

THE PORT NICHOLSON DESIGN GROUP

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Gavin Pascoe.
30 Rawhiti Rd
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Dear Gavin.

Enclosed is my current thoughts on Lizzie.
There are many ways to skin a cat but as outlined.
This lot will produce good results. That is after
some tempering for discrepencies and the Trusts
Preferences.

It would be nice to get the ship into a
secure lockup shed. This would also assist
with the camaraderie. Like a good place for
the coffee pot. The Mikitiia has an active mess.
There are always more people there at lunch-
time than work on the ship but it gives it
all heart.

Reynolds
②

①

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010810

Lizzie.

Opening comments.

On inspection the vessel appears to have retained much of her earlier, designed, form (shape) reasonably well. Subsequent modifications are readily identifiable.

The lower fabric is saturated and has accumulated damaged areas. She is definitely not wrecked. There are signs of recent hogging, probably in salvage and transport. (Explanation in Planking/Caulking to follow)

Her general arrangements would benefit from some ergonomic input (Note 1) Below decks they are a little optimistic.

The vessel can be reinstated to a very satisfactory level, incorporating some necessary modifications but retaining her principal characteristics. She is not a very large vessel so it is reasonable to foresee a reworking that will take her into the next century providing that the upcoming reinstatement does not complicate or compromise later necessary maintenance. (Important)

Lizzie's form shows the dramatic breakaway from the "plank on edge lead mines" that were the norm until a few years before her conception. She was possibly the first of the more contemporary hulls built in Wellington. Her shape and concept is nearer to today's yachts than those that were being built ten years before her.

Objective. (Desired result film).

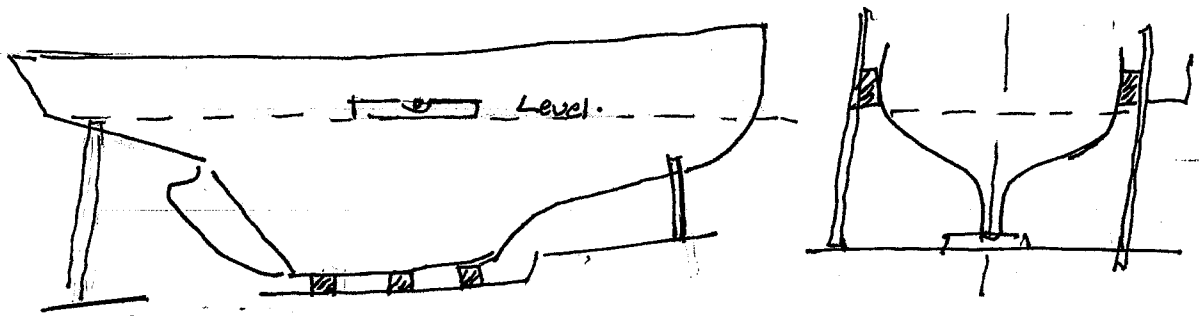
A workable, handsome, interesting, durable small (ish) keel yacht that will be able to span several future stewardships yet retain her prime historical features and function.

Note 1. The human being is 8-12% bigger now than 1900. This may continue (carbon/E harming or not)

② Lizzie

Secure. Some minor dismantling can be undertaken at present but any major work should be delayed until the hull is well supported.

The P.N. slipway cradle has a level section suitable to set gawing, blocks, say 3, for the lead portion of the keel to sit. These should, for convenience, be 150mm or so high to allow access to the ballast bolting and rudder heel. Side shores can be arranged abreast the cradle arms to hold her vertical and stable. Props for and aft of the ballast keel structure to prevent any subsequent hogging.



If the hull can be set up level and vertical it means that plumbbobs & levels can be used directly thereafter. Think 'vandal proof.'

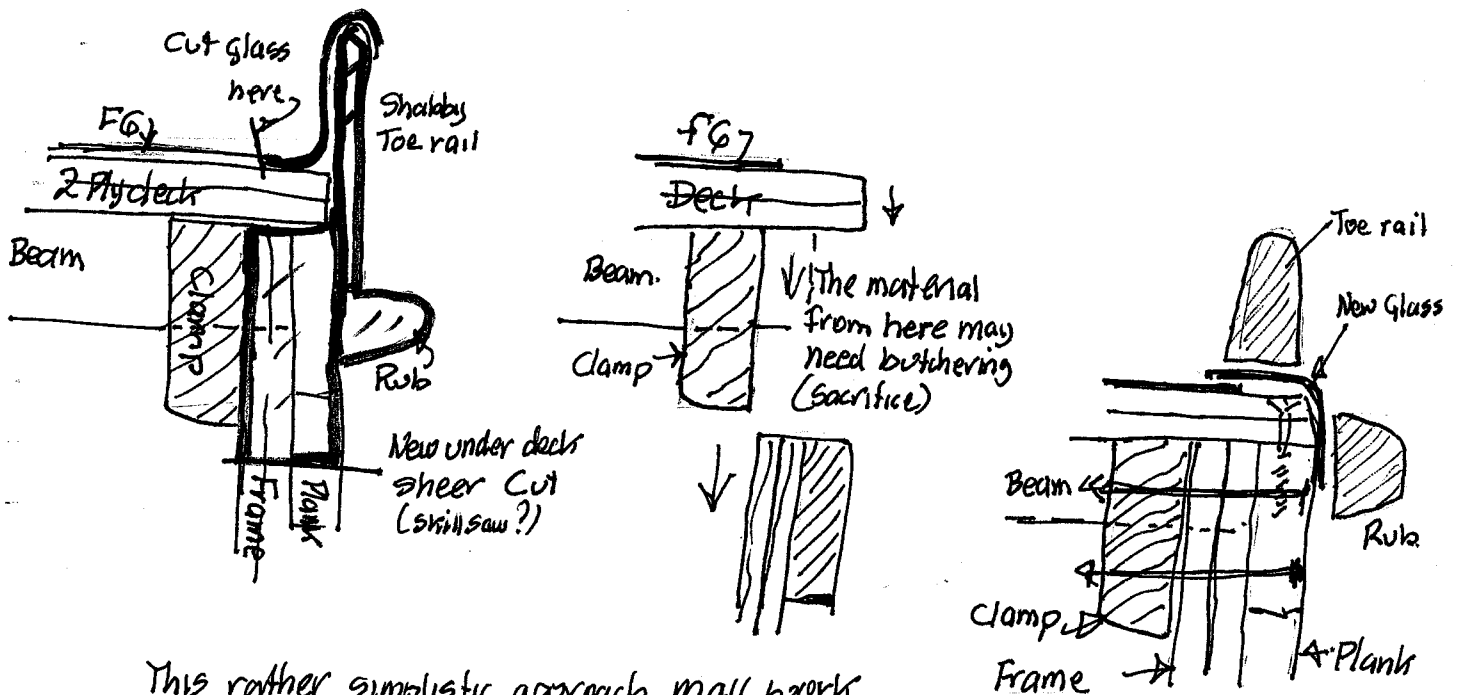
Dismantle. Every part of the interior leaving frames, floors, stringers mast step, vertiborae. Much of the removed material may be reused. This is to allow a thorough inspection of all her structural components and ultimately to simplify any remedial work required. Some is obvious. The question of maintaining the moisture content of the hull, planking in particular may require some experiment. If shrinkage is the only occurrence, it can be accommodated but if there is disintegration some re planking may be necessary beyond the two/three planks at the turn of the bilge. Just keeping her saturated could obscure the proper remedy.

Lowering the Sheer/line At the dismantle stage it may be possible to establish the original height of the sheer at the stem and transom. The existing foredeck and cockpit are comparatively recent modifications. It appears possible to reuse these components at least in part. It should be considered to allow the vessel more freeboard than the original. (Note (1) again) This would definitely improve performance and seaworthiness but also

③ Lizzie

allow some reasonable social space below decks. See the attached sketches based on preliminary sightings at Evans Bay. Re working of the deck should be begun before the necessary framing repairs/replacements are undertaken and completed after the framing. (i.e. off deck, fix frames, refit the deck). Hopefully this work can be done more or less in place.

Note: The raised forward deck has a good degree of integrity. The comparatively vertical top sides mean that the plan view of the deck will not alter greatly by lowering the deck, a modest amount. With the deck and clamp removed the rim of the planked hull will be quite flexible.



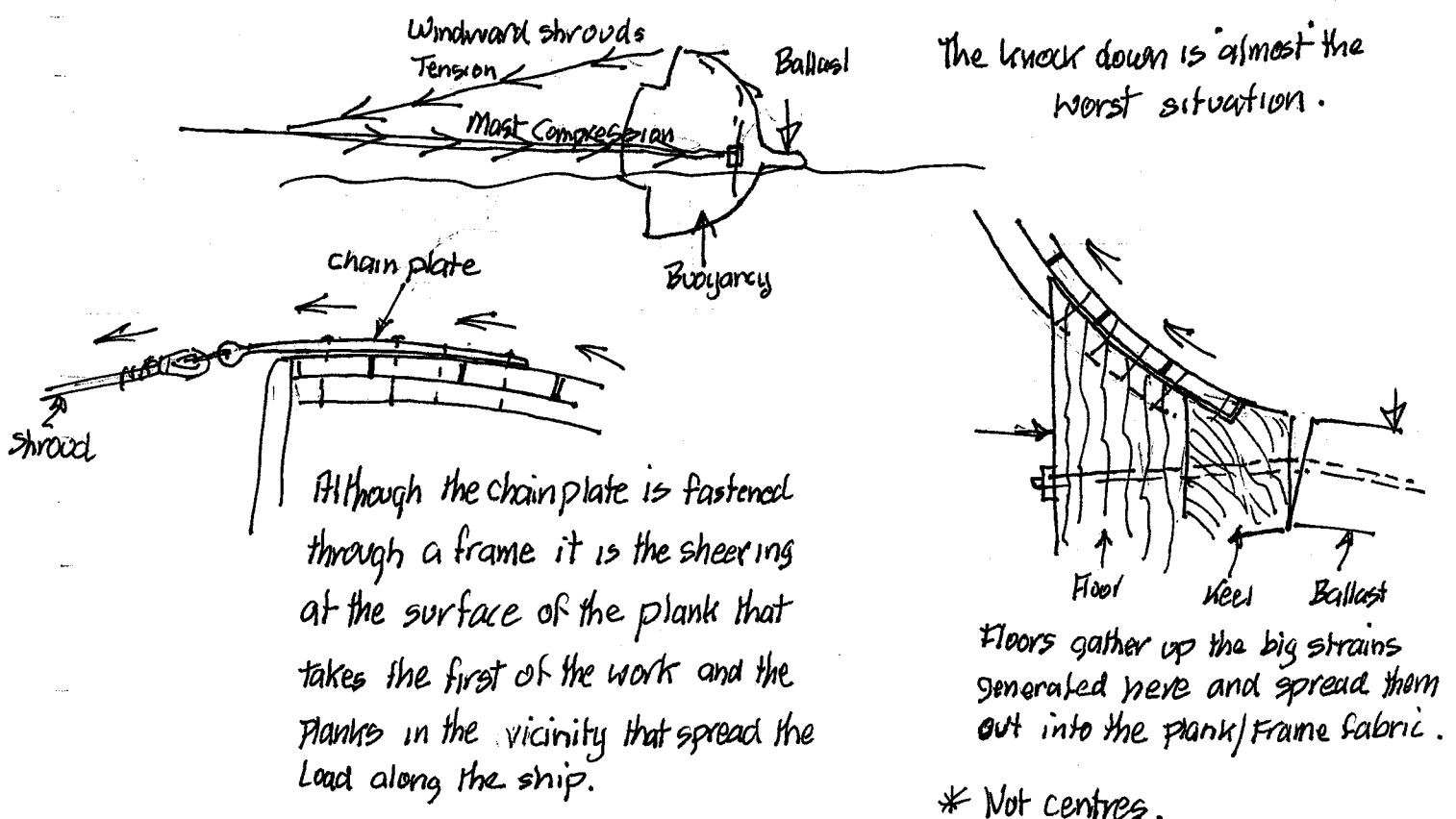
This rather simplistic approach may work but some variation of it would ensure that it does. As before, the existing deck could be quite rigid, certainly in plan form but also as a lamina. If the dimensions/style of the cabin trunking are known the appropriate cut out in the deck would make this forward section more manageable and a little more flexible. There will be some adjustment to the after deck and cockpit to have the forward and after units to join in a structurally sound manner with a fair sweeping sheer curve. The sheer line is the most important visual line on all vessels (except submarines),

④ Lizzie.

(submarines). Most other features eg. boot top paint line, coamings, toe rails, rub rails etc. should reflect the sheer but not necessarily parallel it.

Frames & floors. Good proportions for plank thickness and frame spacing suggests that for a ^{6-8 metre} sailing vessel, tallasted, should be 19mm with frames spaced 155 centres. Frames 24mm side x 19mm moulded, for steam bent or laminated hardwood frames. American white oak is the preferred material. Another rule states that the frame spacing* should be 7 times the plank thickness. Lizzie's plank thickness is varied and her frame spacing is almost random. Some frames must be replaced. Just how much of this framing history should be retained is a decision to make when she is opened up. My first thoughts are to replace half of the frames in the ballast area and others when there is doubt. With particular attention in the chain plate area.

The few existing floors appear to be in quite good order. There should be a floor at alternate frames in the mid third and spaced a little further towards the ends with one or two extra under the mast step. The principal sailing strains on a yacht are as shown below.



⑤ Lizzie.

The mast is the 'spanner' that applies the heeling force and her vertical centre of gravity, the opposing force, which is principally the lead. In Lizzie's case there is some distance between these two longitudinally so as well as the above (sheet 4) forces, there will be a twisting tendency that is also largely taken up by the plank and deck.

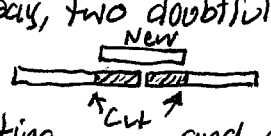
When the deck is freed from the hull shell will be the best time to replace/repair the frames as required. Moving the clamps free from the hull and the deck complete (almost) moved a few centimetres to one side would provide the best opportunity to slide frame laminations down behind the bilge stringer.

Nibbing the frames into the keel and other centre frame units is common but it is not vital provided the floors are adequate and frequent. Glued laminated frames ^{are?} the preference and this can be achieved with planning (messy).

The reassembled gluey frames can be held together and in place with anchorfasts or steel nails driven from inboard through ply washers to aid removal.

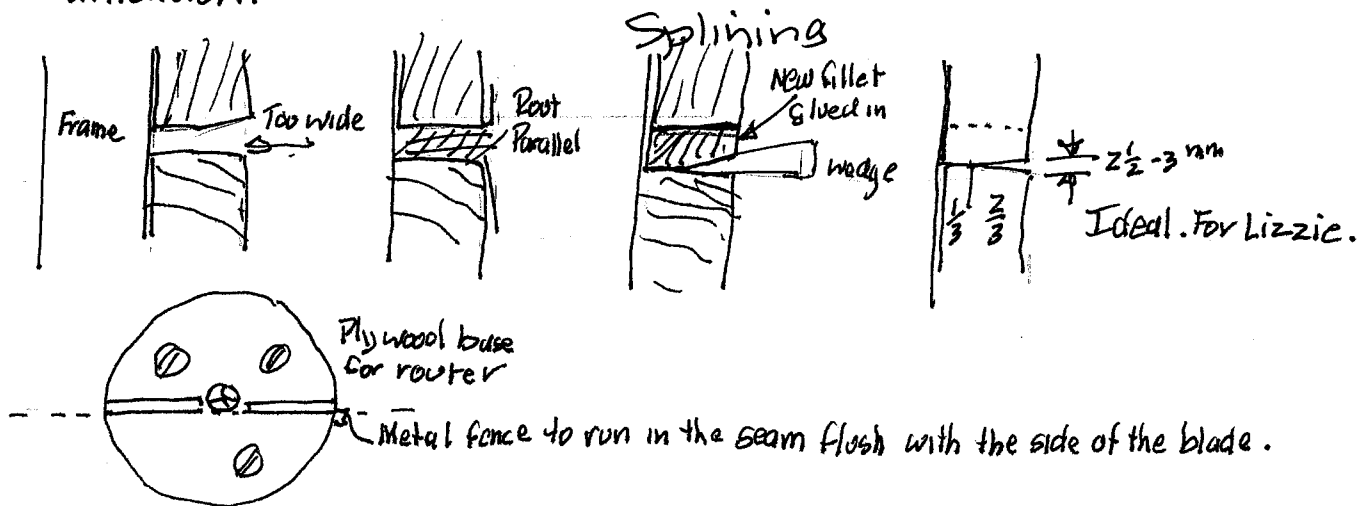
(A thorough reconstruction would require the bilge stringer to be removed also and a complete new set of frames laminated in place then removed on setting, cleaned up and then fastened into position.)

Then shift the deck over to the other side and procede ditto. Probably the deck could be lowered into its final position before plank repairs are begun.

Planing As mentioned earlier, there will be shrinkage and the 'Trust' should be prepared to expect that a few more planks than the damaged ones should be replaced. Generally narrower planks say 90-100 mm would be more appropriate for Lizzie's size. This opens the possibility of reducing the width of say, two doubtful planks by, say, again, 33% and fitting a new one between . Plank 'streaks' or 'strakes' should follow the lines of the existing ^{cut} and avoid edge setting. Fastenings can be clinched or (copper) rivetted on roves. Twinfast bronze screws would be satisfactory provided that the frame, laminations etc are in intimate contact with the planing.

⑥ Lizzie

Planking cont. Some plank seams may be too wide to caulk satisfactorily. After raking/recting the seam and regularising its width with a router a fillet can be glued to one of the planks to bring it to a caulkable dimension.



Caulking The seams should be adjusted like above. Some experimenting may show that the planks can be wedged very slightly sideways so that not all seams will require splining. A tool named a reef hook manufactured from a screwdriver is very useful for removing old caulking (creefing) and shaping the seams.



There are mixed views on whether the seams should be primed before or after caulking. Graham Hargreaves says that the strand slides in beautifully on wet red lead. I rather like it. For caulking to be satisfactory the framing and fastenings must be adequate.

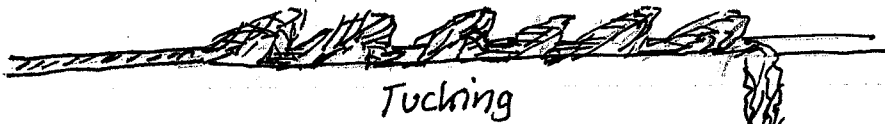
The caulking medium, for yacht construction is built up with several passes of candle wicking so that the twisted strand's diameter is about three times the opening of the seam. This is built up by experiment, usually between nails at each end of the building site. It is then twisted by eggbeater drill with a hooked nail in the chuck. Then it is wound on a stick like a fishing-line. The strand is then tucked into the seam for half to one metres or so and then driven into the mid third of the plank thickness. The frequency of

⑦ Lizzie.

Caulking-cont-

The frequency of the tucks acting as the adjustment for any variations in the seam's width. The strand when driven home should approach the density of the adjacent timber.

Caulking has three major functions. 1. To close up the gaps being, rather basic. 2. Confining the width of the plank limits the amount of moisture that the plank can absorb. 3. Provides friction preventing the planks from creeping, eg. when hogging or sagging.



Tucking

The candle wicking can be obtained from Fosters.

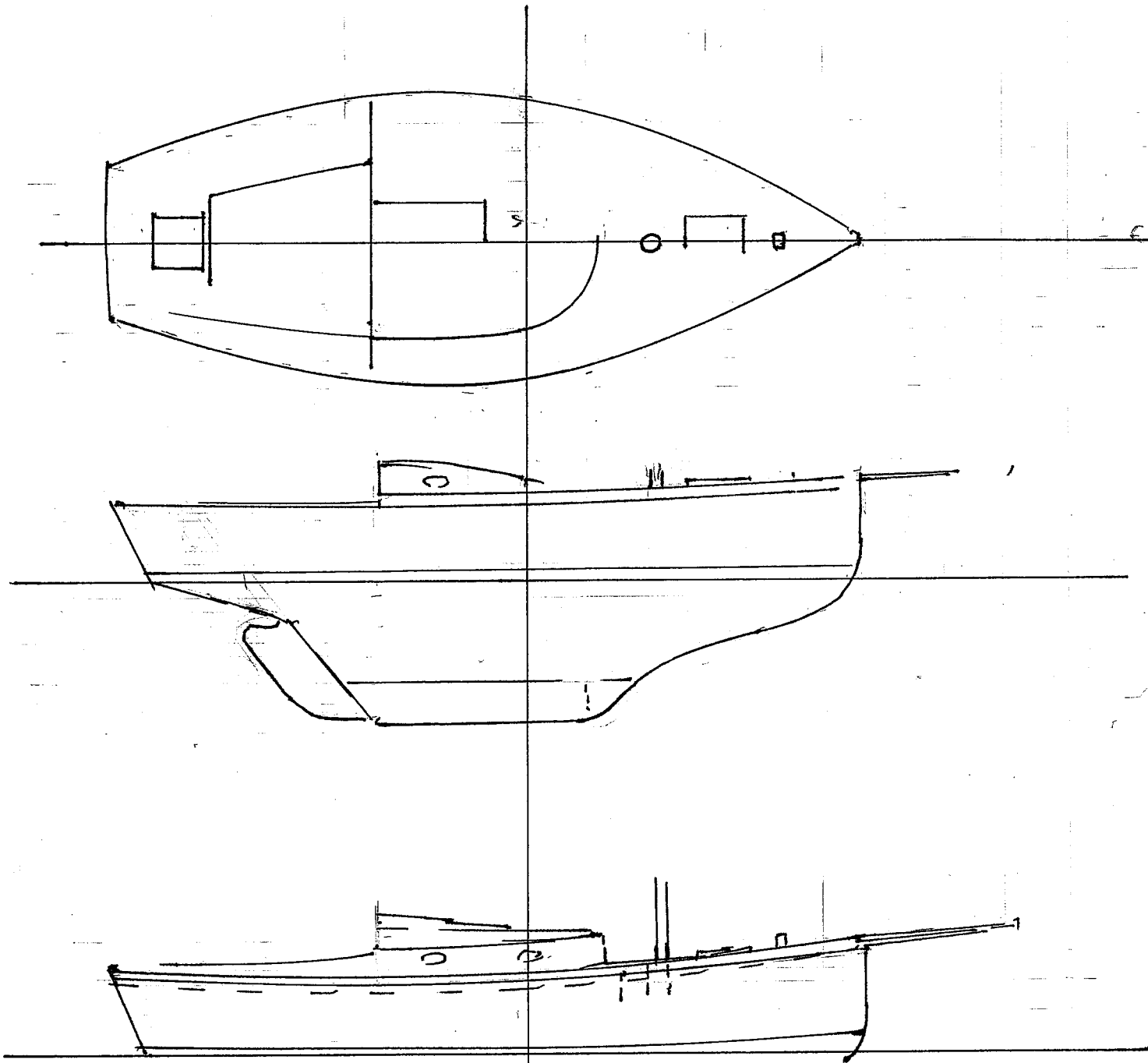
It is not essential that a traditional mallet be used but appropriate irons should 'aquired'.

Contemporary 'sealants' that are sold in cartons for extruding are not satisfactory. The time proven stopping for seams is conventional glazing putty with about 25% of white lead worked in, sometimes a little red lead also. It retains just the correct amount of elasticity to be compatible with the wood planking. If the planking and caulking are sound and the seams have been primed the seams should remain smooth when painted. There will probably be a little swelling of the planks when reloaded, especially the older wide ones. This will cause a slight raising of the stopping but it can easily be sanded off at repainting. Not urgent. Leave the existing paintwork until after the planking and caulking are complete. By then, all should be stable and a general fairing will be in order.

Topics? to follow.

Auxiliary framing, eg. floors, partial Bulkheads? Ballast and other bolting, Rudder, Internal fittings, Deck Hardware, Rig, Sails. etc. . . .

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Approx Lizzie

Approx 1.50

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