

TIMBER FRAMING FOR BEGINNERS

VI. A Glossary of Terms

ABUTMENT. In joinery, the end of one timber touching another. See also **BUTT JOINT**.

ADZE. A handled edge tool (various patterns) with its edge at a right angle to the handle, used to shape or dress timbers.

AISLE. Lengthwise space (parallel to the roof ridge) in a building divided into several such spaces, usually three. Cf. **BAY**.

ANCHOR BEAM. Major tie beam joined to H-bent posts, generally with shouldered, outside-wedged through-tenons.

ARCH BRACE. 1. Curved brace. 2. Brace rising from bridge abutment to support lower chord of truss.

ARRIS. The edge along which two adjacent surfaces meet.

ASHLAR PIECE. Short vertical strut near the foot of a rafter, joining it to a sole piece at the top of a masonry wall.

AUGER. A handled edge tool for boring holes in wood.

BACKING. Top surface of a hip or valley rafter, beveled to follow the slopes of adjacent roof surfaces. The hip backing is thus convex, the valley backing concave.

BAREFACED DOVETAIL. A dovetail (see) flared only on one side and thus suitable for mortising as well as housing. Also *half-dovetail*.

BAREFACED TENON. A tenon flanked by only one shoulder.

BARGE BOARD. The board covering the ends of purlins at the gable end of a roof. Also **RAKE**.

BASE CRUCK. Cruck with blades starting as posts and curving upward to end at the collar beam. Cf. **CRUCK FRAME**.

BAY. The volume between two bents or crossframes. Cf. **AISLE**.

BEAM. Any substantial horizontal member in a building's frame.

BEETLE. A large wooden mallet typically weighing 15 to 30 lbs. Also **COMMANDER**, **PERSUADER**.

BENDING. Deviation from straight resulting from the application of force. In a bent member, the concave surface is compressed, the convex surface is tensioned and the neutral axis is unaffected.

BENT. 1. An assemblage of timbers perpendicular to the ridge, usually the crossframe of a building, sometimes including rafters, assembled on the ground and then reared up into position. 2. One of the supporting frames of a railroad trestle.

BEST EDGE. On a timber to be laid out, the secondary reference surface adjacent to the best face.

BEST FACE. On a timber to be laid out, the primary reference surface, which will typically receive flooring or wall and roof sheathing. Not an appearance term.

BEVEL. Any non-orthogonal angle taken through the breadth or depth of the material; the tool to measure or lay out such angles.

BINDING JOIST. Transverse floor timber (runs perpendicular to the ridge) connecting posts and carrying common joists. Cf. **BRIDGING JOIST**.

BIRDSMOUTH. A 90-degree notch cut into the seat of a rafter to fit the corner of the plate or a step in it.

BLADE. 1. In a scarf joint, the termination of one half of the joint so as to lap under the beginning of the other half. 2. In a cruck frame, one half of the cruck.

BOLT-O'-LIGHTNING. Scarf form with many abutments, whose jagged interface line resembles its eponym; used in heavy work.

BORING MACHINE. A hand-cranked device with gears that drive an auger bit, used to bore large holes, as in roughing out a mortise.

BOW. Deviation from straight in the length of a timber. Also **SWEEP**. See also **CROOK** and **CROWN**.

BOXED HEART TIMBER. Timber whose section includes the heart of the tree. Since checks will not cross the heart, such a timber can never split completely. Cf. **FOHC**.

BOX FRAME. Construction in which roof trusses are carried by a self-supporting structure of posts, tie beams and wall plates. Cf. **CRUCK FRAME**.

BRACE. Any diagonal timber (permanent or temporary) that resists distortion of a frame. See also **KNEE BRACE**.

BRACKET. Block tenoned or pegged to one timber to support another. Also *cleat*.

BREADTH. See **WIDTH**.

BRIDGING JOIST. Intermediate floor beam connecting one crossframe to another and carrying the inner ends of common joists. See also **SUMMER BEAM**. Cf. **BINDING JOIST**.

BRIDLE. 1. An open mortise and tenon end joint, such as at a rafter peak or sill corner, with one end of the mortise open (see **TONGUE AND FORK**). 2. An open mortise and tenon joint between the top of a post (the bridle) and a passing beam reduced in section to form the tenon.

BROADAXE. Wide-bladed axe with its edge usually beveled only on one side, and fitted with an offset handle for knuckle clearance. Used to hew timbers from logs or for similar shaping work.

BUCKLING. Irreversible bending of a timber as a result of a compressive force along its axis.

BUILDER'S LEVEL. A rotating telescope set on a tripod and used for leveling a foundation or sill timbers.

BUTT. 1. The end of a log that in the living tree stood at the ground; generally, the larger end. 2. The end of a timber cut at right angles to its length.

BUTT JOINT. An abutment (see) of two timbers without penetration, kept in place by gravity or other timbers, or ironwork.

BUTTRESS. A reinforcing mass, typically masonry, built against a wall to counteract the thrust of an arch.

CAMBER. Hewn, sawn, natural or deliberately bent upward sweep in a beam or in its top surface, often incorporated into the lower chords of timber trusses, to increase stiffness (especially in bridges) or to obtain aesthetic effects in the space below. See also **CRANK**.

CANTILEVER BEAM. A projecting timber unsupported at one end.

CARRYING STICKS. Sticks placed under a timber to provide easy handholds for carrying.

CHAIN MORTISER. Jigged power tool with chain-mounted cutters that plunge into the face of a timber to cut a mortise, fitted with a depth stop and other controls.

CHAMFER. A bevel cut at the long arris of a timber, which may be run right through or decoratively stopped before the ends; a bevel at the leading arrises of a tenon, to ease assembly.

CHASE MORTISE. 1. A lengthened mortise for swing-insertion of a tenoned member otherwise impossible to insert in an existing assembly, such as a brace or a joist added after assembly of main members. See also PULLEY MORTISE. 2. A mortise with one end angled to follow the slope of a member such as a brace.

CHECK. Separation of wood fibers along the rays, caused by the tension of differential radial and tangential shrinkage or by surface fibers of a timber drying first and attempting to shrink around an incompressible, still-wet center.

CHECK BRACE. A short, low-angle brace fitted behind a principal post in a bridge truss as reinforcement. It transfers back to a housing in the chord the horizontal component of the main brace load arriving on the front of the post. Also *kicker* (M. Graton, 1972).

CHEEK. The broad surface of a tenon; the corresponding surface of a mortise. The tenon shoulder is usually square to its cheek.

CHORD. In a truss, the major uppermost member (*top chord*) or lowermost member (*bottom chord*). In a roof truss, the principal rafters serve as top chords, the tie beam as bottom chord.

CLASPED PURLIN. A purlin fitted under the common rafters (the principal rafter is reduced to match) and over the collar beam.

COG. Recess in one timber to accept full cross-section of the end of another timber; notch. See also HOUSING.

COLLAR BEAM. Horizontal member fitted between a pair of opposed rafters, used, depending upon position, to prevent sagging or spreading of the rafters. Often improperly called *collar tie*.

COLLAR PURLIN. In a roof frame, the central longitudinal beam running under the collar beams and usually supported by crown posts.

COMMANDER. See BEETLE.

COMMON PURLIN. In a roof frame, lengthwise member, regularly spaced in sets, connecting principal rafters and carrying the roof sheathing. See also PRINCIPAL PURLIN.

COMMON RAFTER. Inclined member, regularly spaced in sets, that supports the roof sheathing. See also PRINCIPAL RAFTER.

COMPOUND JOINERY. A connection whose timbers are cut at non-orthogonal angles on both face and edge, typically found in hip and valley roofs.

COMPOUND ROOF. Hips (outside corners) or valleys (inside corners) formed where two adjacent roofs join at an angle.

COMPRESSION. The state of stress in which particles of material tend to be pushed together.

CORBEL. A block protruding from a wall to support the springing point of a masonry arch or a roof or floor member.

CORNER CHISEL. A chisel with two equal cutting edges forged at 90 degrees, struck with a mallet to clean out the corners of a mortise.

CRAB. In steeple work, an eight-armed flat roof frame that sits upon the octagon stage of a steeple, supporting the next octagon.

CRANK. A sharp change of angle in a timber, usually in a collar or tie beam higher at the center than at the ends on both upper and lower surfaces. See also CAMBER.

CRIBBING. Stack of crisscrossed short timbers used for temporary support of a structure or timbers being worked on.

CROOK. Deviation from straight in the length of a timber. In a plank, *crook* is curvature of the width, *bow* (see) is curvature of the thickness; in a squarish timber, the two are indeterminate.

CROSSCUT SAW. Saw whose teeth are sharpened to a point and set outward to cut across the wood fibers by severing to left and right, so that the waste between falls out as dust. Cf. RIP SAW.

CROSSFRAME. See BENT. However, traditional crossframes do not include rafters.

CROSSGRAIN. Grain not parallel to the long axis of a timber. The ultimate strength of a timber is greatly dependent on the slope of its grain. Also DIAGONAL GRAIN.

CROWN. Curvature in a timber's length placed upward in spanning members where the load will tend to straighten it.

CROWN POST. Central post of a roof truss that connects the tie beam to the collar or to the collar purlin.

CRUCK FRAME. Early timber frame type with each crossframe made up of two opposed and collared timbers, usually curved, set up as an arch or A-frame that rises from the ground or a short foundation. Each half of a cruck is called a *blade*, and a matched pair of blades is often cut from the same tree. Cf. BOX FRAME.

CRUSHING. Permanent deformation resulting from compression.

DAP. To house in (usually) a beam; the housing (see) itself.

DEAD LOAD. Weight of building (roof, floors, walls, etc.).

DEFLECTION. Movement of structure under load.

DEPTH. 1. The vertical dimension of a beam or rafter. 2. The sectional dimension of a post measured perpendicular to the wall; otherwise, the larger dimension of a post.

DIAGONAL GRAIN. Also *sloped grain*. See CROSSGRAIN.

DIMENSION LUMBER. Planed timber sold according to its nominal size, usually less than 6 in. thick.

DORMER. Aperture or window of variable shape rising upright from the surface of a roof and having its own roof. According to its extent and form, a dormer may be termed *eyebrow*, *doghouse*, *roundhead*, *shed* or *running*.

DOUBLE TENON. Two tenons cut in line on the end of a wide or deep member. A triple tenon is possible. Cf. TWIN TENON.

DOVETAIL. A central or lap tenon shaped like a dove's spread tail to fit a corresponding notch. See also BAREFACED DOVETAIL.

DRAGON BEAM. A horizontal timber bisecting the angle formed by two wall plates and used to carry the foot of a hip rafter or the inner ends of joists from the adjacent walls, or both.

DRAWBORE. Traditional fastening technique in which the peg hole in the tenon is deliberately offset from the peg hole in the mortise to draw a joint tight when assembled and fastened with a tapered pin. The proper offset varies with species and scale.

DRAWKNIFE. A large knife blade with bent tanged handles at each end so that the knife can be pulled with both hands toward the user; for chamfering, shaving pegs and shingles and general trimming.

DRIFT PIN. Tapered iron pin with enlarged head used to bring joints home and hold them temporarily during assembly, to be removed and replaced by a permanent wooden pin. Also *hook pin*.

DROP. In general, any ornamental pendant; in particular, the square-turned or carved termination to the lower end of a second-story post in a framed floor overhang.

EAVE, EAVES. The drip edge of a roof, often overhanging the wall.

EDGE-HALVED. A lengthwise timber joint divided through its thickness; a class of scarf joints. Cf. FACE-HALVED.

EXTREME FIBER STRESS. Maximum compression in the concave edge and tension in the convex edge of a member in bending without failure.

FASCIA. Generally, a face board to cover the exposed ends of joists or rafters. In neo-Classical trim, the horizontal band in the cornice assembly, set plumb to cover the edge of the soffit.

FACE-HALVED. A lengthwise timber joint divided through its width; a class of scarf joints. Cf. EDGE-HALVED.

FISH, FISHPLATE. Reinforcing member applied over a break in a timber or an end joint between two timbers; usually applied in pairs and bolted right through.

FLYING PLATE. In a framed overhang, a beam set outside the wall plane and forming a solid base for the cornice elements and sometimes for the feet of common rafters; it can be continuous or interrupted (by tie beams) according to the framing system. Cf. PLATE.

FOHC. Free of heart center. Timber sawn to exclude the heart can in theory be seasoned without checking.

FOOTING. Sub-foundation.

FRAMING CHISEL (US). A long, rectangular-section heavy-duty socket-chisel typically 1½ in. or 2 in. wide, handled for striking.

FRAMING SQUARE. L-shaped metal graduated measuring tool with legs fixed at 90 degrees, used for layout and checking of angular lines. Most framing squares have a *body* 24 in. long by 2 in. wide and a *tongue* 16 in. long by 1½ in. wide. Also STEEL SQUARE, RAFTER SQUARE.

FREE TENON. A tenon cut as a separate piece and used, via appropriate mortises, to join two timbers face to face, end to end or end to face. See also SPLINE.

FROE. A stout, flat-bladed, handled tool for cleaving pegstock as well as shingles, clapboards or sections for furniture.

GABLE ROOF. A double-sloping roof that forms an inverted V.

GAIN. Sizing (see) reduction at timber surface in joinery area; any shallow housing, as for a hinge. Cf. HOUSING.

GAMBREL ROOF. A double-pitched, double-sloping roof with the lower slopes steeper than the upper slopes; resembles the gable roof but with each leg of the inverted V broken into two pitches.

GIN POLE. A lifting device composed of a single pole, stayed by guy lines, from which lifting tackle is hung.

GIRDER. Major timber spanning between sills to carry floor joists.

GIRDING BEAM. See BINDING JOIST.

GIRT. Horizontal timber joining wall posts at a level somewhere between sill and plate. A *wall girt* runs parallel to the ridge, a *bent girt* perpendicular; either can support the edge of a floor frame.

GRAIN. The pattern of growth rings, rays and other structural elements in wood made visible by conversion from the tree.

GREEN WOOD. Wood freshly cut, not dried or seasoned.

GROUND SILL. Sill, originally laid directly on the ground.

GUNSTOCK POST. A post deeper at the top to provide more wood for intersecting joinery, and usually obtained by inverting the timber from its grown position to take advantage of butt taper or swell. Cf. JOWL.

HALF DOVETAIL. See BAREFACED DOVETAIL.

HALF LAP. An end joint or a crossing (the latter called a *halving*), in which two timbers are let in to each other to half their depths.

HALF-TIMBERED. 1. An evolved building type in which wall timbers are spaced out (cf. STAVE CONSTRUCTION), to be filled in with other materials. 2. Closely studded or otherwise elaborated versions of the type. See NOGGING and WATTLE AND DAUB.

HALVING. See HALF LAP.

HAMMER BEAM. A roof bracket consisting of an interrupted tie beam projecting from the top of a wall and supporting a roof truss. A complete hammer beam roof frame permits a large roof span made of relatively short timbers.

HARDWOOD. Wood of certain deciduous trees, e.g., oak, beech, ash and the like. Cf. SOFTWOOD.

HAUNCH, HAUNCHED TENON. On a tenon, the part—square or diminished in outline—that would otherwise be removed to preserve the relish of a mortise cut quite near the end of a timber. The haunch helps preserve alignment of the members without unduly weakening the end of the mortise.

H-BENT. Crossframe made up of floor-to-roof posts connected by a heavy, braced tie beam, usually enclosing the taller central aisle of a Dutch or other three-aisle barn.

HEADER. 1. Floor member running across the joists at an opening, as for a staircase, and supporting the ends of cut joists. 2. Wall member bridging the opening for a door or window and carrying any cut studs. 3. Roof member bridging the opening for a chimney, dormer or skylight and carrying any cut rafters.

HEARTWOOD. The inner, nonliving part of the tree, as a rule the more durable portion.

HEW. Shape wood with an axe, usually to convert a log to a timber.

HIP RAFTER. In a roof frame, the rafter that follows the line of the hip, typically backed to follow the slopes of the adjacent roofs.

HIP ROOF. A compound roof occurring where two roof slopes meet over an outside corner. Cf. VALLEY ROOF.

HOG. Lengthwise deformation of a timber supported in the middle and (over)loaded at its ends. Cf. SAG.

HOLLOW CHISEL MORTISER. Jigged power tool with auger bit fitted inside a square hollow chisel that plunges into the face of a timber to cut a mortise, fitted with depth stop and other controls.

HORIZONTAL SHEAR. Shear along the grain resulting when a beam is loaded in bending.

HOUSING. A shallow mortise or cavity to receive the full section of a timber end for load bearing. Often but not always combined with a standard mortise to add bearing area and secure the connection via the tenon. Cf. GAIN. See also COG and DAP.

HUNDEGGER. Proprietary name for computer-controlled industrial joinery machine designed to handle large timbers.

INFILL. 1. Insulation placed inside timber-framed walls (see NOGGING and WATTLE AND DAUB). 2. Studding placed between major posts to support interior and exterior finish.

JACK RAFTER. A roof framing member that lies in the common pitch and terminates at the hip or valley rafter. In a valley system, the jack runs from the ridge down to the valley; in a hip system, it runs from the eave up to the hip. In general, any rafter shortened from its full run between ridge and plate.

JAMB. Side of any opening such as a door or window.

JETTY. Cantilevered overhang of an upper story.

JOINERY. The work of connecting timbers using woodwork joints; the joints themselves.

JOINT. The connection of two or more timbers; to make one (UK).

JOIST. Relatively small timber, usually spaced regularly in sets to support a floor or ceiling.

JOWL. Local step or flare near end of post or beam to accommodate joinery. Cf. GUNSTOCK POST.

JUGGLING. In hewing, striking a log crosswise at wide intervals and then splitting off the chunks in between, to remove the bulk of the waste before broadaxe work. Also SCORING.

KERF. The space left by the passage of a saw blade.

KERFING. 1. Making a series of shallow sawcuts to hasten the removal of a section of wood. 2. Sawing along the abutments of an assembled joint to improve the fit.

KEY. Small element, usually wedge shaped, used to lock a joint or, if a shear key, to prevent sliding of one member over another.

KINGPOST. In a truss, the central, vertical member extending from the tie beam (or *lower chord*) to the peak and receiving the upper ends of the rafters (or *upper chords*). Cf. QUEENPOST.

KNEE. Alternative term for brace, but often implying a naturally curved piece, usually taken from the base-swell of certain trees, that presents long grain to both timbers being braced. Knees are termed *hanging* (if beneath the beam), *standing* (if above the beam) and *lodging* or *lying* (if bracing beam to beam).

KNEE BRACE. A relatively small, short timber framed diagonally between two members at right angles to stiffen their connection.

LAP JOINT. Similar to the half-lap joint, but the parts are not necessarily housed to half their depths.

LAYOUT. The drawing of a joint on a timber before it is cut; the arrangement of timbers into a predetermined pattern for marking.

LEAN-TO. A shed-roofed section of a building, often an addition, joined into the main frame. See also OUTSHOT.

LEDGE OR LEDGER. Band of timber fastened to or let into the face of studs or posts to support the outer ends of floor joists. Also RIBBAND.

LINTEL. Horizontal beam over a door or window opening. Also HEADER.

LIVE LOAD. All load other than the permanent weight of a structure including people, furnishings, snow, wind, earthquake, etc. (Cf. DEAD LOAD.)

LOAD. Force imposed on a structure.

MALLET. A hammer of wood, rawhide, steel or synthetic materi-

al, weighing generally between 24 and 40 oz., and used to drive a framing chisel.

MARRIAGE MARKS. Marks incised in a timber to indicate its proper placement in the frame when matched to identical marks on an adjoining timber. By extension, any marking system to aid assembly or reassembly of individually fitted joints.

MAST. In framed spires, a central timber that anchors the spire rafters at their apices and moves the center of gravity of the spire inward and down. Masts often exceed 45 ft. and may be pendant, compressing the rafters, or clasped by partner timbers (nautical tradition) to stiffen the spire.

MITER. Equal division of the angle formed by two intersecting members.

MODULUS OF ELASTICITY. A measure of stiffness of a material. The ratio of stress (force per unit area) to strain (deformation).

MOMENT. A load that imparts torque or rotation, quantified as the product of a force times the distance over which it acts.

MOMENT OF INERTIA. A measure of the resistance of a body to angular acceleration about a given axis. Moment of inertia is the section property used to gauge the stiffness of a beam in bending. For rectangular members of breadth *b* and depth *d*, the moment of inertia taken through the centroid (center of mass) of the section is quantified by the formula $I = bd^3 \div 12$.

MORTISE. In general, a rectangular cavity into which a tenon (or another object such as a lock) may be inserted.

MORTISE AND TENON JOINT. The end of one timber, usually reduced in section to form the *tenon*, inserted into a corresponding cavity, the *mortise*, in the face of another timber, and most often pinned across, though sometimes otherwise secured.

MUD AND STUD (UK). 1. Late framing method using relatively few and light framing members infilled with wattle and daub. 2. Notorious timber framers' pub in the East Midlands.

MULLION. Vertical division in window opening.

NOGGING. Infill in early framed walls, often brick. See also WATTLE AND DAUB and HALF-TIMBERED.

NOMINAL SIZE. Sawed or hewn timber dimensions before *sizing*; actual dimensions may be larger or smaller than nominal.

NOTCHED LAP JOINT. Lap joint with interference surface cut to prevent withdrawal of the tenon, found in very early braces.

OUTSHOT. Lean-to (see) area added to a building, usually an aisle.

OVERHANG. Projection of second story beyond the first, or projection of roof over wall.

PACKING PIECE. 1. Short piece of material used to fill the empty space in a mortise previously elongated to allow insertion of a tenoned member into an existing assembly. 2. In cruck framing, the cleat set on the back of a cruck blade to carry a purlin.

PARGETING. External plastering.

PASSING BRACE. A long brace half-lapped over other timbers, sometimes running from plate to sill (Cecil Hewett, 1962).

PEAVEY. A pointed tool with long stout handle and forged side hook, used to roll logs or heavy timbers.

PEG. A wooden pin typically 3/4-in. dia. and larger, usually of oak or other tough hardwood, formerly riven and shaved, now usually turned, and used to fasten timber joints, particularly the mortise and tenon joint. Bridge builders distinguish tapered *pegs* from cylindrical *pins*: the latter are used particularly at connections stressed in shear (see PIN 2).

PENTICE. Narrow roof projecting from a wall over a door or window to protect it from the effects of the weather.

PERSUADER. See BEETLE.

PIKE POLE. A long pole, pointed with a sharpened spike, used to raise frames. These tools were known as early as the 15th century, when they were called *butters*.

PIN. 1. A short shaft of tough hardwood, often tapered, used to draw together and fasten the traditional mortise and tenon joint in

timber framing. See PEG. 2. A pin of uniform diameter, usually 1 or 2 in., used to transfix timber, join members or resist flexure when the goal is to maximize the uniform bearing area between timber and fastener, notably in bridge lattice-truss work.

PLATE (US). In normal position, the most important longitudinal timber in a frame. It ties the bents together at their tops and simultaneously stiffens and connects the wall and roof planes while providing a base for the rafters. Also *top plate*, *wall plate*. Cf. FLYING PLATE.

PLATE (UK). The sill or the subsill; the sole plate.

PLUMB. Vertical; perpendicular to the ground.

POST. Vertical or upright supporting timber. See STORY POST and PRICK POST. Cf. BEAM.

POST AND BEAM. 1. Any structural system made up primarily of vertical and horizontal members. 2. Such a system in which floor and roof loads are carried by principal timbers butted together and fastened with structural hardware. 3. A structural system of heavy timbers connected by woodwork joints. See TIMBER FRAME.

PRICK POST. A post of single-story height.

PRINCIPAL PURLIN. In a roof frame, lengthwise timber connecting principal rafters and carrying common rafters. See also CLASPED PURLIN, COMMON PURLIN, PURLIN and RIDGE PURLIN.

PRINCIPAL RAFTER. In a roof frame, a large inclined timber carrying a substructure of purlins and common rafters, usually but not always placed over a principal post.

PULLEY MORTISE. 1. Long mortise found at the lower edges of the lower chords of roof trusses, where ceiling joists were evidently swung in after erection of the trusses. See CHASE MORTISE.

PURLIN. Any longitudinal member in a roof frame lying in or parallel to the roof plane.

PURLIN PLATE. In a roof frame, a longitudinal continuous timber used to support common rafters near the center of their span and itself supported by posts or struts.

PYTHAGOREAN THEOREM. In a right triangle, the theorem that the sum of the squares of the sides is equal to the square of the hypotenuse ($a^2 + b^2 = c^2$). Used to calculate rafter, knee-brace and other lengths.

QUEENPOST. In a truss, one of a symmetrically placed pair of vertical members standing on the tie beam or lower chord and separated at their upper ends by a straining beam. In a barn, queenposts may be full height and connect to rafters, the collar beam or purlin plates. Cf. KINGPOST.

RABBET. An open (one-sided) groove cut at an arris.

RABBET PLANE. A handplane with cutting edge exposed completely across the sole, and thus able to cut up to an inside corner; used to trim tenon cheeks and shoulders, to level material across the grain and to form or trim rabbets.

RACK. The action of straining or winching a framework to bring it into square or plumb; the opposite action by a force of nature.

RAFTER. In a roof frame, any inclined member spanning any part of the distance from eave to peak. See COMMON RAFTER, PRINCIPAL RAFTER and JACK RAFTER.

RAFTER FOOT. The lower end of a rafter, usually framed into a plate or a tie beam, rarely into a post.

RAFTER PEAK. The point where the tops of opposed rafters would meet if mitred (see). A series of such points forms a *ridge*.

RAFTER SQUARE. See FRAMING SQUARE.

RAISING (A FRAME). Erecting the bents, roof trusses and other subassemblies of a frame and fastening them. Also REARING.

RAKE. In a gable or gambrel roof, the edge of the roof as seen at the gable end. Also BARGE BOARD.

RAKING STRUT. In a roof truss, an inclined member fitted between the tie beam and the principal rafter.

REACTION. A force pushing back in response to a load.

REARING (A FRAME). UK term equivalent to RAISING.

RELISH. 1. In the case of a mortise cut quite near the end of a timber, material the width and depth of the mortise remaining between the mortise-end and the end of the timber; in a tenon, material between the peg hole and the end of the tenon, equal in cross-section to the path of the peg through the tenon.

REVERSED ASSEMBLY (UK). For a timber frame with continuous top plate, raising procedure in which the crossframes or bents including tie beams are raised first and the top plates are laid last. Traditional assembly first raises the sidewalls including the plates and lays the tie beams over the plates, as for the English tying joint (Cecil Hewett, 1962). American frames with dropped tie beams are raised by "reversed assembly."

RIBBAND. See LEDGE.

RIDGE (RIDGE PIECE, RIDGE TREE). In a roof frame, the continuous longitudinal timber at the peak of the roof to which the rafters and sometimes wind braces are attached; ridges are often five-sided or otherwise non-orthogonal in section to allow square connections to the rafter ends when the roof peak is not square.

RIDGE PURLIN. In a roof frame, a ridge member, continuous or interrupted by rafter apices, lying in notches or trenches on one side of the roof; if continuous, sometimes itself trenched where it crosses a principal rafter.

RIP SAW. Saw whose teeth are designed to cut parallel to the wood fibers, each tooth a small chisel to shave off lengthwise a short bundle of fibers that falls out as stringy waste; the teeth are set left and right merely for clearance. Cf. CROSSCUT SAW.

RIVE. To split wood along the grain, thus avoiding any slope of grain, for maximum strength in a given cross-section; pegs, ladder rungs and chair parts were formerly riven and shaved.

ROOF PITCH. Inclination of a roof to the horizontal, usually given as inches of rise per foot of run. For example, a roof inclined at 45 degrees has 12 inches of rise for each foot of run and is therefore called a "twelve-pitch" roof.

ROOF TRUSS. See TRUSS.

ROUTER. A hand or power tool designed to produce or to level grooves and housings along and across the grain; the power tool can also be used as a molding plane.

SAG. Lengthwise deformation of a timber supported at its ends and (over) loaded at its middle. Cf. HOG.

SALLY. Pointed end of a scarf-half.

SCANTLING. 1. The cross-section of a timber, as found in a table of scantlings, together with length. 2. Any small piece of wood.

SCARF. To join two equal-section timbers in their length to make a longer beam; the joint so used. There are many variations in the form of scarf joints, such as *bladed*, *bridled*, or *stop-splayed*.

SCHNAFF. Slang for an inch and a half.

SCORING. See JUGGLING.

SCRIBE. In general, to mark a timber by scratching a line with a sharp instrument; specifically, to use dividers to transfer a profile to be cut—often enough irregular—from one surface to another.

SCRIBE RULE. General term for layout systems where each timber is custom-mated to its neighbors. The process requires setting out all the timbers for a given assembly in a framing yard or on a floor, positioned relatively as they will ultimately rest in the building. Cf. SQUARE RULE.

SEASONED WOOD. Wood dried over time to equilibrium moisture content with its atmosphere.

SECTION MODULUS. The section property used to quantify the strength of a beam in bending; for rectangular sections, given as $S = bd^2 \div 6$.

SHAKE. Separation of the growth rings in a timber, a structural defect normally developed during the growth of the tree.

SHEAR. State of stress wherein particles of material tend to slide relative to each other; the force inducing such stress. Vertical (cross-grain) shear loads also impart horizontal (long-grain) shear stress.

SHEAR BLOCK. Wood block dapped (let in) partially to adjoining parallel laminae in a built-up chord, designed to resist shear between the two members or to transfer load around a discontinuity such as a scarf, and properly oriented parallel to the grain, so that shear block end grain bears upon chord end grain.

SHEAR KEY. Wood block oriented perpendicular to (across) the grain. Easier to assemble, and tightenable if wedge-shaped, but not so resistant to compression as a shear block.

SHEATHING. A covering of rough boards or sheet goods on exterior walls or roofs, usually itself covered by an additional weather-proof layer of material.

SHED ROOF. A monoplanar roof sloping in one direction.

SHOULDER. In a mortise and tenon joint, the element of the tenoned member perpendicular to the tenon cheek, and which lies against the face of the mortised member; there can be as few as one and as many as four shoulders on the tenoned member.

SHRINKAGE. Reduction in section and length of a timber as it dries. Sectional shrinkage is analyzed into *tangential* (shortening along the rings) and *radial* (shortening along the rays).

SILL. Horizontal timber that rests upon the foundation and links the posts in a frame; usually fastened to the foundation.

SIZING. Planing hewn or roughsawn timber to uniform section, by hand locally at the joints, or by machine for the whole timber.

SLICK. A large, long, heavy chisel with a blade as much as 4 in. wide, fitted with a handle meant to be gripped with both hands, used for trimming and surfacing of all kinds.

SOFFIT. 1. In general, the underside. 2. In neo-Classical trim, the cornice element set level and joined to the fascia to form a band under the edge of the eaves. 3. The trim piece covering the undersides of overhanging rafters for a roof without cornice.

SOFFIT TENON. A horizontal tenon with lower cheek coplanar with the lower surface of its beam.

SOFTWOOD. The wood of conifers or evergreens, e.g. pine, spruce, Douglas fir and the like. Cf. HARDWOOD.

SOLE PIECE. Short beam at top of masonry wall to carry the foot of the rafter and the ashlar piece; a sort of interrupted tie-beam for intermediate roof crossframes.

SOLE PLATE (UK). Sill.

SPAN. In a roof frame, the horizontal distance covered by a rafter; in a beam, the unsupported distance from support to support.

SPANDREL. The triangular space between a knee brace or arch brace and its adjoining members.

SPIRAL GRAIN. In the log, the disposition of the fibers twisted like a corkscrew around the pith of the tree (and normally visible in the bark); in the timber, distinctly sloped grain as displayed by the direction of the rays. Such timbers tend to twist as they dry and are weaker in ultimate bending than straight-grained examples.

SPLAY. 1. In a vertical member, divergence from upright. 2. In a scarf joint, a cut through the depth or breadth of the timber not parallel to the original surface.

SPLINE. 1. A relatively thin piece of material fitted to full-length grooves in the edges of planks, used for alignment and load sharing; a feather. 2. A stout piece of material, comparable in section to a tenon, used particularly to join beams to posts in three-way and four-way joints where individual mortises cut for each entering tenon would weaken the post fatally. See also FREE TENON.

SPLIT. Complete separation of wood fibers, normally on a ray plane. See also CHECK.

SPOKESHAVE. An extremely short plane with wing handles in line with the edge of the blade. Pushed or pulled, it is used for forming and finishing curved surfaces.

SPUR. 1. The short tie that connects a cruck blade to the outside wall post or plate. See CRUCK FRAME.

SQUARE. At an angle of 90 degrees; a measuring tool so angled.

SQUARE RULE. Layout system in which a smaller, perfect timber is envisioned within a rough outer timber; joints are cut to this inner timber. Many timbers in a square rule frame are interchangeable.

SQUARING OFF. Cutting off one end of a timber so that the cut gives a plane surface perpendicular to the length; helpful for layout.

SQUINT. In a scarf joint, an abutment angled at other than square.

STAVE CONSTRUCTION. Ancient wall method of solid posts.

STEEL SQUARE. See FRAMING SQUARE.

STICKER. Spacer used between stacked timbers or boards to provide air circulation and between stacked bents for strap clearance.

STOP. See CHAMFER.

STORY POLE. A slender stick marked with important intervals, for repeated transfer in frame, finish or individual timber layout.

STORY POST. A wall post that rises through more than one story.

STRAINING BEAM. The topmost horizontal timber joining the upper ends of queen posts in a truss or in a roof frame.

STRESS-SKIN PANEL. A sandwich of two layers of sheet goods enclosing and bonded to a core of framing lumber.

STRUCTURAL INSULATED PANEL. A sandwich of two layers of sheet goods enclosing and bonded to a core of thermal insulation.

STRUT. An axially loaded minor member in a truss or frame.

STUB TENON. Abbreviated tenon designed for location only.

STUD. Subsidiary vertical member in a framed wall or partition.

SUMMER BEAM. Major timber spanning between other floor timbers to support common joists. See BRIDGING JOIST.

SWEEP. See BOW.

TABLE. 1. In a scarf joint, the raised portion of each scarf-half, designed to interfere once assembled and so prevent withdrawal in the length. 2. The broad surface of a vertical housing.

TEAZLE TENON. In the English tying joint, the tenon cut at the top of the post that engages the underside of the tie beam.

TELESCOPING FRAMING. Steeple framing, concealed from the outside, that lodges the bottom timbers of any given stage several feet within the frame of the stage below, contributing stability.

TEMPLATE. A full-size pattern of thin material, used for laying out and checking joints and other purposes.

TENON. The end of a timber, reduced in section and flanked by one or more resulting shoulders.

TENSION. The state of stress in which particles of material tend to be pulled apart.

THICKNESS. See DEPTH.

THROUGH TENON. A tenon that passes right through the timber it joins; it may be cut off flush or it may extend past the outside face of the mortised member to be wedged or locked in place by one of several means.

TIE BEAM. An important horizontal transverse frame member that resists the tendency of the roof to spread the walls. The tie beam may be found at the top of the walls, where it is able to receive the thrust of the rafters directly, or it may be found as much as several feet lower down the walls, where it joins principal posts in tension connections.

TIMBER. A large squared or dressed piece of wood ready for fashioning as one member of a structure.

TIMBER FRAME. A frame of large timbers connected by structural woodwork joints and supporting small timbers to which roof, walls, and floors are fastened. Sometimes called a *braced frame*. Cf. POST AND BEAM 2.

TONGUE AND FORK. An end joint in which one timber has the shape of a two-tine fork and the other a central tongue that fits between the tines; usually found at rafter peaks. See also BRIDLE.

TRAIT DE JUPITER. See BOLT-O'-LIGHTNING.

TRENCH. Crossgrain open housing cut less than half the depth of the timber, to receive any crossing lapped timber.

TRIMMER. Floor member running with the joists at an opening, as for a staircase, and carrying the end of the header (see).

TRUNNEL. A peg. Sometimes refers to an extra-large peg.

TRUSS. A network of timbers forming a rigid support structure; ideally, all members of the truss behave in either compression or tension, none in bending. Trusses are used to span distances impractical for solid members, or to support unusual loads.

TUSK TENON. 1. Horizontal through-tenon with outside-wedge (the tusk) applied vertically (Hewett, 1980). 2. Horizontal blind tenon with square buttress (the tusk) between lower cheek and shoulder (Newlands, 1854; Alcock, 1996). 3. Horizontal blind tenon with diminished buttress (the tusk) between upper cheek and shoulder (Moxon, 1680), called by Hewett and Alcock (1996) a *diminished shoulder* tenon, and by Levin (1980) an *entrant shoulder* tenon. This buttress is sometimes called a diminished haunch because of its resemblance in profile to that of a diminished-haunch tenon. However, the latter tenon is used to make a corner joint, whereas the tusk tenon is used to connect the end of one beam to the face of another.

TWIN TENON. Paired tenons cut side by side and used to strengthen connections in large timbers. Cf. DOUBLE TENON.

TWIST. Deviation from plane in the surface of a timber. The bane of the woodworker. If the twist is the result of released growth stresses in the tree (see SPIRAL GRAIN), rather than poor conversion, all surfaces of the timber will be twisted. Also WIND.

UPPER FACE (UK). Best face, used for marking out.

VALLEY ROOF. A compound roof occurring where two roof slopes meet over an inside corner. Cf. HIP ROOF.

VERNACULAR. Local, as applied to building style, method and materials; vernacular styles are directly influenced by immediately surrounding culture, conditions and climate.

WALKING BEAMS. Two parallel beams laid on the ground upon which timbers may be moved with a pivoting action.

WANE. Nature's chamfer; the rounded edges of a timber squared from an undersized log. Adjective *waney*.

WARP. Deviation from flatness across the grain. If concave, also called *cup*. Timber surfaces typically warp as if to return to the log.

WATTLE AND DAUB. A framework of woven withes covered by layers of daub mixed of clay, lime, horsehair and cow dung, used to fill openings between studs in early timber frames.

WIDTH. The horizontal dimension of a beam as viewed in place; breadth. Cf. DEPTH. Indeterminate for interior posts.

WIND BRACE. A brace lying in the plane of the roof, usually running from a principal rafter to a ridge or purlin.

WIND, WINDING. See TWIST.

WINDING STICKS. Matched pair of perfectly straight sticks laid across a timber at some interval (usually the full length) and sighted over their top edges to reveal twist in the timber surface. If the sticks are parallel, the surface is free of twist.

—WILL BEEMER AND KEN ROWER
Published sources consulted for this beginner's glossary include *Recording Timber-Framed Buildings* (Nat Alcock), *Building the Timber Frame House* (Tedd Benson), *Build a Classic Timber Frame House* (Jack A. Sobon), *The Timber Framer's Workshop* (Steve Chappell), *The Framed Houses of Massachusetts Bay* (Abbott Cummings), *English Historic Carpentry* (Cecil Hewett), *Discovering Timber-Framed Buildings* (Richard Harris), *Mechanick Exercises* (Joseph Moxon) and *The Carpenters Assistant* (James Newlands). Ed Levin (engineering terms), Jan Lewandoski (bridge and steeple builders' terms), Chris Madigan, Jack A. Sobon and Peter Wechsler contributed additional entries or emendations. Many of the joinery terms in this glossary are illustrated in *Historic American Timber Joinery, A Graphic Guide* (Sobon), recently published by the Guild and available at www.tfguild.org or 413-623-9926. For historic English carpentry, Alcock, Harris and Hewett all offer excellent drawings. For illustrations of first-period New England work, Cummings is probably alone except for J. Frederick Kelly's *Early Domestic Architecture of Connecticut*.