

RE-BUILDING THE BRIGHTLINGSEA ONE DESIGN

B O D



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RE-BUILDING THE BRIGHTLINGSEA-ONE-DESIGN (BOD)

Using Epoxy glues & coatings

The method upon which these notes are based assumes a working knowledge and experience of woodworking hand tools and machine tools, and familiarity with “West” or similar epoxy coating / gluing resins and fillers. Insurers will require a survey, prior consultation with them and / or a surveyor experienced with BODs, and their construction / sailing range will be useful. No problems have arisen thus far.

A dry warm working environment and access to the BOD plans and templates is essential and it may be helpful to try to retain as much of the original boat as is practical. This will critically involve an accurate perception of what epoxy will do and how it fundamentally changes the engineering structure of the boat (i.e. glued “as one” in addition to the individual pieces being fastened with metal. In fact, thus fastened and glued the ‘traditional’ clinker shell matrix with curving ridges / overlaps (lands) and intermittent “spaced away” ring frame bracing inside (ribs) might well prove to be a rather innovative and embarrassingly strong light structure if scientifically tested against other more modern skin moulding methods!)

The first pre-requisite is that all timber surfaces must be clean with all oil-based products removed. The special sharpening and use of a “Harris” or “Scarsten” type scraper as a wood cutting tool is critical. (Appendix B).

The few remaining un-restored B.O.D. hulls (*60 years old plus*) are probably irredeemable by any other method. Certainly any reliance on traditional clinker/moisture/expansion water tightness with oil-based coatings, is likely to result in leaky, disappointment sooner or later. But C 8 ‘Egret’ the earliest restoration by this method (*1990*) remains exceptionally serviceable in 2013.

So, the boat is to be cleaned, all rot removed, some parts renewed or added, and every seam or joint glued, then coated all over with epoxy before varnishing and painting where appropriate.

The broad stages of achieving this are as follows in 1 to 23:

(Many sequences are critical, but later jobs can sometimes be brought forward, out of sequence, without duplication or difficulty).

Also Appendices – ***read them first - pages 10 - 20***

Appendix A – Centreplate and rudder blade

Appendix B – Special Techniques

Scrapers as cutters, and angle grinders

“Vee” gluing

Appendix C – Restoring with Epoxy

Philosophy

Notes on use of Epoxy

Finishing for varnishing

Appendix D – Steaming ribs

Appendix E – Epoxy colour tinting

Appendix F – Fair Lines

THE METHOD

1. Remove the paint from the outside of the hull. Clean the outside of the hull to clean bare wood including areas for repair. “Vee” the lands where sound.
2. Dismantle the boat to a shell minus the outer keel and with only the deck beam shelves and two deck beams at cockpit ends remaining. Remove the deck skin only first and measure and mark the ‘beam at deck’ at the cockpit end and amid ships.

Ideally, for fairing the shell, all the ribs will be removed except one pair at the extreme forward, and aft ends. For the moment, if there are many split planks and lands, then leave some ribs in place temporarily to hold these together. Sometimes a run of several ribs from the bow aft can be retained for good.

Send all the bronze items to be lightly shot blasted, or clean them yourself, soaking in hot caustic solution (BEWARE) followed by rotary wire brushing, or soaking in spirit of salts (dilute Hydrochloric Acid). (Note : Both caustic solution and hydrochloric acid are available from DIY stores)

3. Fix the hull, through the hog, to the keel jig with brass screws at 2 ft centres and mark the position of the screws on the side of the jig with chalk. Shore and fix the hull level with four vertical shores screwed to the second plank down and angle screwed into the floor just forward and aft of the cockpit ends.

Temporarily ribband and shore, or otherwise support the hull underneath against breakage, and remove all the paint / varnish from the inside of the hull and all the "kit of parts". Work first with some ribs in place and the beamshelves. When no further progress can be made then remove the beamshelves and remaining ribs. The process is finished when the inside of the hull shell and the "kit of parts", deckbeams etc, are entirely clean wood, free of all oil based products.

4. Now ribband and shore the hull fair. Use ply pads under screwheads when fastening down into the ribbands and keep these fastenings clear of the new ribs and floors to go in. One ribband on planks, two and four each side, will work well. Ribbands approximately 15' x 1 1/4" square. Shores under ribband approximately 3ft apart. Shore down from the ceiling onto any really tough upward curves in the planking.

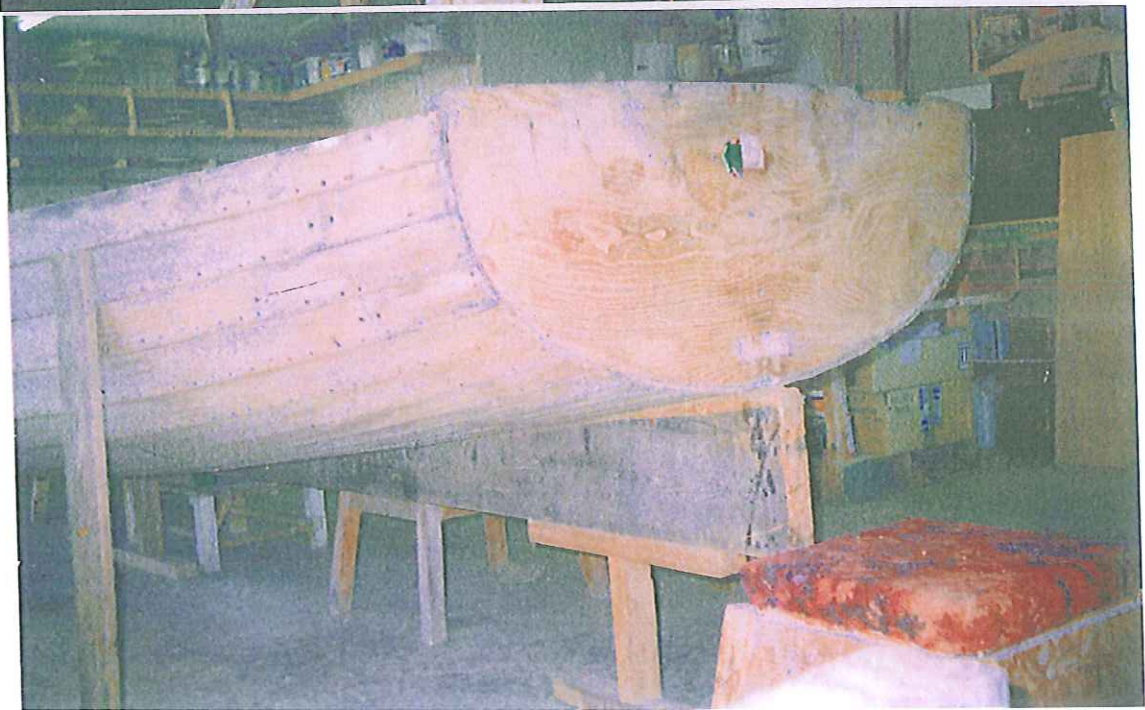
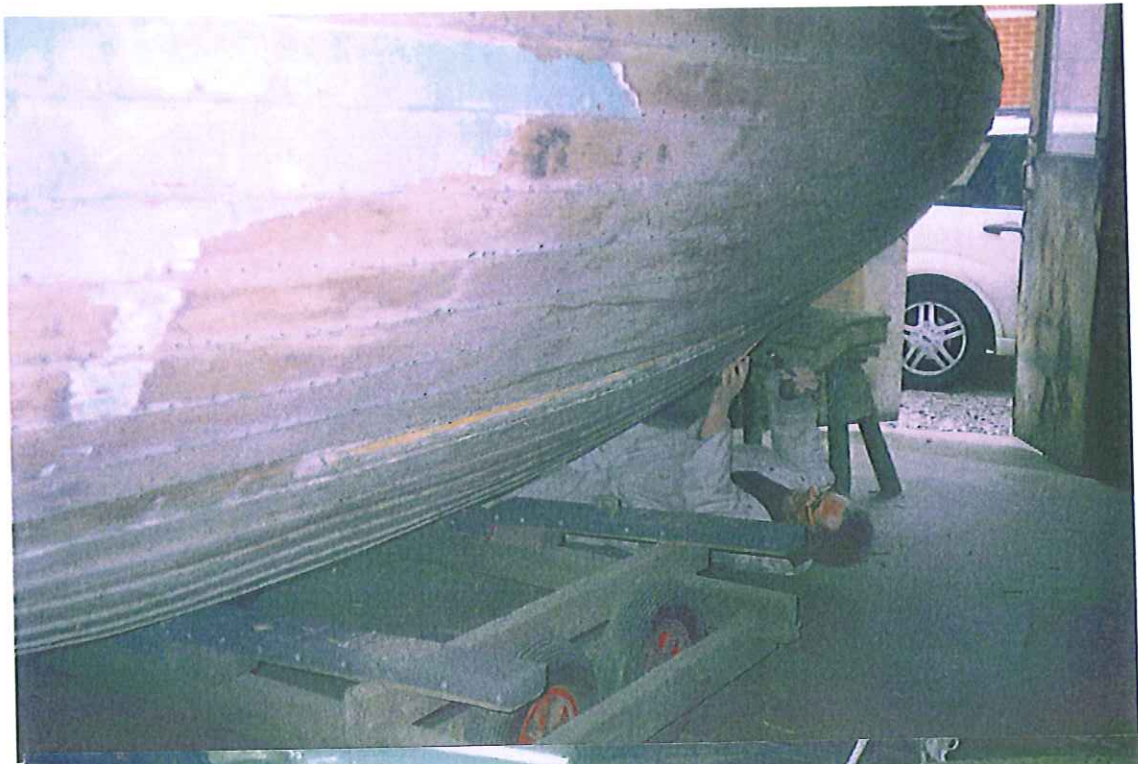
Repair the hull and the parts individually. Ideally remove the transom and stem clean, glue and screw back in place, otherwise use "vees" and epoxy fillets.

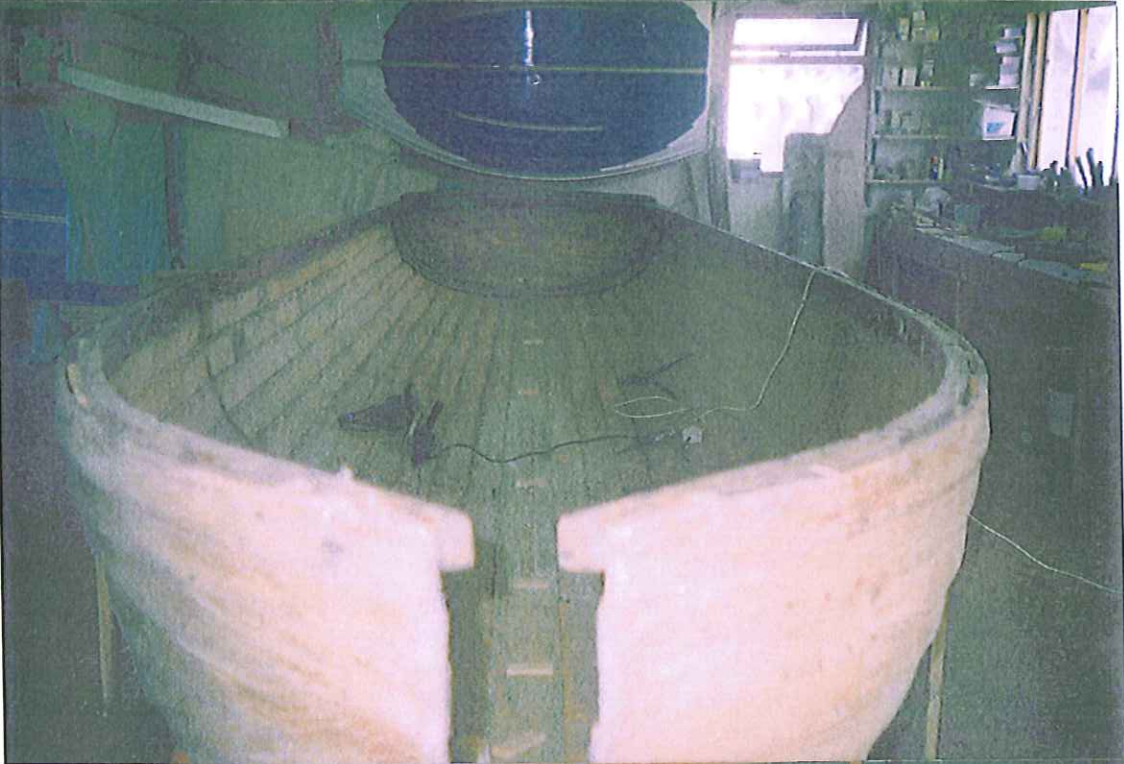
PHOTO'S 1 – 24 – refer to Sections 1 – 4

















5. Where repairable splits in planks occur along a row of rivets (remove the rivets), clean the planking and glue up. Shore fair from the outside while the glue sets.

Or the plank, can be repaired with a new edge or 'stealer'. Make it, place on top, mark, cut and glue in position with temporary screws, replace the rivets later.

In an extreme case where a joint between two planks has entirely split and separated for a considerable length then use multiple shores underneath to re-establish this shape, using the old rivets / holes as joint datum. When all is set up just right (possibly with a forrest of shores underneath!) glue and fillet "boomerang" shaped pieces of 9 or 12mm ply across the two planks on the outside of the boat, clear of where the ribs will go.

Repair the planks with glued on edge stealers (grind off the 'boomerangs after the new ribs are in).

"Vee" the inside of the plank lands with the specially ground scraper over the entire bottom of the boat, and any lengths along the inside of the topsides where the joints are more open.

Fill these with epoxy using a broad knife which is also run along to remove surplus. A small rounded fillet can be left.

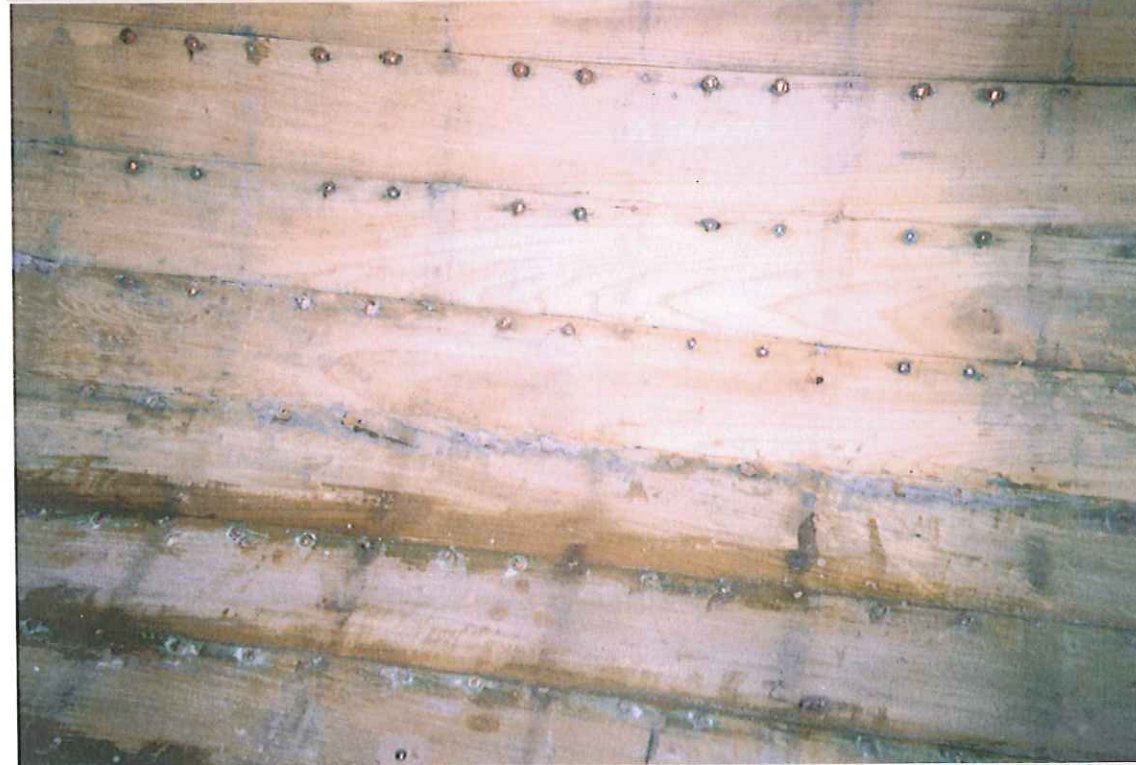
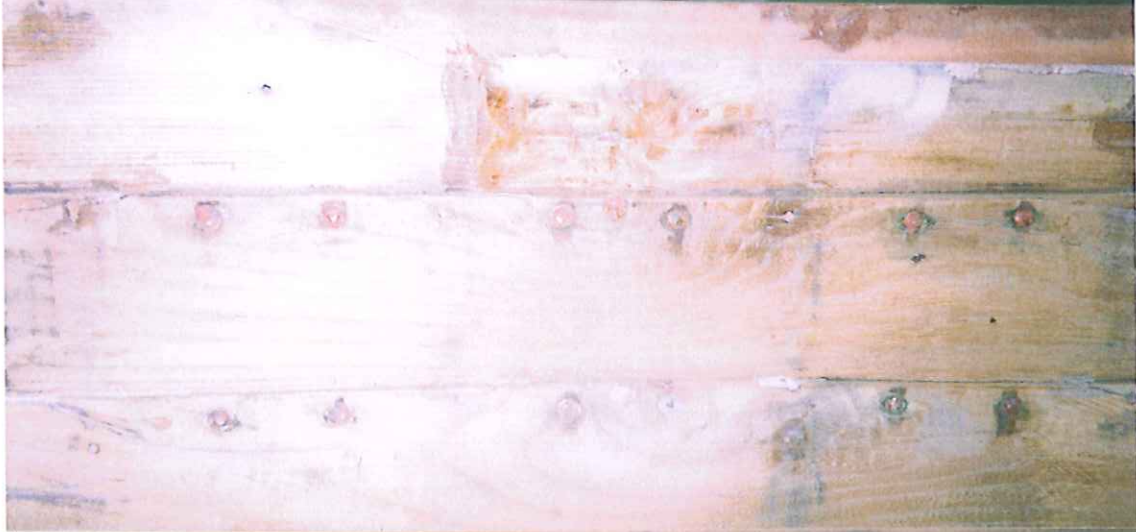
6. Re-build or make a new full length centre case unit and cills to fit the hog. Start by planeing 3 x 12ft x 11 3/4" boards to 1" finish. Fit an edge of one to the hog, and then shape the two lower halves, then edge glue the top pieces on oversize and finally trim to profile shape.

Assemble the centre case using 1" finished packers glued to one half. Lay both halves flat and apply two generous coats of standard epoxy inside. When assembling pack the centre, lower, slot with 1 3/16" packer to allow for any

irregularity in centreplate thickness /shape. The centreplate pivot bolt may need to be slightly raised and forward in the case so that the plate is still just fully housed above the keel when raised – in spite of the slot in the plate having become longer through wear. Fit (but don't fix) the winch bracket to the forward spur of the centrecase.

7. Fit a ½" ply centrecase print and centreline stopper strips to the hog in way of the half ribs. Optionally remove the two pairs of ribs at the extreme bow and stern.

PHOTOS 25 – 35A – refer to Sections 5 - 7













8. Steam /boil (45 mins) in the new Ash rib timbers (See Appendix D) and bleach the inside of the shell / ribs where it is to be varnished with hot Oxalic Acid solution (HAZARD), then fully fasten the ribs. Neutralise the Oxalic Acid by brushing on a coat of warm borax solution. Note that the outboard edges of the garboard planks may require wedges before riveting.

Make and fix shroud plate chocks, re-fix the deckbeam shelves. Try the two deckbeams at the cockpit ends, dry to check that the beam of the boat is correct. If too wide cramp across the boat with two pairs of sash cramps bolted together. Each pair positioned 4" to 6" within the length of the cockpit – this position will also pull the mid ships beam check measurement in or very close to correct.

Shroud plate chocks can be fitted dry with 4 x $\frac{3}{4}$ " no. 6 screws through the hull, before the deckbeam shelves, or alternatively made after the deckbeam shelves are fitted by leaving out a run of four rivets temporarily and wedging the beam shelves away from the ribs a little. Then either way glue / screw the shroud chocks and fully rivet the beam shelves.

PHOTOS 36 – 64 – refer to Section 8



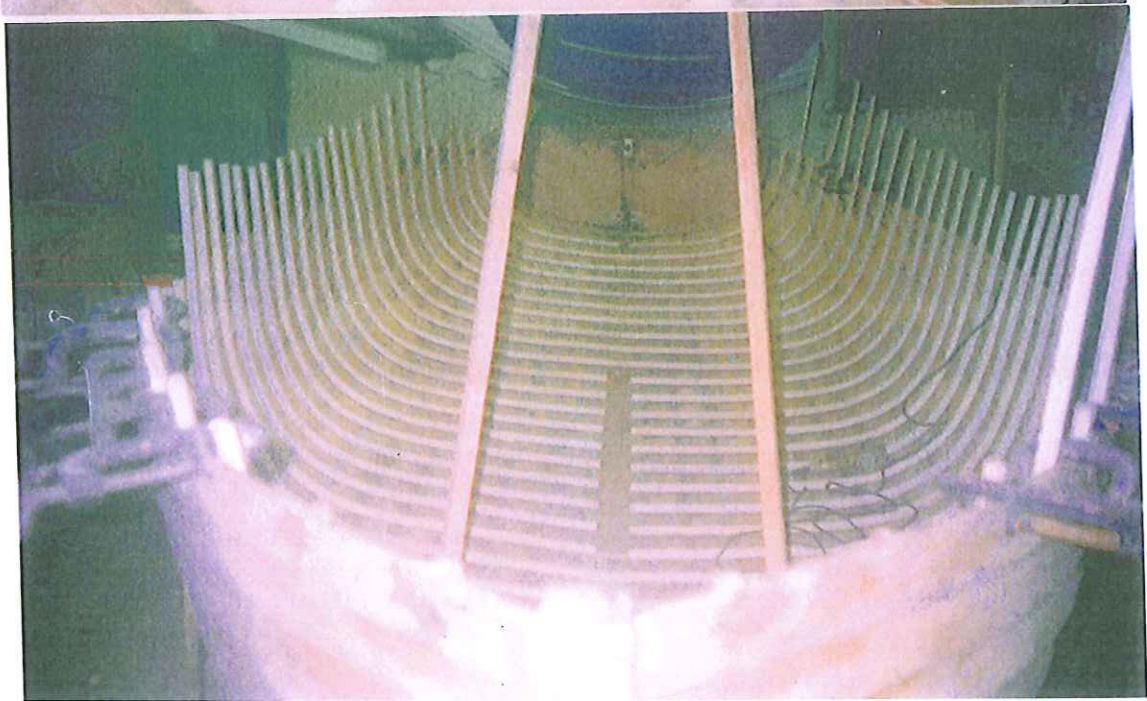


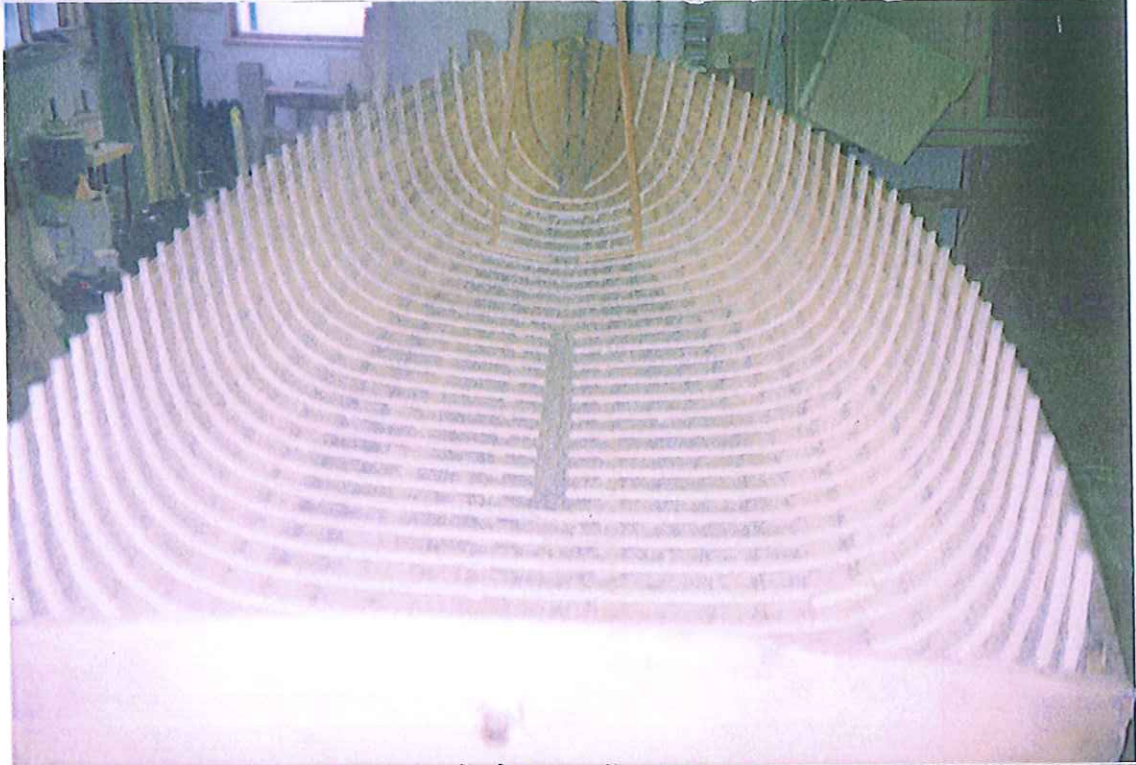
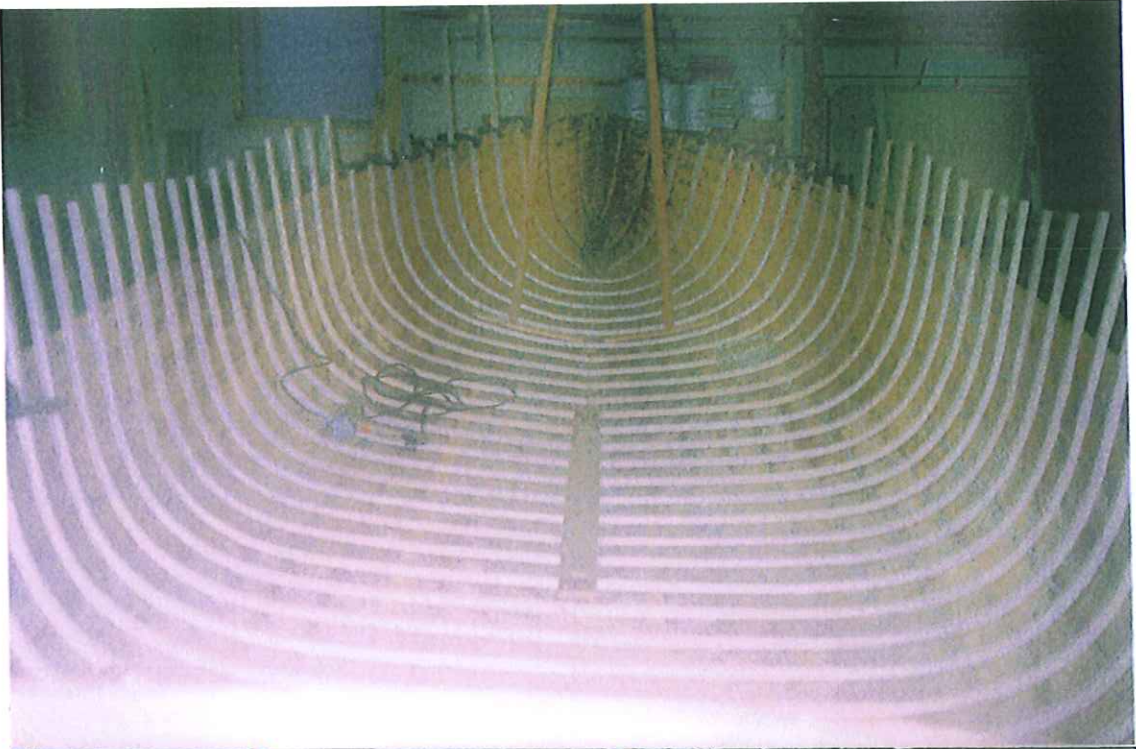




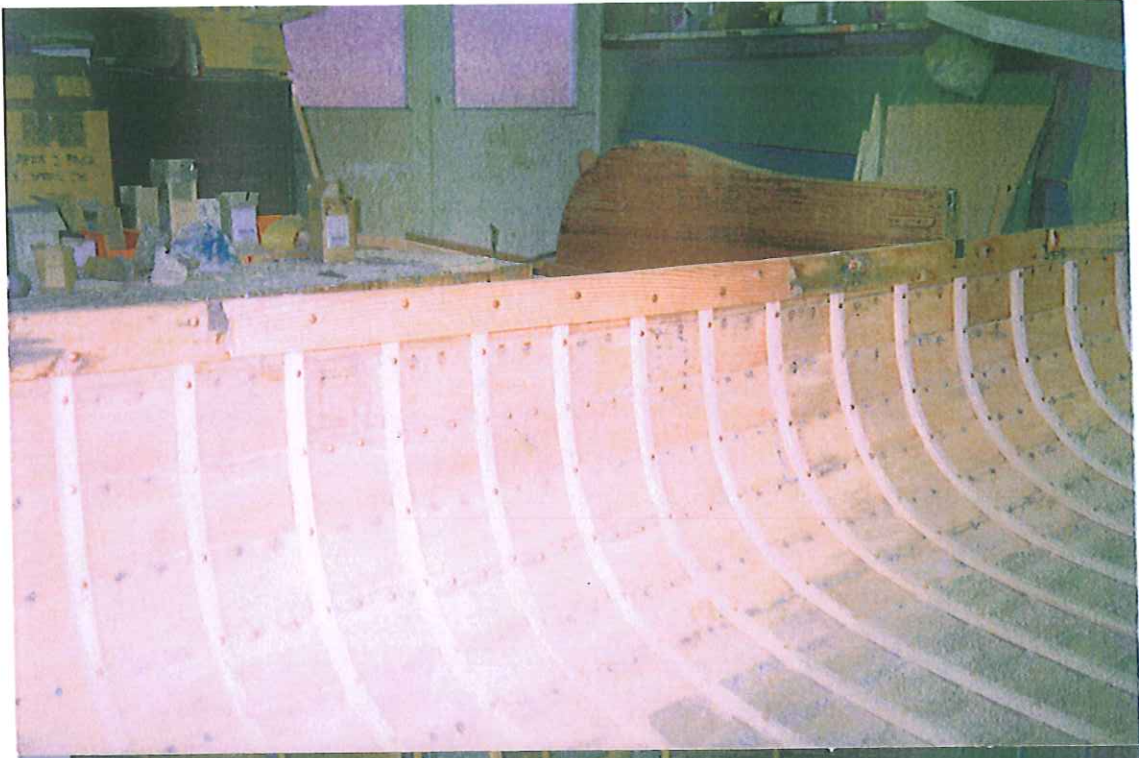












9. House the centrecase assembly to fit the ribs where they cross the centreline and similarly house the cills over the ribs in way of the centrecase sides. Make and fit the floors to the centrecase assembly all in position dry. Similarly fit the two original type floors near the bow of the boat. Only these and the floor at the extreme aft end of the centrecase assembly need cross the boat in one piece. All the others are made in two halves, half housed under the centrecase / cills where necessary.

The top faces of the floors on which the floorboards bear will be trimmed down starting with floor 1. Farthest aft and floor 6 at the forrad end of the centreplate slot.

Then spring a fair line around with a light batten through the points where the floors taper to the same thickness as the ribs and therefore where the outer edges of the floorboards will lie.

Carefully trim down the top of floor 4 so that the fair line will run all the way forward from floor 1, through floor 4 and floor 6 and continue a fair line forward to the end of the short floor near the bow. (*The second floor back just ahead of the centrecase spur will be entirely inside this line*). Now trim down the top edges of floors 2,3 and 5 to comply with the system. That is so the outer edges of the floorboards take a fair line while showing a 1 – 2 min constant clearance above the ribs.

Remove everything from the boat, glue and screw the cills to the centrecase and glue the centrecase into the boat plumb with two screws aft, one forward and shores from above as necessary.

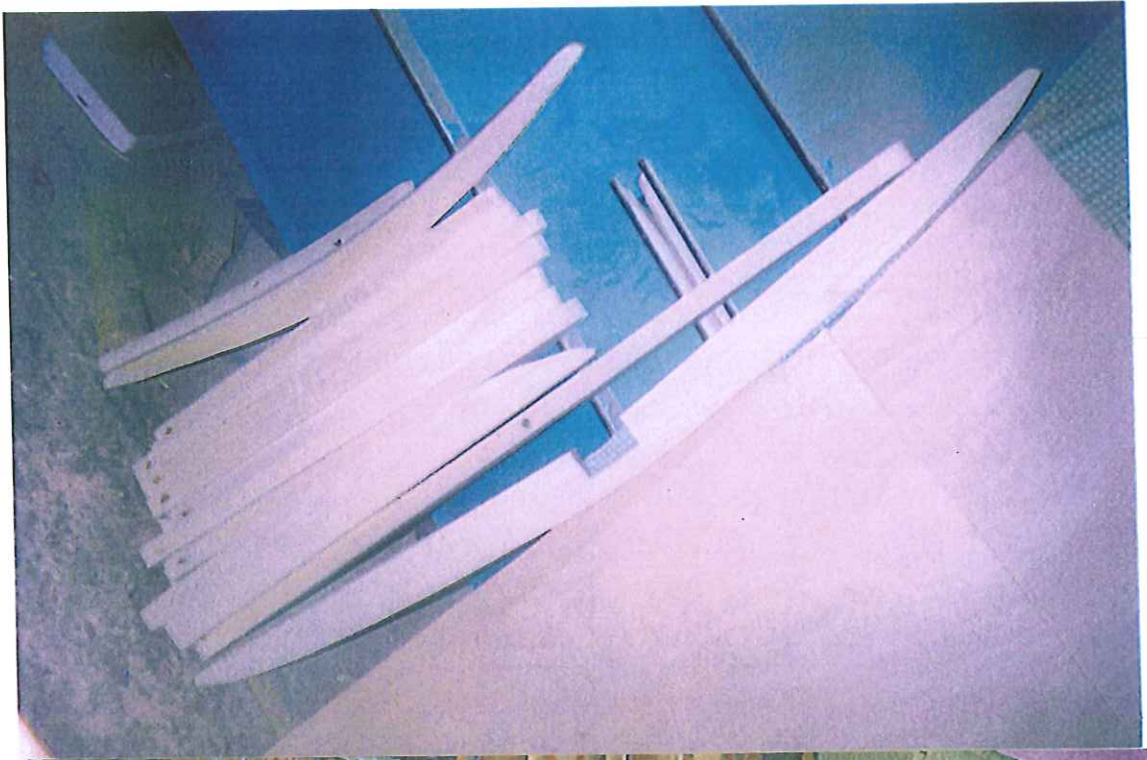
Glue and fasten in the floors, but first drill the hull in preparation for screw fastenings upward through the planking later, when the boat is inverted. Rivet the extreme outer land of each floor when the glue has set.

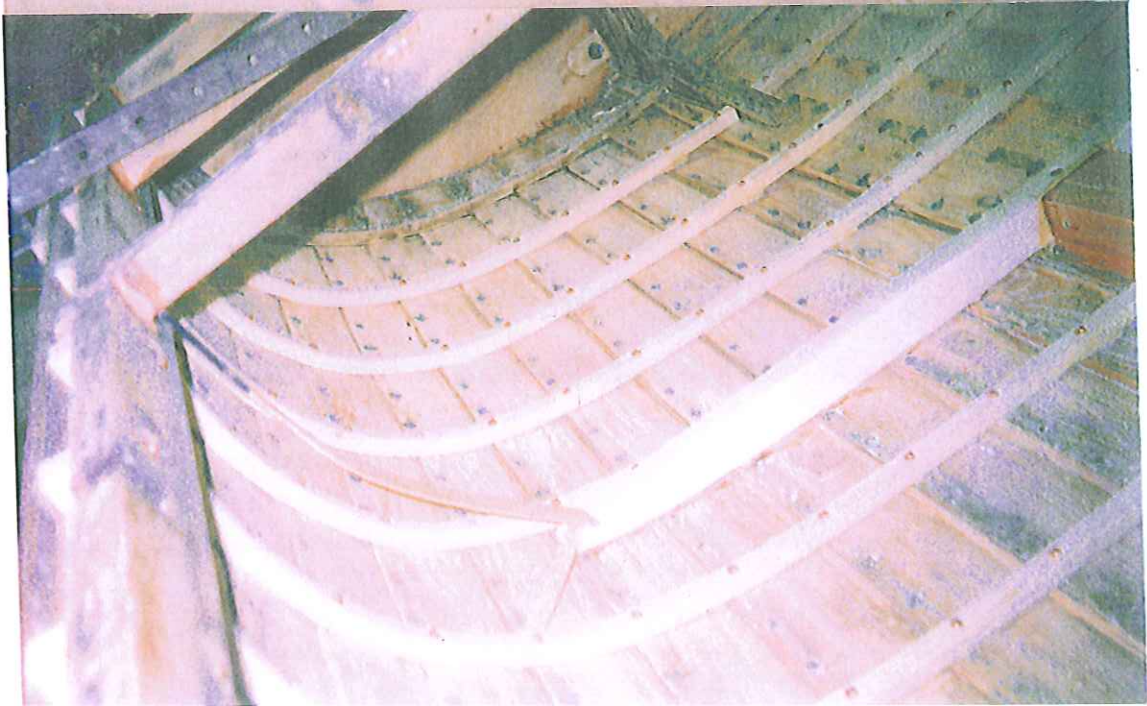
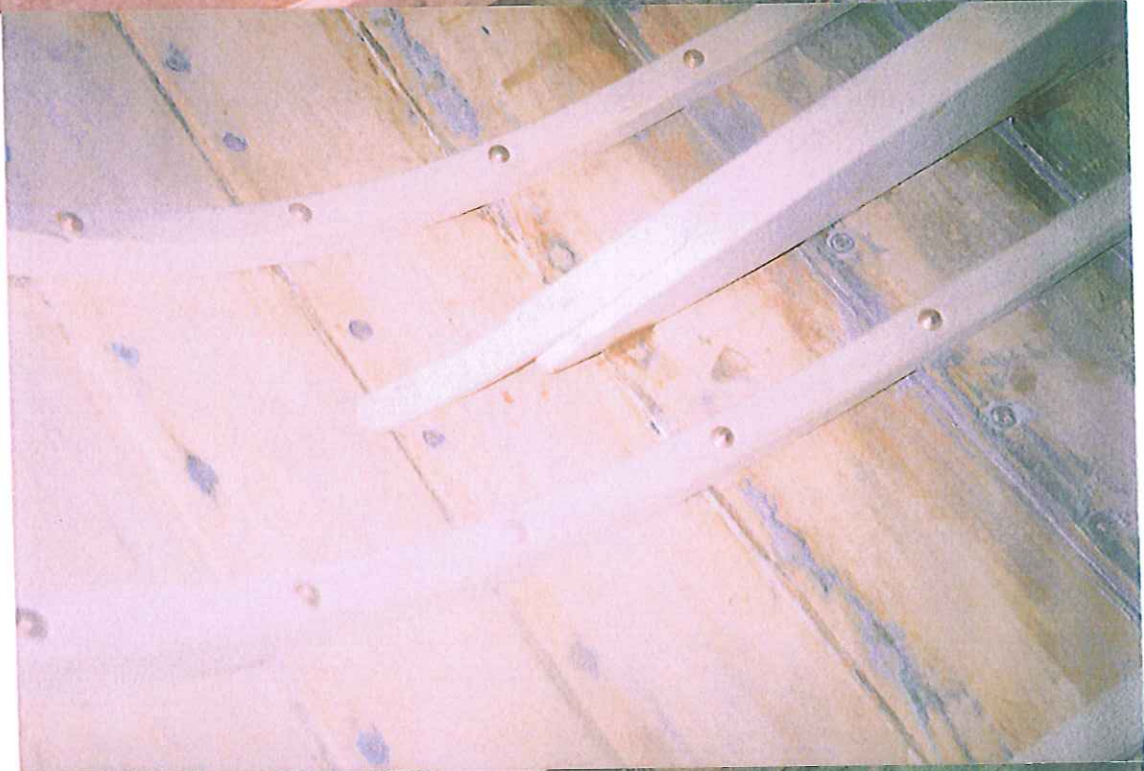
Finally fix the two main deckbeams at the ends of the cockpit and make the floorboards from 12mm ply.

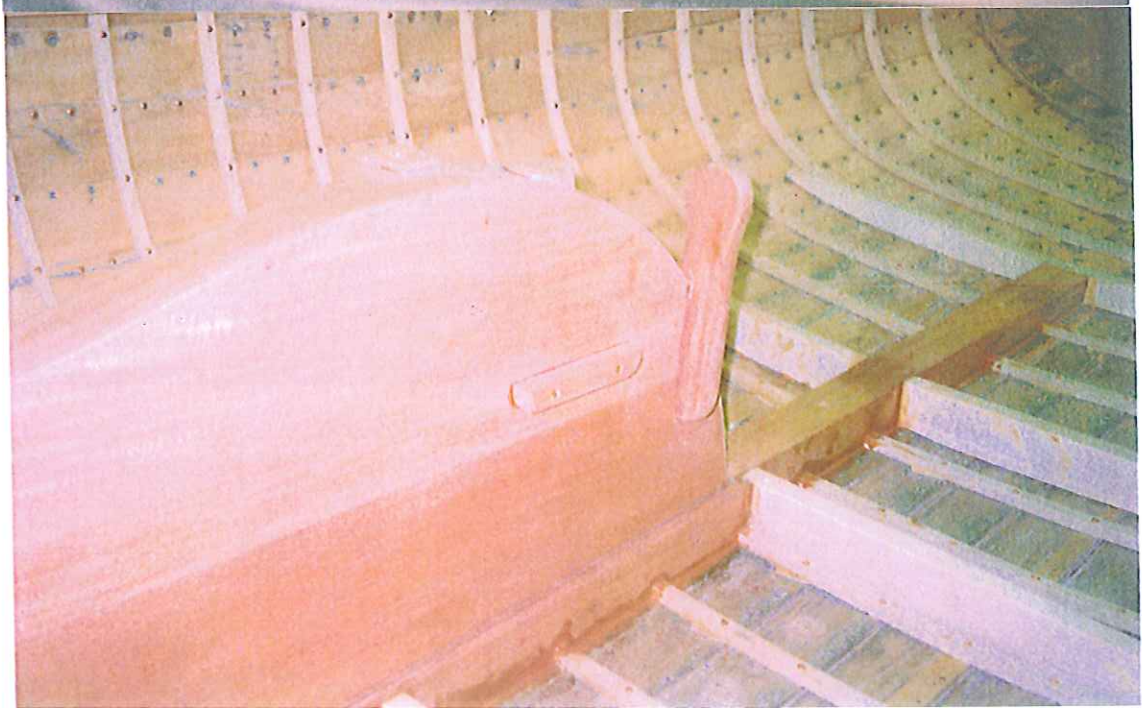
10. Temporarily fit the shroud plates using a piece of 9mm deck ply to gauge the height and fit the rudder fittings. Make and assemble the rudder with fittings, dry. Make the tiller but leave the tenon oversize and do not cut the mortice in the rudder head. Individually mark and remove the shroud plates and rudder fittings from the boat.

11. Assemble and glue the deckframe with 3" x ½" ply centreline buttstrap pieces and fitting pads, check the beam measurements at deck.

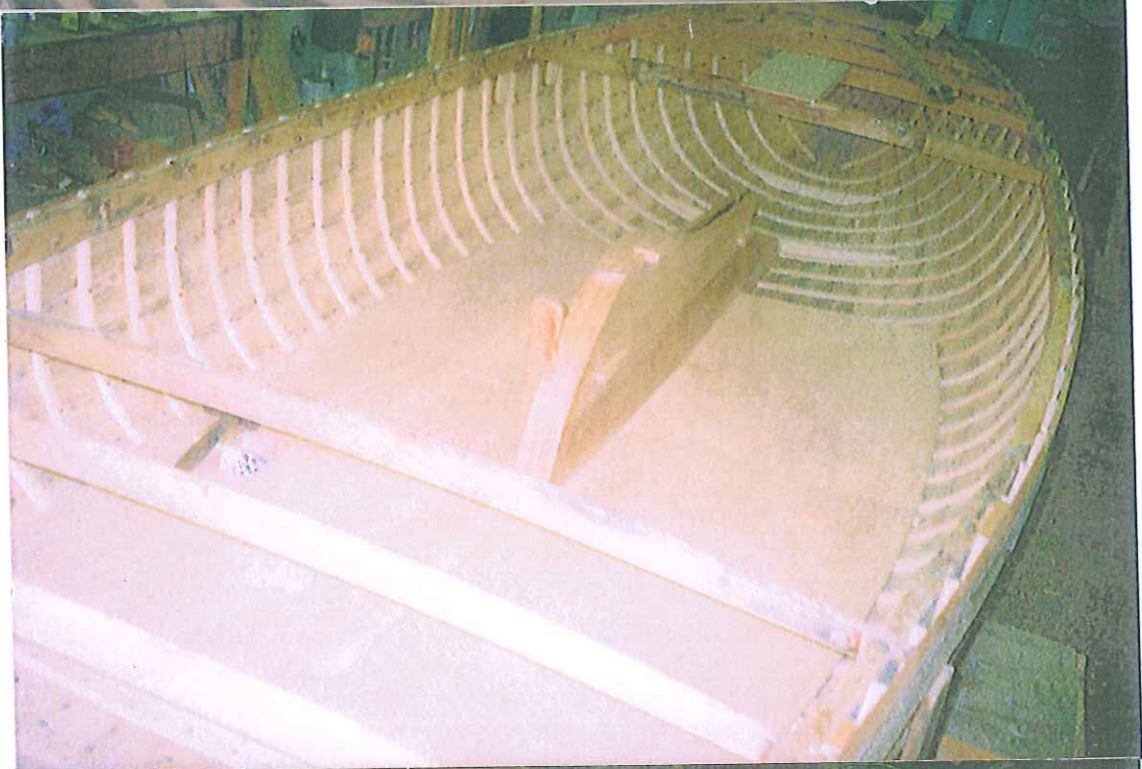
PHOTOS 65 – 85 – refer to Section 9 – 11











3







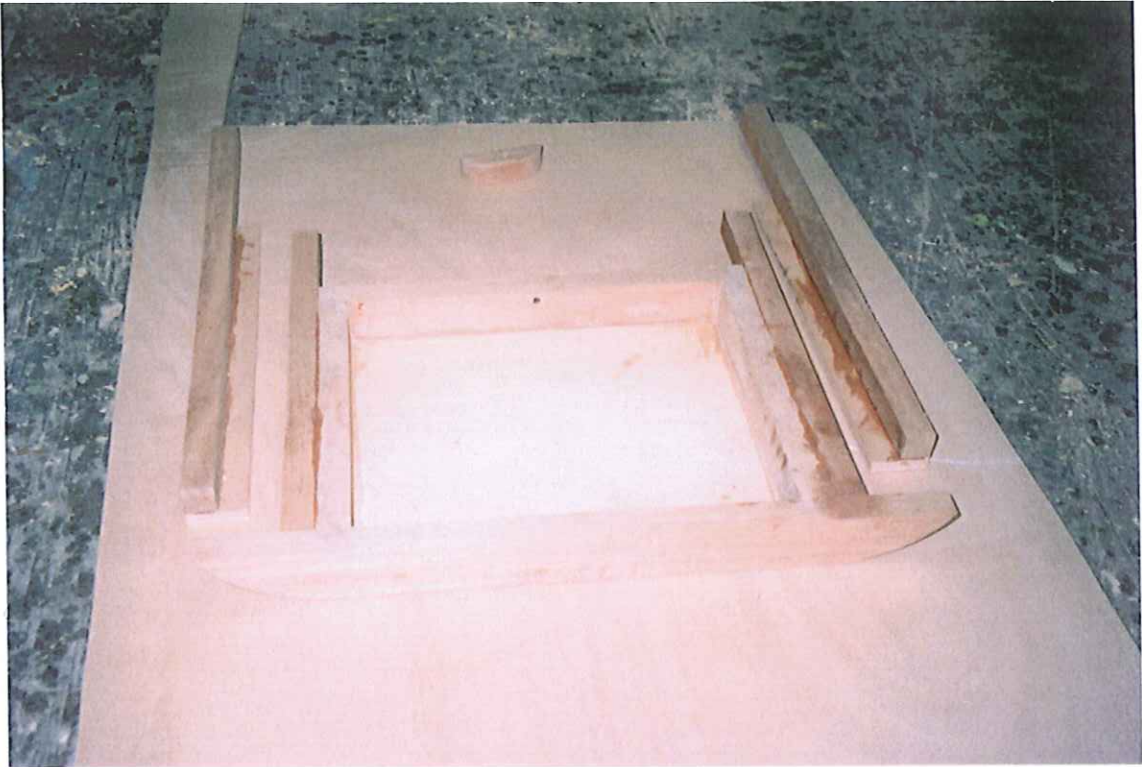
12. Make the "jablite" buoyancy blocks from the templates and fit to the boat. Install 2" toestraps webbing to retain them. Remove all from the boat and send the buoyancy blocks to be canvas covered.
13. Fit the thwarts and "shelf and drawer" and their risers. Fix the risers to the boat, then remove the thwarts to be coated separately. The shelf will be made so that the rear edge is ½" forward of the front face of the aft buoyancy block – which is nominally 14" thick but may not be entirely touching across the transom.
14. Cut the 9mm deck panels a little oversize. One half fore deck, and a side deck from each of two sheets, and two aft deck / side deck "L" shaped pieces from the third sheet.

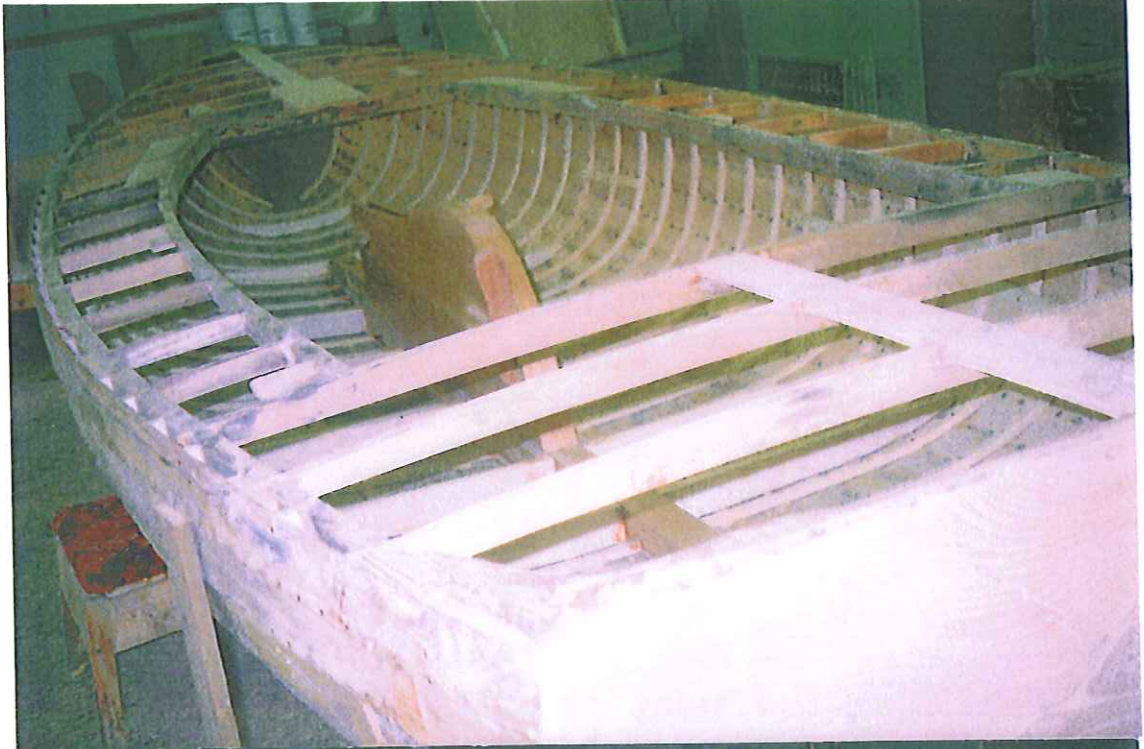
Apply 3 coats clear special coating epoxy to all loose joinery, inside top sides / hull where varnished and undersides of deck panels.

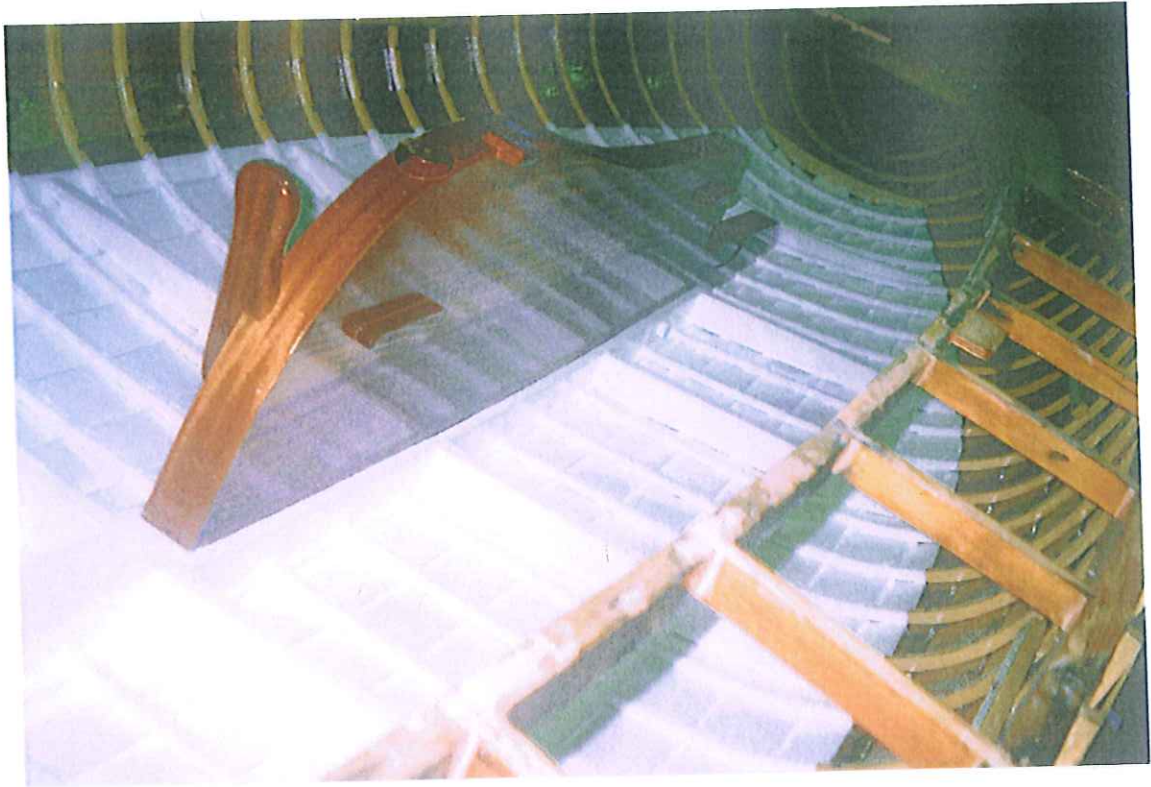
Then 3 coats (white) pigmented standard epoxy to "sump" below floor and forward. Cut this in to a fair pencil line previously marked just outside the shape of the floorboards and extending to the rear of the forward most floor in the bow.

Fix the rudder fittings to the transom and check their alignment by hanging the rudder.

PHOTOS 86 – 91 – refer to Section 12 - 14







15. Plane in the deckframe fair and fix the decks, fore decks and L shaped aft decks first with scarphs cut. Then lay in sidedecks. Fix the washboards, cockpit bevels and trim, mooring cleat, boom crutch socket, and boom crutch. Fill and fair the topstrakes and fit the gunnel beadings. (Pre-scarph a piece to make both beadings and then rip, bevel and shape the undersides – shape the top outer nosing after fitting).

Fit the tiller / tenon / mortice to the correct height above deck, glue the rudderstock and finish the rudderstock, tiller and extension. (Underside of tiller 2 ¾" above top of deck at aft end of cockpit).

16. Finish sand down to 120 grit and apply 3 coats clear special coating epoxy to all loose parts and to deck and bright work including the transom and down to the lower edge of the top plank. Flat sand the top of the deck near the shroud plates and fit the shroud plates glued and filled where they pass through the deck.

PHOTOS 92 – 98 – refer to Section 15 – 16





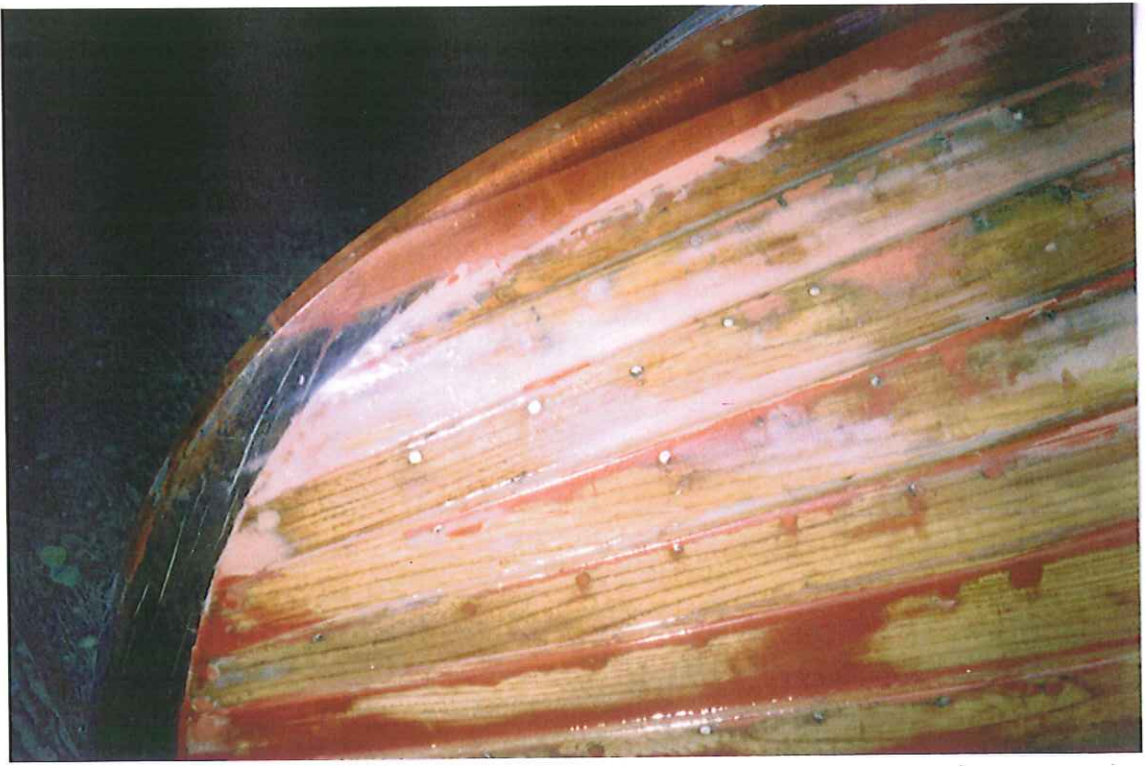


17. Remove the boat from the jig and invert it. Insert fixings into the centre case and floors.

Laminate in a new keel in two x 1" finished laminates fastened with screws. The 2" keel is ¼" bearded each side. So the laminates will be 1/8" bearded each side with the top most laminate initially cut square and ¼" narrower than the lower laminate for its full length.

18. Repair/fill any minor splits remaining along the rivet lines. Fill the previously "Veed" out plank lands with epoxy. Fill and fair the planking with epoxy / fairing / balloons up to 6mm thick (or timber laminates over 6mm thick). Sand the hull fair – block sand with sanding boards or orbital 'block' machine. Apply 3 coats standard epoxy. Optionally abrade the coating to 120 grit now.
19. Now with the boat right way up, sand the decks, bright work, transom, top plank and all loose parts to 120 grit. Varnish the bright work with 3 coats 2 pack PV without rubbing down between coats Mask up and paint / sprinkle / non skid to deck and top surface of floorboards. (Sprinkle silver sand into one wet coat, remove margin marking, apply two coats all over to edge of varnish masking, remove masking ASAP).
20. Fix all fittings to "ready to sail" note any snags and short fall. (Fix the stem head fitting and remove it).
21. Invert the boat again. Abrade / fair the epoxy coating down to 120 grit if not previously done. Fix the brass keelband with epoxy in every screw hole and abrade it.

PHOTOS 99 – 105 – refer to Section 17 - 21







22. Paint the hull. For one colour all over with boot-top / waterline coachline, a good production method is as follows:-

Apply 3 coats 2 pack PU to the hull all over without rubbing down between. Next day set out, mark and apply two or three coats to paint the waterline and coachline. Remove the masking tape as soon as possible.

For different colour bottom and topsides with or without coachline, as follows:-

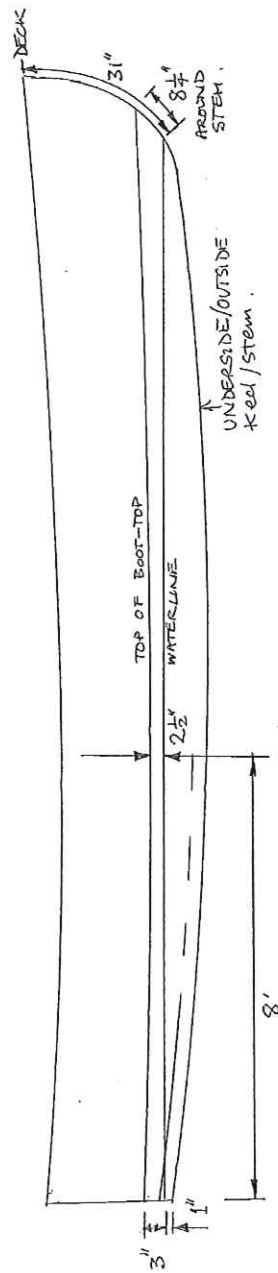
Apply 3 coats 2 pack PU to the bottom higher up the topside than required and "tapered out" as much as possible, or 3 coats all over. And, if a coachline is required 3 coats to the top-strake of the coachline colour.

Next day set out and mask the waterline, and the coachline with a 1/2" strip of tape. Apply 3 coats to the topsides.

("Coach" finishing – after "production finishing" optionally mask and rub down the topsides to 320 grit ensuring that the colour remains continuous. Apply a single coat of colour mixed with up to 50% varnish and some thinners, laying the paint off with the brush in 3ft panels while maintaining a wet edge).

SEE FIG 1.

BOD Waterline / Boot-top
Not to scale!



WATERLINE for single column break
- AT TRANSOM - exactly in corner of keel/garboard
- AT STEM - 27 1/2" measured around stem from deck

WATERLINE is 1" above
underside of keel at Transom.

TOP OF BOOT-TOP follows a
shallow, but similar, curve to sheer.

Fig. 19/11/12

- Turn the boat right way up, fix the stemhead fitting and the boat is ready to rig and sail.

PHOTOS 106 - 120 - refer to Sections 22 - 23













APPENDIX A – CENTREPLATE AND RUDDERBLADE (STEEL)

CENTREPLATE (HEAVY & POTENTIALLY DANGEROUS)

Dealing with the centreplate is straightforward with epoxy but the cure schedule of the epoxy coating must be adhered to and the iron totally rust free so:-

1. Have readily available two high trestles with pairs of 2 ½” or 3” nails half driven in the tops so that the centreplate can rest safe and flat with the underside sufficiently accessible for coating. Ideally wrap the nail heads with cellophane parcel tape to avoid adhesion. (The plate could also be hung up touching the floor if a totally safe anchor point is available).
2. As convenient collect the plate and ruddleblade if steel, from the shotblasters – on the same or the next day from when it has been cleaned. Warm it slightly if possible and with it laid safely on the nail heads and still on the same day apply at least the first of two coats of standard epoxy all over, All the irregularity and pitting is irrelevant. What is relevant is getting epoxy onto clean metal. Clearly coating of the underside may be uncomfortable and inconvenient but achieves the objective. Apply the second of the two coats of standard epoxy as soon as the first has just set.
3. Immediately the second coat of clear standard epoxy has hardened just sufficiently - next day at the latest, broadly fill the pits and irregularities with a suitable epoxy filler mix using a wide broad knife. A coat all over will not go amiss.
4. When that has just gone off and as soon as possible WITH ADEQUATE HELP, turn the plate, removing the nails and similarly fill the other side. The forward edge and tip may well require an adequate build to achieve a true shape later, which may need to include ‘graphite’ and ‘microfibers’ in the mix.
5. The centreplate is now ready for re-finishing either now or later:-

Block down with 60 or 80 grit first, detail fill again with epoxy / filler and then flat to 120 grit all over and apply 3 coats 2 pack PU paint either flat one side at a time or paint both sides with the plate SAFELY hanging / touching the floor.

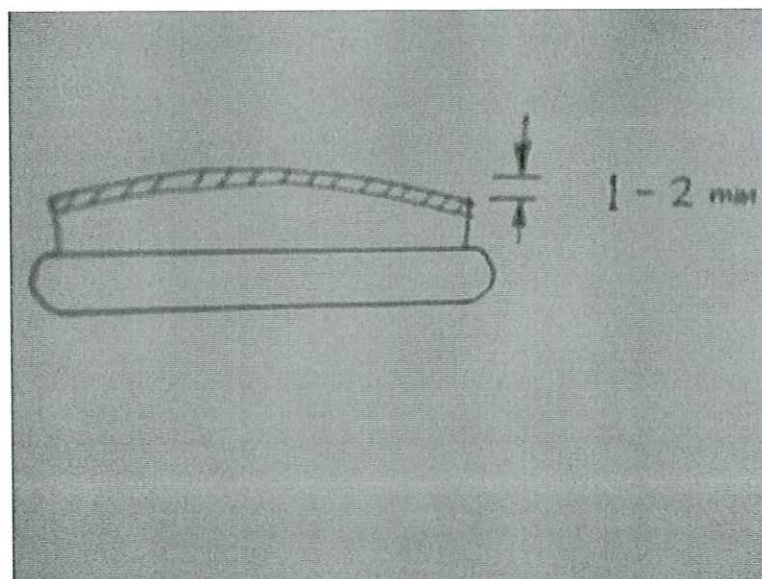
A steel rudderblade may be similarly dealt with as above but with less filling and greater convenience. (A new stainless steel rudderblade will not require finishing).

APPENDIX B – SPECIAL TECHNIQUES

1. Use of “Harris” or “Scarsten” scrapers as an effective cutting tool:-

The blade must be prepared differently to “as sold”. The cutting bevel is slightly sharper / finer and the edge of the blade is shaped in an arc of 1 to 2 mm in the length so decreasing the effective width and therefore increasing the pressure of the cut.

FIG. 2



The strokes used are deliberate, two handed, PRESSURED with one hand on top of the blade and will remove a significant depth of (old) varnish, paint or surface shaving at one pull. AS SOON AS THE BLADE STARTS TO SKID (5 mins?) EFFORT IS WASTING. So brace the tool against the bench and sharpen with a triangular saw – file or on a fine bench grinder.

Significant builds of paint can be removed first with a blowlamp and flat knife or Yellow Nitromors (HAZARD) and this or other effective scraper.

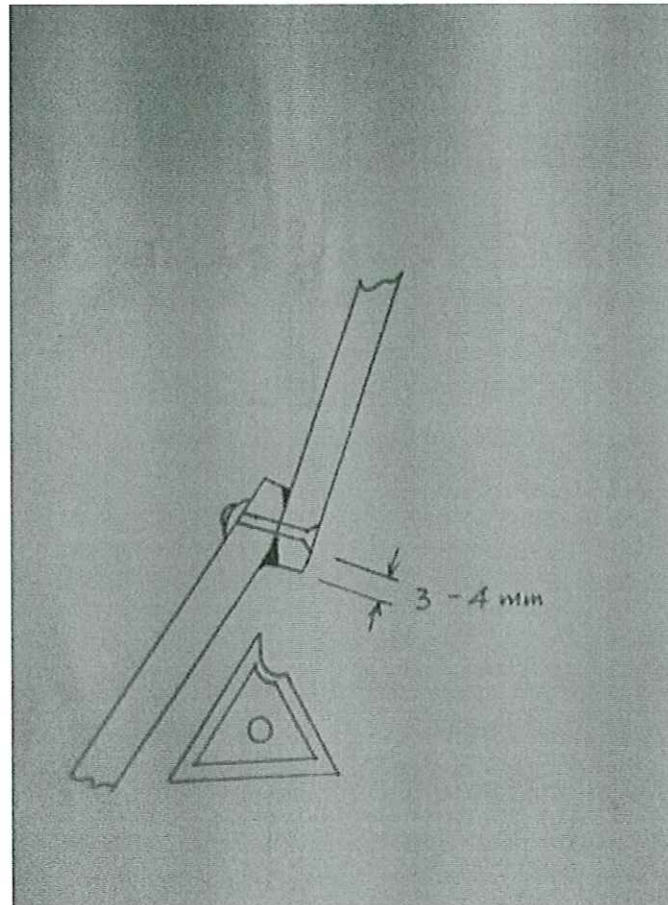
Old oil based varnish will come off solely with the sharp scraper as above. All the oil based product must be removed. So cut once all over to remove the varnish from the surface, then one or even two finely sharpened cuts all over to take a shaving from the wood and the ingrained varnish with it.

If “Nitromors” is used anywhere it may not be neutralised with White Spirit as the oil will entirely repel the epoxy coating causing it to “fish-eye” (draw back).

A small angle grinder with very coarse 24 or 36 grit discs is very useful for removal of old or bodged G.R.P. or Epoxy coatings and fillets. Also extremely versatile in flushing down surpluses of new epoxy adhesive / filler inside or outside the hull prior to finer sanding.

2. Cleaning and "Vee" glueing the lands. Make a special scraper:-

FIG. 3



Grind up a triangular or similar scraper to take out a Vee. On the outside of the hull do this everywhere and pay up with epoxy also slightly fillet radiussed. On the inside vee the bottom only and pay up with epoxy before the ribs go in. Inside the topsides, the internal brushed on epoxy coating will also run into the generally finer plank seams and glue them.

APPENDIX C – RESTORING AND REPAIRING WITH EPOXY

1. Philosophy

The standard of work can be “wholesomely sound”, but appropriate throughout.

Take every reasonable time saving advantage offered by the properties of epoxy for soundly repairing “old” and bonding “new to old”. The appearance of the “new to new” cabinet joinery of the decks, centrecase etc, will dominate the appearance of the finished boat as a whole.

The critical choice is either:

Build a BOD from a repaired historic shell with all the biologically rotten timber removed but most of the rest retained

OR

Build a new shell.

Because of the overall thoroughness and extent of the re-fastening there is little to choose between the results.

2. Notes on use of epoxy

The wood must be dry. The atmosphere must be warm and dry 16c/61f minimum especially for coating. No mist on the inside of the windows, damp will cause irreversible milkiness within the coating. Very unsightly under varnish, and always use epoxy Special Coating hardener under brightwork.

The strongest epoxy filler mix is fibrous either microfibrils and suitable filler powder or even stronger glass chopping (staples) 3mm, 6mm etc. Requires grinding smooth but very strong. (Effective Non stick “retainer” for epoxy – parcel tape over plywood).

Thus mixed, long gaps of 6mm and larger “pockets” will fill satisfactorily. Planks with splits repaired, or edge jointed stealers are generally equal to scarphed and glued new pieces and far stronger than traditional scarph / riveted and white leaded repairs.

Where long splits or gaps exceeding say 8mm are evident and the adjacent area of the plank is sound then clean / fair up the split, offer mark and cut a thicker insert, then glue and trim flush.

Generally an epoxy glued long grain joint or split, or an epoxy glued 10:1 scarph is as strong as the timber. Short grain splits, re-glued are as strong as that timber was .

3. Production finishing, varnish work areas

Essentially from machine planers / hand tools to clean varnished finish – clean internal corners.

i) Sand everything before glueing / assembly, either with 60, then 80, then 120, or with 80 then 120. Use an orbital / block sander where at all possible. Do not sand bare wood below 120 grit (worn) for epoxy coating because it will “polish” and “close”. Vacuum the timber surface thoroughly before coating.

ii) Glueing / Assembly

Obviously any joint that can be tooled flush after glueing can and will also be sanded at that stage.

(Internal “Aerolite” glued joints could be washed to a perfect glistening bead with warm water!).

Clean internal epoxy joints immediately with a glue spatula made into a “pottery” knife, sanded sharp wipe this on a cloth and then clean the joint again.

Then allow to set hard and hand sand in the angle with folded 80 or 120 grit.

APPENDIX D - THE NEW RIBS

1. 10 ft x 1 ½" sawn Ash will be required. Selected with straight running grain. Buy six boards 6" wide or the equivalent (*which will do the sawn floors as well*).
2. A week before steaming prepare only the ribs, leaving whole boards in reserve in case of breakages (normally only one or two).
3. The ribs are to be finished ¾" wide x 5/8" deep lightly bevelled on the top edges.
Rip 26 pieces 7/8" wide x 58" long (52" min)
And 6 pieces 7/8" wide x 95" long (93" min)

Then put them all through the thicknesser to finish ¾" planed (x 1 ½" sawn).

4. Rip them all in half again with the centre of the sawblade to the centre of the 1 ½" nominal width – so yielding a thickness for each rib which is adequately full of 5/8" for planeing now. (*So now 52 half ribs and 12 full width in stock for 48 and 9 actually required.*)
5. Saw the bevels using a 45 degree jig and skim clean with a plane by hand.
6. Soak the ribs fully submerged in clean fresh water for a week. (They wil grow a bit but reduce again when dry).
7. The steamer is a 6" alloy tube 7 ft long with a kettle element in the end / bottom plate. Set on the floor with the open end on a trestle, a bucket under, a cloth, a pusher in, and some 3 ft lengths of natural string. "How much water shall I keep in there Bob?" – Bob Lee – "Fill it right up boy" – so the steamer is a boiler and extremely effective as such.

8. About 15 ribs, each with a string tied with a clove hitch, will go in the steamer at once and will need to boil for 45 minutes, so either:-
- a) Boil and fit in batches of 15 (simple but slower)
 - b) Replace each seven or eight used with another seven, this time each having a knot on the string. Wait for the steamer to boil again before using any even from the original batch. Write down the time when the new batch can be started.
 - c) (Best) – Put in ten and replace each two used. You will have to tie one knot to identify the first replacement pair, then two knots etc. The steamer will pretty well continue to boil and give continuous delivery. You only need to note the time when the first replacements go in. Subsequent pairs cannot then be taken too early so long as the “knot rotation” is adhered to.

The long, full width ribs will appear too long for the steamer, but they do not need string. Make an extension to the steamer, over them at the top end with thick folds of cloth and a piece of tin or roofing felt. Turn them just before fitting.

Wear gloves – work one in the boat and one out, fit the half ribs with a single (*permanent*) 2" x 12g copper nail, part driven, in the second land from the top, and a (*temporary*) galvanised nail, part driven from the inside into the third row from the centreline. Drill 7/64 for both. As you bend set the rib slightly cornerwise where necessary to form the twist required by the tapering ends of the boat. Work upwards, slightly overbending to bed the rib against each land in turn. Nip the top with a cramp, tap down firm with a hammer (*not too hard or a plank may split*) – nip the cramp fully tight, tap across into true position if necessary then drill and drive the two nails. Leave the cramp until cool.

The full ribs

Staple / pin ply guide “stop” strips across the hog, forward of the ribs near the stern and aft of those near the bow. Work on each side standing on low stools for reach as necessary. Bend the centre in first then up the sides to fit as near as possible. Cramp both ends then one hop into the boat quick and as rapidly as possible, deal with each side as for half ribs, *(or you may have the luxury of 3 people?)*.

If an acceptable fit has been obtained then nail as for half ribs and with a single grip fast into the hog at the centre.

But if the ribs especially near the bow, would benefit from a little bevelling on the forward underside, typically at the turn of the bilge, then leave them cramped only until set. Mark a centreline check point and drill a centre fixing hole without nailing. Remove, bevel 4mm maximum, and re-fit.

B.O.D. ribs are substantially thick at 5/8” and will resist the variable twist required near the bow. “Fanning” of the line of the rib increasingly toward the bow, will help, but in excess is unsightly and in any case will probably not allow the ribs to be replaced in their original “shadow” lines.

APPENDIX E – EPOXY COLOUR TINTING

Natural wood compatible colour can be obtained in epoxy fillers / coatings in two ways:-

1. Using epoxy standard fillers

DO NOT USE COLLOIDAL SILICA except where a joint will be tooled and sanded off entirely flush only leaving a hairline of glue, and none in the grain. The slightest trace of silica or silica mix will glow white under varnish).

Use white microfibers for strength and add brown micro balloons for “mahogany” colour. Microlight fairing balloons also added will vary the colour towards cream / buff for ash / elm and other timbers and many variants in between can be obtained.

2. Using epoxy (fillers) plus antique tinting colour powders

Mix up the applicable white glue / filler paste for the job by adding white microfibres and/or white micro balloons. Colour this by adding any small quantities of yellow ochre, brown umber, van dyke brown, various reds etc, that will give a suitable tint. Err on the lighter side.

The same tint powders can be used for a little local “graining” technique in epoxy coatings or varnish. Apply this between the first and second coats (or later) when the true colour reading is evident.

APPENDIX F – FAIR LINES

No amount of superbly fancy varnished joinery or traditional look, or colour scheme or anything else will save the project if it shows an ugly line.

Sweet lines look natural and confident as if they fell there, whereas kinks witness difficulty and labour.

The most important line is the sheer which cannot be altered after the deck goes on. The deck outline, and cockpit carlin lines, in plan view will not “read” quite so much as the sheer but are similarly irredeemable after the gun’1 beading and carlin liners are on.

The plank faces and edges, which so characterise the BOD can be laminated / filled and faired relatively easily at any time before paint is applied, but all of the above constructional elements should be constantly eyed, tested with a batten, shored, planed in or laminated to: radically if necessary, before each “closing” constructional element is fixed.

The top edge of the top plank may well be rather wavy, and potentially show an ugly deck edge in plan view, but there is an easy solution. First make sure the general fairness of the deck edge in plan cannot be improved by taking a fraction off the length of a deckbeam? – or replacing / packing one out?

Then deal with the ripples and dents by applying the deck with at least 6mm overhang all round. Then using a “C” gauge pencil the wavy line of the top strake onto the top of the deck. Now spring a light batten through the outer points of the ripples and pencil a fair line round. Plane the deck ply to this and finally with a broad knife fill the hollows in the top strake using the deck edge as a datum.

Other lines which will “read” and therefore need to fall into harmony with the overall design are the stem, and transom top, the waterline / bootop and cove-line, the rudder and tiller, washboards, main sheet horse (*curved*) – and also the line of the boom and cover when the boom is stowed in the crutch. (*Fortunately the BOD sails rather well with considerable mast rake, and some pre-bend so that, as it happens, the mast, which is a major element in the appearance of the boat sits rather well emerging from the rising sheer at right angles as it does, and curving gently back*).

Mark the waterline with the boat upside down and levelled athwartships. Arrange two 6’ straight, level sighting battens at the waterline, bow and stern one side at a time.

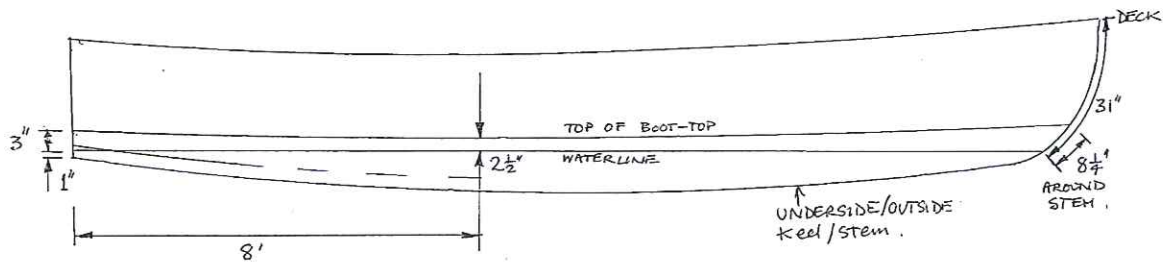
With two people and a pencil (long pencil, hand well clear) sight and mark the waterline at plank lands at 6” intervals which can then be joined up by applying masking tape.

The powerful shape of the BOD can be rendered very elegant with a boot-top. The top edge of this will need to curve with the sheer a little. In side elevation a vertical depth of 4” at the stem, 3” at the transom, and 2 ½” at the aft end of the centre case.

FIG 1 (COPY)

Fig 1

BOD Waterline / Boot-top
Not to scale!



WATERLINE is 1" above underside of keel at Transom.

TOP OF BOOT-TOP follows a shallower, but similar, curve to sheer.

(WATERLINE for single colour break
- AT TRANSOM - exactly in corner of keel/garboard
- AT STEM - 27 1/2" measured around stem from deck)

Th. 11/12

Tape a very light batten to the boat through these points. Sight level with it, and adjust the line until happy then pencil mark, note and comply with the nature of the "jags" at the plank lands. Now apply masking tape and finally sight all round, level with the boot top, for a final appraisal before painting it.

(Have full confidence in a scale drawing to settle any doubts about the sizes and proportions of any elements since it allows you to see the boat at a distance which cannot be done in the workshop.)

Colours

Colours are a matter of personal choice but too many colour look a mess.

With the varnish work as a “given” one approach which is fairly safe is to have a bold statement of colour for the hull and waterline / boot-top. So consider either “total contrast” (light / dark), or “harmony” (two blues, or two greys etc), or “clash” (similar tone but opposing colours).

Then a pale neutral colour for the decks and floorboards.

Then for the “canvas” covers etc, either neutral, or matching one of the hull colours – if available in “canvas”!

Malcolm Goodwin

Spring 2013