the whole of which is housed in the primary beam - thereby defeating its own purpose, since the compression-wood is wasted. 'Thatched Cottage' at Elmstead Market in Essex, shown in fig.49, is a mature English specimen of the New England house, with central-stack, and two rooms and one attic on either side of it. The wind-bracing was in this building reduced to the eight straight braces placed in the first-floor corners - as in early American houses over a wide area. The final diagram, fig. 50, shows the ultimate degradation of floor joist-jointing: the butt-cogging. When this began is as yet unsure, but the oldest known specimen of the joint in New England is at the aforementioned Gedney House, in Salem, Massachusetts, dated to 1660 by documentation. A date close to this is proposed for this development in England - unless upon this occasion, we imported a development from the New World.

If this evidence can be summarised, briefly, it indicates that roofing in timber-frame had evolved a long way; in the early context of coverings for masonry walls, and that flooring in such cases had little need to develop since it could be lodged in place as the buildings rose. In cases where the area was found too great, support from series of posts, sometimes one above the other, was employed; as in the White Tower, London. In this example the posts have been replaced, but it is clear that no alternative principle could have been used there originally. This method was mirrored, in small scale, during the thirteenth century; in the Manor House at Chesterford, and the West Tower of the church at Wethersfield - a third example is known in Steventon, Berkshire. During this century the splayed-and-tabled scarf described was very widely used, possibly to the exclusion of other types then known, occurring for example in the side-purlins of Chichester Cathedral Nave-roof at the close of the century, and on the collar-purlin of the church roof at White Roding, in Essex, perhaps a little earlier.

The first half of the ensuing century - the fourteenth - saw the combination into new and more elaborate types, of the types of roof-frames that had been developed until that time. A good example of such hybridising being the nave-roof of the church at Laxfield, Suffolk; this has arch-bracing from short hammer-beams, rising to the intersection of its scissor-braces - indicating that the fitting of arch-timbers beneath collared roofs was at least as early in origins as were the chase-tenoned, and final form, of scissored roofs. From this point forward, throughout the Perpendicular period, scarfing declined, joist-jointing for integral flooring in timber houses developed; and the roof having exploited arching to collars, hammer-beams, and framing into seven cants resolved itself into fine camber-beamed roofs - like that to the nave at Saffron Walden.

En route to the ultimate, camber-beam roofs of this period, carpenters exercised their utmost ingenuity to form compounds of all the types of roofing that had been perfected during the preceding periods. Some notable results of this have survived: at Cressing, Gosfield, and Margaretting, with an unusual specimen over the nave at Bird-brook - which is eaves-bladed in principle.

The perfection of different categories of carpenters' joints, therefore, occurred at widely separated points in time; as a result of which it is unlikely that a timber building exists which incorporates the best joints of several categories. For example: lap-joints were most ingeniously exploited, it appears, during the Early English Period - or thirteenth century. Thereafter they were discarded, in favour of far more elaborate assembly methods on site. Scarf-jointing was probably at its most efficient - but inevitably its most costly also - throughout this same period. Thereafter it began to evolve into its shortest, and cheapest forms, culminating in the counter-bladed joint of the close of the seventeenth century. Flooring, as an integral part of a timber house-frame, seems to begin with the early H-plan halls cited, to develop up to the middle, approximately, of the sixteenth century, and thereafter to decline steadily, reaching its nadir at Salem, Mass., in 1660, with the butt-cogged joint. The bracing of wall-planes, wind-bracing, seems to be of relatively late inception, but rapid development and proliferation of braces - possibly culminating in the magnificent display of curved timber to be seen at Fressingfield, dating to c. 1330. This exuberance settled into the more functionally conceived type shown at Paycocke's, throughout the fifteenth century until its close, and then to have gone 'flamboyant' or 'wavy', as at Ravens (fig. 33) for three decades before being relegated to the inner surfaces of walls toward the end of the century. Ultimately, during the seventeenth century the wall-braces became primary members of the frames, as at Thatched Cottage, fig. 50, and the studding was affixed to the braces instead of vice-versa as before.

In fig. 10, the jettying at the Service-end is shown drawn to scale (along with the framing of the roof, and scarfing of the top-plates) and upon study of this drawing it can be seen that the overstealing common-joists were, in three cases, supported only by the floor-boards; since they did not rest on the top-timber of the wall beneath. This end of the house is shown in greater detail in fig. 11, inset to which is the mortise-and-tenon joint, unrefined, which was used to frame the ends of this floor into the lodged central portion.

The open hall at Tiptofts, Wimbish in Essex, which is shown in fig. 12, from which the two end-wings forming its present-day H-plan are omitted; is a structure designed more single mindedly than Priory Place, showing some years of experience in hammerbeam and crown-post roofing. This is generally dated to c. 1330, on the evidence of its numerous finely wrought mouldings, and splayed-and-tabled scarfing. The scarf-joint used is illustrated in fig. 13, it had at this date the refinements of under-squinted butts and a transverse key which, when driven, compressed the butts with great mechanical force. Probably the most efficient scarf, but one which proved to be too expensive in terms of both timber and skilled labour hours, it was modified by the middle of this century.

During the second quarter of the fourteenth century Baythorne Hall was probably built, at Birdbrook in Essex, and the complete frame of this house is shown in fig. 14. The proliferation of braces on the outer face of walls is well exemplified by this house, which is remarkable for the experimental nature of its first-floor. The two end wings, both of which are of the first build and clearly for service and solar rooms, have first-floors mounted on bridging-joists that are, in turn, mounted on a pair of samson-posts - these can be seen in the drawing by virtue of their jowled heads. They form no part of the wall framing, and merely support the floor. The common-joists are fitted into the bridging-joists by the joint shown in fig. 15; the barefaced- or soffit-tenon. This was the first modification of the tenon for the purpose of load-bearing in the horizontal plane. The series of steps by which integral and framed first-floors in timber structures was achieved are shown, for direct comparisons in the diagram numbered fig. 16. This summarises the matter by showing the wall-frames of four early houses, with one mature example of the fifteenth century. The ultimate in Decorated timber-framing, so far as Essex and Suffolk are concerned, is the building at Church Farm, Fressingfield, Suffolk. This is shown in fig. 17. The first-floor is, in this case, lodged; and may for that reason be an insertion. The most probable date for this structure is c.1330. A novel, and relatively weak; but undoubtedly cheaper form of scarf was used there and it is shown in fig. 18. It is a 'fished' - scarf, of which the third component constitutes the 'fish' - piece; this joint was not developed elsewhere so far as is known.

St. Clere's Hall in Essex, which is illustrated by its central hall-frame in fig. 19, has been carbon dated to 1450-60; and this decade saw the inception of the scarf-joint which combined splayed-halvings with bridled butts - thereby

paving the way for the scarf of the Perpendicular period. This is shown in fig. 20, and is defined as a stop-splayed scarf with square and vertically bridled butts, two edge-pegs and four face-pegs; it is a joint used but little since it soon became modified. An ancient roof-type which has not been found combined with timber-walling, in the domestic context, is that framed into seven cants as shown in fig. 21. This is a rafter-couple and wall-plate are from the chancel of the church at Pattiswick, and they are representative of a roofing tradition that continued for several centuries. One secular and domestic example is known at Clinton's Farm at Bury Green, Little Hadham in Hertfordshire.

From the closing years of the fourteenth century until the middle of the fifteenth few important developments occurred, and the next was the third modification of the joint for the ends of floor-joists. This joint exists in build number three of Paycocke's which is shown, in frame, in fig. 22. Twice jettied, and with coving of timber and plaster fitted beneath the upper projection, this structure had the joist-joint shown in fig. 23. The central tenon with both shoulders housed, a joint that weakened the bridging-joists too much, and which was not used upon many occasions since it was soon further modified. Scarfing through-out this period was by the edge-halved and bridle-butted joint, shown in fig. 24, which had developed from the form employed at St. Cere's Hall in the middle of the previous century.

A second phase of compound roof-types occurred during the central decades of the fifteenth century, and one inevitable result of this was the combination of central-and side-purlins; the example shown in fig. 25, is the granary of Rookwood Hall at Abbess Roding in Essex. This is a rare and important building, which is scarfed with a joint that was about one hundred and fifty years later to become the final form of its type - the face-halved and bladed scarf. Another compound of roof-types is shown in fig. 26, which represents part of the nave-roof at Borley church in North Essex. This combines crown-pieces upon arched-collars with tie-beams and crown-posts, terminally; while its common-couples are framed into seven cants. Other examples which combine the roof-types that had been perfected up to this mid-fifteenth century date are mainly confined to parish churches; but this development was mirrored in the building of rural hall-houses - as will be shown.

The final decade of this century saw the framing of Paycocke's 'Great House' along the street frontage of that side and designed in four parts; three of which conform roughly to mediæval precedents upon both ground-and first-floors; and the fourth provided a covered access for road vehicles and had double doors. The frame of this very important house is shown in fig. 28, and the innovation noted there is shown in fig. 29, the central tenon with housed soffit-shoulder which was used to frame all the Paycocke's floors. The wind-braced side-purlin roof was used widely at this date, and perhaps a quarter of a century later, in the house known as "Northbury" at Bury St. Edmunds the system was modified, as is shown in fig. 30.

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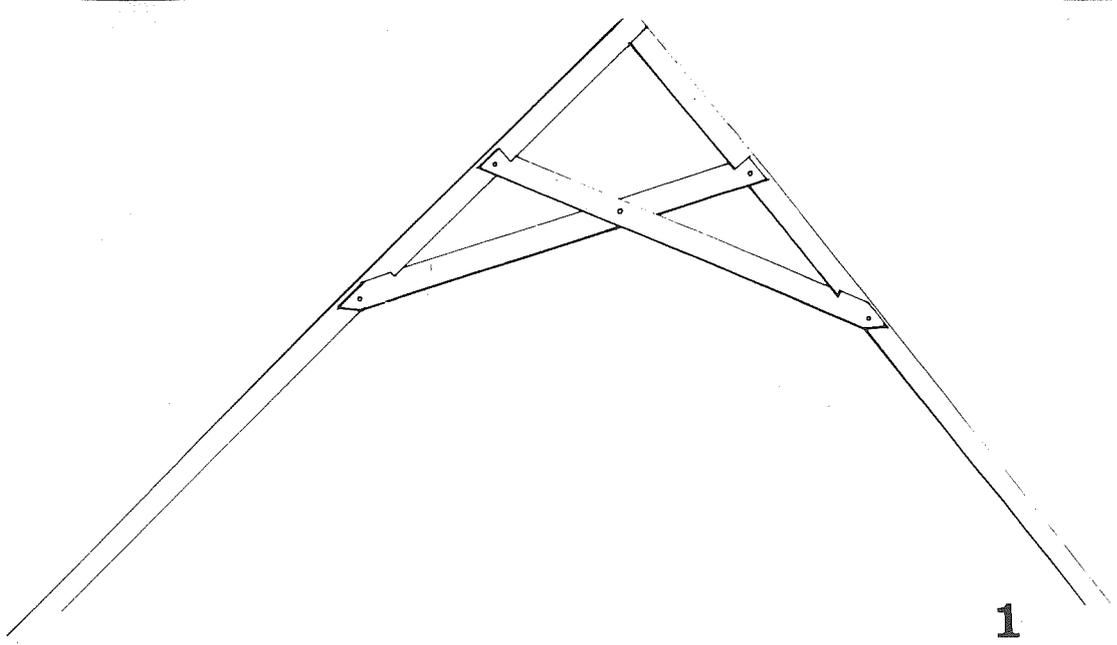
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The Text Figures.

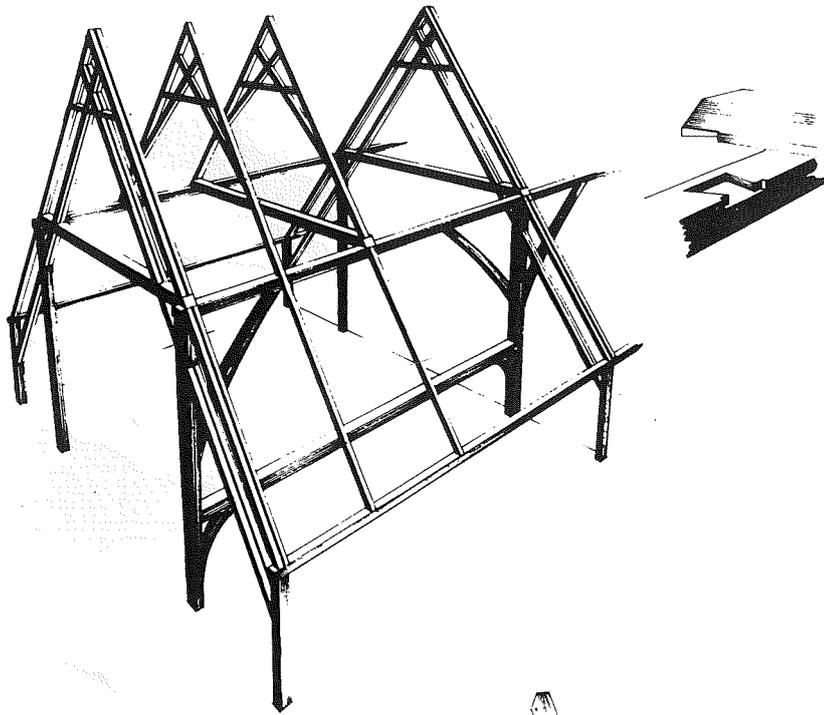
- 1 - A scissor-braced roof-couple from the Hall-complex in the Lower Ward of Windsor Castle. Notched-laps are used with barefaced lap-dovetails, the work is attributable to Henry III, between c.1220 and c.1250.
- 2 - The frame of the Hospital, founded early in the 13th at Kersey Priory, Kersey, Suffolk.
- 3 - One roof-couple from the Capella-extra-Muros at Coggeshall Abbey. Datable to c.1215 it employs secret notched-laps at the scissors' feet.
4. The first-floor fitted into the stone wing, now the service, and originally the Hall, at Little Chesterford, Essex; dated c.1225.
- 5 - The scarf-joint used for the bridging-joint at Chesterford Manorhouse; a 'Trait-de-Jupiter'.
- 6 - Two transverse frames of Abbas Hall, Great Cornard, Suffolk. Dated c.1275, with secondary-rafters.
- 7 - The opening for the missing service-doors at Abbas Hall.
- 8 - The rear-frame of the North door of Great Burstead church, possibly resembling closely the missing doors from Abbas Hall
- 9 - The entire frame of Priory Place, Little Dunmow, Essex.
- 10 - Scale elevations of the service-wing jetty-framing at Priory Place, showing doubled timbers (girths) and other details.
- 11 - The service-wing at Little Chesterford, its entire frame. The middle third of its floor is lodged, the two outer thirds are framed into it, by the joint, unrefined, which is shown inset.
- 12 - The frame of the open hall at Tiptofts, Wimbish, Essex.
- 13 - The scarf-joint, splayed-and tabled with transverse key and under-squinted square butts, used at Tiptofts. Period of use c.1240 - c.1340.
- 14 - The entire of Baythorn Hall at Birdbrook, Essex. This is of a single build dating to c. 1330.
- 15 - The joist end-joint used at Baythorn, a barefaced tenon, off the soffit.

- 16 - Diagram of five cross-wing end-walls showing the progress toward framed, and integral, timber flooring. 1. Stone-wing at Lt. Chesterford, entirely lodged, supported on samson-posts. 2, Baythorn Hall, mounted on two samson-posts, and independent of the wall-frames to some extent. 3, Tiptofts, half lodged, and half framed; jetty carried by short punchons and braces. 4, Priory Place, centre-bay lodged, end-bays framed into outer joists; jetty effected by doubling the girths. 5, Hill Farm, a normal and efficient mediaeval jetty, the floor is fully framed and an integral part of the building.
- 17 - The framing of the 'stable' at Fressingfield, Church Farm. Remarkable elaborate, and structurally decadent, c.1330.
- 18 - The 'fished-scarf' introduced at Fressingfield.
- 19 - Frame crossing the open hall at St. Clere's Hall; the spandrels are filled with plank, to resemble solid knees, as at Fressingfield. Carbon dated to c.1350.
- 20 - The Scarf used at St. Clere's Hall. Stop-splayed with square vertical, and bridled butts; this effected the transition from splayed scarfing to edge-halved in its many forms.
- 21 - One couple from the chancel roof at Pattiswic. church, framed into seven cants.
- 22 - Build no. 3, at Paycocke's House; twice jettied and coved at the gable tie-beam, of c.1450.
- 23 - The joist end-joint used at Paycocke's, for the building in fig. 22. Central-tenon with housed shoulders.
- 24 - The scarf of the Perpendicular period; edge-halved with bridled-butts.
- 25 - The granary at Rookwood Hall, Abbess Roding, Essex. Of c. 1450, this has a compound roof, both side-and centrally purlined.
- 26 - One bay of the nave-roof at Borley, Essex, church; this is also a compound of preceding types.
- 27 - The frame of Radwinter's Old Forge, in Essex. An example of an early Perp., hall-house without wings or jetties.
- 28 - Paycocke's House, proper. Coggeshall, Essex. This retains a three-part ground-plan, but with various additions including the carriage entrance, and the attic-floor.
- 29 - The joist end-joint used in Paycocke's House; a central tenon with housed soffit-shoulder.
- 30 - 'Northbury', a house at Bury St. Edmunds, having side-purlins framed into gable-studs and lacking collars as a result. It is of two bays, with flanking stack.
- 31 - Place House at Great Bardfield, Essex. Dated 1554 A.D. This introduces the perfected joist end-joint; and had the ditched roofing shown. The tenon with diminished-haunch is inset.

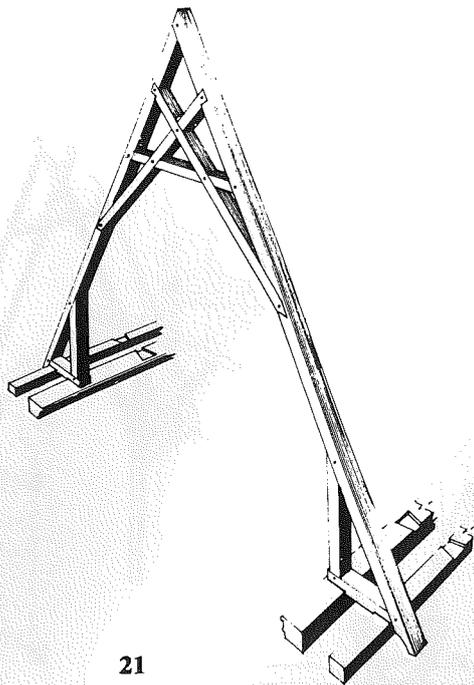
- 32 - The service-gable at Raven's Farmhouse, Ulting in Essex. Serpentine braces were fitted into the feature-gable.
- 33 - The frame of Moat Hall at Chevington, Suffolk. A hall-house in three parts, formerly open; and having a 'smoke' or chimney-bay -among other peculiarities.
- 34 - Two sections across Moat Hall: left an end-frame with stack, right, the hall-frame and service-partition.
- 35 - Moat Hall, a side elevation showing the cross-passage bay and the smoke-or chimney-bay; in black.
- 36 - Crown House, Newport, Essex. The frame, this has vestiges of chimney-bay framing which were never completed.
- 37 - Doe's Farm, Toothill in Essex. A two-part house with original stairs-wing at the rear, and a chimney-bay; the colonial prototype.
- 38 - A 'creased'-door from Doe's Farmhouse, of late sixteenth century character.
- 39 - The face-halved and bladed scarf, the joint used through the seventeenth century, and shipped out to Massachusetts.
- 40 - The granary at Cressing Temple, dated A.D.1623. Its frame.
- 41 - The spurred tenon, introduced at Cressing granary.
- 42 - Bay Tree Farmhouse, Stisted, Essex. With plan at lower right. Three bays on left: mediaeval, chimney-bay and two bays on right, seventeenth century.
- 43 - Tinker's Green Farmhouse, Thaxted, Essex. The storey and a half type of housing, dated to 1660. Two-part with central chimney.
- 44 - Hyde Hall Cottages, Chatham Green, Essex. The development of Tinker's Green, with spur-tied attic door-ways, and added outshut at rear.
- 45 - Old Manor House at Braintree, Essex. Much jettied, the helix ornament is introduced here, carved on knees. The floor used a new joint.
- 46 - The joint used for the floor at no. 45. The soffit-tenon with over-squinted shoulder.
- 47 - House at Reepham, Norfolk, with 'hewn'-jetty.
- 48 - The joist end-joint used at Reepham; with diminished-haunch, housed - and thereby defeated.
- 49 - Thatched Cottage, Elmstead Market, Essex. A colonial prototype, in every respect.
- 50 - The ultimate in floor-joist end-joints: butt-cogged. This relied upon over-size timbers for its survival.



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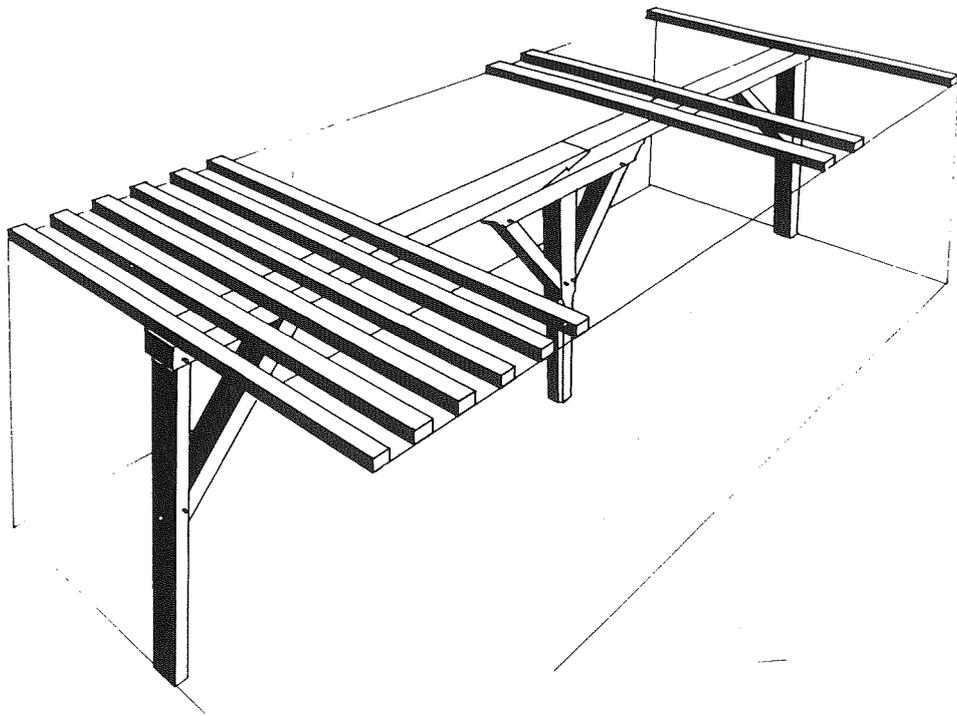


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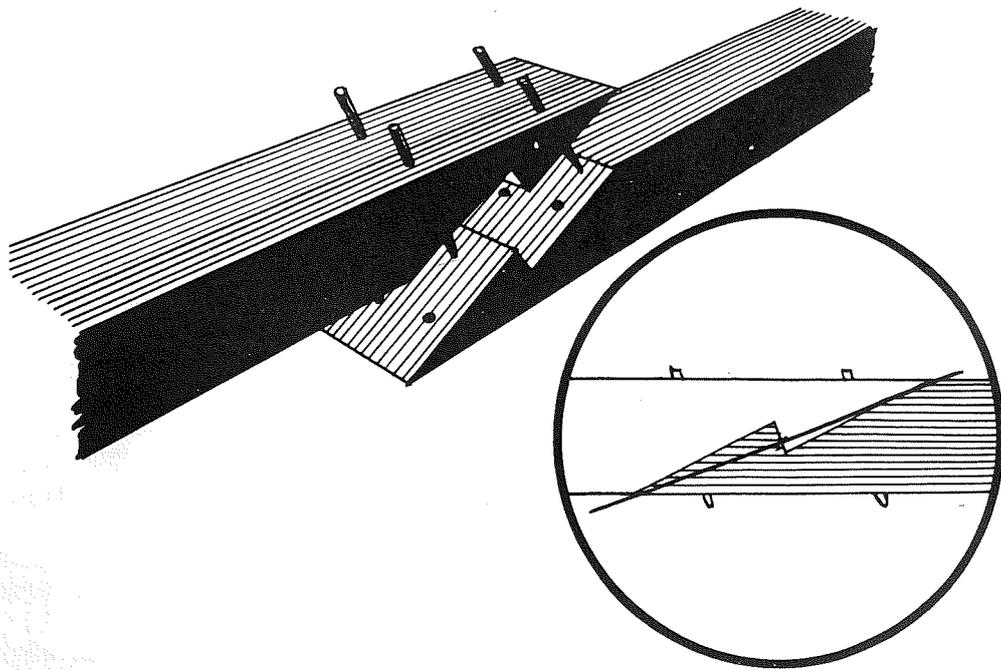


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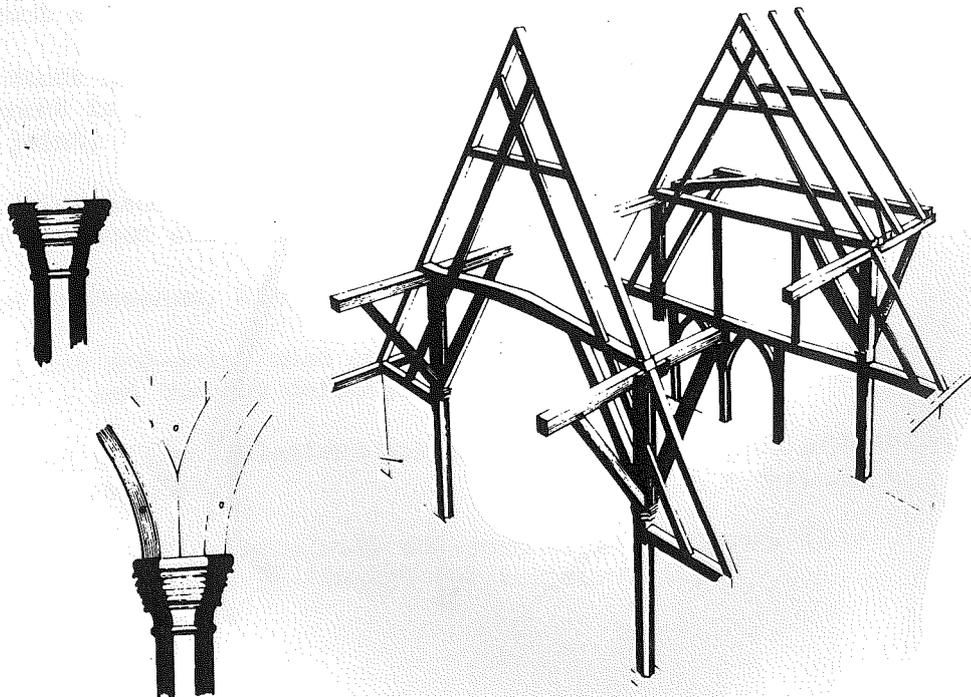
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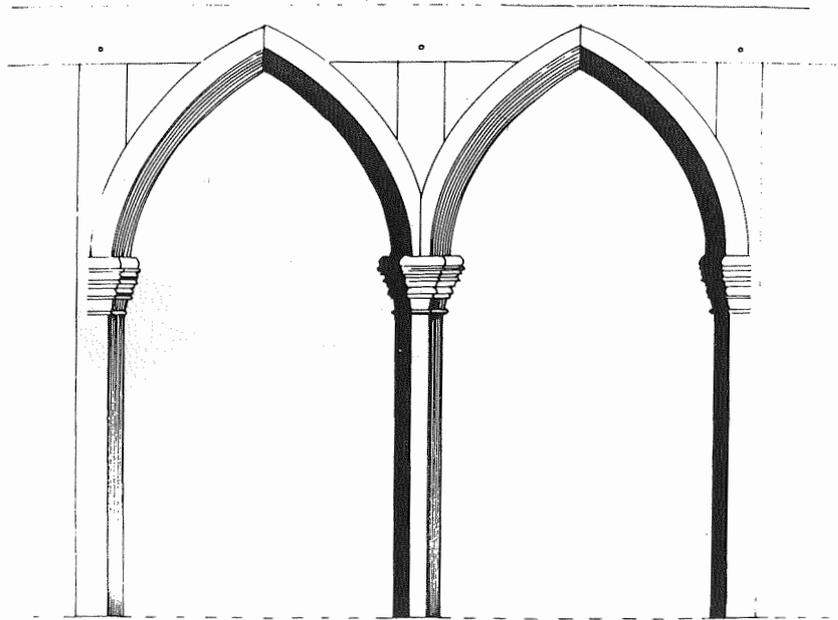
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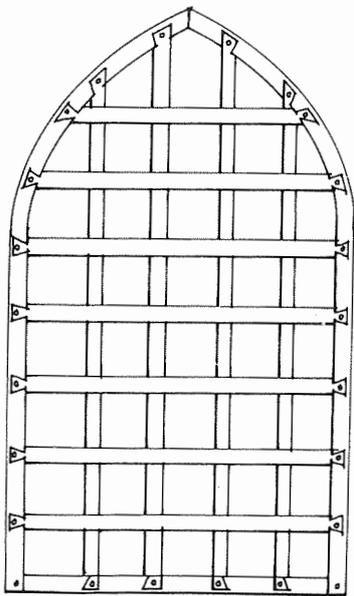
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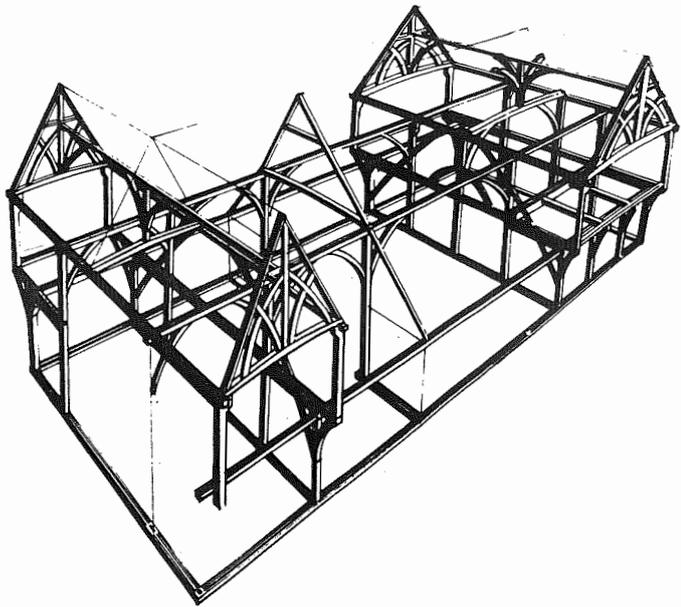
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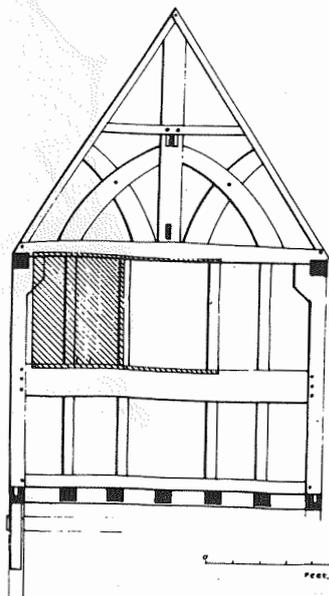
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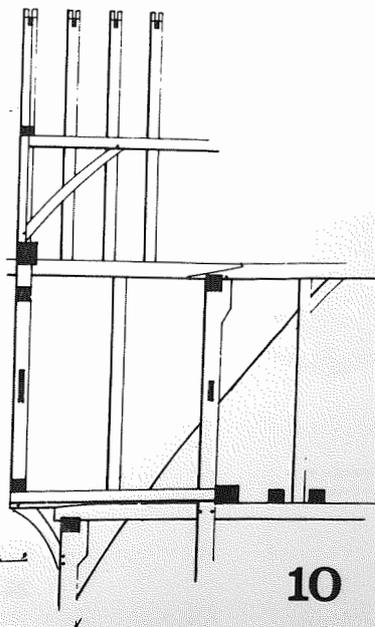
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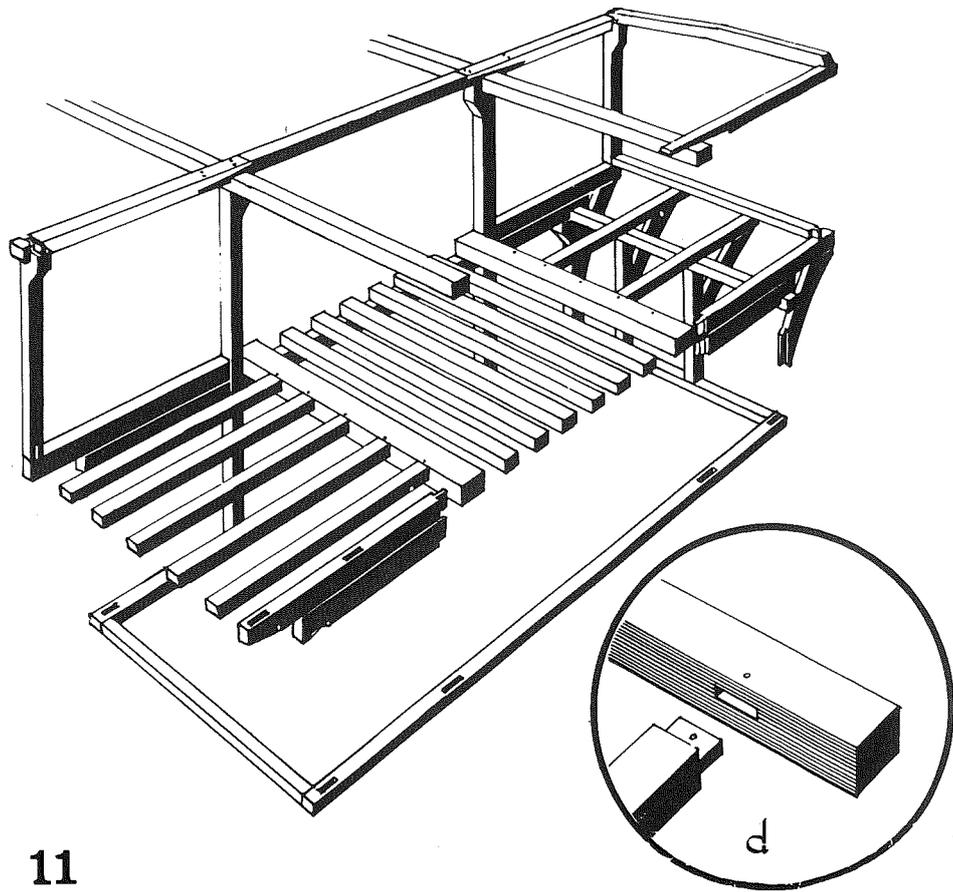
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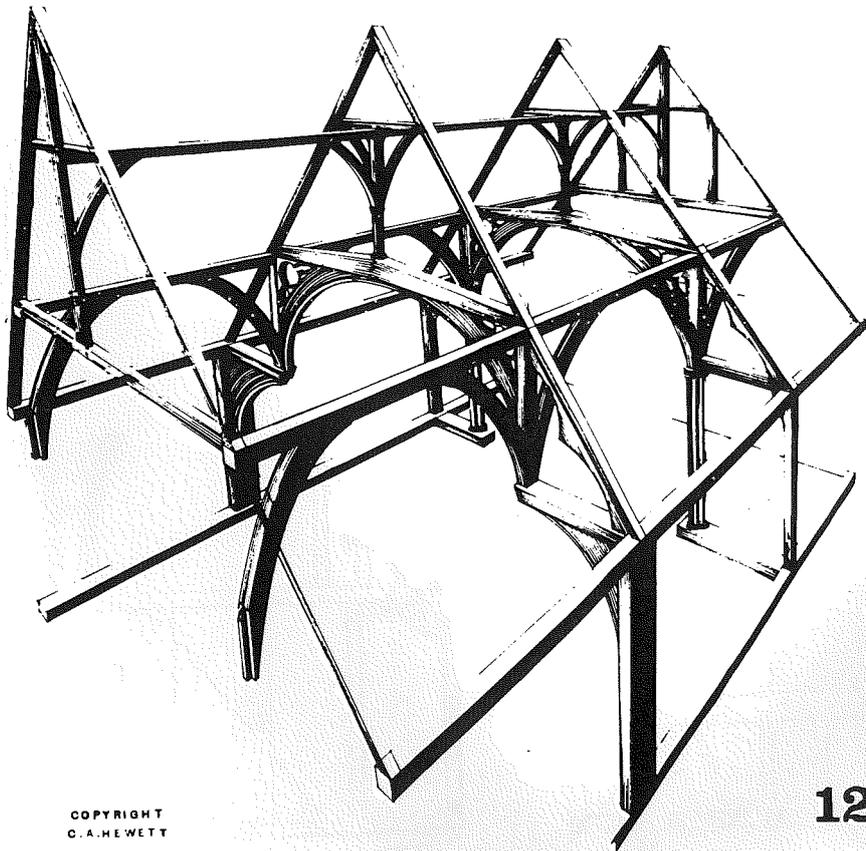
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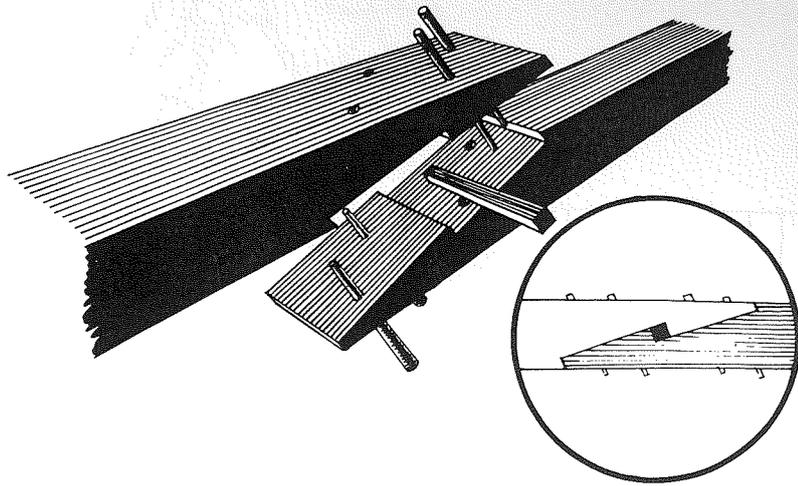


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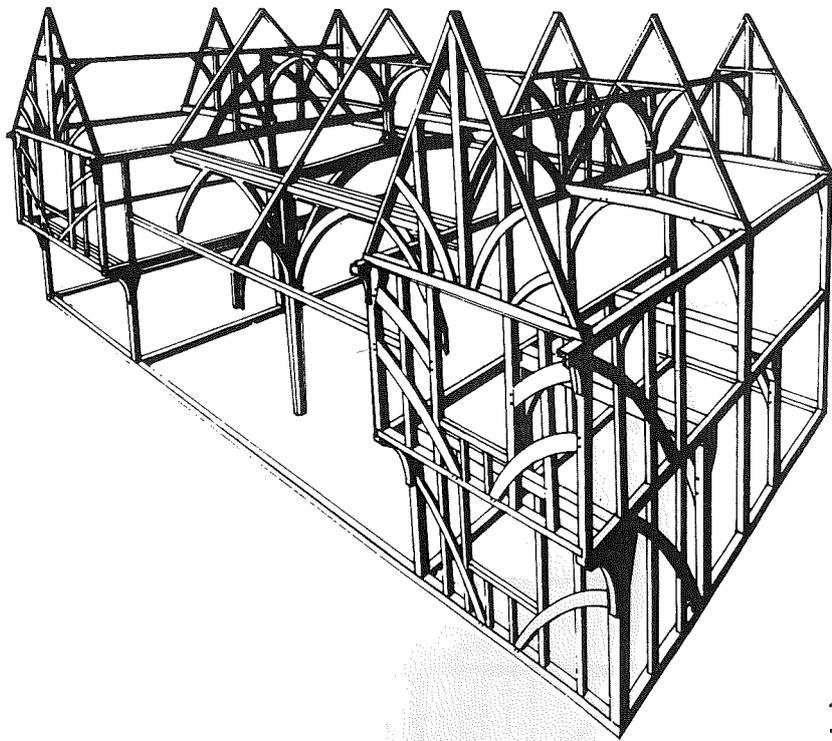


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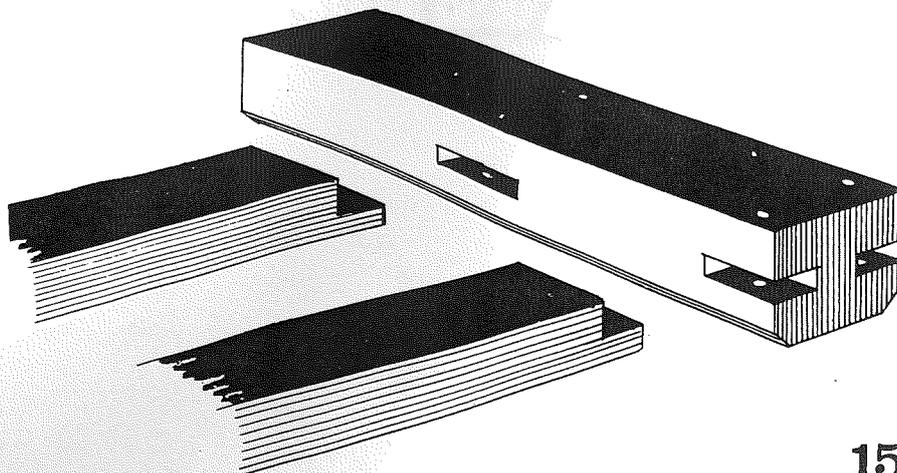
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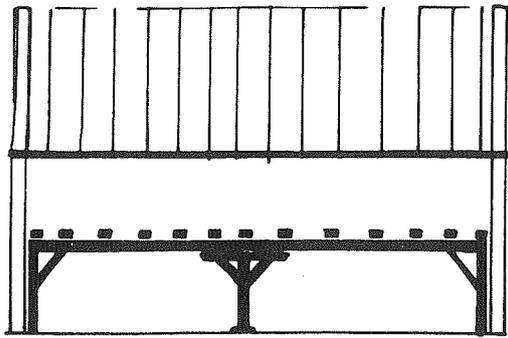
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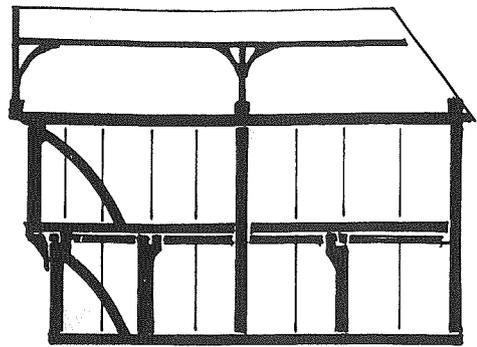
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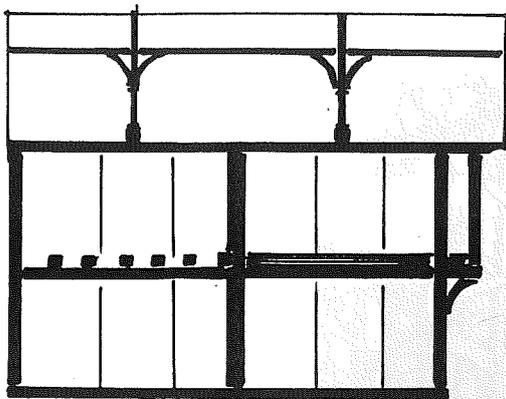
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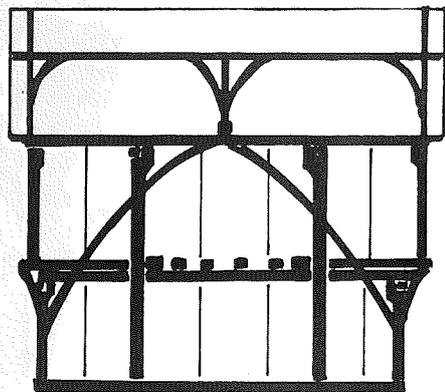
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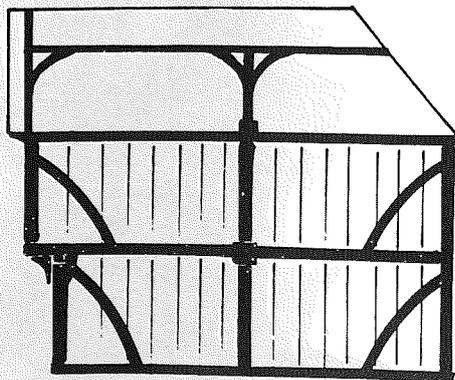
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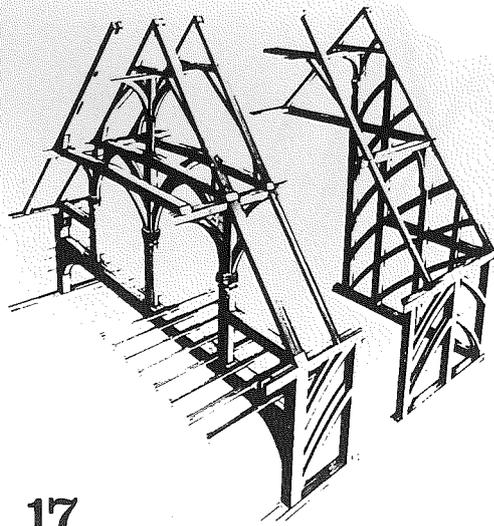


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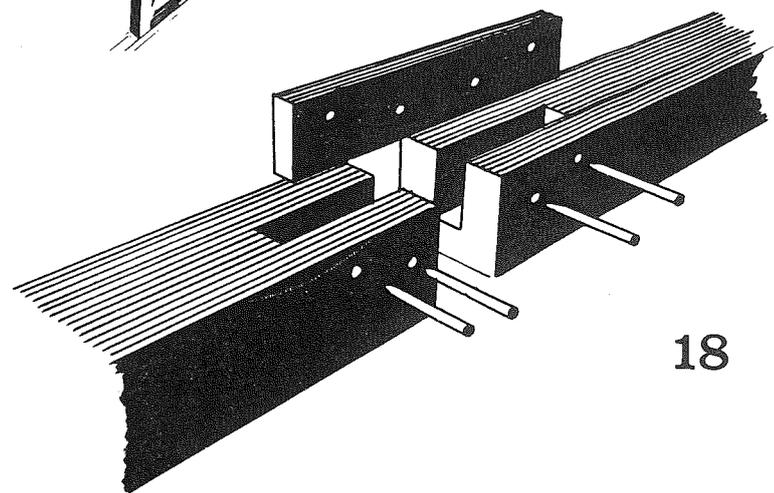


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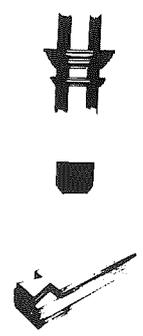
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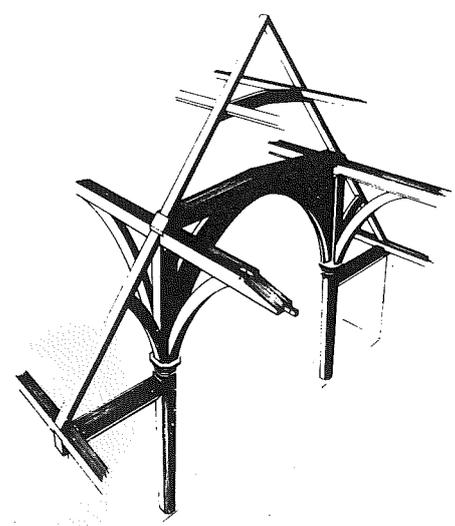
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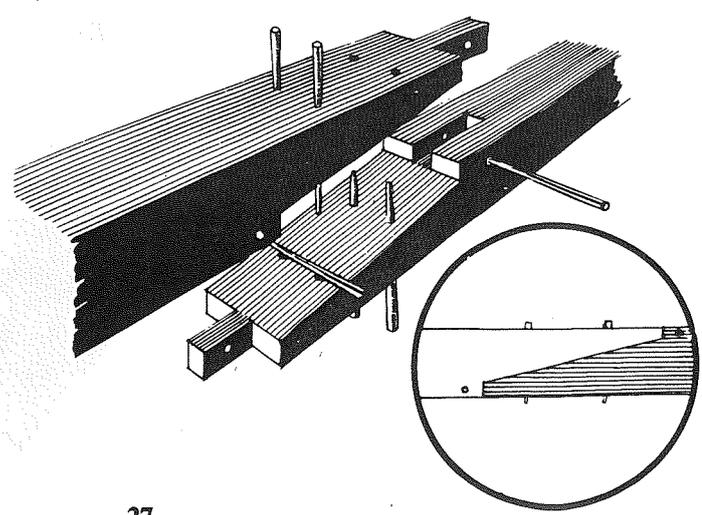
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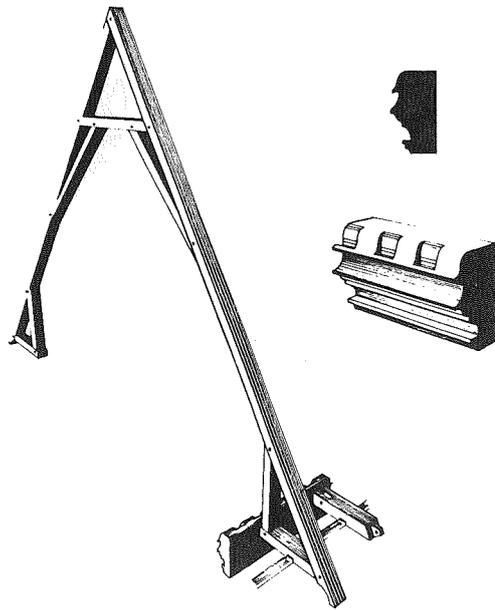


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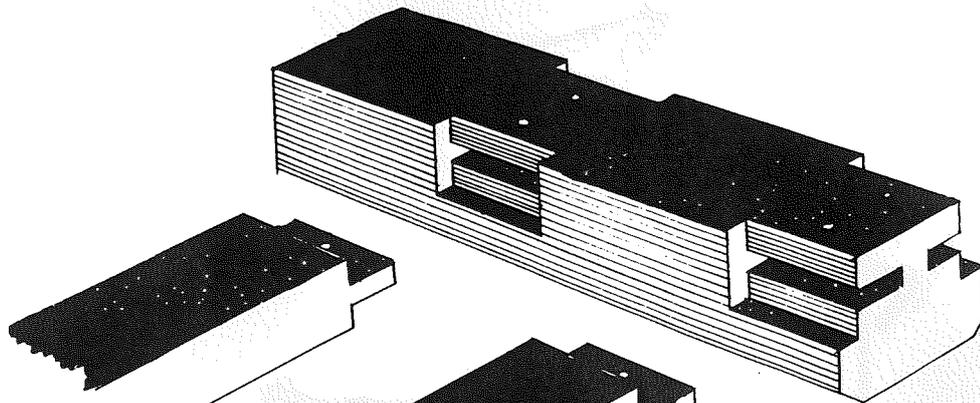




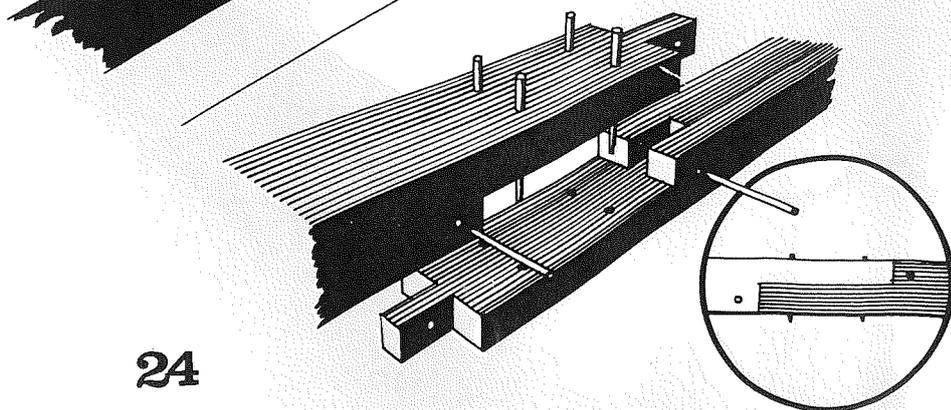
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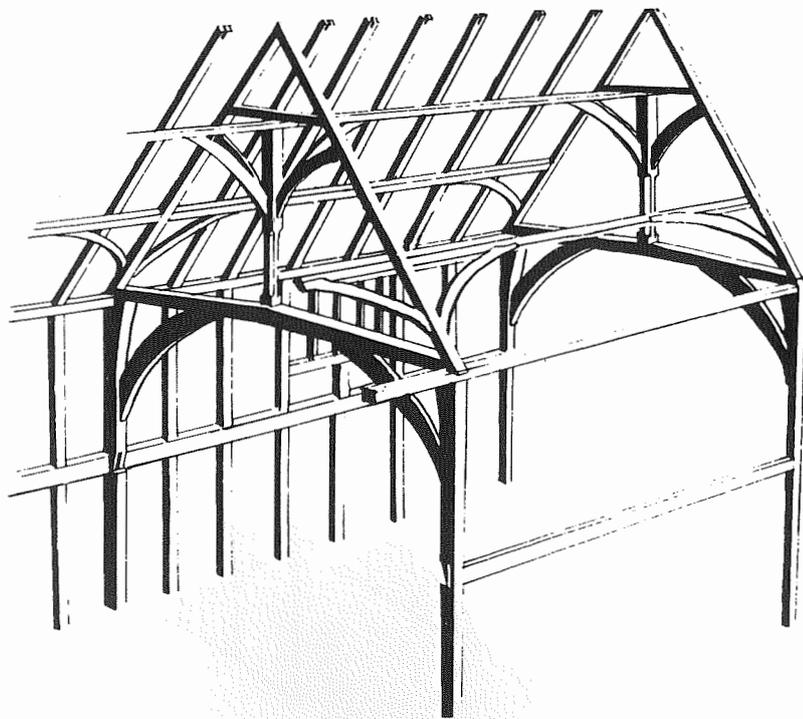
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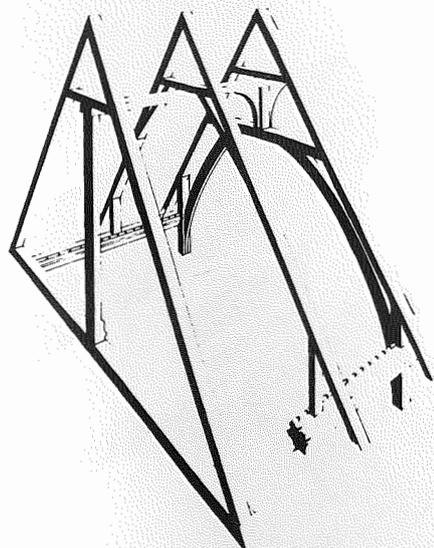
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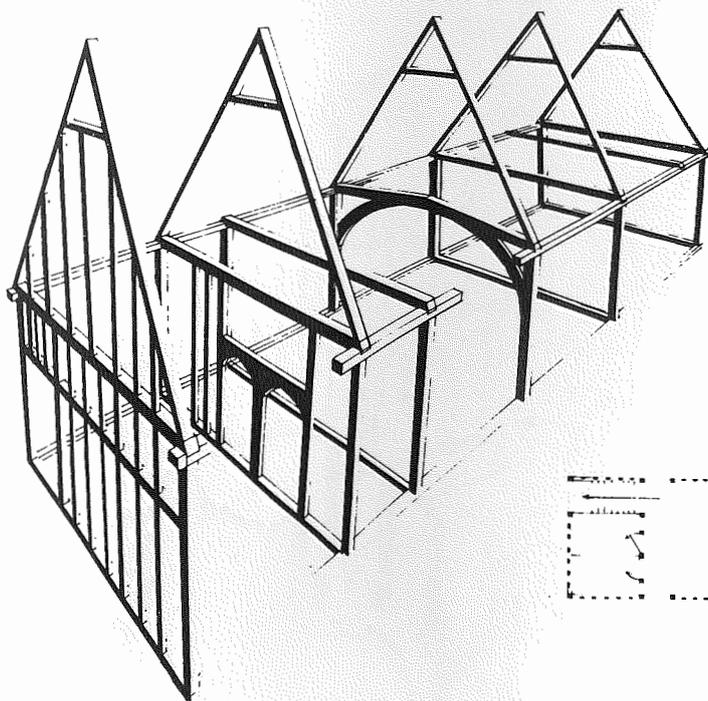
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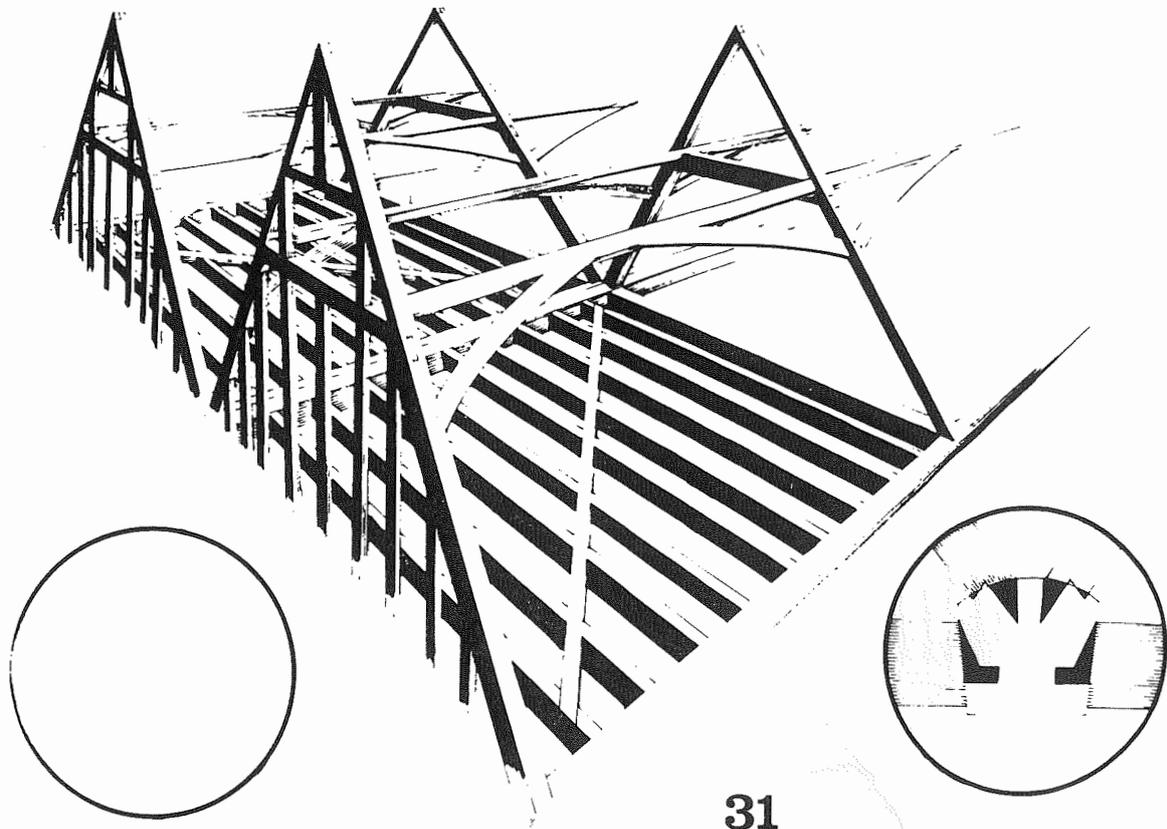


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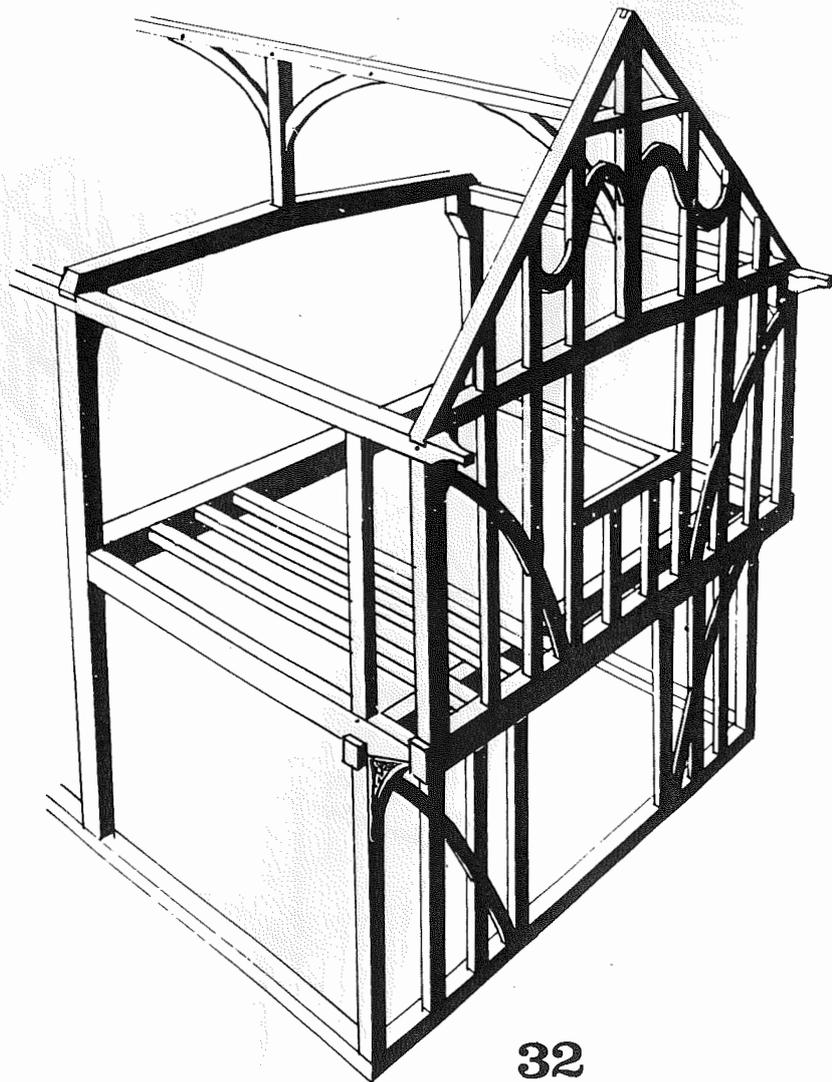


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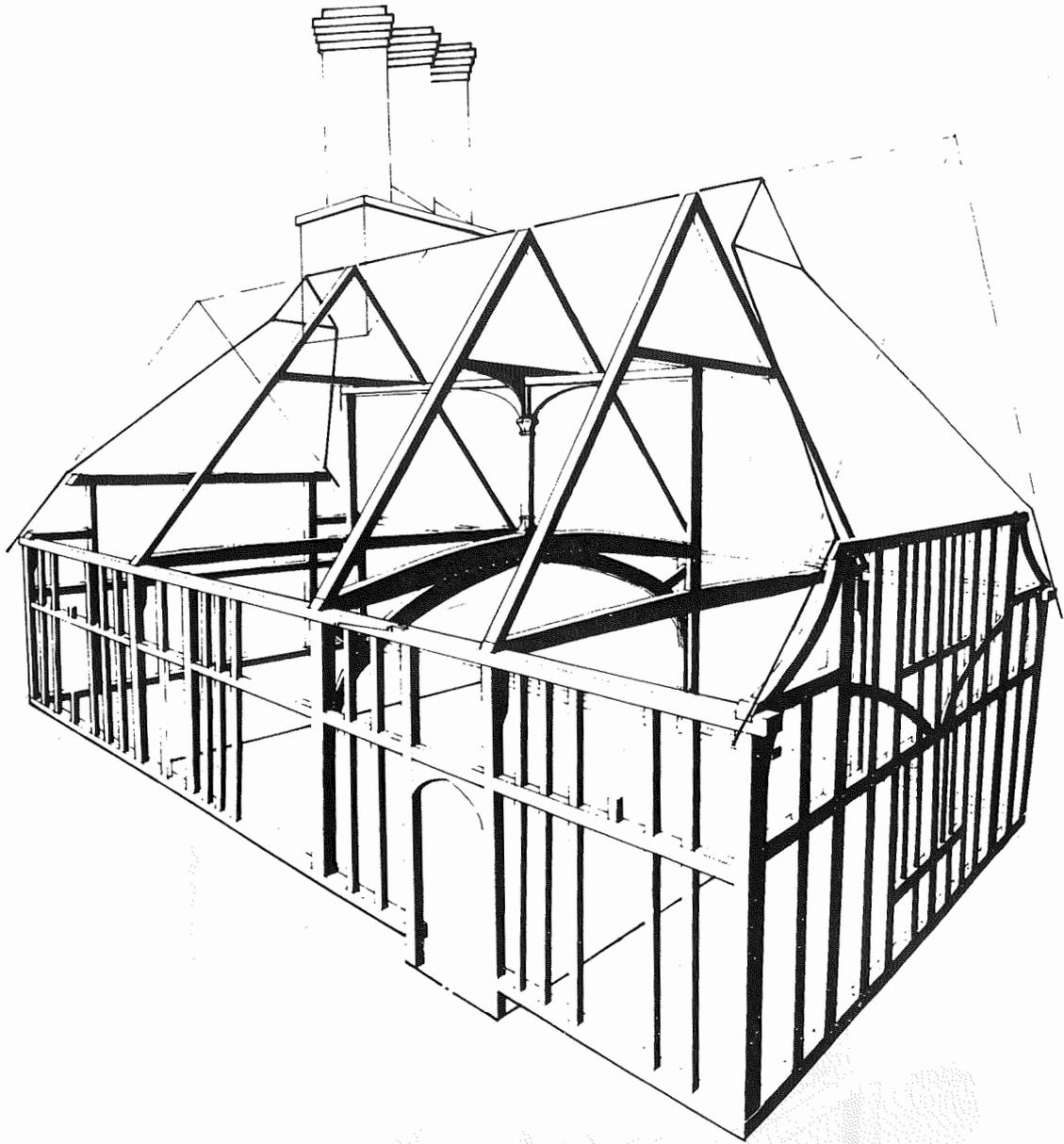
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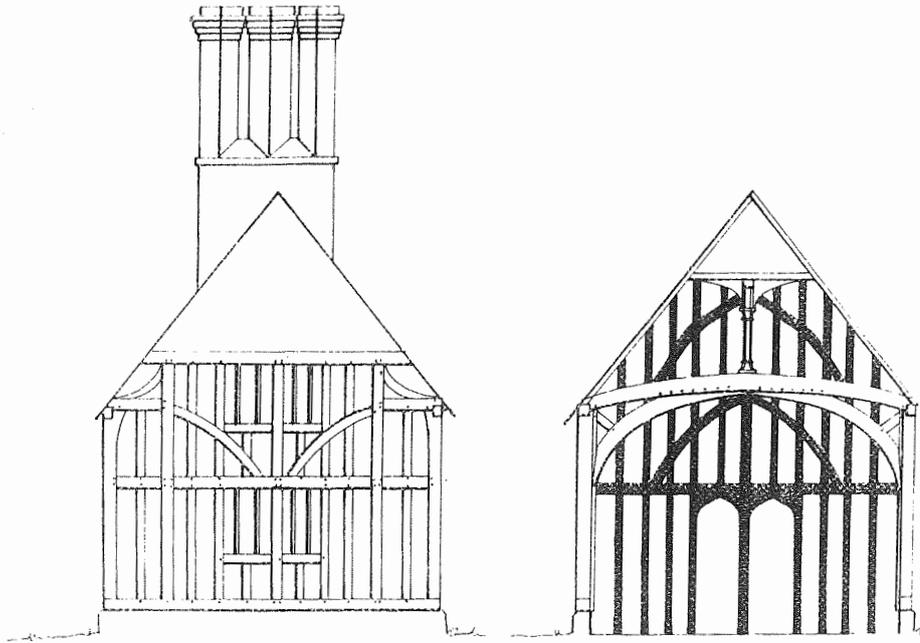
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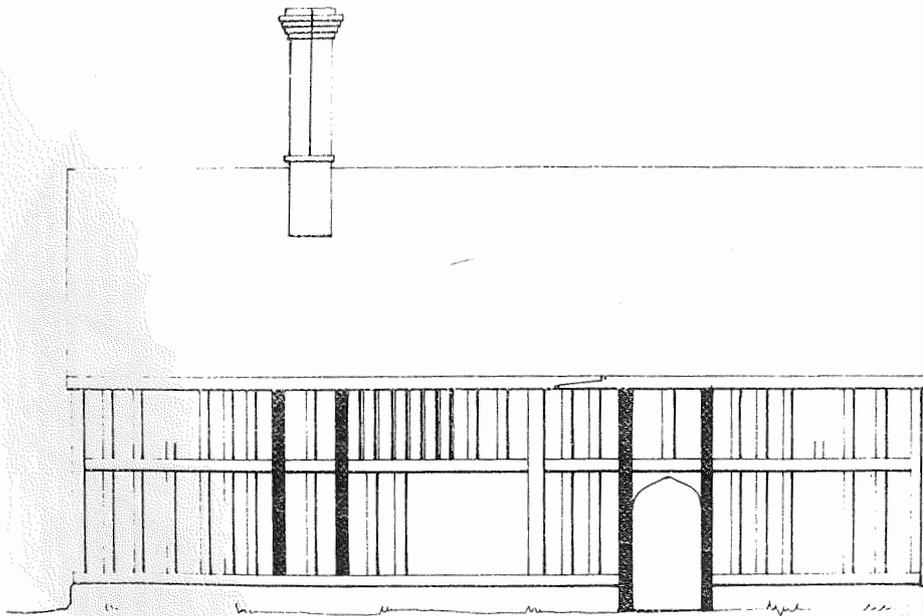
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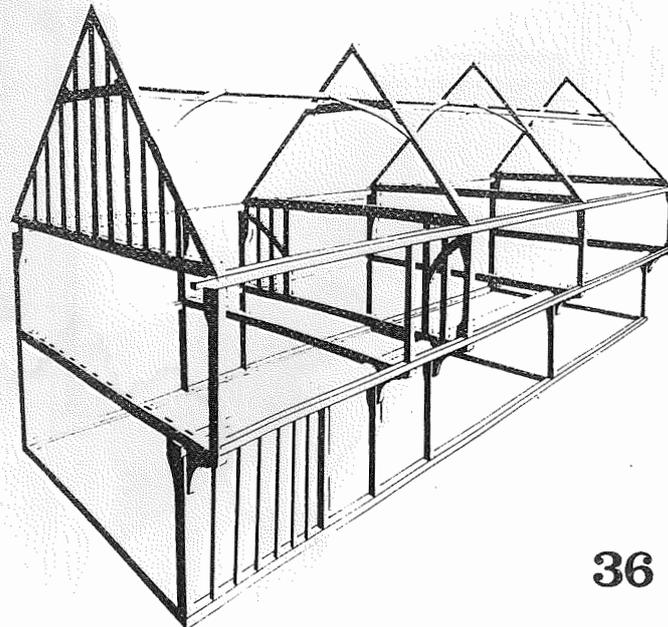
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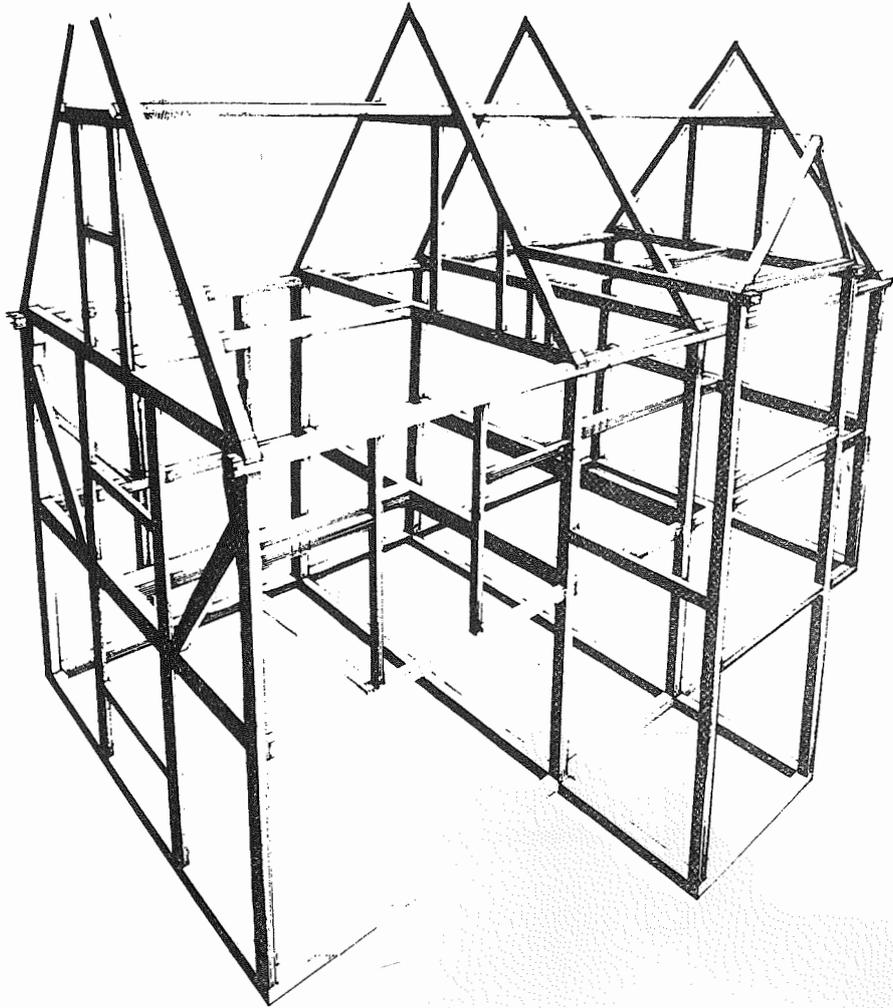
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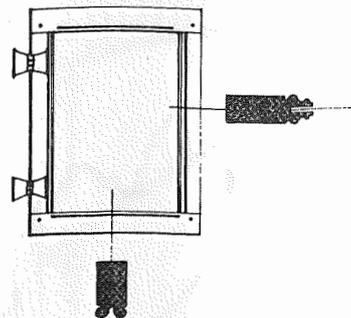
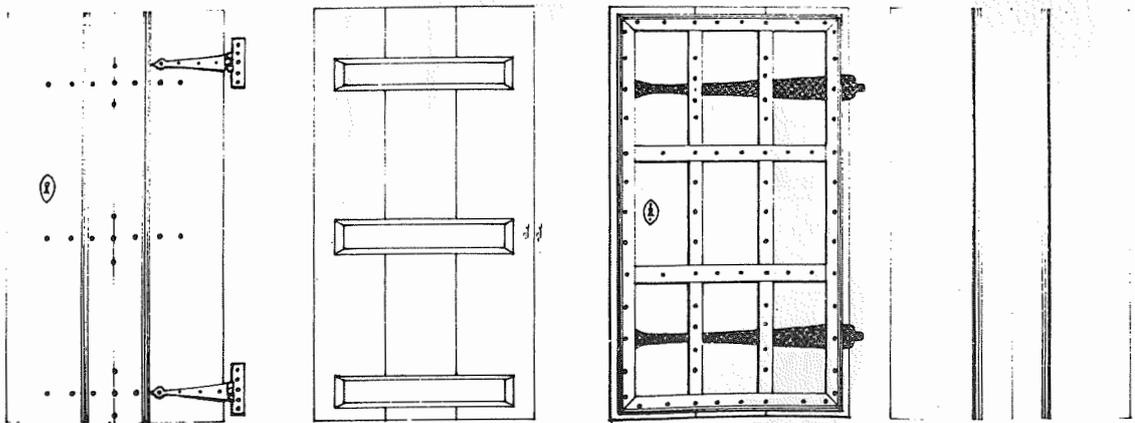
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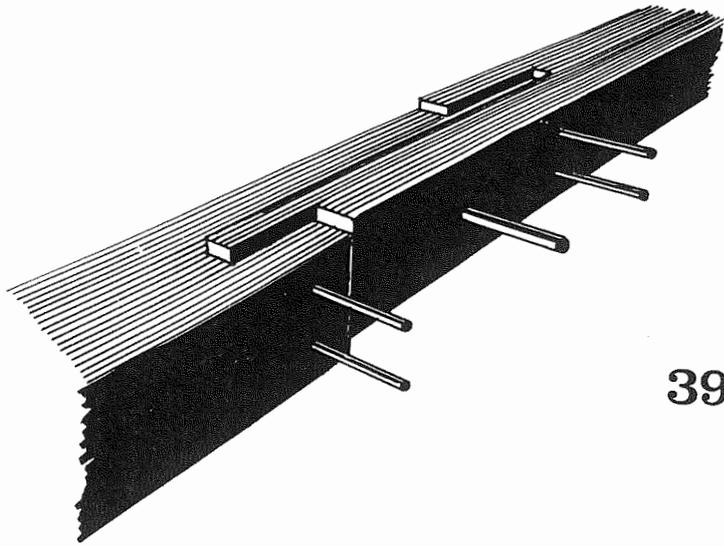


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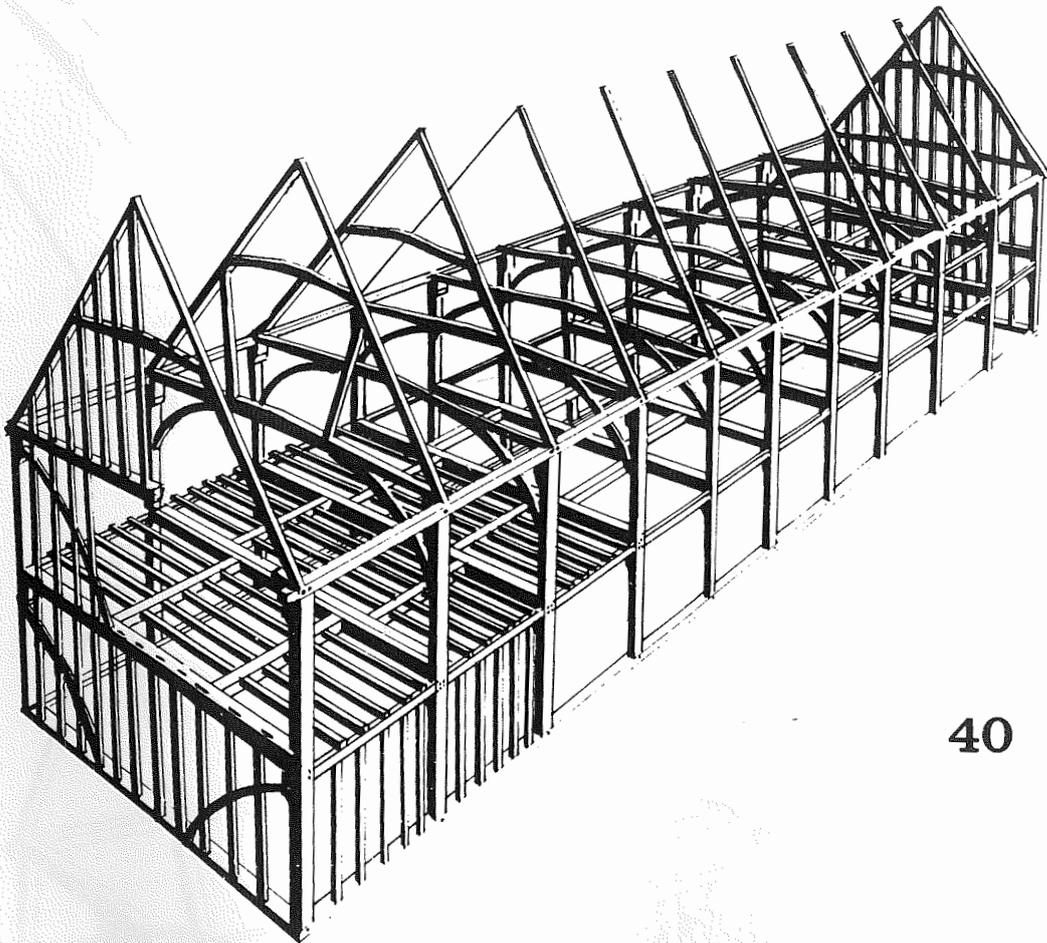


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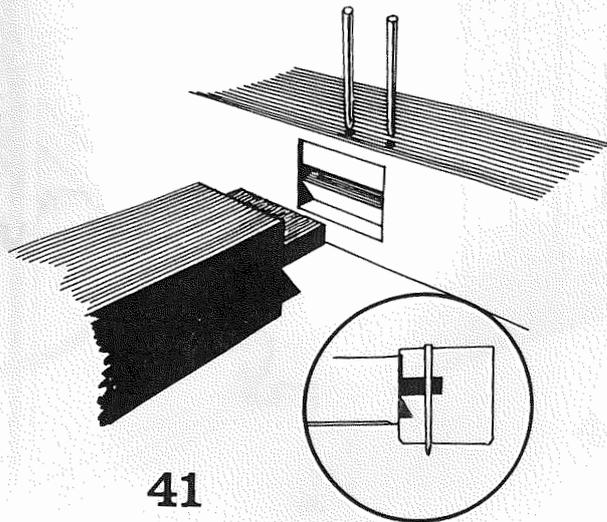
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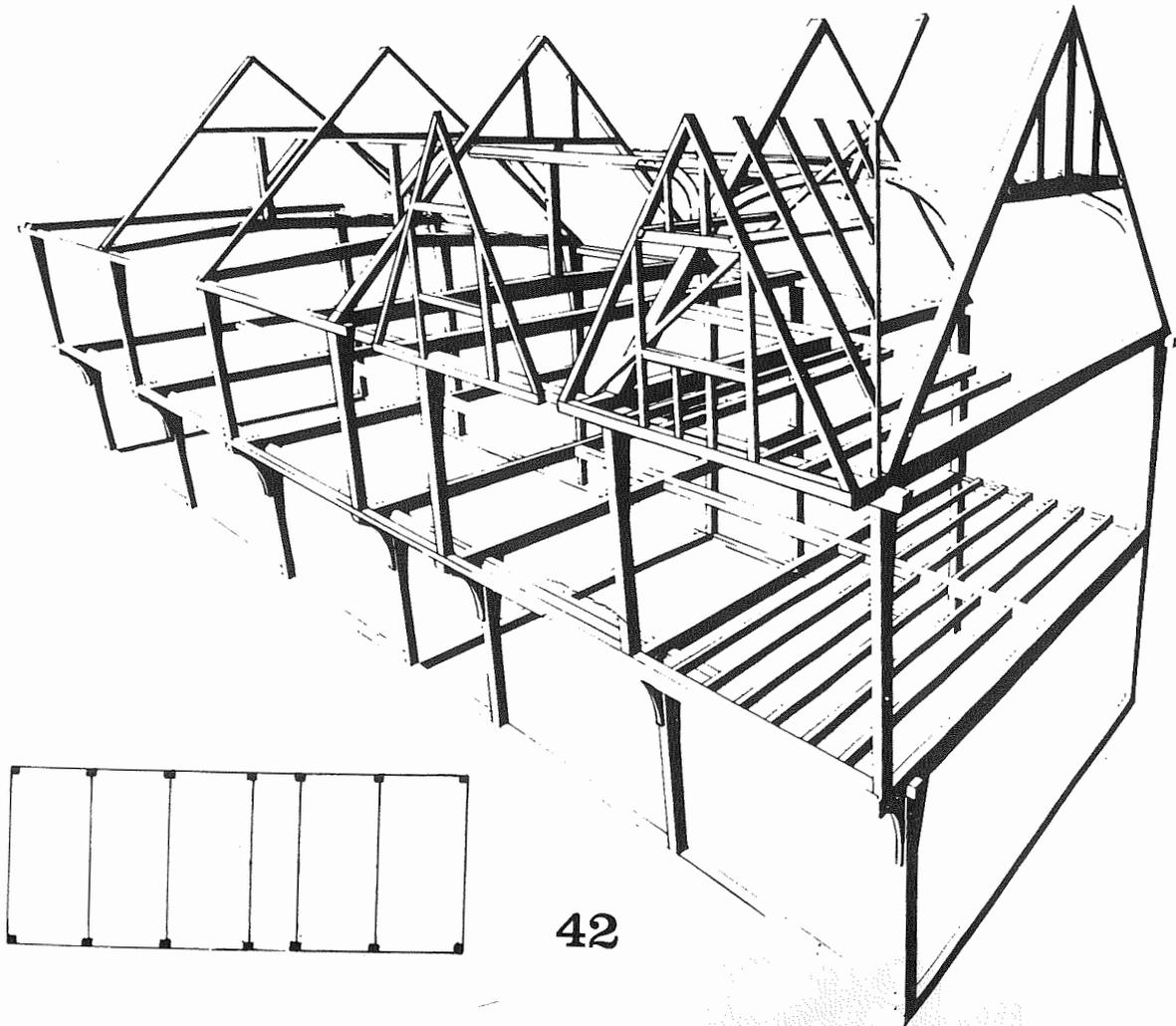
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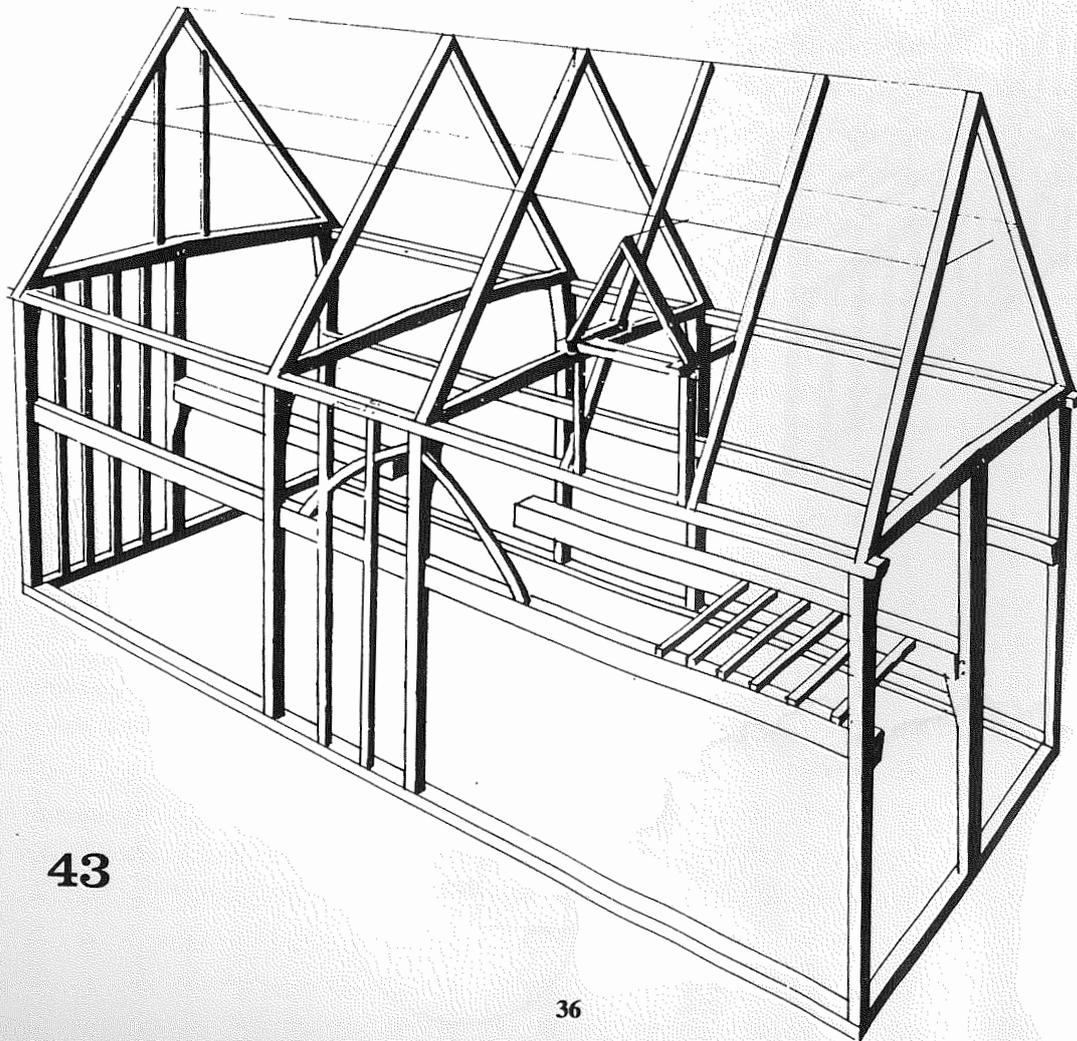
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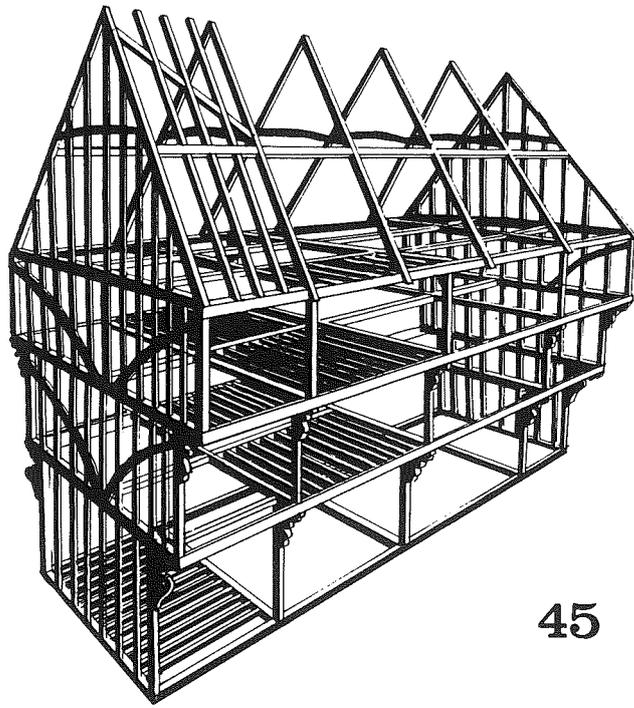
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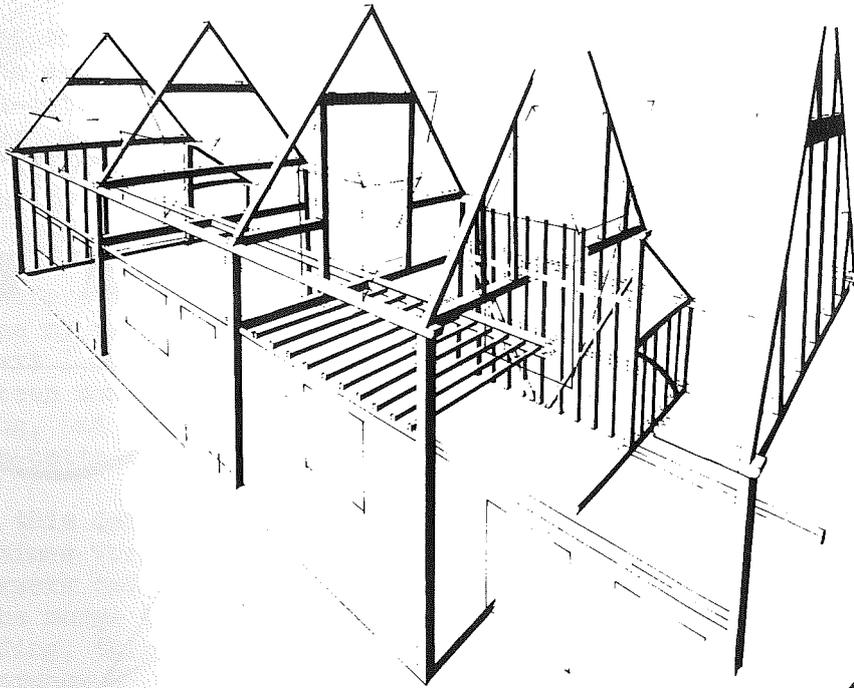
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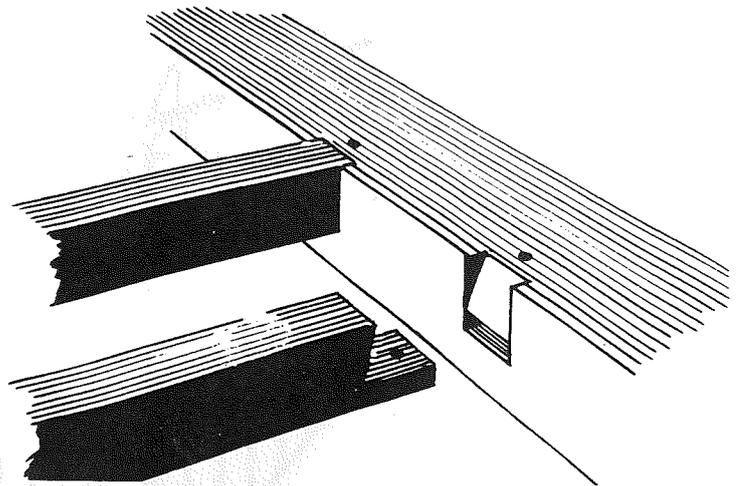
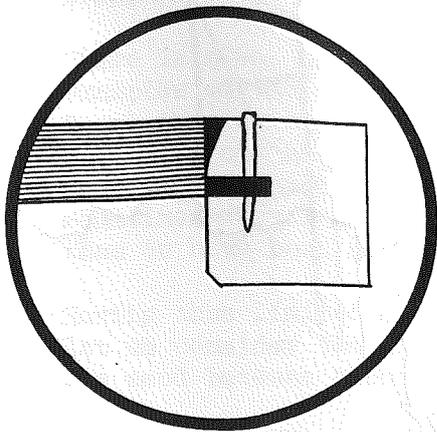
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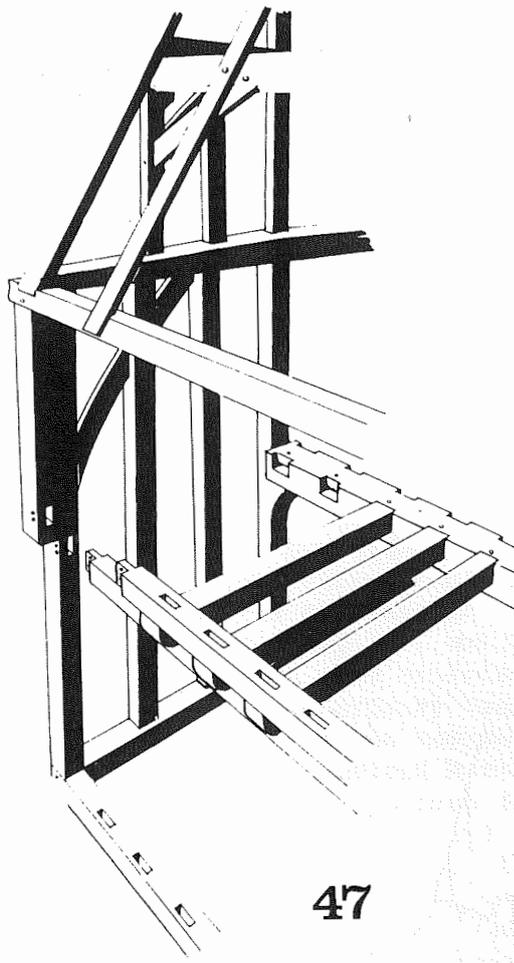
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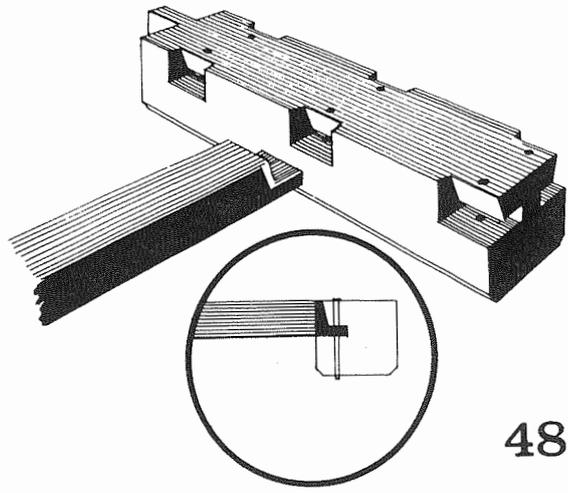
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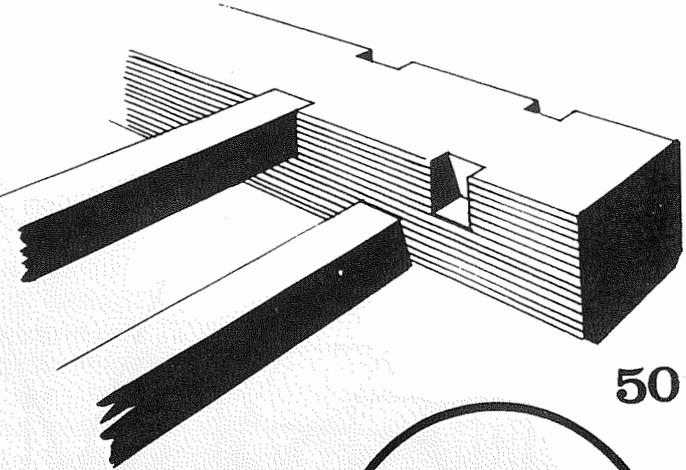
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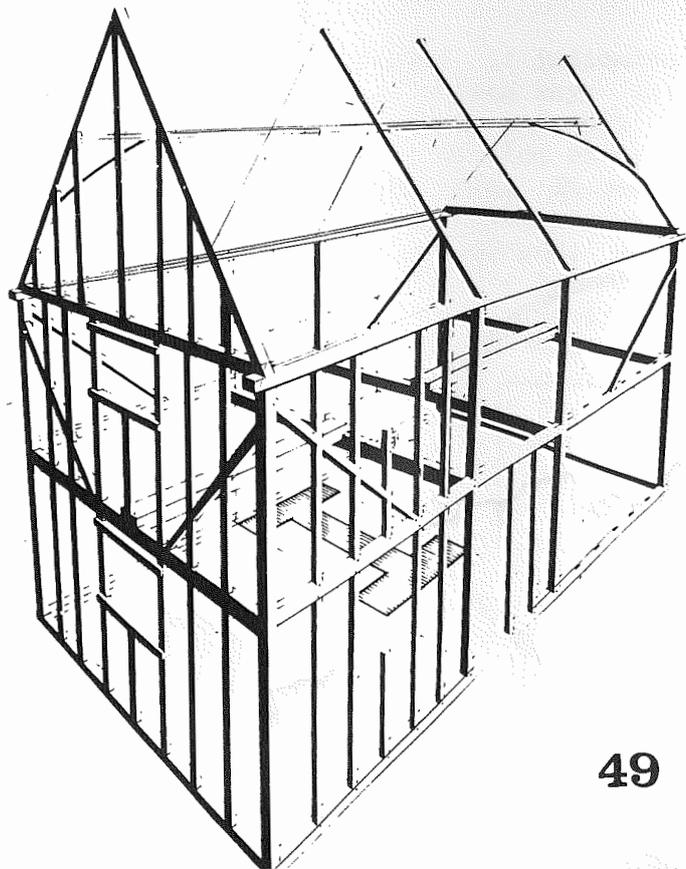
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SIXTEENTH-CENTURY TERRA-COTTA IN EAST ANGLIA
Donovan Purcell, TD, FSA, FRIBA.

One of the unsolved problems of architectural history is the appearance, in the early 16th century, of unglazed terra-cotta in the forms of windows, wall decoration and tombs: and, with the notable exception of Sutton Place near Guildford, the leading examples of this terra-cotta appear to be confined to the counties of Norfolk, Suffolk and Essex.

But before discussing these examples it will be advisable to define my terms. When I speak of terra-cotta in this context I mean moulded work made from a brick earth which has been more finely sifted than would be usual for brick-making, and to which has been added sand or finely ground terra-cotta to reduce shrinkage.

From this definition it will be apparent that it is sometimes very difficult to distinguish between moulded brickwork and terra-cotta; and as the finer-textured brick earths merge into those specially prepared for terra-cotta moulding, this becomes very nearly a distinction without a difference. In this paper I shall not be discussing the moulded work in arches, chimneys and the like, which seems to me clearly to belong to the category of moulded brickwork.

There is also, of course, carved or cut brickwork. Among examples of the former I would include the well-known Royal Arms on the gatehouse at East Barsham Manor in Norfolk; and a close examination of the shaped bricks used in doorways, windows and arches of the period will sometimes reveal marks of the pick or the chisel, proving them to have been cut to shape, not pre-formed in moulds.

Having thus limited and defined the subject of this paper, let us consider the different ways in which terra-cotta was used between about 1500 and 1540.

It appears as framing to windows in three different forms.

At Great Cressingham Manor (sometimes incorrectly called the Priory) in Norfolk the four-light windows are transomed and mullioned, solid in form and boldly moulded. The heads of the individual lights have simple arches without cusping, and the colour of the terra-cotta is buff to pale pink (fig.51). Of similar form but bigger and more elaborate, the six-light and eight-light windows at Sutton Place have cusped heads and a band of delicate floral decoration in the innermost hollow mould.

At Mannington Hall and at Great Snoring Rectory, both in Norfolk, a more simple type of window is to be seen, mullioned but not transomed, with simple arched heads to the separate lights, and more delicately moulded. Both these examples are the same red colour as the local bricks; but they do not come from the same moulds, because those at Great Snoring are decorated with the shell and the tun which were the punning device of Ralph Shelton, the builder of the house.

The third and most elaborate form of window, in which a definitely Classical influence appears in the decoration, occurs in the gatehouse and West Wing of Layer Marney Tower in Essex, in Shrubland Old Hall near Ipswich, and in a single window in each of three village churches near to Shrubland. The jambs, mullions and transomes of these windows are decorated with a delicate raised pattern of urns and foliage, such as we shall meet again in the tombs; and dolphins disport themselves to form very original and attractive window heads (fig.52).

The terra-cotta of these windows is of that same buff to pink as those at Cressingham; and when, a few years ago, we had to make some new mullion sections for Layer Marney, we used a brick earth from not far away in Essex.

The use of personal devices in moulded terra-cotta is one of the more interesting facets of this problem, and I shall return to it in connection with the tombs. But before coming to this important and interesting group we will consider the use of terra-cotta in pure decoration to wall surfaces.

For the most striking example of this use in East Anglia we must return to Great Cressingham Manor (fig.53), a house which is altogether a fascinating problem and one to which some attention has been given in the last two or three years. What remains is that part of the south wing which lay east of the gatehouse, together with an east wing which seems clearly to be a rebuilding. The upper part of the south front is covered in panelling of terra-cotta in which the mouldings are of similar boldness to those of the windows to which I have already referred; and the panels have trefoil heads. Within the larger panels are two alternative devices, the falcon on a gloved hand which was the crest of the Jenney family, who owned the property from about 1511, and the initials J.J. in saltire and M, all within a wreath, which refer to the marriage of John Jenny to Margaret Spring, daughter of a rich Lavenham clothier.

This panelling is as clearly Gothic in character as are the windows here and at Sutton Place. But the Janney panels must be later than about 1543, when the marriage took place; and to make the problem even more difficult, some of the initial panels are upside down! (fig.54).

Wall decoration of a simpler kind is to be found at Great Cressingham, Great Snoring and East Barsham, mostly in the form of moulded panels up to about 12 inches square. These were used often in continuous bands - as at Snoring and Cressingham - or separately (see fig.51). The form of the panels varied from simple quatrefoil to human heads, animals and so on. But though quatrefoils appear on all three houses, and very similar heads of men and women at Snoring and East Barsham, the moulds differed in detail from one house to another; so there seems to be no question of purchase from a merchant's stock.

I have deliberately left the most important group to be dealt with last; but I think it may be a mistake to consider these too much in isolation from the others - particularly as there is so far a complete lack of any real dating evidence for any of it. I do not know of a single documentary reference either to the making or buying of terra-cotta, or to the building of the tombs. We must therefore do the best we can with such indirect evidence as we can find - the date of the Janney marriage, and the fact that the Jannys tomb in Norwich displays arms granted to the Grocers' Company in 1531. Unfortunately none of the buildings we have considered can be dated with precision; and even if they could, some of the terra-cotta could have been applied later. Until something more definite comes to light, we cannot reliably date terra-cotta from buildings or buildings from terra-cotta.

The sixteenth century terra-cotta tombs have been fully catalogued and described by A.P. Baggs in a paper published in *The Archaeological Journal*, Volume 125.

In brief, they are of traditional "altar tomb" form, with or without arched canopies; but their surface decoration is distinctly - albeit somewhat crudely - Classical. Products of some moulds in some of them - or even in only one; and two of the tombs have armorial panels which must have been specially made to order, (fig.55 - a canopied tomb in the Bedingfeld Chantry Chapel in the parish church at Oxburgh, Norfolk; fig.56 - a detail of the same tomb).

To me, the most interesting thing about those tombs is the mystery of their origin. They have often been described as of Italian workmanship, and we are reminded of Torrigiano, Maiano and other Italian craftsmen who were working in England before the break with Rome. But more recent opinion is that the Classicism is too crude to be direct Italian work, and that Frenchmen or Englishmen who had worked with Italians on the Continent are the more probable makers.

(An example of the blind acceptance of inaccurate tradition is in the local belief that the effigies of the two Lords Marney on the tombs at Layer Marney are examples of Torrigiano's work, in Black Belgian Marble. The facts are that Torrigiano left England in 1521, two years before the first Lord Marney died: the carving, though competent, does not compare with Torrigiano's work in the Henry VII tomb and elsewhere; and the stone is Catacluse from Cornwall).

If we accept the proposition that the craftsmen were Englishmen or Frenchmen who had acquired a working knowledge of Classical detail, there remains the question whether the parts were made at home or abroad. The existence of the Gothic style work at Cressingham and elsewhere suggests that the technique was not unknown in this country at the beginning of the 16th century; and there is some hope that a detailed geological examination of the clays used may help to decide their area of origin. But the surface geology of this country and adjoining parts of the Continent tends to be very much the same, and we must not hope too much for success in this direction.

There are, however, certain historical coincidences which are interesting.

In 1501, Georges d'Amboise, Cardinal Archbishop of Rouen, scholar and much-travelled statesman, started upon the rebuilding, on the old foundations, of the Chateau de Gaillon in Normandy. Like many cultured Frenchmen of his time, he deeply admired the Renaissance art and architecture of Italy. But though he may have thought of his new buildings as an Italian Renaissance palace, what he created was, to quote Blomfield, "a late Gothic house profusely decorated with Italian Renaissance detail". His builders were Frenchmen; but a team of Italians was brought in to carry out all the ornament.

When the Cardinal died in 1510, these craftsmen moved into Rouen; but whether they set up ateliers there - as the Netherland refugees were to do in Southwark later in the century - or simply hired themselves out I have not yet discovered.

The second link in the chain is the marriage of Edmund Bedingfeld of Oxburgh to Grace, daughter of the first Lord Marney of Layer Marney. Grace's father was a Privy Councillor to Henry VII and Henry VIII; and there is at least a strong possibility that ambassadorial duties had taken him to Rouen and perhaps to Gaillon near by.

What is certain is that Grace's husband was knighted in 1523 at the siege of Montdidier, even nearer to Gaillon.

What, we may ask, has Gaillon to do with the terra-cotta monuments at Oxburgh, Layer Marney, Wymondham, Barsham, Norwich and Braconash? The answer is that strong stylistic similarities have been remarked upon by leading antiquaries, both English and French; and Gaillon could have produced Frenchmen who had worked with Italian decorators.

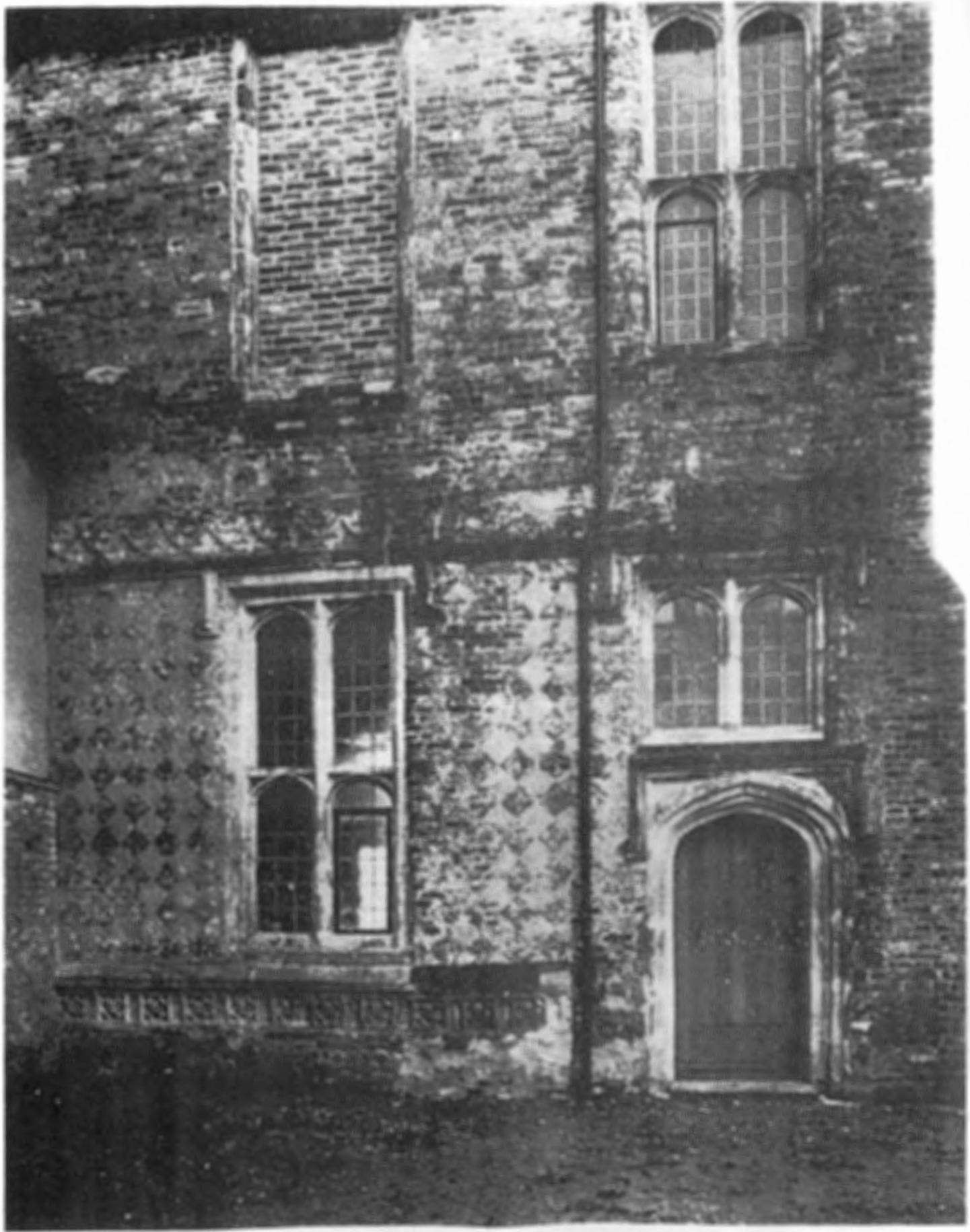
But the Bedingfeld - Marney - Gaillon link can only affect the Oxburgh and Laver Marney tombs. How did Elisha Ferrers, the last Prior of Wymondham, Sir Robert Eckingham of Barsham in Suffolk and Robert Jannys the Norwich grocer have access to the supply?

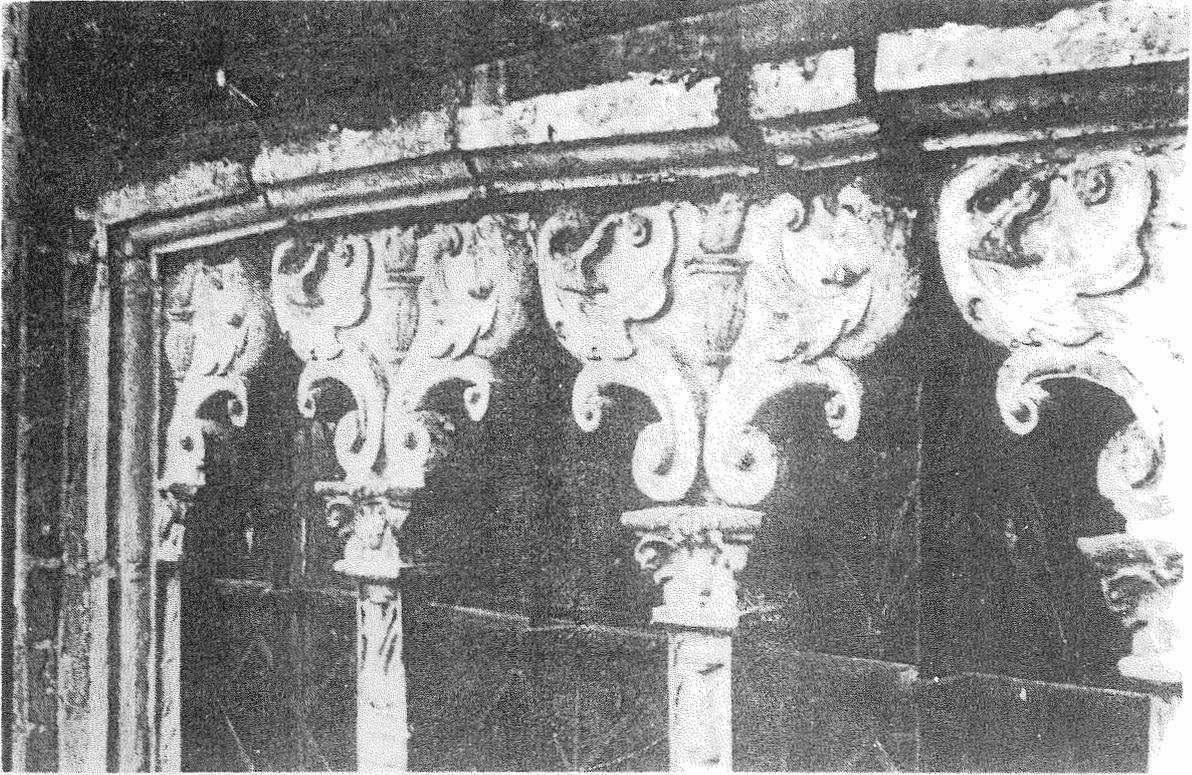
Pevsner has suggested a workshop established at Laver Marney; but he offers no proof of this, and I think that the distribution of the tombs suggests that somewhere in the Norwich area ~~seems~~ geographically more probable.

If, on the other hand, they were imported as pieces to be assembled, all the tombs ~~are~~ within easy reach of sea-borne transport: even Oxhurch had its hythe.

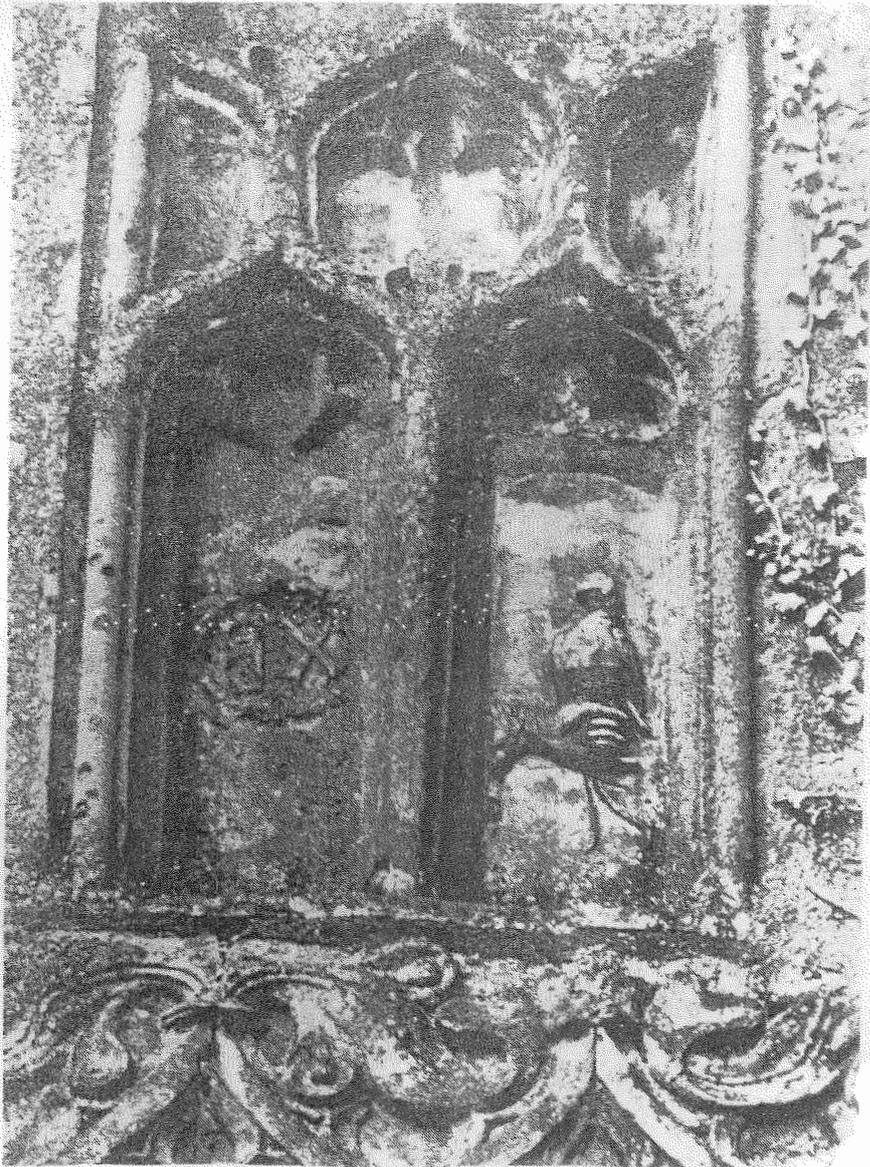
The Marney tombs have armorial panels along their sides: that of Robert Jannys has a shield on which his Merchant Mark impales the arms of the Grocers' Company. It might have been difficult, though clearly by no means impossible, to order these from a workshop overseas.

In the paper to which I have already referred, A.P. Baggs suggests a Flemish rather than a French origin, because of the strong trading links between Flanders and the East Coast Ports. Imports from France, he reasons, would be more likely to come through London: and in a recent letter he has told me that he is not convinced by the Gaillon theory. But his argument ignores the personal element - the Marney - Bedingfeld link - and, while respecting his scholarship, I remain unconvinced, and shall continue the search for more evidence.

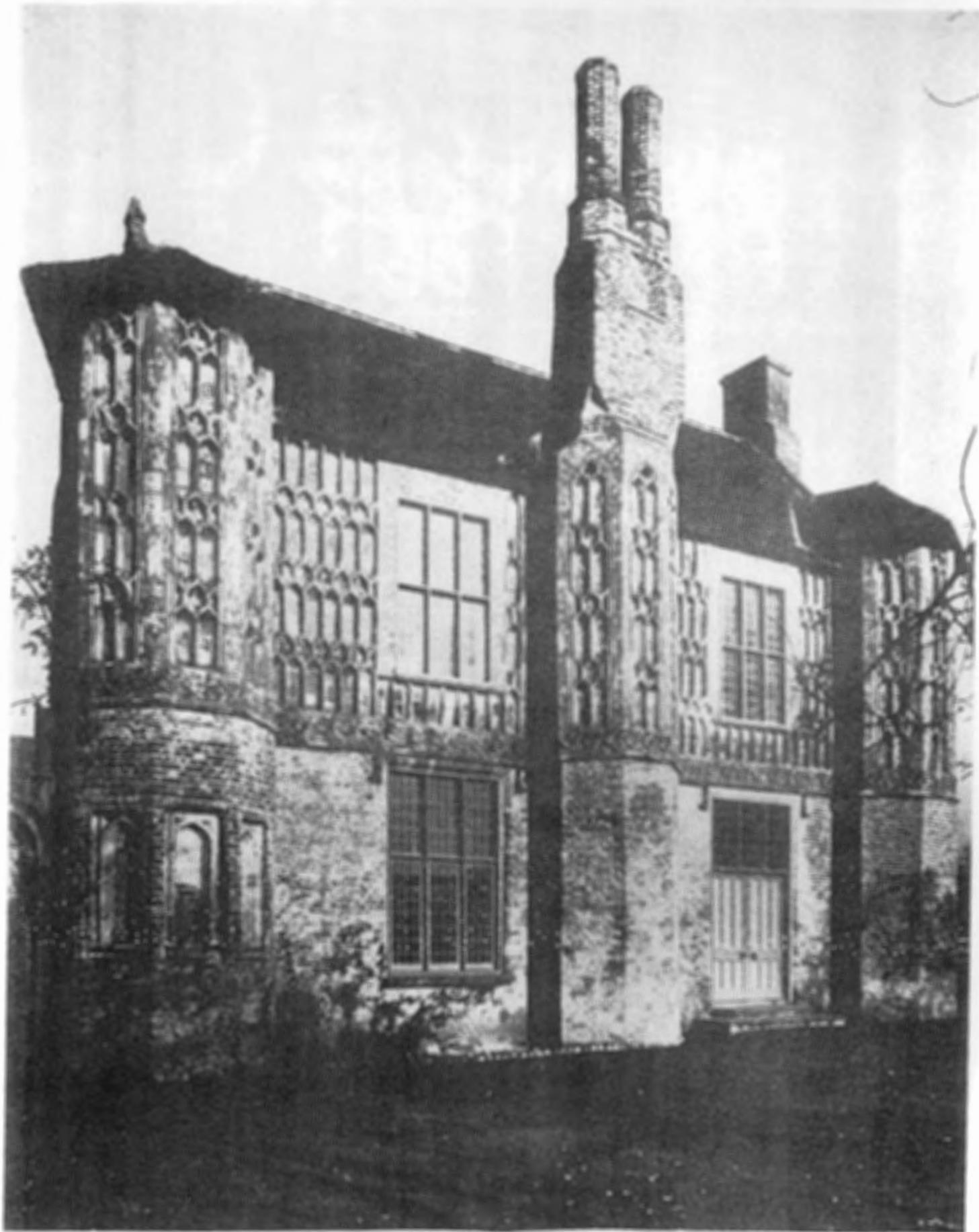




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