



CHRISTIAN TOPF

FROM THE LOFT FLOOR TO THE SEA

THE ART & CRAFT OF TRADITIONAL
WOODEN BOAT CONSTRUCTION

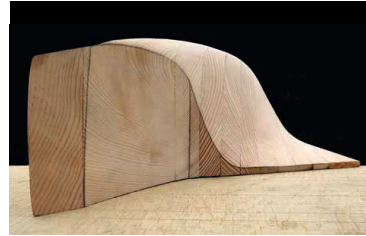
The Falmouth Pilot Cutter *Pellerw*
is the largest traditional wooden
sailing boat to be built in the UK
for decades...



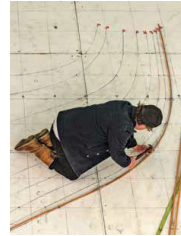
DRAWING THE LINE

It is difficult to take accurate dimensions from a small drawing, which makes necessary the process of lofting, where the designer's scale drawings are transferred to the loft floor enlarged to full size. Intersections of the horizontal and vertical contours are measured from an imaginary base line. The listing of these points is called a table of offsets, which are usually supplied by the designer. Flexible battens are then used to adjust and

fair the lines to ensure that they are smooth and sweet without hard spots. The term lofting is a relic from the days when the task was carried out in the loft above the building shop. In our case, the loft floor is adjacent to where the boat will be built. Planning ahead, it is also the place where the frame pairs will be assembled, requiring the least distance to move for assembly.



Stern view of the builder's half model kept in the yard office for reference and to show visitors.



Luke tacks nails around which a batten will be bent to produce a fair curve without any hard spots.

LOFTING

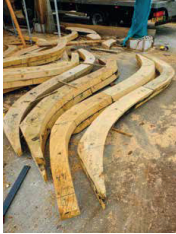
CHECK & CHECK AGAIN

← The loft floor needs to be smooth and level. It is made of painted plywood to show up the lines with maximum contrast.





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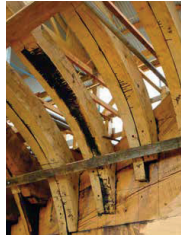
CANT FRAMES

Ready to go in as soon as the square frame pairs are done, cant frames await their turn for installation. James adjusts the foot of a cant frame using an electric power plane. It usually takes a couple of goes before the fit is just right.



CONTORTIONS

Installed cant frames fastened to the stern deadwood; Bert does acrobatics and gets the hilly tackle to help with placing a cant frame; Dominic lowers a cant frame into position before fastening it to the stern knee.



LAST FRAME IN

— and more ribbands and shores have been installed to hold the ribcage secure.



INSTALLING FRAMES

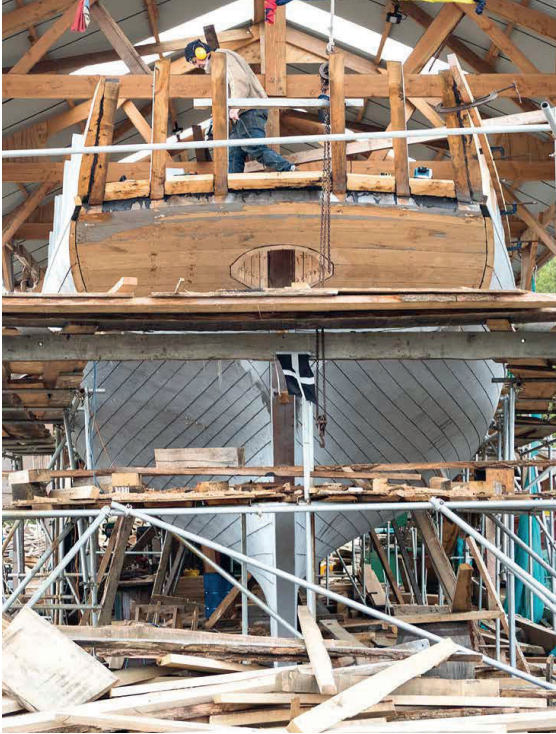
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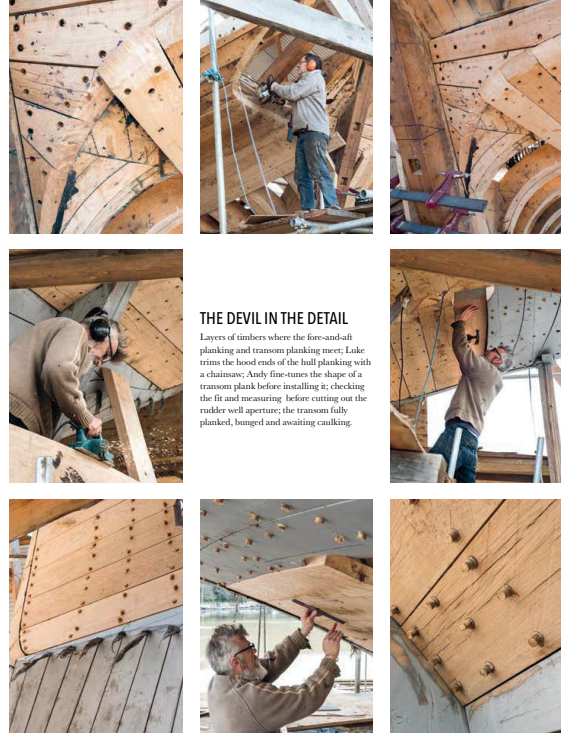
OFFERING UP & FORCING THE TWIST

Garboards are shapely planks with considerable twist at both ends. Much coaxing is required to achieve the correct fit. The garboard is also the widest of all the strakes, making it noticeably heavier than its neighbour. Thus, several pairs of hands are needed to offer it up and get the first clamps and shores quickly into place. To ensure a satisfactory fit many shores, clamps, and

props are needed, along with some gentle persuasion from a sledgehammer to position the plank edges in the keel rabbet. The plank is under enormous stress at this time and the shipwrights must handle it with care and respect — were it to spring loose it would deliver a powerful kick, endangering life and limb.



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PLANKING THE TRANSOM

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THE DEVIL IN THE DETAIL

Layers of timbers where the fore-and-aft planking and transoms planking meet; Luke trims the hood ends of the hull planking with a chainsaw; Andy fine-tunes the shape of a transom plank before installing it; checking the fit and measuring before cutting out the rudder well aperture; the transom fully planked, bunged and awaiting caulking.

PREPARATION

Oakum is supplied by the chandlers in loose balls which need to be prepared for use. Katey and Shane roll the oakum, trasing and twisting the strands of fibre from the ball then rolling them on their knees into even thickness strands. This is a monotonous task, but a welcome change from caulking itself, as it can be done in one of the tool or material sheds sheltered from the bitter easterly wind that has been blowing for a few days. Time also for witty banter, catching up on salacious gossip or plain old deep philosophical discussion.

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CAULKING Mallet & IRONS

Nef's toolbox with a still nearly-new caulking mallet and assortment of caulking irons; in order of width: single-crease, double-crease, triple-crease and feeding-iron, and a chisel and mallet for the odd clearing of the seam. Working under the hull at the turn of the bilges is good for body building, especially the shoulders.

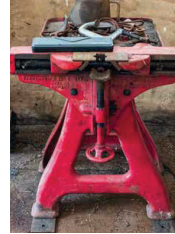
CAULKING

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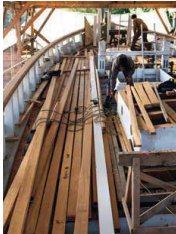
STEEL
Today, mild steel is cut, drilled, ground, shaped and polished using metal-working tools such as the hand-held grinder and power drills. Once finished, fittings and fastenings will be sent away for acid etching and hot-dip galvanising.



BLACKSMITH'S SHOP

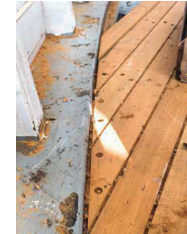
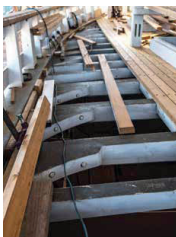
FIRE IN THE FORGE

Much of the metalwork is still done on-site by the blacksmith. In days gone by, virtually all metal fastenings and fittings were made of malleable or wrought iron, and only later steel. Iron is heated until glowing red hot then worked on the anvil with hammer and tongs, beaten into required shapes, welded, and ground using stone grinding wheels.



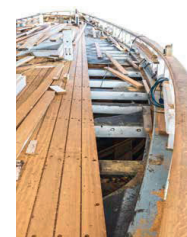
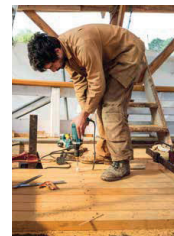
LAYING PLANKS

Clockwise from top-left: The port side deck with a store of deck planks ready for fitting; Luke confers with Clyde about the placement of the king plank – planking starts with this central strake with all following planks abutting to the left and right; Clyde's tool box and his chisel roll; Clyde marking the placement of a plank butt; a section of deck planking with counterbored fastenings; Andy fits the latest plank against its neighbour using shores, wedges and G-clamps; planking commences with each new plank from the centre outwards – note the unimpeded view of the substructure with its lodging knees; Andy drills a plank for fastenings.



PROGRESS

Planks ready to be installed, Katy cuts stock to size using the cabin top as a makeshift bench; the covering board and plank ends fastened to the moggins below, showing bevelled caulking seams; Clyde counterbores a row of fastening holes using a hand power drill and spade bit, while Katy fits short planks between two hatch coamings; planking progresses on both sides of the deck with each plank being first fitted, then clamped, drilled and fastened before the process is repeated for the next.





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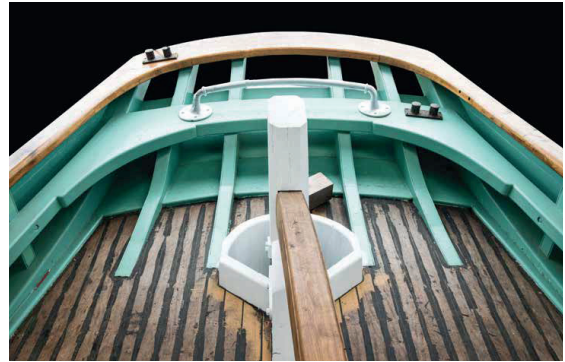


THE THWART

The shapely thwart and aft cap rail had to be bent to achieve the correct camber. This was done by steaming the wood over a jig and securing it there with plenty of clamps. Steaming time is approximately one hour per inch of timber thickness. Once the desired curvature of the timber has been achieved, the wood is left to cool before the clamps are removed and the piece is fitted. Note the chocks that strengthen the stern assembly before the deck is laid. Timbers have been treated to ensure longevity.

COMPLETING THE STERN

The stern fully assembled with horns, stern, and quarter timbers clearly identifiable; the rudder stock and tiller are being fitted; the graceful lines of the completed stern, with the cap rail finished bright and the stern framing, thwart and inner bulwarks painted.

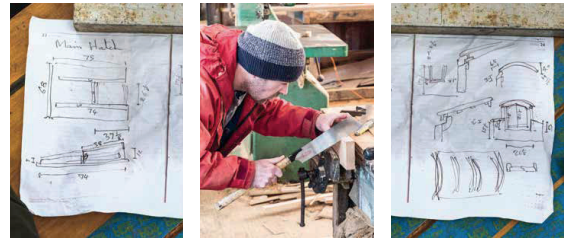


FRAMING THE TRANSOM

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HATCHES & COMPANIONWAYS



FUNDAMENTAL KNOWLEDGE

It's remarkable how little there was in the way of detailed construction plans for the deck furniture. As you can see from the sketches on a spare diary page, it is part of a shipwright's fundamental knowledge to be able to make a standard companionway sliding hatch with or without doors. They know the proportions, ratios, sizes, angles and camber of roof, it's just the principal measure-

ments that are needed – and can be gleaned from the master plan – to scale up or down the scantlings and dimensions. Master shipwright, joiner, and furniture maker Jon uses a Japanese saw for precision work. Cutting on the pull, rather than the push stroke, its blade is thinner than its European counterpart, and capable of cutting with greater precision.

SLIDING HATCH

← The main companionway hatch leading from the saloon to the aft deck is the most frequently used of all.

HATCHES & COMPANIONWAYS

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THE BARREL ...

The construction of the anchor windlass is one of the more complex jobs, with many parts and intricacies. Clockwise from top left: Setting out the mechanical symmetry; the

bearing installed on the carrick bitt; the wooden barrel assembly nearing completion – note the stainless steel shaft with bearing surface and lugs; the ratchet in place on the

shaft with its double pawl arrangement; Clyde and Sam discuss the finer details of installation methodology; Ned and Clyde fix the starboard winch head to the shaft.

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... & WINCH

The traditional parts of the anchor windlass assembled temporarily to check alignment and functionality – it is then disassembled to fit the electrical controls and auxiliary motor;

the checks showing the surprisingly complex inside; the motor fitted and coupled to the shaft – note the clutch on the top of the black casing and controls partly obscured by the

port winch head; Clyde displays a check timber that resembles a sculpture rather than part of a boat: fitting the piece to complete the assembly.

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ON A RUN

Planning each facet, Clyde works his way around the spar following the marks on the baulk. You can clearly see the eight facets, though one has barely been started.

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FROM ROUND TO SQUARE TO ROUND

Each tree or stick goes through the same process that starts with a forest tree and ends with a fully-dledged spar. The following sequence starts with the tree as delivered by the foresters; removing the sapwood by squaring

the timber with the portable chain mill; the finished square baulk; a square timber made of two glued parts; seven-sided awaiting the removal of the last facet; fully eight-sided; sixteen-sided and rounded; the mast head

with tenon. The final picture shows the rounded inboard end of the bowsprit before installation of its sheave (to aid running out the sprit).

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GOING LIKE A TRAIN

Pilliw thunders past to windward of *Unity* at the annual Pilot Cutter Regatta held at the end of May in St. Malo. While *Pilliw* does not participate in this year's races, she does come to visit her racing sisters, showing off her own agility and easy power and grace. It certainly is a treat to

sail in close proximity to her and observe her getting into her stride. Her maiden voyage then takes her to the west coast of Scotland and the Hebrides before returning to her home waters of the south west coast, the Lizard and West Penwith.

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The Art & Craft of Traditional Wooden Boat Construction

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Christian Topf

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