

# TIMBER FRAMING

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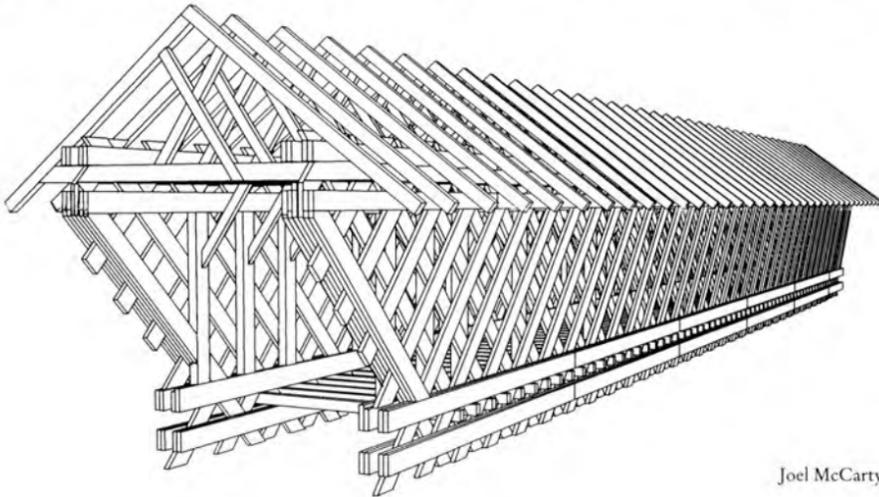
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*Room at the top: while sidewalk superintendents watch, a crown for the new roof of the Cabildo in New Orleans takes shape on a bright March day. Here, the cornice for the cupola, made entirely on site, is set on posts preparatory to flying in the assembly to the top of the roof. The bulk of the immense Mansard*

*roof frame, some 800 pieces and 53,000 board feet, was cut during January and February in New Hampshire. The 1796 Cabildo, originally Spanish City Hall and now the Louisiana State Museum, suffered a devastating fire in 1988. Photo report, page 10.*



Joel McCarty



Andrew Goldie

*At top, perspective view of the 120-ft. clear-span Town Lattice covered bridge the Guild will produce in Guelph, Ontario, as part of its Eighth North American Conference, June 9-13. A small crew will arrive early to lay out the lattices; at later stages hundreds of timber framers will build the roof trusses and assemble the bridge. Above, the piers cast in place in the Speed River.*



Michael Anderson

*A Japanese carpenter swiftly clips the end from a window lintel, already grooved to receive sliding panels. Lintels and sills, though set after a frame is up, are considered important elements and play a visible role in the framing scheme of a Japanese house. Article on cutting and setting lintels, page 6.*



Jan Lewandoski

## THE WILSON BARN

Jan Lewandoski

BUILT (surprisingly) of hemlock, this Putney, Vermont, barn at first looked younger than it turned out to be. On the evidence of wrought nails fastening the outside boarding, it must have been built before 1810. In that era a greater premium was placed on continuous members than on sectional uniformity. Thus a wall plate might be 9 in. high at one end and 40 ft. away at the other end, only 7 in. high. The difference was taken up by varying the height of the posts and systematically accounted for by what we call "two-foot marks," designated lines scored across the face of the posts at a fixed distance from the bottom end and 2 ft. from the top of the plate in the projected assembly. These lines were generally designated by a scratched descending half-circle. The same system was used to account for the varying breadth of the plates from one corner joint to another. The braces in this barn are also noteworthy, with unequal leg lengths (the vertical one a few inches longer), possibly designed on the principle that when in position such braces look symmetrical. To some observers, braces at 45 degrees appear to droop.

## RESTORATION OBJECTIVES

Randy Nash

TO work properly, we must distinguish among restoration, reconstruction, reproduction and preservation. Restoration is putting a building in as accurate order as possible as it existed at some specified time, often but not always its earliest period. Reconstruction is the taking down of a building and then its rebuilding from salvageable and newly-made parts. Reproduction is the making of a new building that is a copy of an old one, from the existing model, from drawings or from informed conjecture. Preservation is the repair of a building to the point of good order without altering any of its features.

Once we have defined our objectives, we can then select our methods and ask further questions. First, do we care only about what is seen? For example, are steel and glue permitted materials? Sometimes we can preserve relatively more original fabric of a building, or get a better appearance by using such foreign matter. Or shall we rule out impurities in advance? Then, do we care about which tools are used to work the wood? For example, is it legitimate to saw out a timber and then put a hewn surface on it using a broadaxe? Is there some educational responsibility to reproduce a technology as well as a surface effect?

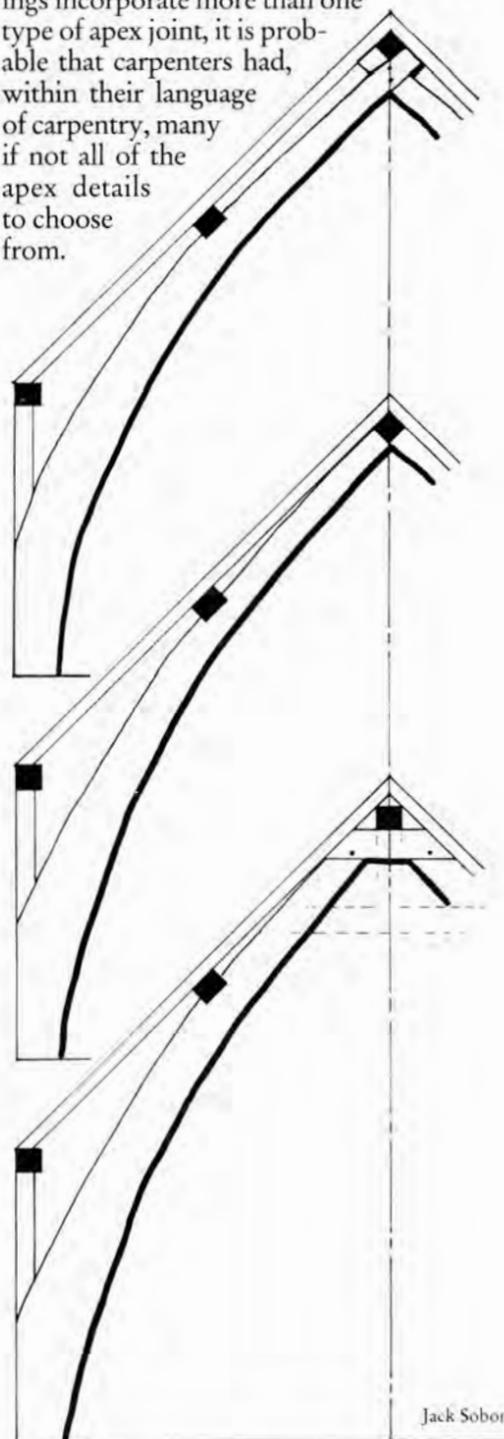
## CRUCK APEXES

Jack A. Sobon

EXTENSIVE research in England on the origin and spread of cruck building reveals a variety of apex types and proposes they might be clues to both the age and spread of the cruck tradition. In 1981, the Council for British Archaeology published *Research Report No. 42: Cruck Construction, An Introduction and Catalogue*, by N. W. Alcock. Distribution maps of apex types are analyzed to reveal where the cruck building tradition first emerged. It is my opinion that the type of apex found in a cruck building is not necessarily an indication of age, but the result of two influences: the shape of the cruck timber and the carpentry methods of the builder.

From surviving cruck buildings we see that the crucks were adapted to fit a building's cross section. Cruck blades of different shapes could be used within the same building and often were. Apex joinery was varied to best utilize the shapes of the crucks that made up each pair. It was important to push the cruck blades close to the wall and roof planes both to support purlins and to keep the interior space clear. Rarely did the shape of the cruck exactly follow the building's profile. A sharply-curved or elbowed cruck required a different apex joint from a straighter one. Some apex designs can use shorter crucks for the same span. On wider structures, the long cruck blades were undoubtedly harder to procure. A building might have two, three or more *different* apex details, depending on the available shapes and lengths.

The other influence was the carpentry method of the particular builder. Some builders preferred setting the ridge on the diagonal, others flat. Each way there are appropriate apex joints. In Leigh Court barn, both types of ridges are found. Since many cruck buildings incorporate more than one type of apex joint, it is probable that carpenters had, within their language of carpentry, many if not all of the apex details to choose from.



Jack Sobon



Ken Rower

## SHIP'S KNEES

Newman Gee

SHIP'S knees are natural arches cut from the roots of Hackmatack trees (Tamarack, Larch). The Hackmatack is a very ancient species: along with Cypress and Sequoia, it bridges the evolutionary gap between hardwoods and softwoods, or deciduous and coniferous trees. Hacks are conifers that lose their needles in the winter.

Hackmatack knees were a vital part of Maine's shipbuilding era, used to brace the ship's frames and deck beams. Natural arches are very strong. When green the knees are easy to cut and hew and when dry they act like hardwood.

In the early 1900s a lot of people still made a living digging Hack knees. Hack is plentiful in central and downeast Maine. People found uses for knees in timber frame barns, warehouses and mills. At the State of Maine Museum is a display of a water-powered mill, with standard timber frame construction, but in the work area Hack knees replace standard braces to increase headroom and work space around the machinery.

Knees are fastened by iron drift pins, bolts, or locust pegs. Knees I have observed in a mill in Hartland, Maine, are bolted. Knees are dug and cut even today in Maine. They are specified in terms of thickness (up to 12 in., commonly 6), stem arm length (up to 48 in.), root arm length (up to 36 in.) and included angle (70 to 110 degrees, commonly 90).

## LEAF SPRINGS

George Yonnone

THE Guild is focused toward manufacturing new timber frames. But I have been repairing them for 25 years. I have found no more useful tools than leaf springs, especially in pairs. The first time I used an ordinary bar on a timber I was upset to see the hole that it left. Most timbers in an old building are captured by a lot of other material. The tapered leaf will slip in and pry things apart without much damage, and two can be used with their curves opposed. If you have something heavy to move like a sill, successive springs are easily fitted in to the space created by the previous one. You can't beat them.

*Symposium speakers included members-at-large of the Guild as well as members of the Research and Advisory group. The group plans another symposium during the winter of 1993.*