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Planking problems

As has been noted earlier, the planking skin design various considerably but, nevertheless where solid wood is used as against plywood, some of the problems are common to all. The main problem being decay caused by fresh water.

This occurs around rigging chainplates, any external attachment to the planking where water can be present but unseen and, the sheerplank where deck leaks will often affect the top a few inches for the full length.

Decay under chainplate extending into deck

The timber used within the construction has an enormous effect upon the longevity of the vessel, Iroko and pitch pine and of course teak being particularly durable, mahogany has been used with great success but is more subject to fresh water decay, Oak is rarely used in this particular country has been used in Norway, Larch is often used particularly in Scotland for fishing vessels. However, there are innumerable spieces, which can be successfully used for planking. Pitch Pine planking can suffer from a defect known as “leaf fracturing”, this is where the growth rings of the timber show signs of delaminating at points of extreme curve. It is usually prevented from total failure by the fastenings, which would be close by.

Mahogany planking can be affected by a fault known as “Thunder Shakes”. This is a hairline crack across the grain, caused by felling the tree and the trunk falling and shocking when it hits the ground. This is a serious fault, but fortunately, usually comes to light at the building as the plank breaks in fitting.

Major sheerplank decay caused by leaking deck

There are areas where planking is adversely affected a through electrochemical damage which has been outlined previously.

Some planking problems emanate from poor subsequent repairs, it is not uncommon to see new sections of planking having been fitted and, it is not necessary to use full length planks when repairing however, it is necessary to ensure that the end of repair planks do not coincide with previously repair planks or original build end of planks.

You occasionally will find that a repairer has tried to fit a short section of planking on a steep curve , this will often resulting in unfair landings and a flat will appear in the hull. On a steep curve , a much longer section of planking would have to be fitted, this not only looks better but relieves the strain on the fastenings. (continued)

On professionally built vessels it would be unusual to find excessive seam gaps where the planks are too narrow however, it can often be found that through lack of knowledge and understanding, subsequent repairs have been carried out with fitting new caulking for instance that have forced the planks apart. Once forced apart they will never be in close contact again and this makes for a lesser vessel. This over caulking also can cause major structural problems which cannot be easily rectified.

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The planking should be in close contact with the framing internally , occasionally it might be found that one particular section of framing is not as tight to the planking as others, this is possibly a consequence of original build however, there should be no wholesale evidence of planking away from the frames, in this particular case, this is often caused by over caulking.

Rotten planking below waterline, in this case the vessel moored for many years in fresh water

Occasionally I will find what is known as knuckling on the planking, this can be on the underside or topsides and it is where the curve of the planking is no longer fair vertically, it is often a sign of fractured or broken internal framing and instead of the planking running smoothly it forms a slight chine or knuckle at the junction of two planks where the internal frame has broken. Generally this would have to be attended to particularly if there were more than one broken frame in the area.

Cottton caulking is generally used on yachts, this is basically a form of cotton string which is then flushed off with red lead putty. The red lead keeps the putty flexible.

The Cotton expands in water and makes the watertight seal. Being an organic material, Cotton can and does decay particularly in fresh water.

The common areas for rotted Cotton caulking are usually in the aft end of the hull low down where rain water is inclined to collect when both ashore and afloat. Sound Cotton caulking is reasonably strong and will not generally break under moderate tension, rotted caulking is usually quite discoloured from the creamy white and, more importantly, just breaks into short lengths with the minimum of strain. If rotted caulking is encountered, it should be replaced.

Plywood Planking

Plywood does have benefits, but can be very susceptible to decay. Unfortunately, it is common that once decay is in a large panel particularly on the topsides or underside it will require substantial areas of plywood replaced. It would not be unusual to replace panels in excess of three or 4 ft. square on some topsides. Working with plywood is relatively easy and, a competent amateur may well be prepared to undertake major works on plywood construction.

There are various grades of plywood, some much longer lived than others and careful examination of different manufacturers of plywood will discern numerous different forms of construction in the makeup in that some manufacturers will use many
less veneers than others.

The same Golden Hind at different times, on the left the stbd side showing softening & delamination, and later exactly the same problem on port fully exposed and being repaired.

It is not unheard of to use good quality exterior ply for decks and other less important structure however, it would be usual to use a good quality marine ply for topsides and underwater. The main difference between exterior plywood and Marine plywood is usually the type of timber used in the construction and, with exterior ply their usually will be more voids within the structure of ply where the internal veneers do not meet precisely. Marine ply to 1088 has to conform to certain standards. The glue on both is identical in nearly all cases.

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There will be cases where a decorative veneer is required on the surface of new plywood for instant, if it is to be varnished but , this is more expensive and , unnecessary if the surface is to be painted or obscured.

All connections to framing and other structure would usually be glued and screwed/nailed and plywood should not have any exposed edges for water absorption as, it is these that are primarily because of gradual fresh water decay. Any butt joints must be well supported with internal butt plates at very minimum.

The ever popular Eventide undergoing repair

Fastening probms

Any timber vessel will have a multitude of fastenings numbering many thousands in some cases. Generally on most marble built hulls , these will be copper rivets which are very long lived and seldom give any problem other than occasional stretching caused by distortion if and when the vessel dries out to excess or the vessel has been subject to unfair loadings such as over caulking.
The garboard plank and hood ends (the garboard plank is the first plank from the keel and the hood ends are the extreme ends of the planks where they attach to the transom and the stem.) are usually secured with bronze screws. On some vessels such as Hillyards for instance, the garboard fastenings are copper nails dead nailed into the keel.

The hood ends are showing slight electrochemical softening surrounding the copper fastening that is likely touching the galvanised rudder tube & scarf bolt

These seldom give problems however, when bronze screws are used, these do have to be checked occasionally throughout the life of the vessel. They are relatively unpredictable in their condition after 25 years and, some can be perfect, some, on withdrawal, crumble and shear off.

The only way of confirming their condition is to withdraw sample fastenings and check. If it was the case that one fastening after another crumbled or broke the head off on removal then it would be safe to assume that the majority of fastenings require replacement. It would be practically impossible to confirm whether brass screws have been used originally in this particular case. By checking those above waterline, aged bronze screws should still be perfect but brass screws are most likely to have shown serious deterioration.

It is not usually recommended to replace underwater plank fastenings with stainless steel as; stainless steel can be particularly unpredictable in these conditions.
In many cases, stainless steel can be used above waterline with relative impunity.

Keel bolts are another area where maintenance and checking is required. The type of metal use the keel bolts will depend largely upon the metal of the ballast keel.

Keelbolt prior to removal

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On lead keels, commonly bronze keel bolts would be used although, occasionally stainless steel is used nowadays but, this as noted above, can be unpredictable.

A 1" diameter keelbolt with a degree of "Waisting"

It should not be assumed that bronze does never deteriorate. Deteriorated bronze can, to a layman, appear to be sound but, on close inspection bronze that has deteriorated has a distinctive reddish colour and, more importantly, the metal is brittle and powdery.

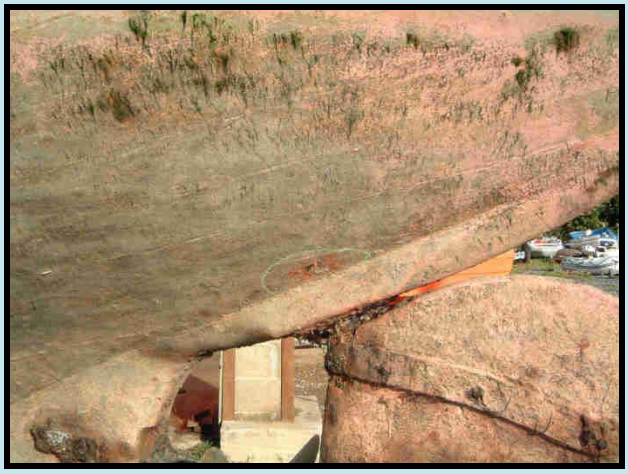
On iron keels it is common to use ferrous bolts, these nowadays, would be mild steel however, wrought iron is thought to be much longer lasting if it can be found. Mild steel bolts can last in excess of 30 years or more but, there is no absolute way of confirming their condition and 10 years would be seen to be starting point for replacement/ inspection.

Obviously small diameter bolts will require early attention. Bolt diameters generally start from around 18mm (3/4") up to 30mm(1 ¼") although some have smaller diameter.

Mild steel bolts can be galvanised and this does appear to add a few more years to their life however, I have seen mild steel non galvanised bolts, after having been replaced perhaps 15 years before in almost perfect condition once removed again for checking.

Again there is no absolute certainty from one boat to another as to keelbolt condition and, if unsure, the only real way is to remove the keelbolt. Unfortunately, depending upon the design of the vessel, this can be extremely easy or phenomenally difficult. Folkboat keel bolts can be particularly difficult to remove, partly because of their smaller diameter combined with their excessive length.
Suspect ferrous keelbolts may well bleed corrosion at the ballast keel/timber keel junction at the keel bolt position numerous scarf bolts fitted and, in most vessels these will be steel and subject to occasional inspection/replacement. Suspicions can be aroused by corrosion staining bleeding from joints on the stem and stern post areas where bolts might will be corroding.

Another problem that occasionally affects the fastenings is when a copper fastening passing through the hood end contacts one of the scarf bolts as these are completely hidden. When different metals are in contact, in seawater, this will create an electrolytic cell which, as noted earlier causes damage to the timber local to the fastening and, it will often be found that the planking at the point of the fastening is softened



Here a copper nail is touching the rudder tube and softening the timber around the fastening end on the hood end