



AMATEUR BOAT BUILDERS' ASSOCIATION

September/October 2010



The 14' Sabre class monotype dinghy being built by Louis at Boating Hardware

A STRIP OFF THE OLD BLOCK

On Wednesday, 28 July we heard Harry Speight describing the ins and outs of strip planking. He had prepared a very full power point presentation and held our attention without trouble for the whole evening.

As Harry explained, the technique is ideal for one-off boats in the 20' to 40' range. It is, however, very common in canoe and kayak construction and has been used in some large vessels, notably the 54m, STS Tenacious! It gives a result like carvel planking but employs very narrow planks which can bend sideways to adapt to the adjacent planks. Professionals are divided as to whether it's a slow or quick way to build, but there's no argument that it results in strong light hulls requiring a lower degree of skill than more traditional methods. Typically strips vary from as wide as they are thick (i.e. square) to three times wider than thick (3 : 1). They are available commercially or are sometimes cut from larger planks by the keener than average builder. In the commercial market three styles are common: plain rectangular cross section, which sometimes results in large gaps to fill; bead and cove, which means a male bowed

section one side, with a matching female section on the other and a tongue and groove section, male and female again, for the most positive alignment. I have heard of amateurs machining their own bead and cove sections on own-cut strips too, using routers or spindle moulders – keen! As a guide, Harry, after much shopping around locally ten years ago, bought his ready-prepared bead and cove strips from the eastern states, enough for a 27' tri, for \$3 000. Very reasonable, I'd have thought. Check advertisers in "Australian Amateur Boatbuilder" as well as local sources such as Morgan Timbers.

Strip planking goes back a fair way, to a stage before edge-glueing in fact. A male mould was made up for the hull, as for clinker planking and sheathed with strips which were held together by edge nailing, the nails, long and thin, going through not just two, but three strips. Such a shell is inclined to be flexible and needs a good bit of internal framing. We assume that the timber in the strips was reasonably robust. These days all the strips are edge-glued to each other and after clean-up the shell is fibreglass sheathed inside and

out. This results in a hull so stiff that much lighter timber can be used, typically Western Red Cedar (WRC) and Pawlonia.

Occasionally end-grain balsa and even foam is used. There's a lot of glue involved but it's a very solid, monocoque result because it's a fibreglass sandwich.

Initially the only glue available and suitable was epoxy; very strong and gap filling but slow to mix, limited pot life and a risk to users (allergic reactions). That's what Harry used on his 27' trimaran when he started about ten years ago. Cleaning up, particularly on the inside of the hull, can be a real pain although one should scrape off as much as possible while wet. These days polyurethanes such as Boatcraft Purbond are, I think, one part mixes with easier clean up and although not as strong as epoxy, are strong enough given the large glueing surfaces. Harry wasn't sure how Purbond would hold some twisted planks before sheathing tied them all together. On the other hand, Mike Rogers has even used PVA (Aquadhere), not even waterproof, but it gets sealed in anyway.

The building jig frames can be cut from MDF or made up from old planks, etc. they are mounted on the usual ladder frame and a keel fitted (probably) before planking commences. The spacing of frames depends very much on the stiffness of the strips used. Usually the jig is a male mould and the strips are laid outside it but it's also possible to cut the frames so that the outsides are used to create a female mould and the strips laid inside. With the latter exercise it's easy to 'glass the interior and then glue in bulkheads and permanent frames while still in the mould. On a male mould one sheaths the outside while still in place and then lifts off the half-stiff shell, finishes the internal clean-up and then decides whether to do the internal sheathing or the bulkheads next. By rights the bulkheads should be next, but this results in messy sections of internal hull to be sheathed second.

Unless one is going to taper the strips, and the idea of strip-planking is to do away with that, then the parallel sided strips are going to "run out" at the ends as the boat gets narrower. If one starts planking at the keel, the run out will

occur at the gun'le, bow and stern. Looks funny, but there's paint. Start at the sheer and the run out occurs at the keel and at the waterline the planks will appear to be bowed downwards, but there's still paint. A third choice is to start at the turn of the bilge and plank in both directions, halving the run out at each of keel and sheer. If one starts at the sheer of an inverted hull and works up then gravity will at least keep the glue on the edge of the last plank while you fit the next one – a point to consider.

Making up the strips to hull length is a challenge. Considering the number of strips in a hull, traditional scarf jointing is going to be very tedious, even if you can jig it. Butt straps are apparently acceptable, but sheathing the inside later must be a bugger. Harry's solution, and the only one as far as I can see, was finger jointing. Presumably he bought an amateur sized gadget and did them all himself and it can't have taken long. At first he joined the strips off the boat but later switched to doing them on it. Very professional and neat. Particularly with rectangular-section strips one often sees photos of hulls under construction with lots of Band-Aid-like strips of ply, temporarily nailed across up to four or five planks to hold alignment while glue dries. It's usually necessary, too, to temporarily nail planks to the building jig. All of these nail holes require later filling and will show up under a bright or varnish finish.

When it comes to colour, Harry recommends a light or white one, to reduce temperatures in the sun because the fact of the matter is that epoxy does soften a little under extreme heat and this can apparently lead to lines showing up, months later, between the planks particularly if a dark colour is used. His two amahs have been finished white and in the sun for a couple of years with no ill-effect.

In a couple of meetings Harry will be back to explain how the foregoing was practised on his own 27' Farrier tri. The amahs are a reasonably simple shape but the main hull is very complex and was built in port and starboard halves, in female moulds – not your basic strip planking exercise! Many thanks for an excellent talk, Harry. You covered the basics very well indeed.

ABBA's AGM FOR 2010

This event was also held on 28th July and was a very low key affair, although very well attended. The secretary, Chris Davis, presented the minutes of the previous meeting and these were accepted. Likewise his financial report was accepted. We haven't got a lot of money, barely four figures in fact but then we don't need much. For the record we have \$715.12 in our working account and \$1359.12 earning very low interest in a fixed term deposit.

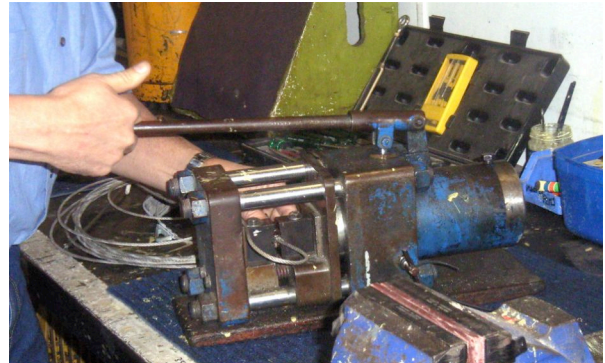
The existing committee was re-elected en-bloc to sit for another year. Many thanks for your involvement, folks. The only bad news is that memberships are now due but they are at least unchanged from last year. \$20 for electronic newsletter, \$30 for hard copy. This is payable to Chris Davis, at 9 Johnson St, Wembley, 6014 or in person at a Wednesday meeting. New members should supply their Email address if expecting an electronic newsletter.

SPLICE THE MAINBRACE (and everything else)

Our August Toolbox took place at Boating Hardware at 6/1 Zeta Cr, O'Connor on Saturday the 7th, hosted by the proprietor, Chris Gaudet. He took the 15 or 20 of us in hand and began a very detailed explanation of rigging and splicing just after 3 o'clock.

Chris first explained that notwithstanding some of us cruising types might like to know about galvanised wire, he himself knew very little about it and would concentrate on stainless steel rigging. He first explained that of the two S/S alloys, 304 tends to corrode in warm conditions and so, particularly in our climate, has been almost totally replaced with the more stable 316. He had three different types of wire to show us. There was the very flexible 7 x 19 (7 lots of 19 strands, the 19 themselves twisted up first, then as a group of 7 twisted up into the final wire). This would be good for halyards with rope tails and almost anywhere where bending is necessary. Stronger but stiffer is 1 x 19 wire where there are only 19 strands, one of which runs as a central core, the rest being wound around it. This is commonly used for shrouds and stays. The individual strands in these wires retain their twists in a "memory" and are easily re-laid after untwisting. Then there's "hammer" or "di-form" wire where the original 1 x 19 material is rolled under great pressure along its length, flattening the outside components and greatly compressing the inner ones. Such

a treatment is expensive and is mostly used in larger sizes for big boats. There's also solid rod rigging, but due to its propensity for sudden failure we didn't give it much consideration.



The craft of the rigger revolves around fitting appropriate fittings to each end of a measured length of wire. In its simplest form this requires the formation of an eye around a ferrule which is locked in place by an oval-sectioned length of copper pipe. The length is about four times the diameter. The swage, as it's usually called is first slipped along the wire some distance, the eye is formed around the ferrule with enough spare to double through the swage a second time, pulled up tight and the swage is inserted into a hydraulic press. The press is equipped with a pair of dies of appropriate size and mould the swage into a circular section and applying great pressure to the two wires. Simple though it sounds, they never seem to let go. Chris has four such hydraulic swagers with dies to suit wire from 5/64" to 1/4".

Such a system assumes that a fitting such as a turnbuckle will be shackled to the eye or in some cases, incorporated into it at splicing time. Far neater and more streamlined are fittings which incorporate the swage in the design. These include T-ball fittings for non-adjustable ends and turnbuckles for adjustment and tensioning purposes. Basically the turnbuckle or T-ball ends in a solid length of plated pipe which is squeezed onto a single length of the wire, although for a somewhat greater length of the wire than before.



A different machine is used for the squeezing this time. A pair of appropriate rollers (well, quarter rollers, actually) facing each other, rotate under electric power and drag the swage section through for its full length, squeezing it tightly onto the wire. Once again, done properly it never lets go. Chris has two such roller machines and dies for 3.8mm to 10mm wire. He also has an even bigger electric/hydraulic machine for wires up to 14mm but didn't demonstrate this one.

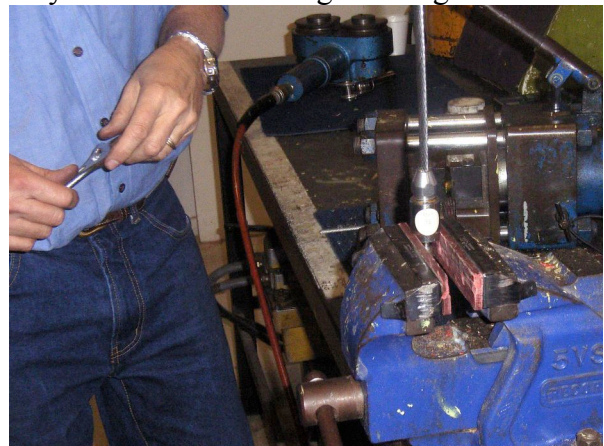


Peter Leggatt holds the tape and one end of the stay for measuring

The exercise on the day was setting up the diamond stays on Harry's F27 mast. T-ball hooks were used at the top with turnbuckles incorporating T-balls at the bottom. First a length of wire had a T-ball swaged on for the top end and was keyed into the mast (more on this later). The relevant length was then measured by tape, with subtractions made for the length of the turnbuckle. Large guillotine – type cutters with hook jaws are used to cut the wire to length, burrs are filed off and the wire is inserted into the second end for swaging like the first.

T-balls clip into an aluminium (sorry folks, I got it wrong last time, that's what Harry's mast is made of) spar section through an oval hole cut in the wall. They require a 90 degree twist to lock them in place. But first, to avoid distorting the aluminium under sailing pressure, the oval hole in the mast is lined with a special stainless backing plate inside the hole. This is a large oval itself with an oval hole around which is flanged outwards to stiffen the material. It's inserted sideways through the aluminium hole, twisted straight and riveted in place. The T-ball can then be clipped and un-clipped endlessly.

Historically, the alternative to this is a tang or strap of stainless with rivets and a bolt right through the spar. There are other ways but they all involve a bolt right through the mast.



Preparing to tighten a Stay-lock fitting

Chris also demonstrated Stay-lock and Norseman turnbuckles. These are like the swage type but don't use pressure to lock them on. They screw up and lock onto the wire over a S/S cone which is inserted into the core of the wire. They can be fitted with only a spanner and a vice, in any out of the

way part of the world – ideal for cruising, but cost about two and a half times as much as the swaged variety.



On top of all that, there was a Sabre class single-handed dinghy being built by Louis, one of the team of five who staff the business. This class is 14' over all using 4mm ply in stitch and glue. The hull was all laced up with internals fitted and just needed taping along the seams. The boat is largish for one man,

but light and should be easy to sail with room for passengers on picnic days. The class currently has a racing fleet of about 30 in WA, with 7 more building. Louis told me where the fleet races and I've forgotten – somewhere up-river; his will be the first at EFYC. Just for once we have a builder who's proceeding even faster than he anticipated, thanks to stitch and glue. He expects to be painting it by the end of August.

We were made very welcome by Chris. He'd prepared an excellent talk and presented it in an engaging fashion. On top of that he provided a very welcome afternoon tea with an urn, tea, coffee and biscuits all on hand. Many thanks, Chris Gaudet.

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NEXT TECHNICAL MEETING

The next meeting will be on 29th September, as usual in the Committee Room of SofPYC, 7.30 for 8 o'clock. Klaus Sussenbach will be talking on, and showing slides of his Kimberley adventures over the last three months. Even if one is not in a position to replicate this sort of travel, it's bound to be of interest to all members. Klaus, of course, has built his own 26' Norwalk Islands Sharpie over the last couple of years and I imagine this has been his first big trip in it.

OCTOBER TOOLBOX

This event will be on 9th October, between 2 and 4pm, and this time will be to Legend Boat Builders in Frederic St, Naval Base (corner of Henry St). I believe the workshop is on the south-east corner. There Brian Phillips is building a H28 yacht for a client, but not just any old H28, this one is in cold-moulded ply and he expects to have the shell finished and turned upright by the time we get there. The H28 is of course the famous L Francis Herreshoff design of 1943. Then, they were all carvel planked by traditional methods, whereas this boat will be both stronger and lighter. I think the class is still raced at South of Perth. Also nearby will be a couple of large catamarans and the "Cape Vlaming", which I think is a light house tender. There should be plenty for all to see, making it a very worthwhile visit.

MEMBERSHIP SUBS

Members are reminded that if they haven't already paid Chris their fees for '10/'11, they are now due but fortunately, in this inflationary age, remain unaltered at \$20 with electronic newsletter, \$30 with hard copy. You can pay Chris either at the next Technical Meeting or by sending a cheque to: 9 Johnson St, Wembley, 6014.



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