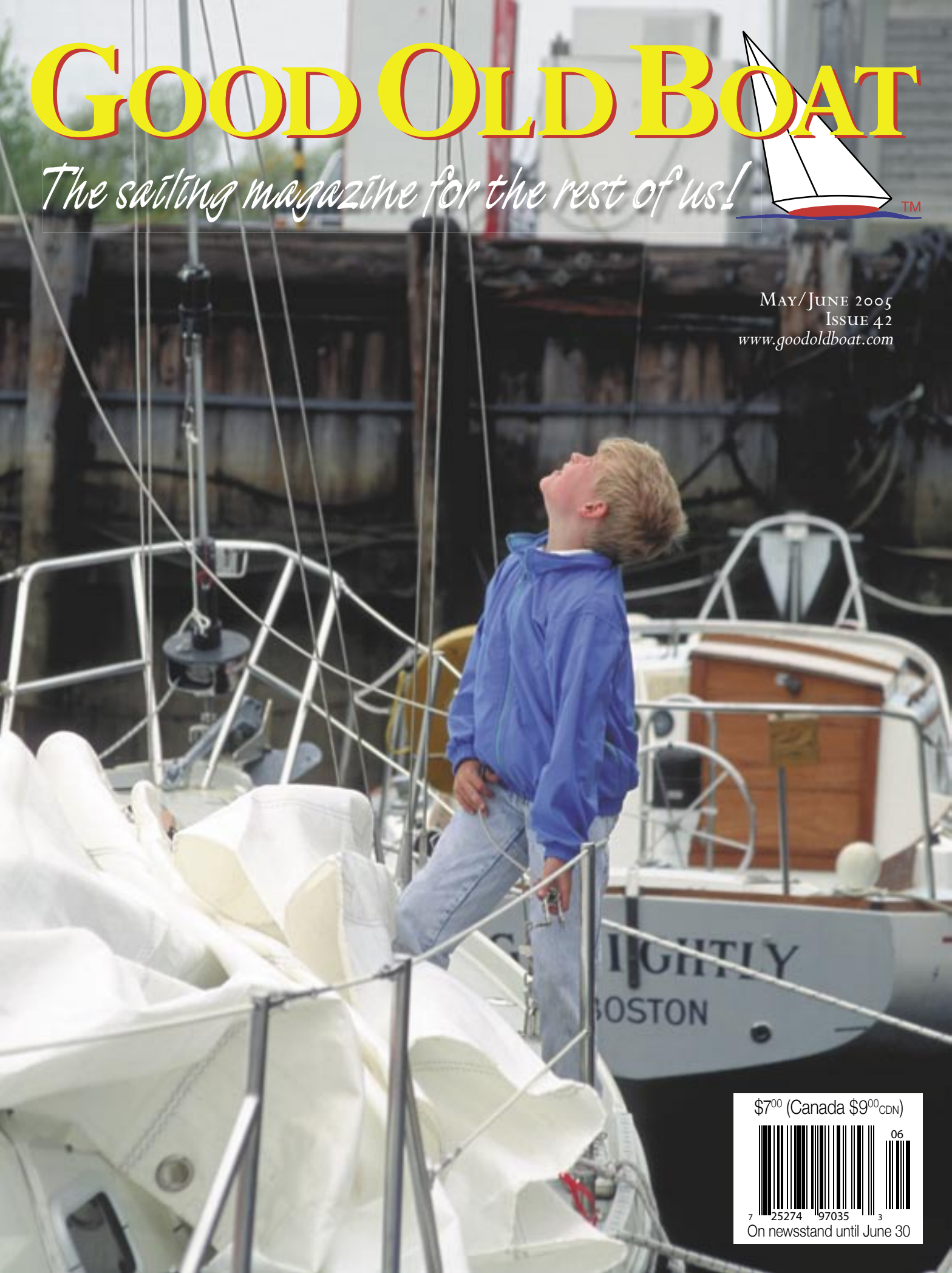


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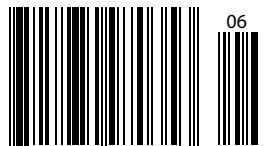
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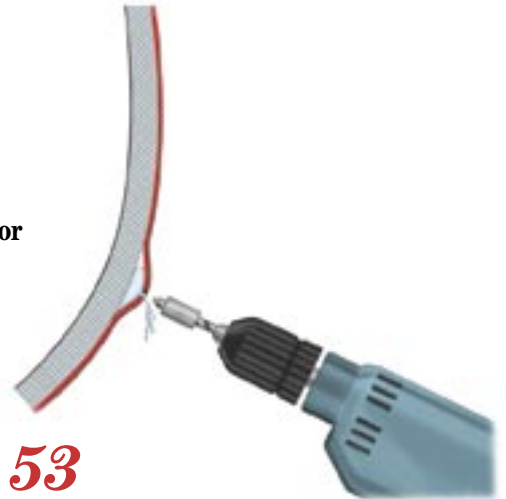
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Gregg Nestor (*Aloha 32*, Page 4; *Cordage for the rest of us*, Page 24) is a contributing editor with *Good Old Boat*. More than 20 years and four boats ago, he discovered sailing and has been an avid "trailersailor" ever since. He and his wife, Joyce, sail an O'Day 222, *Splash*.

Tom Young (*Brightwork: A sailor's system*, Page 8), a lifelong sailor, lives on the coast of Maine in Rockport village. Tom and his wife, Mary Ann, have sailed from Down East Maine to the Exumas, Bahamas. They enjoy sailing the New England coast with their two children in *Christmas*, their 1961, 38-foot Alden Challenger yawl.



Marianne Scott (*Hal and Margaret Roth*, Page 12) started writing about marine subjects when she and her husband, David, sailed from Victoria, British Columbia, to Bora Bora on their good old boat, *Starkindred*, a Niagara 35. She's the author of *Naturally Salty — Coastal Characters of the Pacific Northwest*.

An escaped corporate executive, **Chuck Fort** (*In search of clarity*, Page 17) "sold out" to go cruising with his family. The Forts settled in Florida for a couple of years while the kids were in braces. Now they're in Maryland while their daughter attends college. Chuck holds a USCG Master License.



Kim Efishoff (*Keeping water out*, Page 21) is a naval architect and marine engineer. He has been sailing since 1975 and has restored three sailboats, ranging in length from 14 to 32 feet. His current project is the restoration of *Teal*, a 1977 Hans Christian 38 Traditional, that he has been working on for four years.

Susan Peterson Gateley (*Selecting a surveyor*, Page 28) has written three books, *Ariel's World*, *Sweet Water*, and *Passages on Inland Water*, that feature her association with a vintage 23-foot woodie and her good old plastic 32-footer, *Titania*.



Gerry McGowan (*New overhead*, Page 32) started sailing when a skiing accident ended that passion and caused him to hobble to a neighbor's 10-foot sailing dinghy. A series of 11 sailboats from 9 to 46 feet brought him and his wife, Marolyn, to their present 1978 Nor'West 33.



These days **Chad Lawie** (*A lifetime adventure*, Page 37) is 20 years old and attends community college. He has already had two seasons of owning and sailing his Privanteer 26. In his spare time he enjoys playing music, reading, cooking, kayaking, and spending time with his girlfriend, Leeann. He can be reached at: Lawiec@yahoo.com.

Jill Knight (*Cruising with pets*, Page 39), bought *Cocee*, a 37-foot, 100-year-old wooden cutter and set about learning to maintain and singlehand her. She apparently learned both lessons well: *Cocee* is still sailing, and the two circumnavigated before returning to Australia.



Don Launer (*Binoculars 101*, Page 42; *The Rhodes 22*, Page 46) has owned 17 boats. A Rhodes 22, purchased in 1969, was his seventh. He now sails a two-masted schooner out of Forked River, New Jersey.

Mary Jane Hayes (*Photo spread: Boat kids*, Page 44) and her husband, Warren, have been boating for more than 25 years. They sailed *Serena*, a Sabre 28, for seven years and now cruise the East Coast in a Grand Banks 36, *Sea Story II*. A freelance writer and photographer, Mary Jane has been widely published in boating magazines.



Geoffrey Toye (*A season begins*, Page 50) lives in a beach house near Cardigan on the west coast of Wales. He's been involved with small craft for more than 40 years. A writer and journalist, he has published several books.

Larry Zeitlin (*Blister repair*, Page 53) says his professional career and personal life have been primarily focused on boats and boating. These days he and his wife, Maggie, sail the East Coast on *Puffin*, their Willard Horizon motorsailer.



Fred Siesseger (*Transforming the Yard and Bay Boat*, Page 57) is the descendant of a German farmer who stowed away on a sailing vessel to America in the early 19th century. In the early 1970s, Fred bought a new San Juan sailboat, which he sailed on the Chesapeake. After the demands of work sidelined the San Juan, a more worthy owner was found. Almost

25 years later he decided to catch up for missed time by rebuilding a boat whose early years coincided with the San Juan's. *Kalypso*, a 1967 Morgan, is that boat.



Ted Brewer (*Planning a head*, Page 70) is a contributing editor with *Good Old Boat* and one of North America's best-known yacht designers. He also is the man who designed scores of good old boats... the ones still sailing after all these years.

Jamie Harris (*Simple solutions: Better mast step*, Page 73), a recovering lawyer who is now an organizational consultant, began sailing in high school with an old wooden Snipe on a Michigan pond. In the 1970s he crewed on a Lapworth 36, racing on San Francisco Bay before purchasing a Gary Mull-designed Ranger 26. Next he sailed a Sparkman & Stephens Yankee 30. Then, after being boatless while raising a family, Jamie and his wife, Martha, purchased the 1968 Spencer 35, *Onrust* (Dutch for "unrest"), in 2003.



Silver Donald Cameron (*Simple solutions: The digital marketplace*, Page 75) is the author of several books about ships and the sea, including the award-winning *Wind, Whales and Whisky*, the story of a circumnavigation of Cape Breton Island in his then-engineless cutter, *Silversark*. He lives in D'Escousse, Nova Scotia. Visit his website at <<http://www.islemadame.com/sdc/>>.



Glyn Judson (*Quick and easy: A traditional boat-hook*, Page 78) is a retired aerospace photographer who sails a 1979 Ericson Independence 31, the *Dawn Treader*. Since purchasing his first sailboat in the early 1980s, he has created a number of innovative systems to make his boats as user-friendly, efficient, safe, and "shippy" as possible.

Rebecca Burg (*Quick and easy: A 'special needs' boat card*, Page 80) has enjoyed boats since childhood. Today she lives aboard and singlehands her beloved Bayfield cutter, *Angel*. She's cruised the Great Lakes, Gulf of Mexico, and the Caribbean. Her other sailboat is a 16-foot racing trimaran named *Troika*.



B. J. Armstrong (*Reflections: In defense of the daysail*, Page 88) is a graduate of the U.S. Naval Academy, who serves as a naval helicopter pilot. He returned to sailing recently with his wife, Charity. *One Love*, a 1984 Gloucester 22, is their first boat.

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About the cover... Mary Jane Hayes took this
shot in Scituate, Mass., in
1992, which makes this
young man — readying
the 38-foot Ericson,
Breguet, for a sail — all
grown up today. We'd sure
like to hear from him,
once he realizes that fame
is assured on the cover of
Good Old Boat.



Shared spaces and other ruminations

Tools rule in the battle of the shared spaces

THEY WARN THOSE STARTING MARRIAGES later in life not to move into his house or her house, but rather to start fresh with a home new to both. Otherwise, the memories of a deceased or divorced spouse are everywhere. Worse, the partner new to the house will find no room for his or her own things, since the house was already full upon moving in. It's just the way it is.

Jerry and I have a second marriage. But we'd been warned and moved into a home new to both of us. Since neither had much stuff anyway, it all worked out. There has been one added complication, however, that those who warn you in advance had not foreseen and therefore didn't tell us about.


Sailors, we bought a smallish home in a smallish yard so we'd have more time for sailing and less time devoted to mundane home maintenance and yard work. Then we started a magazine in one bedroom of that smallish home. Before long we were wishing for more space, as we gave away furniture and possessions to make way for office space, one room at time, until Jerry and I now have as our own one bedroom and the living room. The rest is shared with *Good Old Boat* as the corporate boardroom, lunchroom, mailroom, storage, and offices.

But the reason for my pondering about shared spaces and who occupies them first is not about land-based homes. It's about homes afloat, specifically about our cruising sailboat. We bought *Mystic*, our C&C 30, together. She was not already Jerry's boat when I came into his life. So I must not

have been paying attention. And those who warn you about such things let me down this time.

Last summer we spent an evening aboard another couple's C&C 30, admiring their modifications and uses of the same spaces. In this business, writing feature-boat articles as we do, we see the interiors of lots of boats. Below a certain size at least, there's only so much you can do with a tear-drop-shaped vessel; they're not really all that different below.

The C&C 30 has the usual V-berth forward followed by a head opposite a hanging locker and a narrow compartment containing four shelves. My attention was riveted upon those shelves in our friends' boat. Where did I go wrong when we moved into our boat?

While their shelves hold clothing, ours are full of tools and spare parts! Aboard *Mystic*, clothing is stored in duffel bags. I missed the opportunity when we took possession of the boat more than a decade ago, and now the die is cast. 

Karen Larson



Aloha 32



*A fairly rare coastal cruiser
with an intriguing layout*

by Gregg Nestor

A CHINESE IMMIGRANT BY THE NAME of Ti Ouyang is the man responsible for the creation and success of Ouyang Boat Works of Whitby, Ontario, the manufacturer of Aloha Yachts. Upon his arrival in Canada, Ti gained employment with the Whitby Boat Works. After a few turbulent years with Whitby, mostly due to his independent nature and refusal to compromise quality, this self-taught woodworking craftsman started his own company. In a friend's garage, during the late 1960s and early 1970s, he built a plug for what is now known as the Matilda 20. The boat was a success, the company flourished, and other Matilda models, a 16 and 23, were introduced. Today, more than 1,000 Matilda 20s are sailing worldwide.

The main thrust for Aloha Yachts

came in the early '70s, in the form of Mao Kang, one of Ti's three sons. He provided the fledgling company with much needed management direction and named the company's new line of cruising boats Aloha. (While in college, Mao Kang dated a girl from Hawaii and the rest is history.) Unfortunately, his contributions were short-lived. He died of cancer at the age of 27. Soon after Mao Kang's death, his brothers, Mao and Stan, joined their father in the family business.

Several naval architects, including Ted Brewer, Robert Perry, and Mark Ellis contributed designs. In five years Ouyang Boat Works introduced the Aloha 27 (8.2), 28 (8.5), 30, 32, and 34 (10.4). In hindsight, it appears that the popularity of the Aloha line came too quickly for what an under-financed

Solitude, a 1988 Aloha 32, is sailed by Wes and Sally Orloff, at left. Lake Erie's Fairport Harbor Light is in the background. Facing page, the cockpit, center, the port-side winch/clutch/cleats, bottom left, the fore-deck, featuring a large forward hatch, bottom center, and the starboard-side winch/clutch/cleats, bottom right.

family could withstand. The Ouyangs eventually ran out of money and turned to a friend and dealer, Canadian Yacht Charters, for a needed cash infusion. The partnership was rocky from the start. Soon Stan and Mao left their directorships with the company, and Ti went into retirement. The three were subsequently bought out for a paltry \$100,000. The year was 1986. Aloha Yachts continued production for the remainder of the '80s but, like so many of its contemporaries, it closed its doors prior to the new decade. All in all, approximately 700 Alohas were built.

The Aloha 32 was designed primarily for cruising comfort. That is not to say that it doesn't sail well. It has an overall length of 32 feet 5 inches, a waterline length of 25 feet, a beam of 10 feet 10 inches, and a displacement of 9,800 pounds, 4,034 pounds of which is ballast.

Design and construction

This cruising sailboat's classic yachty look is the result of designer Mark Ellis' reliance on traditional styling. The boat exhibits a strong spring to its sheer, a delicate spoon bow, and a short counter stern. Aesthetically, the short bowsprit actually extends the sheerline, giving the boat a longer appearance. Technically, it compensates for the somewhat forward placement of the fin keel by moving sail area forward to balance the boat. The wide cove stripe accentuates the sheer, while the cabintop's teak trim piece visually reduces the cabin's height.

Underwater, the hull is about what one would expect to find on most modern cruising sailboats. There is a fin keel, which draws 4 feet 9 inches, and a balanced spade rudder.

The hull is solid, hand-laid fiberglass, while the decks are a sandwich comprised of fiberglass above and below with an end-grain balsa core. This construction technique increases strength and rigidity without adding

weight. The balsa core also affords good sound and temperature insulation. The hull-to-deck joint is an inward flange, which is actually the toerail, that is chemically bonded and mechanically fastened on 4-inch centers. All deck hardware is through-bolted and secured to stainless-steel backing plates.

On deck

From the stainless-steel bowsprit, with two built-in anchor rollers, to the turtle-shaped cabinfront, the expansive fore-deck makes an excellent platform from which to anchor or make sail changes. Deck fittings include a pair of open-base cleats, a corresponding pair of closed chocks, and a deck pipe leading to a rope locker in the forepeak. There is a generous 26-inch square hatch through which crew can easily maneuver and pass bulky sailbags. For safety, the deck has a continuous non-skid surface and is rimmed with a molded-in toerail capped with a continuous aluminum track from stem to stern. A bow pulpit and 27-inch stanchions with dual lifelines complete the package.

The sidedecks are a generous 20 inches wide. However, fore and aft movement is somewhat impeded by the shrouds and the jib track situated in the center of each sidedeck. For handholds, there is a teak hand-rail on each side of the cabintop. Located amidships and on each side is an open-base cleat and closed chock. These are convenient for attaching spring lines and fenders.

Located on the cabintop, which is also non-skid, is a 20-inch-square forward hatch, a pair of 12-inch-square amidships hatches, and a sea

hood with smoked plastic companion-way hatch.

The T-shaped cockpit is surrounded by straight-backed coaming 13 inches high and capped with 8-inch-wide teak. This makes for comfortable back support. There is a bridge deck and a pair of opposing cockpit seats. Beneath each of these 4-foot-long seats is a shallow locker. Additional stowage is located beneath the helmsman's hump, which also opens to the lazarette by means of a locker with a false bottom. In each coaming is a sheet cubby. In the aft deck there's another shallow locker, ideal for stowing mask, fins, and snorkel. Propane tank lockers flank the helmsman. To starboard of the Edson wood-rimmed wheel is the engine control panel, while to port is the manual bilge pump. For water removal, there are two cockpit drains and two aft-deck scuppers. There's a stern pulpit with an integrated, centerline swim ladder, plus a pair of open-base cleats and accompanying closed chocks.

Belowdecks

The interior of the Aloha 32 was available in two configurations. Option B is the classic V-berth and opposing settee

configuration. These areas are separated from each other by the head on one side and a hanging locker on the other. No surprises here. Our review boat's interior is of the more novel Option A arrangement. Instead of a V-berth, there is a large sail stowage bin and two illuminated worktop areas with lockers beneath. Directly above is the large hatch. The worktops are of different heights so they can be used as steps to enter and exit the hatch (see photo on Page 6).

Separating the forward "all-business" space from the main cabin are two hanging lockers with a fiddled shelf above each. Since the main cabin is pushed forward somewhat, the 6-foot 2-inch opposing settee/berths are toed in slightly. While the port settee can be converted into a narrow double, the starboard settee is not convertible. Beneath each settee is a 35-gallon aluminum potable water tank and stowage space. Outboard are four lockers with cane doors and four fiddled bookshelves. The centerline drop-leaf table measures 44 x 40 inches when open and conceals a built-in spirits locker. Ventilation and natural illumination come from four opening ports and a 20-inch square hatch. Four reading lamps provide illumination. A pair of grabrails overhead helps maintain balance in rough conditions.

Just aft of the main saloon and amidships is a bulkhead. The starboard bulkhead denotes the beginning of the private head compartment, which measures a generous 29 by 42 inches. There is a stainless-steel sink, hand shower with its own sump, pressurized hot and cold water, an additional foot pump for cold wa-





The port hanging locker with the shelf above, top. The forepeak sail bin and work area, above. The port-side, L-shaped galley, below left. The main saloon, looking aft, below right.



ter, a vanity with four drawers, a mirror, a wet locker, and three additional lockers/bins. A fixed port provides light, while an opening hatch offers light and ventilation. A fluorescent fixture provides nighttime illumination. There is also a grabrail for balance.

Sliding bulkhead

The port bulkhead is a partial; the upper portion can be slid up and down (see illustration on facing page). In the down position, there's an openness to the cabin. It also creates a pass-through from the galley to diners in the main saloon. With the sliding bulkhead in the up position and the door closed, fore and aft privacy doesn't get much better.

The port side galley is L-shaped and consists of a deep centerline stainless-steel sink, with pressurized water and a foot pump for sea water; a gimballed, two-burner propane stove with oven; a deep well-insulated icebox; two dry storage bins; four drawers; and several lockers with sliding or hinged doors. There are two fixed ports for light and an overhead hatch for light and ventilation. Six feet of overhead handrail spans the galley area for safety.

Aft from the galley is a small flip-up chart table, which is almost useless except for extending galley counter space. Located outboard and above is the AC/DC panel. Continuing aft is the

port quarter berth, which measures 6 feet 3 inches long by 2 feet 3 inches at its widest. It has stowage beneath and a reading light above.

Aft of the head compartment on the starboard side is a reasonably large (6-foot 3-inch by 45-inch) double quarter berth. Beneath is the 35-gallon holding tank and stowage. Small items can be kept within easy reach in the deep, full-length, fiddled shelf, located above and outboard of the quarter berth. For illumination, there's a fixed port and a reading lamp.

The Aloha 32's construction incorporates a fiberglass pan and an overhead liner. While the liner is noticeable, the pan is not readily apparent. Teak has been carefully applied to almost all of the pan's exposed surfaces. The oil finish on the solid and on the veneer

teak, combined with the teak-and-holly sole and cane locker doors, gives the interior a warm, homey appeal.

The rig

The Aloha 32 sports a keel-stepped mast that towers 46 feet above the water. It uses single airfoil-type spreaders and is conservatively stayed with single uppers and fore and aft lowers. There is a split backstay, and the spars are aluminum and Awlgripped white. The halyards (one main and two headsail) are internal, as are the two reefing lines and the outhaul. This

"The Mark Ellis-designed Aloha 32 is a comfortable, traditionally styled, cruising sailboat. It's a little light for serious bluewater work but is more than adequate for coastal cruising and that escape to the Bahamas."



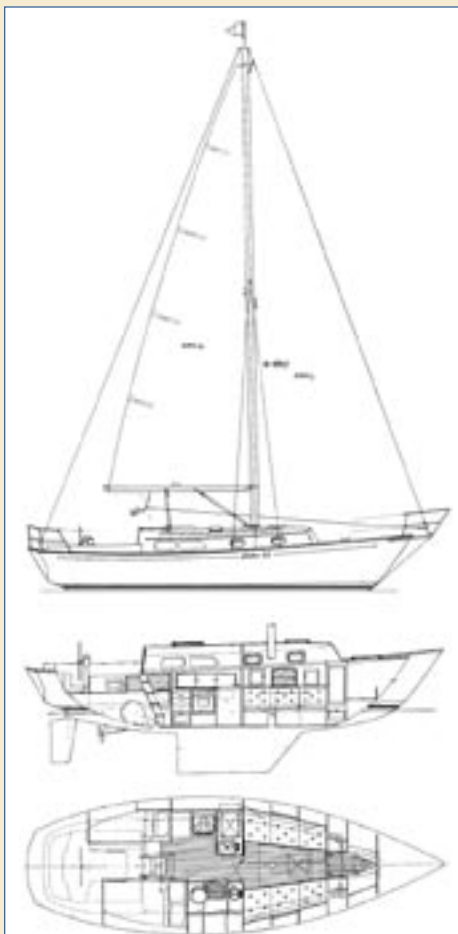
sloop's high-aspect-ratio masthead rig consists of a 213-square-foot main and a 464-foot genoa.

With the headsail tack out on the bowsprit extending the "J" dimension, there is room in the foretriangle for a staysail.

All sail controls are led aft to the cockpit. The headsail halyards, out-haul, and reefing lines are routed to the port aft cabintop, where they can be controlled by a series of clutches and a pair of Barlow winches (a #23 two-speed and a #15 single-speed). On the starboard side, the main halyard is lead to a single clutch and a single Barlow #23 winch. In lieu of a traveler, the Aloha incorporates two mainsheets in an inverted V arrangement.

These are cleated on each side of the companionway's sliding hatch at almost mid-boom. With the exception of the headsail winches (Barlow #26 self-tailing, two-speeds), located on the cockpit coamings, this concentration of running rigging keeps most all of the controls on the aft cabintop. With a dodger installed, they all would be comfortably protected.

The Aloha has a 3-cylinder, 21-hp Westerbeke. Coupled to a V-drive, this freshwater-cooled diesel can adequately push the boat along near its hull speed of 6.7 knots. Access to the engine is achieved from behind the companionway steps and through side panels. Because of the V-drive and the gymnastics involved, access is only fair. The capacity of the boat's aluminum fuel tank is 20 gallons.



Aloha 32 (Option A)

Designer: Mark Ellis
LOA: 32 feet 5 inches
LWL: 25 feet 0 inches
Beam: 10 feet 10 inches
Draft: 4 feet 9 inches
Displacement: 9,800 pounds
Sail area: 518 square feet
Ballast: 4,034 pounds

Under way

The Aloha 32 was designed as a cruising sailboat. It is light and accelerates well. The tall rig helps it move along in light air. And when the air gets heavy, there are two sets of reef points. If they're properly employed, this boat will sail on its feet at or near hull speed.

The wheel steering and the engine and sail controls are, for the most part, straightforward. However, the mainsheet arrangement may take a little time to get used to.

Things to check out


As with all boats that employ end-grain balsa as coring material, the deck should be sounded for possible areas of delamination. Osmotic damage or hull blistering is a minor problem with Aloha 32s. Still, the hull should be carefully inspected.

There have been several reports of loose aft keel bolts. This is due to the degradation of wooden or mild-steel structural components that have been continually subjected to bilge water.

Along with water seeping into the coring material, water has also been responsible for rotting the wooden chainplate knees. Even though these are glassed to the hull, water (via capillary action) can rot these critical support members. While in the chainplate area looking for rot, examine the chainplates for signs of excessive wear.

Summing up

The Mark Ellis-designed Aloha 32 is a comfortable, traditionally styled, cruising sailboat. It's a little light for serious bluewater work but is more than adequate for coastal cruising and that escape to the Bahamas. Even though its production run is purported to be 1979 to 1988, there weren't hundreds built.

Consequently, there aren't many on the market at any one time. If you are fortunate enough to locate one for sale, expect to pay in the neighborhood of \$30,000 to \$45,000, with condition being everything. For more information, see <<http://www.alohaowners.com>>. 

The port settee with the sliding bulkhead up (closed), looking aft, at left. The port settee with the sliding bulkhead down (open), looking aft, below.



Brightwork:

Here's how to find

by Tom Young

these areas are freshly renewed, some are in need of stripping but will be maintained for another year with the protection of a coat or two of finish as they await their turn on my schedule.

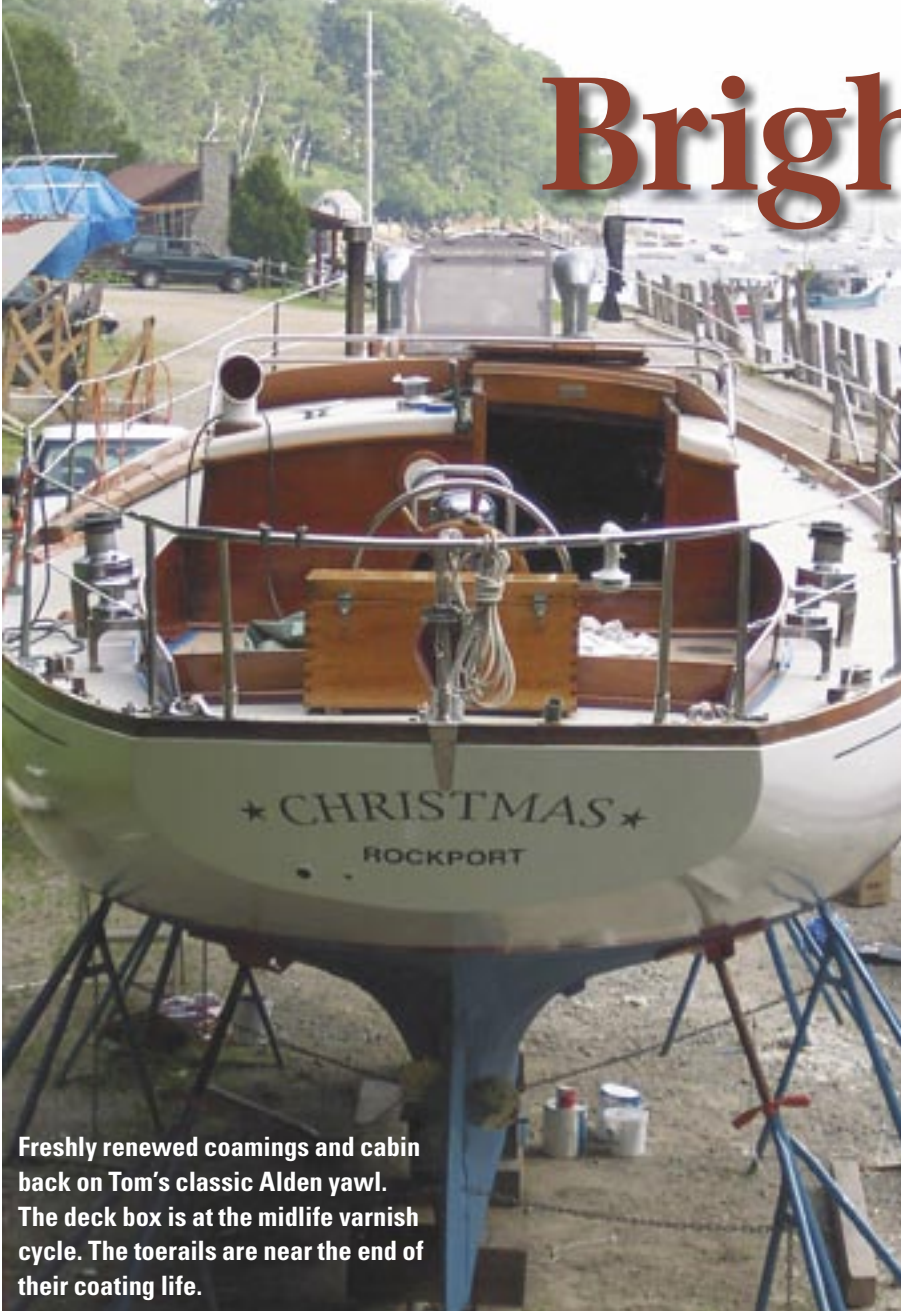
Your brightwork

Take a look at your own brightwork. Has it been aggressively refinished before? Severe sander cupping? Scraper gouges? It's difficult to correct this damage, but it can be improved. If the wood has just been neglected and not aggressively attacked with scrapers and dished with sanders, it may be easier to renew even if it's very discolored.

Step One for me is dividing the brightwork job into parts. This year I will renew the cockpit coamings and the aft end of the deckhouse. To illustrate my process, I'll focus on one coaming board. This coaming was shaped from African mahogany and installed more than 40 years ago.

It's been 10 years since it was correctly stripped and coated. Despite a yearly maintenance coat or two, the varnish has turned a cloudy yellow. Even with the UV protection a good varnish affords, the powerful sun still raises havoc. It is lifting off in many areas, especially the edges where it meets the deck and cockpit. Chips have exposed the wood underneath, now a little gray from sun and water exposure. Its life as a protective coating is over. The mahogany coaming has a straw-yellow shade that contrasts with areas that have been renewed in the last few years and show a deep rich reddish mahogany. They look like different species of wood, even though the pieces may have been milled from the same log.

I will leave the coaming in place, but I will remove the winch stands and cleats. The extra time spent removing most or all of the hardware will cut down equally on the renewal process. There are real benefits to removing and rebedding these pieces as well. Old brittle fasteners and aging bedding



Freshly renewed coamings and cabin back on Tom's classic Alden yawl. The deck box is at the midlife varnish cycle. The toerails are near the end of their coating life.

SOMETIME LONG AGO, WITH A PALE newly sanded board scrap of some nice shape — maybe a toy sword — I took a small brush, dripping with varnish, and slowly dragged it across the wooden surface. I watched as it soaked deeply into the wood grain. As if a light had been turned on below the surface, the amber finish unlocked and illuminated the depth in the patterns of the beautiful wood grain. There was magic in the wake of that brush for me then. That magic remains with me years later.

About the same time in my life I also felt the wind fill a small sail. Sail, keel, and rudder working in unison, and a small boy in a small boat came to life. What a feeling! In the hissing sound of the tiny wake, I heard a whisper of adventure I still hear today. Few things are as magical. Another sailor

was hooked for life.

These days, my deep appreciation of an older, nicely designed and crafted boat with a lot of brightwork blocked up on the edge of a beckoning blue sea presents a dilemma. Spring brings a new season and the crunch of projects to do on the boat. For a do-it-yourself sailor there never seems to be enough time. Therefore, my limited work time and conflicting desire to sail have evolved an efficient system for brightwork: a sailor's system.

The lifecycle of varnish as an exterior coating is a dynamic process of renewal and aging. A combination of proper preparation, proper application, adequate maintenance, and amount of exposure to the elements will determine its lifespan.

Most of the brightwork on my boat is in the maintenance stage. Some of

A sailor's system

time both to varnish and to sail

compounds will be replaced, surfaces under the parts will be sealed, eliminating varnish edges and making stripping and coating much easier on an unbroken surface. Except for the coating, this work will be performed during the off-season as time allows.

Think creatively about the work platform. The little time it takes to set up a simple, safe staging will be more than offset in time saved as you strip the outside of the coaming from a comfortable standing position. For low staging I like to use two stepladders and a plank. The steps make for easy adjustment of plank height. I use just the lower few steps. Anything higher requires a more substantial and safer platform.

Varnish removal

The important tools are stiff-bladed scrapers with a sharpened edge, not soft putty knives. In time, the edges may require filing to the original angle. Experiment with this. I like to file the edge to the original angle and then blunt the sharp edge with a stroke or two. Too sharp an edge is prone to gouging; too dull leaves too much finish. You also need small pull-type scrapers for tight spots and rounds and extra blades for the pull scrapers. A heat gun is important too. Any will work, the hotter the better as you get more skilled.

My sailor's system uses the heat gun for finish removal. It's fast and clean. Depending on the gun's heat output and the finish age and thickness, the time to heat until the coating lifts will vary. This is an easy skill to learn. Use the medium 3-inch scraper. Moving the gun back and forth, gently heat the finish on the flat area of the coaming. Watch it closely; the old finish will begin to soften. Just as it starts to bubble, push your scraper (held at a sharp angle) into the melting varnish. It will begin to move with a gentle pressure as the coating softens. Your heat gun and scraper should move together now as wide ribbons of finish peel away. That's it. It's all feel and timing; little effort is needed or even wanted. The skill becomes second nature in no time. After a little practice,

you should be able to strip the coaming board in little more than an hour. If the coaming has a lot of equipment still installed, it will take longer of course.

There are three things to watch out for. First, don't overheat and scorch the wood; a burn will result from too much heat aimed too long in one area. Second, don't force the scraper; you may gouge the wood. Third, don't burn yourself. Direct the heat away from your scraper hand. A heavy glove on your scraper hand provides protection, if you are concerned.

Smaller scraper

Use the smaller scraper for smaller areas, inside corners, and shaped areas. Rounds, such as the top of a coaming, require little heat. A gentle scraping with a small pull-type scraper works best on round surfaces.

Apply just enough heat and pressure on the small scraper to remove the softened finish, not the wood. Generally, scrape with the grain, but scraping across with a light motion in corners is OK. The object is to remove the most amount of finish safely and quickly without damaging the wood.

In the damage-control department, remember that overheating can cause scorching. Too much pressure or too sharp an edge can damage the wood. The flatness of the broad areas and shape of the curves on the coaming must be maintained. This work can be

The first step involves using a stiff scraper and heat gun to remove the heaviest layer of varnish, at right above. A sun-bleached layer of wood is partially removed during scraping with a pull scraper, at right. This is the second step in the process.

done anytime, even during the off-season. If you live in northern latitudes, a good cover system or storage building will make this possible.

Once the old finish is mostly removed, it's time to inspect the coaming closely. After several years — a decade is not unusual — the rich, deep, original hue of the wood may become sun-bleached and dulled. A deep-red-dish mahogany coaming may take on a blonder hay color over several years, even under a good varnish coating system. A slightly bleached, yellow-gray appearance means more surface removal is necessary if you want to achieve a new-mahogany look.

This difference is easy to see as you compare the wood. This moment is the crossroads in the brightwork job. You can skip the scraping and aggressive sanding systems that follow if you're pleased with the appearance. If that's the case, you can go on to finish sanding and coating. However, if you



*"The scraping system
has one rule: leave the
surface of the wood
flatter than you found it."*

want the mahogany coaming to return to its deep-reddish luster, keep going. Proceed very carefully; you're almost there now.

Scraping the wood

For this part of the project, the tools include wood scrapers with sharp blades. You'll need various sizes, all designed to be pulled. Also have replacement cutting blades or a file for sharpening softer, metal-bladed pull scrapers.

In the sailor's system, I refer to this as wood planing. A wood scraper is not a planing tool, I realize, but the result I'm hoping to achieve is similar. A sharp, correctly used scraper cuts a thin layer of the remaining finish and wood off the surface. Unlike scraping paint or finish where heavy pressure is used, this is a gentle process. Imagine removing one even, paper-thin layer from the coaming. Remember that you won't remove a thin layer often with this process. If your wood is correctly maintained, very little wood will be removed during the renewal process. The scraping itself happens only once every five to 10 years, depending upon your geographic location and the level to which the wood is maintained.

If you are new to this sort of scraping, practice on a safe piece of wood to acquire the feel. A sharp scraper will

require a light-to-medium pressure.

Imagine the widest sharp scraper, pulled along the broad flat surfaces of the coaming. Each section planed with the scraper removes the same amount of wood and overlaps the previous area planed. Resist the temptation to overscrape a discolored area. This step is meant to remove one uniform and very thin layer of finish and wood surface from the coaming.

If performed gently and uniformly, this step will remove most of the last of the finish that will otherwise gum up your sandpaper. Cut or plane one layer of the straw-colored surface. Don't scrape the rounded areas. You can remove a layer on these areas during the sanding system. Done correctly, this step will flatten the wood's surface and raised grain while aggressively removing a layer of the coaming. Overall flatness has to be retained.

Scraping won't flatten previously cupped surfaces. Done correctly and gently, however, it will maintain the existing flat surface, perhaps even improve its flatness. The scraping system has one rule: leave the surface of the wood flatter than you found it.

The objective with this step is to remove the remaining finish layer and some of the sun-bleached yellow layer. Remove one even layer from the flat surface. Maintain the flatness of the wood and improve the flatness of the existing surface.

Damage control in this step is to prevent

Work can continue during the off-season with the use of a good cover, at left. Applying the initial coat requires a stroke perpendicular to the grain, facing page. Then finish brushing it using long strokes with the grain.

severe gouging, cupping from over-scraping one area, and chipping. Avoid damaging the shape of rounds and corners. Only apply this technique to flat areas, not to rounded edges or corners.

This step can also be done during the off-season if you have a way to protect the newly exposed wood from moisture.

Sanding

Once you get to the sanding step you'll need sanding blocks. When using these remember to only sand with the grain. You'll also need a random orbital finishing sander. These sanders are designed to sand in any direction; they leave few marks if used with care. Have a range of paper grits as well.

Sanding, when done correctly, is a great technique. When done incorrectly, sanding can ruin wood. The goal is a gentle removal of a thin, uniform layer of wood and remaining finish. This step will retain and even improve the flatness of the existing surface. Make a mental picture of systematically and consistently moving the sander at the same pressure and rate over the flat areas of the wood. This goes for small hand-sanding blocks all the way up to a large random orbital electric sander. They are all flat sanders.

The size of the flat area to be sanded dictates the size of the sander to use. Even an aggressive 6-inch random orbital sander, if carefully used, can maintain or even improve the flatness of weather-damaged wood. Small sanding blocks must be used on smaller flat areas. Remember to leave the surface flatter than you found it.

Once I have scraped off a uniform layer, my coaming is looking pretty good: the old finish is gone except for what's left in the grain. The color, while improved, is still yellower than I want, but a reddish tint has begun to emerge. I want to improve it. If you're doing the same, start with a coarse grit: 80, even 60 if you're careful. This is an aggressive step meant to remove a uniform surface layer. Use the sanding block on the broad flat areas or the random orbital sander, if you are comfortable using it.

Envision the sanding block or random orbital sander gently removing one uniform layer of the flat surface of the coaming. Resist oversanding discolored areas. Think: uniform layer. Think: even. Think: flat. Stay



away from the rounded areas with your sanding block or orbital sander. Don't oversand the larger flats with a large orbital sander. You have to take the same amount off the smaller areas with a small hand block.

Notice the shape of the coaming top and corners. Sand these areas with a scrap of sandpaper folded in your hand to maintain the existing shapes. Don't over-round, just evenly remove a thin layer of wood. These come off fast. Remember to maintain the shape.

Finish-sanding

Now the heavy material removal is over. On my boat I know this because the coaming has taken on the reddish hue of new mahogany. It's time to begin to prepare the wood by finish-sanding. There is no further attempt to remove a layer of wood. Now the goal is to smooth the coarse surface with a finer grit. This may mean going from 60-grit to 80- and finally to 100- or 120-grit. Think: even and uniform. Stop here; 120 is a good grit to prepare for your first coating.

While a cockpit coaming presents wide flat areas for this removal system, smaller parts, such as toerails and handrails, have smaller flat and round areas which can be treated the same way with smaller scrapers and sanders.

The objective during this aggressive surface removal stage is to sand off an even, thin layer of the wood with coarse-grit paper to expose the new mahogany. It is also to maintain and improve the flatness of the coaming and to maintain the shapes of all rounded edges.

Once you get to the finish-sanding stage, the goal is to sand with progressively finer grits, each time covering one even layer, and ending with 120-grit paper ready for applying the coating.

At this stage, the damage control is to avoid cupping flat areas by over-aggressive, non-uniform sanding. Also take care not to destroy the shape of any edges by rounding over them with the sanding block or orbital sander. Beware of orbital sanding marks: start and stop your sander away from the wood's surface. Watch out for block-sander marks: always sand with the grain. And don't go too far; finish-sanding with too fine a grit can result in poor coating adhesion. This step can also be done during the off-season if

“Now the heavy material removal is over. On my boat I know this because the coaming has taken on the reddish hue of new mahogany.”

you can protect what you have accomplished by keeping it dry.

Overall, you should be happy with your wood now. You may consider using a little oxalic acid on a water or mildew stain if it is really unsightly. But it's often better to resist the temptation as many stains become less visible under the new finish. If you do choose to go with an oxalic acid touchup, follow the instructions, use it sparingly and well diluted, and be sure to rinse it off. Follow this once more with finish sanding to smooth the water-raised grain.

Varnishing

The materials required at this stage include good-quality marine spar varnish specifically designed with a lot of UV protection for longevity and the recommended compatible thinner. You'll also need good-quality bristle brushes designed for varnish work, long-release masking tape, and several tack rags. Have several one-quart plastic painters' buckets and some disposable paint strainers that fit this container. Remember to have some clean rags, fine sandpaper loaded on a flat block sander, and a vacuum cleaner.

First, vacuum everything. I do this between every coat. It's fast and helps keep wind-blown dust off the wet finish. Next, tape off the area to be varnished. I believe it's worthwhile to leave a small exposed area untaped on the adjacent surface not

receiving the varnish. This adjacent surface could be the deck or cockpit. The space I leave is around $\frac{1}{16}$ inch or less. I believe this little overlap allows the varnish to penetrate into cracks, even weeping into invisible end grains for better adhesion, and may help seal out moisture. I find it worthwhile and invisible. Just before applying the coating, wipe the surface with a tack rag to remove the last of the dust.

The first coat of varnish, a base coat, is thinned with about 10 to 20 percent of the compatible thinner. Pour enough varnish into the container and add about 10 percent of the thinner. Stir it gently to keep foaming or bubbling down. Keep adding a little thinner until the varnish appears a little watery. This takes less than 20 percent unless the varnish is thickened, but it changes the viscosity significantly, as you will see. This extra thinner will deeply penetrate the grain, carrying the varnish with it. Imagine this first coat going deeply into and around the wood fibers and setting up, forming a foundation that reaches from the surface into the wood. This helps tie your coating down.

Checkerboard pattern

Apply that first coating perpendicular to the grain and then finish brushing it with long strokes with the grain. This checkerboard pattern distributes an even, thin coat. It will be flatter with fewer runs and sags. Don't overbrush. Evenly distribute a thin coat and moving along fast enough to keep the varnish edge wet. Keep the brush in a can of clean thinner between coats.

Drying requires several hours of dry weather, usually overnight. Since you must sand lightly between coats,

Continued on Page 77



Hal & Margaret Roth

*Meet the
cruising couple
who inspired
a generation
of dreamers*

by Marianne Scott

IF IT'S TRUE THAT "MARRIAGE IS ONE long conversation, chequered by disputes," as Scottish novelist and poet Robert Louis Stevenson wrote, then Hal and Margaret Roth have conducted a prolonged and intense conversation. Over the past four-and-a-half decades they've sailed more than 120,000 nautical miles in a Spencer 35 called *Whisper*, a Santa Cruz 50 christened *Sebago*, and most recently, a Henri Wauquiez Pretorien 35, again baptized *Whisper*. Many of their adventures are recounted in Hal's 10 books and numerous magazine articles.

And the partnership continues. When I visited the Roths at their on-the-golf-course townhouse in St. Michaels, Maryland, they had just finished repainting *Whisper's* bottom. Margaret, who was turning 82 the following day, said this was the last time she wanted to scrape the keel. "Haulouts are dirty," she said in her precise British accent. "Next time, we'll have someone else finish the bottom." She reflected a bit. "But," she then added in a soft voice, "Hal is so fussy about the sanding and filling. So if he goes, I go too."

That statement likely reflects Hal and Margaret's relationship since they married in 1960. Since then, except for

the two singlehanded BOC races Hal completed, they've spent all their time together circumnavigating the world, sharing the tranquility of countless anchorages, exploring the Mediterranean, and surviving some horrendous sailing debacles. If there have been disputes, they've been unimportant. And what's even more remarkable about these celebrated adventurers is that they'd never sailed until they were 30-something — neither had salt in the veins.

Depression-era childhood

Hal was born in 1927 in Cleveland, Ohio. His father played the violin and directed a popular orchestra, but nearly disappeared from his son's life in the early 1930s. Hal was raised by his mother and his grandparents. "Life was hard in the Depression," he recalls. "But my mother got a job as a telephone operator. She earned \$18 a week, and when she got a better job, with a \$4 raise, it was a big thing for us." In childhood,

Hal developed the hobby of building model airplanes from kits. Eventually, his dexterity and inventiveness led him to design and build his own models and absorbed so much of his time that his high-school grades suffered.

"I was bored out of my skull," he says. "In retrospect, I realize I just didn't know about homework. I never did any. My parents were school dropouts and didn't know about studying either." When World War II improved the economic climate, Hal began taking odd jobs. At age 17, near the end of the war, he enlisted in the U.S. Air Force. "There was a policy never to reveal air-force casualties," he said dryly. "So I didn't know the casualty rate was 30 percent." True to his youthful passion, he became an airplane mechanic and accompanied pilots and navigators on many B-25 and B-29 missions, "flying along to keep things going." Much of this time was spent in Alaska, where he rose to the position of panel engineer.



Photos courtesy of Hal and Margaret Roth

*“In 1999, Cruising World
inducted Hal and Margaret
into its Hall of Fame,
demonstrating that you
can start sailing in your
30s and still earn a most-
valuable-player award.”*

After mustering out, Hal returned to Cleveland, took a bank teller job and enrolled at Western Reserve University. But a year later the young man traveled west, having decided California was a better place in which to live. He first signed up in chemistry at the University of California at Los Angeles, then transferred to Berkeley. Money was always a problem. “The GI Bill gave me \$65 a month,” he grumbled. “Not enough for tuition and all the other expenses. Today, parents seem to be obligated to send their kids to college. In my day, nothing.” He vividly recalls seeing a billboard over the Oakland Bay Bridge advertising student loans. “It was the Bank of America. ‘We want to help the youth of America,’ they said. So I went and asked them for \$1,000. ‘We need a co-signer,’ they told me. I hate that bank and have never done business with them.”

About that time the Korean conflict was heating up, and Hal enlisted in the Air Force Reserve. “I was patriotic and had a desirable skill. People who can fix things are always in demand.” As Cold War fears were on the rise, Hal flew in old World War II planes dropping shredded tin foil from the air to determine if Russian planes, using the same technique, could confuse radar. Results were inconclusive.

After serving two years in the Reserves, Hal re-enrolled at Berkeley and completed a degree in journalism in 1953. Why journalism? “I was always a good writer,” he says. He recounted how, at age 11, he wrote a letter to the editor of the *Cleveland Press* describing how his model airplane had been trapped in the thorns of an unclimbable tree. Wanting to save his precious model, Hal chopped down the tree. As the tree tipped, the model fell and was crushed under the branches. “The newspaper,” Hal says with satisfaction, “published the letter under the headline, ‘Poor lumberjacking.’” He picks up a 2-inch stack of paper. “These are copies of the letters I have sent this year,” he continues. “I correspond with people all over the world, with fans and editors and people I’ve met over the years. I much prefer letters over

email. Much of email is appalling. Full of misspellings and poor writing. I try to write carefully and edit my stuff.”

Freelance career

With his journalism degree in hand, Hal went looking for a position as a newspaper reporter. But in the early 1950s, television was fast becoming a fixture in most households and newspaper circulation plunged. Hal remembers that in 1953 San Francisco had five newspapers. Two years later, just two were still in print. To earn his living, Hal turned to freelance writing, covering just about any topic.

He quickly noted that editors wanted photos to illustrate articles, so Hal, ever enterprising, took up photography. This time he was in the right place at the right time. He studied with such icons as Ansel Adams and Edward Weston. He bought a 4 x 5 Linhof camera and built a darkroom. Soon he was selling stories and photos to *True*, *Argosy*, and the Sunday supplement, *American Weekly*. He was able to capitalize on his model building by publishing pieces in model airplane magazines. Always a quick study, he

also peddled articles to the medical press. But the golden magazine markets of the day were the *Saturday Evening Post* and *Colliers*. “I finally sold my first story to *Colliers* in 1956,” says Hal, relishing the memory. “They paid me \$1,500. That was big money (equivalent to \$10,500 in today’s funds). I was finally in the big time and counted on selling many more articles. The next year, *Colliers* folded. But I did sell photos to the *Saturday Evening Post* after I switched to a 35 mm camera.”

Growing up in Bombay

In 1958, Hal and Margaret met at a Chinese New Year’s party in San Francisco where Hal was assigned to take photos. Margaret had recently arrived from England. Born in Bombay of British parents, she’d spent her early years in India. At age eight she was sent to boarding school in England, a common practice in the 1920s and ‘30s. Margaret remembers her time away at school with fondness. “I loved sports,” she explains. “Lacrosse, cricket, and tennis, I was quite good at all of them.” After serving in Britain’s Women’s Royal Naval Service (WRENS) during World War II and attending university, Margaret went to Paris for seven years as a translator for NATO.

In 1958, encouraged by her sister who lived in Westchester, New York, Margaret emigrated to the United States. “In the United Kingdom the winters were so cold,” said Margaret. “All those clothes you had to wear. Such an awful bore.” Later that year, Margaret



Hal and Margaret on *Whisper* in Sausalito in 1970, facing page. Hal in *Whisper*’s cockpit, at right, while rounding Cape Horn.



Margaret wears a marvelous Cheshire grin along with her tam-o'-shanter while sailing *Golden Feather*.

decided to visit a former NATO colleague living in San Francisco. It was during this visit that she and Hal met. Neither revealed if love hit them like a lightning bolt, as the French say, but Margaret returned to New York, spent \$150 on an old Plymouth and drove back across the country. The couple married a year later. Hal continued his work as a freelance writer and photographer; Margaret managed the financial side of the business, "doing the accounts and tracking spending," and, of course, taking care of Hal. Forty-four years later, although suffering from a heavy cold and a back distorted by osteoporosis, she continues the pattern started early in married life. "When you get married," she stated, "you have to adjust. Everyone has to adjust."

The first sail

In 1999, *Cruising World* inducted Hal and Margaret into its Hall of Fame, demonstrating that you can start sailing in your 30s and still earn a most-valuable-player award. How were they transformed into sailors? I asked Hal if he'd ever taken advantage of Lake Erie's

proximity during his youth. "I couldn't have afforded an oar, let alone a boat," he groused. Margaret remembers her parents sailing 18-foot Bombay Tomtits, but she herself never participated.

They experienced their first salty adventure aboard a friend's 38-foot wooden ketch. "Sailing has a lot of intriguing aspects," says Hal. "You know, the design of a boat, the interplay of the wind and the water." Smitten, the couple began walking docks and learning about various sailboats. They sailed on other people's boats. Wishing to become more competent and confident, they decided to take lessons: to this day they scorn people who risk themselves on the open sea without training. A charter in Antigua supplied them with a captain, a 45-foot wooden cutter, and a lot of rums with ginger ale. "We were able to ask questions all day long," recalls Hal. "We learned a lot." During the charter, he took batches of photos and wrote several stories recounting their sailing education for the *New York Times* travel section.

They also signed up for a "nuts-and-bolts" sailing course on the Clyde in Scotland, then chartered in Greece to learn more. "It was a disaster," says Hal grimly. "The captain didn't know how to sail, the crew couldn't boil water, and

we had to [use] the mainsheet to moor." Brightening, he adds, "but it did make an interesting story for *Skipper*, a slick magazine published out of Annapolis."

In 1963, having gained confidence, the Roths bought their first boat in Holland — a 36-foot steel sloop called *Golden Feather*. It cost \$4,500. Another \$750 shipped it to San Francisco aboard a German Lloyd ship. They practiced sailing in sheltered waters, madly read sailing tomes, and tried to perform all tasks under sail, including docking. Two years after they acquired the yacht, a gasoline fire destroyed her.

The mishap did not deter them, and they began searching for a new boat. "Fiberglass was becoming a popular yacht material," explains Hal. "There was a lot of skepticism about its strength. Many thought the stuff would dissolve in a year." But Hal had written an article for *Popular Science* in 1958 describing the first large fiberglass production sailboat, the Philip Rhodes-designed 41-foot Bounty 2, built in 1956. He knew the newfangled material would last. So when he and Margaret spied the lines of a fiberglass Spencer at a Seattle dock, they traveled to Vancouver, British Columbia, to investigate the boatbuilder. Liking John Brandlmayr's design and the Spencer's construction, they ordered a boat despite its steep price of \$16,000.

Offshore ventures

In his writings, Hal encourages boat buyers to purchase a used yacht, as they're more economical. But in 1966, perhaps encouraged by the publication

1964

San Francisco to San Diego aboard a friend's boat, *Vaeringer II*.

1967-68

From San Francisco, they sailed to the South Pacific, Japan, the Aleutian Islands, Alaska, British Columbia, and back to San Francisco.



1972-76

From California to the Galápagos, Peru, Chile, around Cape Horn, Argentina, Uruguay, Brazil, Bermuda, Maine.

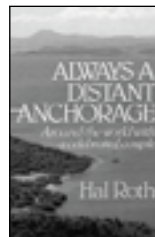


1977

Maine to Florida and Bahamas. Book: *After 50,000 Miles*, not shown.

1981-84

West-about circumnavigation. Beginning in Maine, the pair sailed to Bermuda, West Indies, Panama, the southern and western Pacific, Torres Strait, Indian Ocean, Seychelles, Red Sea, Suez, Mediterranean, Martinique, Maine. Book: *The Longest Race*, not shown.



64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85

1969

San Francisco to Vancouver Island and return.

1970-72

San Francisco to Victoria, Vancouver, and around Vancouver Island to San Diego. *Whisper* was altered in Vancouver and became the standard for the Mark II version of the Spencer 35.

1978-79

Bahamas to Maine; Maine to Annapolis.

1979

Hal navigates *Toscana* from Massachusetts to Ireland.

“‘From the time we married, we were always together. You know, at boat shows when Hal is selling his books, men come up to us and ask how they can persuade their wives to cruise with them.’”

of his first book of text and photos, *Pathway in the Sky: The Story of the John Muir Trail*, the previous year, he opted for a brand-new Spencer. Moreover, it was about this time that the couple “elected to sail and earn our way with words and pictures while living aboard a 35-foot yacht,” as Hal wrote in his latest book, *How to Sail Around the World*. So they went to Vancouver Island to commission and sea-trial their new *Whisper*, met the famous Smeeton, and then left on their first bluewater sail to San Francisco. The trip stimulated them to plan a Pacific voyage, and a year later they provisioned, loaded two typewriters aboard, and set off from an island off Mexico straight to Nuku Hiva in the Marquesas. Hal chuckles, remembering they were given a couple of wooden spinnaker poles before their departure. “They were very thick and heavy. We had a terrible time raising them. So the first chance we had, we planed them. On the next island we planed them some more. At each stop these poles got skinnier and skinnier.”

From French Polynesia the Roths moved through the western Pacific to Samoa and the Gilberts, visited Japan and then circled past the Bering Strait to the Aleutians, British Columbia, and on to California. Hal chronicled their adventures in *Two on a Big Ocean*.

How did the couple manage the close quarters on their first offshore voyages? “It wasn’t much of a change,” says Margaret. “From the time we married, we were always together. You know, at boat shows when Hal is sell-

ing his books, men come up to us and ask how they can persuade their wives to cruise with them. Now I’m the first to admit there are dangers. So I tell these men that to sail together the wife has to have complete confidence in the captain. I’ve always had complete confidence in Hal.”

Margaret adds that they worked out a system for maximum safety. The couple shared watchkeeping around the clock, making sure each would have at least seven hours of sleep every day. “One of us was always dressed and ready for action,” says Margaret. “In busy places like Mediterranean ports, with boats everywhere, we’d both be on watch.” Each also used the sextant but always double-checked the other’s calculations to avoid errors.

Continuing offshore

During their next major journey, the Roths went south, eventually rounding the Horn. It was at the Wollaston Islands where *Whisper* was blown ashore. “We set two anchors, but they dragged because there was too much kelp,” remembers Hal. “The boat was holed and half-filled with water. To

survive, we set up camp on an island about a mile away. I was rowing stuff from our boat in our dinghy when the wind picked up suddenly, swinging our little vessel [the dinghy] out to sea. Three-foot waves are a big deal for an eight-foot dinghy. ‘Next stop, Antarctica,’ I thought to myself. But another tiny desolate island, one-quarter mile away, just allowed us to land. We ate wild celery and small crustaceans. When the wind died, we rowed over to the camp.”

A week later they saw a Chilean navy vessel and, after attracting the crew’s attention by signaling with an Aldis lamp, they were able to patch *Whisper*’s 3- by 4-foot hole with plywood and 75 through-bolts. After they pumped out the water, the yacht was towed and repaired in a Chilean port. Two months later, the intrepid pair again rounded Cape Horn, then sailed on along South America’s coast, eventually reaching Bermuda and then Maine. Their adventures led to another book, *Two Against Cape Horn*, a film, and a North American lecture tour.

Hooked on adventure in a small boat, the Roths next circumnavigated the world, from Maine to the Caribbean via Bermuda, through the Panama Canal, to the southern and western Pacific and Torres Strait, through the Indian Ocean to the Red Sea, Suez, the Mediterranean, Caribbean, and back to Maine. Their one misadventure, caused by a faulty Australian chart, left them on a reef in Torres Strait. How they managed to get off the sharp coral is described in *Always a Distant Anchorage*.

1986-87

Hal completes his first singlehanded BOC race via the Southern Ocean on the Santa Cruz 50, *American Flag*, coming in fourth in his class.



1995-97

Chesapeake to Turkey and back.



1999

Voyage to Newfoundland.

From 1966 to 1986 Hal and Margaret Roth sailed a Spencer 35 named *Whisper*. From 1986 to 1992 they switched to a Bill Lee-designed Santa Cruz 50 named *American Flag* (later called *Sebago*). In 1993, they bought a French-built Wauquiez Pretorien 35, again called *Whisper*, which they still sail today.

86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03

1987-90

Hal and Margaret sail from Maine to the Chesapeake Bay.

1990-91

Hal completes his second BOC race on the Santa Cruz 50, renamed *Sebago*. Book: *Chasing the Wind: a Book of High Adventure*, not shown.

2000

A second voyage to Newfoundland and Labrador.

2003

Hal publishes *How to Sail around the World*, a culmination of his sailing knowledge.



Racing around the world

Hal always had a yen to see if he had the backbone and skills to sail long distances singlehanded. He decided to sail the 1986-87 BOC Challenge, an east-about around-the-world race — 27,000 miles in four legs starting in Newport, Rhode Island, and on to Cape Town, Sydney, Rio de Janeiro, and back to Newport. He asked yacht designer Bill Lee to build him an engineless Santa Cruz 50, figuring an ultra-light boat would serve him well. It did. He completed his contest, with Margaret meeting him at the three stops and serving as shore support. Three years later he reenacted this feat, again with Margaret as backup and, of course, publishing two more books about his experiences.

Having proved his stamina and ability, Hal sold the Santa Cruz, bought the Wauquiez 35, and rejoined the “best mate a man ever had.” Their next major sail also involved a project: tracing the wild peregrinations of Odysseus trying to return home to Attica after the Trojan War. As Hal describes in *We Followed Odysseus*, figuring out the semi-mythical locations described in a saga based on oral tradition was a challenge — but an appealing one as it allowed the couple to explore the Mediterranean at leisure while studying the *Odyssey* and the many commentaries on that classical poem. Since that time, they’ve made a series of shorter voyages.

Sailing and writing

For decades, the Roths have supported themselves through Hal’s writing and

The Roths on their first boat, the 36-foot steel sloop, *Golden Feather*, in about 1964, at right. Margaret steering the *Spencer 35*, below.


photography. “We’ve learned to live simply,” says Hal. “During our voyages or on land, we never went to restaurants. We anchored out. No marinas.” They never bought health insurance, counting on their wholesome lifestyle and paying for the occasional doctor visit. Their modest two-story Maryland townhouse is furnished with comfortable 1970s teak furniture. They didn’t join the golf club, but the course provides for great walks. Bookcases line the walls and are filled with marine books, among them Hal’s tomes in English and their various translations into German, Portuguese, Swedish, and Japanese.

Next to the bookcases Hal has his desk with a laptop, which he says has really speeded up his book writing. When we met, he was working on a book about six artists/adventurers who spent time in the South Pacific searching for their personal paradise, but who mostly came to a sticky end: Paul Gauguin, Robert Louis Stevenson, Robert Dean Frisbie, Alain Gerbault, Jack London, and Tom Neale. Margaret, still fluent in French, was translating Alain Gerbault’s autobiography for Hal. Had she ever wanted to write herself? “I’m not a good writer,” she responds with emphasis. “It didn’t come up to Hal’s standards, and I was busy looking after him. His work is more important than mine.”



Age not a barrier

Now that Hal is 77 and Margaret 82, will they give up sailing? Not necessarily. They’d agree with Gabriel Buck’s statement, “I refused to let my age determine my destiny.” Margaret showed me her newly repaired knees that allow her “to run up and down the ladder like a girl.” The new knees don’t hurt the way the old arthritic ones did during their late trips in the 1990s. Hal’s study of “paradise seekers” has stimulated his desire to return to the South Pacific, although he dreads traversing the Panama Canal. Margaret has a yearning to visit Portugal. “All we have to do is get the yacht ready, lock the condo doors, and go,” he says. “We may just do it.”

Perhaps what they’re not ready to relinquish is the romance of seeing the world from a small boat. Despite the knockdowns Hal experienced during the BOC races, and notwithstanding such events as their near-death experience in the Wollaston Islands, or their Torres Strait reef grounding, what they remember is the beauty of the wispy fogs around the Aleutians. What still tickles them is their ability to find a speck of land in the vast Pacific through their accurate dead reckoning and celestial navigation. What gives them joy is remembering that special feeling when seeing “that big black rock that is Cape Horn,” even after holing *Whisper*. “It’s been wonderful to make all these trips,” says Margaret. “Yes,” adds Hal, “I think what Slocum said so succinctly applies to both Margaret and me, ‘The wonderful sea enchanted me from the first.’” 





In search of clarity

Shedding some light on portlight replacement

by Chuck Fort

I'VE ALWAYS THOUGHT KITCHEN DUTY much more pleasant with a window to look out of...not only for the cook, but also for the cleanup crew (usually me). A galley on a boat is no different. When we were planning our first cruise, I told my wife that the view out of her galley window would be ever-changing, and I kept my promise. While Theresa prepared sumptuous meals on our 30-foot Mercator, she gazed on icebergs and glaciers in Alaska, the desert of Baja Mexico, howler monkeys swinging in the trees of Costa Rica, and tropical forests in Panama. (Also, of course, many white-tipped mountains of rolling ocean water.)

Looking out through crystal-clear portlights is an ever-changing event that connects you to the world when you can't be on deck. So when we bought our next boat, a 1975 44-foot Van de Stadt cutter, I could see there was a problem. Rather, it was what I couldn't see that was the problem. The boat had six large non-opening deadlights in the saloon that were made of plastic. The bad news was that they were so crazed that only soft fuzzy shapes could be seen of the outside world. The good news, I told Theresa,

was that we didn't need curtains. Other projects had priority. But since we were living aboard at the time, I knew the lack of view would become less tolerable in winter when the already-opaque view would be lessened by shorter days. It was time to bring some clarity to our world.

The big question was what material to choose for the portlights. Our last boat, the one that had afforded us such magnificent views of the world, had portlights made of glass — rather thin glass I later discovered when rebedding them. Though the crystal clearness of the glass was wonderful, I worried about the possibility of impact with an errant block, whisker pole, or even a crashing wave. Our new boat, according to the South African seller, had portlights made of polycarbonate that had been fitted only five years earlier while the boat was cruising the Caribbean. After looking at the work involved in replacing the portlights, I knew I didn't want to do it very often, certainly not every five years.

If you want to see out, the choices for materials are pretty obvious — glass or plastic. But which kind of glass can be used, and what type of plastic works best?

Chuck compares the new acrylic portlight with the previous well-aged version made of polycarbonate.

Two plastic types

Two types of plastic are commonly used for portlights. The first is polycarbonate, variously known as Hyzod, Makrolon, or most commonly the GE trade name, Lexan. The second is acrylic, known as Acrylite and Lucite, although it is best known as Plexiglas, a trademark of Atoglas. Though similar, there are some significant differences that should be considered.

Polycarbonate has been hailed as one of the greatest plastics yet invented, with myriad uses including eyeglasses, bullet-proof riot shields, baby bottles, and even CDs and DVDs. It's optically clear and transmits 98 percent of the light that glass does at half the weight. It has very high-impact strength and tends to cold-form, rather than shatter. In fact, Chuck Mulcahey, an engineer for GE Lexan, said that though it's not sold for this purpose to the public, a $\frac{3}{8}$ -inch piece of Lexan will stop a .45 caliber slug. Unless you do most of your sailing in the piracy capitals of the world (and the bad guys only shoot at your portlights), that might not be relevant. But the same strength can withstand a stainless-steel shackle that's being whipped by a sail, a runaway block, or a clumsy jack-booted third-world boarding party.

It's important to note, though, that polycarbonate's real claim to fame is point-impact resistance — up to 200 times that of acrylic, according to Hunter Marine. But polycarbonate's overall strength when it comes to the usual knocks and dings expected on a boat is not much greater than acrylic's. Its price, however, is. Standard Lexan is about \$10 per square foot for $\frac{3}{8}$ -inch material bought as a 4 x 8-foot sheet — about twice the price of acrylic. You'd think with all its toughness, polycarbonate would be hard to damage, but its ability to absorb punishing blows without breaking also makes its surface easy to scratch.

Very economical

Acrylic has been around a long time in the boating world and has many things to recommend it for boat portlights, not the least of which to sailors is its economy. Like polycarbonate, it's

Photos by Theresa Fort



The previous portlight serves as a guide for the new one.

Durable glass

Glass is made out of the same stuff as beach sand (or close enough) and laughs off the sun's rays. What could be better for use on a boat? Glass is extremely durable and shrugs off acetone and other chemicals that would instantly ruin plastic, and it stays clear for generations. The glass portlights I rebbed in our last boat were installed in 1971. In 2003, they were as clear as when new. But the one thing that makes glass stay transparent for so long is its hardness which, alas, is also its weakness. Glass is a brittle material and does not deform before failure like plastic. It fails in tension regardless of the nature of loading. This brittleness is why glass fractures from impact or stress and forms razor-sharp shards — the last thing you want on your boat when things are going wrong. But there are a couple of things that can be done to make glass more suitable for portlights.

Tempered glass

Glass can be greatly strengthened through the use of a "stressed skin sandwich," in which both surfaces are in compression and the middle is in tension. This can be accomplished by heating the glass nearly to its melting point and rapidly cooling both surfaces. The contraction of the middle of the sheet develops the desired stress on final cooling. Tempered glass is three to five times more resistant to failure by bending, impact, or thermal shock than non-tempered glass of the same thickness (but still not as resistant as that of either polycarbonate or acrylic and nowhere near polycarbonate's point-impact resistance). Another advantage of tempering is that if it does break, tempered glass shatters into small pebble-sized pieces, rather than large shards.

Tempered glass is comparable in price to polycarbonate until it comes to cutting. Typically, glass distribu-

tors will charge a nominal fee per cut, but odd angles and curves are expensive. We were quoted about \$90 each for custom-cut rectangular portlights with rounded corners (our acrylic portlights cost less than \$20; polycarbonate would have cost about \$50).

Laminated glass

Laminated glass is a kind of glass/plastic hybrid. It's a composite of a flexible plastic material (usually polyvinyl butyral) sandwiched between two layers of glass. The advantage over standard glass is that it will not shatter explosively since the plastic innerlayer is not subject to brittle failure as is the glass. Laminated glass has only about half the impact resistance of tempered glass but still much more than standard glass. If it does

"You'd think with all its toughness, polycarbonate would be hard to damage, but its ability to absorb punishing blows without breaking also makes its surface easy to scratch."

break, the glass pieces tend to stick to the plastic rather than flying about — anyone who's seen a car windshield break can see the advantage. Another advantage of laminated glass to boaters is that it blocks 99 percent of the sun's UV

rays (tempered glass blocks about half). Laminated glass is typically more expensive than tempered glass, though the expense of cutting the latter can negate the savings.

Glass manufacturers are quick to point out that the impact-resistance touted by plastics manufacturers can be misleading. Tests of plastics are often done to highlight their superior impact-resistance, not overall strength. In the end, the strength of tempered glass vs. plastic portlights of sufficient thickness is probably irrelevant since the framing or even the cabin side is more likely to fail than the insert.

Working with plastic

Replacing portlights with polycarbonate and acrylic is easy... it's the thing that makes plastics ideal for the do-it-yourselfer. Both polycarbonate and acrylic can be bought in 4 x 8 sheets and in many other sizes, making it easy to cut and fit right at the boat.

Cutting plastics is simple if you use a variable-speed reciprocal saw

half as heavy as glass and has about the same transparency. Though overshadowed by its polycarbonate cousin's ability to shrug off a few rounds, Jack Reilly, a Plexiglas engineer, says acrylic is still many times more impact-resistant than standard glass and makes a great choice for portlights since it doesn't scratch nearly as easily as polycarbonate. Due to its light weight, acrylic breaks into large dull pieces that tend to fly off with a lot less fanfare than glass.

Both acrylic and polycarbonate allow most of the sun's damaging UV rays to pass through, which can cause sun damage to fabrics and finishes inside a boat. And both have more thermal expansion during temperature swings than glass does.

Weak link

The Achilles' heel for both acrylic and polycarbonate is something boaters usually relish — the sun. UV rays can cause polycarbonate to become hazy in as little as six months of tropical use, especially if it's exposed at an angle to the sun, as it might be on a pilot-house, hatch, or hard dodger. UV also causes a color shift in polycarbonate and eventually lessens its famous impact-resistance. Chuck Mulcahey says that problem can be solved by using Lexan XL10, which was designed for skylights. XL10 is treated to be far more UV-resistant than standard Lexan, but since it's only treated on one side, it's important to make sure the treated side is exposed to the sun. Other manufacturers offer treated polycarbonate as well. As might be expected, treated polycarbonate carries a heftier price — up to two-and-a-half times that of standard polycarbonate. Plexiglas is also offered with a coating called A200 that increases its abrasion- and UV-resistance even more.

“UV rays can cause polycarbonate to become hazy in as little as six months of tropical use, especially if it’s exposed at an angle to the sun as it might be on a pilothouse, hatch, or hard dodger.”

on a slow setting. Nearly any blade will work, but the maker of Plexiglas recommends a carbide-tipped blade made for cutting plastic. It’s important to use a sharp blade to avoid forming microcracks along the edges, which can grow over time. Cutting is just a matter of following an outline of your old portlights; just don’t try to cut too fast. If your saw is making chips, you’re cutting it right — if you’re melting plastic and making goo, slow down. You can also dribble water as you cut to keep the blade cool. Be sure to leave the protective opaque film on the plastic while you’re cutting to protect the surface — don’t take it off until you’re ready to install.

One problem sometimes mentioned with polycarbonate is its temperature expansion and how this can cause portlight leaks when the expansion causes the sealant to lose its grip. But according to GE, a 2-foot section has only about an 1/8-inch expansion over a 100-degree range — about the same as acrylic. What that means, though, is that if polycarbonate or acrylic is drilled to fasten it to the boat, the holes may split during temperature extremes. Drilling the holes oversize to allow room for movement will solve the problem. Any drilling should be done with a special bit designed for plastic, otherwise the holes can chip and splinter.

Drilling acrylic

If acrylic is drilled with normal metalworking “twist drills,” the plastic will “grab” the drill and ride up it. This can be dangerous to the operator and will often crack the hole. This is not a rare event; you won’t drill very many holes before it happens. The tendency for acrylic to crack when drilled causes me to prefer polycarbonate with all its costs and other drawbacks. If you must drill acrylic, use special drills made for that purpose or modify your “normal” metalworking drills. Gently flatten the cutting edge of the drill with a whetstone. You can find detailed instructions for modifying metalworking drills at <http://www.plasticsmag.com/features.asp?Issue=Sep/Oct-01>.

Jerry Powlas
Technical Editor

It’s very important not to counter-sink the holes, otherwise stresses will cause cracking and splitting at the holes. The best method to attach plastic panes to a boat is with frames whose screws don’t penetrate the plastic. In some cases, the deadlights are simply set in cutouts and adhesives are used to hold them in place. Several products are designed for this purpose, one of which is GE’s SSG4000 Ultraglaze that’s used to hold Lexan windows in place in high-rises. 3M 5200 is not recommended as an adhesive, as the sun will turn it a rather disgusting shade of brown through the plastic.

Working with glass

Both tempered and laminated glass are much more difficult to work with than plastic. The biggest problem with tempered glass is that it must be tempered after being cut or drilled. Otherwise it will shatter (one glass manufacturer said cutting tempered glass is like trying to cut a balloon). This makes it impossible to cut and install right at the boat — it must be ordered in cut sizes from a distributor. And the cutting must be accurate — there’s no trimming to size if it’s off by a bit.

Laminated glass is rarely tempered and therefore can be cut at a local shop. It’s possible for a do-it-yourselfer to cut, but it’s tricky. When glass shops cut it, they score both sides, break it, and then cut the laminate. In the past, do-it-yourselfers have cut the glass and then poured methylated spirits (denatured alcohol) on the plastic laminate and lit it to melt the laminate away. Cutting laminated glass is best left to professionals.

Use a variable-speed jigsaw on slow speed and a carbide-tipped blade. If you cut too fast, instead of producing chips, as shown, the plastic will melt.

Sealing plastic

Sealing acrylic and polycarbonate portlights is mostly a matter of what *not* to use. Polyurethane sealants (3M 4200/5200) and polysulfide sealants (3M 101, Life Calk) can’t be used, as they can cause the edges to craze. It’s also best to avoid caulk that is catalyzed by acetic acid (it smells like vinegar when it’s curing), as this may cause crazing as well. The best bet is marine-grade silicone. Though not an adhesive, it forms a great long-lasting gasket if used right. The trick is to apply it generously (one advantage of silicone is that it doesn’t stick well to new plastic so it’s easy to remove excess from the panes) and gently snug the screws so the sealant doesn’t squish out. Final tightening should only be done after it sets, usually 24 hours. Make sure the screw holes are sealed as well.

Sealing glass

Glass is pretty much inert to most chemicals onboard, so the selection of sealant is not as critical as with plastic. The best bet is a polysulfide sealant. One important point with laminated glass is to seal the edges of the pane (polysulfide can be used), otherwise the laminate can absorb water and become hazy.

Plastic care

Caring for plastics is different from glass, but it’s not hard. Chuck Mulcahey has a few tips: “Treat it as you would the paint on your car, since it’s very similar. You wouldn’t use acetone, MEK, or paint thinner on your fender. Rubbing alcohol and even



kerosene is safe if done gently. Routine cleaning of the outside surface is not hard — wet it first and use a mild detergent, such as Joy with lots of water.” He warns, “Don’t wash in direct sunlight; the chemicals are more aggressive in the sun. Don’t scrub it hard and never wipe it while it’s dry since this will scratch it.”

If polycarbonate gets tiny scratches, it can be polished with Novus products but only on products that don’t have a coating. Chuck says they use Brilliantize around the lab and not only does it clean, but it’s anti-static as well. He recommends an all-purpose cleaner, such as 409, for interior cleaning. Household products containing ammonia, he says, are probably OK since they contain very little ammonia, but those without are preferable. A 50/50 mix of rubbing alcohol and water is recommended for cleaning Plexiglas. Novus products can also be used for removing scratches in acrylic.


Glass care

Not much needs to be said about caring for glass. Any glass cleaner can be

used, and scratches aren’t likely to be a problem. An application of RainX can be used to make the surface less likely to attract dirt, and it makes the glass look pretty cool when water beads on it.

Our choice

The choice of which material to use is dictated by the use the boat is expected to be put to. Though our glass portlights had served us well on our previous boat, we decided to use acrylic to replace the old polycarbonate panes on our new boat. We based our decision on the fact that the polycarbonate hazed so quickly in the tropics and the cost of treated polycarbonate is prohibitive since we had a dozen portlights to replace. Also, after removing one of our portlights, it became obvious that in addition to the high price, simply sending in the old plastic ones as a template for new tempered glass panes was impossible since the cutting on the polycarbonate was done poorly and custom fitting at the boat was called for. We ruled out laminated glass because, though it is safer in some ways than tempered glass by

staying together when broken, it is only half as strong as tempered glass. This made it seem unsuitable for off-shore voyaging. 

Resources

Plastics

Pierce-Ohio Companies

<<http://www.freckleface.com>>

San Diego Plastics

800-925-4855

<<http://www.sdplastics.com>>

Glass

Consult your *Yellow Pages*.

Cleaning products

Novus

800-668-8760

<<http://www.noscratch.com/novus>>

Brilliance

800-445-9344

<<http://www.brilliance.com>>

Acrylic drills

Craftics Inc.

800-289-2020

<<http://www.craftics.com/>>

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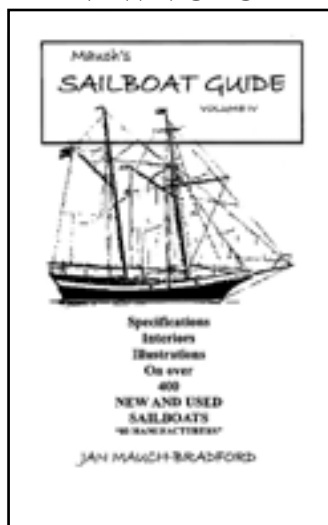
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Keeping water out

Here's how one sailor rebeds portlights and hatches

by Kim Efishoff

THE REBEDDING OR REPLACEMENT OF hatch and portlight inserts, a process referred to as glazing, is a common chore on older sailboats. Plastic inserts (called "lights" in the glazing industry) eventually become weathered, scratched, and crazed. Weathering and crazing can make it almost impossible to see through them, and they give your boat a tired, worn look. Glass, another material commonly used for glazing hatch and portlights, can become cracked, broken, chipped, and pitted.

Hatch or portlight installation is a project that most sailors can satisfactorily accomplish on their boats without needing to call in the professionals. The example used in this article is a teak-framed hatch taken from my 1977 Hans Christian 38. The suggestions and techniques provided here can be used for glazing hatches and ports constructed of any materials and on any type of boat.

Existing inserts

The existing inserts may be constructed of tempered glass or a variety of plastic materials. They may be trimmed in wood or metal (typically bronze or aluminum). Some installations forego the trim and secure the inserts using fasteners alone. Regardless of the method used, all installations must be waterproofed against wave and weather.

Removing the old insert

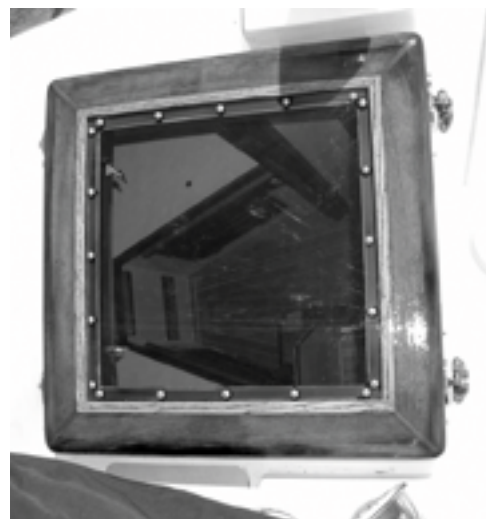
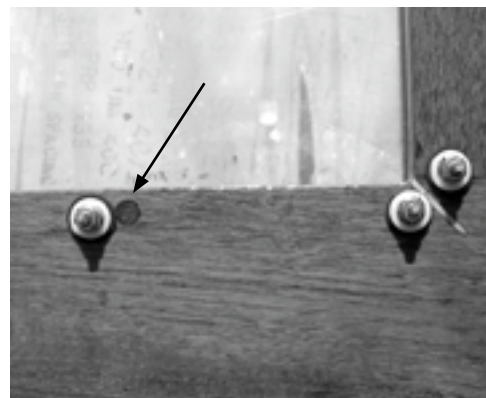
Hatch and portlight inserts may be held in place with a combination of screws, trim, and marine caulking or sealant. Removing an old insert may

be as easy as removing the fasteners and applying hand pressure to the inside surface of the insert. However, depending on the holding strength and tenacity of the original caulking, the job may be more difficult. Take care not to damage the wood trim or mounting surfaces during removal.

In some cases, as when 3M 5200 caulking has been used in the original installation, it may be necessary to use means other than brute force to remove the old insert in order to prevent damage to existing surfaces. One way to accomplish this is to pull piano wire or guitar string along the seam between the insert and the mounting, separating the two.

When using the wire method, first drill connecting holes at 90-degree angles through the existing caulking on the inside and outside of the insert mounting. Thread the wire through the connecting holes and pull it along the seam of the sealing surface. Wear leather gloves to prevent cutting your hands. Take care to prevent damage to the wood or metal trim beneath the in-

Kim's hatch before it was reglazed, at top. The previous holes were plugged, second from top, and the holes were drilled. Weather stripping is laid in, third. Care is taken during the installation of the weather stripping to make sure that the holes in the weather stripping line up with the holes in the hatch frame. Once in place, the protective covering is removed from the face of the weather stripping. The newly refurbished hatch installed on Kim's boat, at bottom.



sert. Generally, this method will make quick work of the toughest removals.

Surface preparation

The recessed wood or metal framework where the new insert will rest must be thoroughly cleaned of old sealant to prevent water penetration. Scrape off the old sealant and wipe the area with solvent. Acetone is generally good for this purpose but, depending on the chemistry of the old caulk, it may be necessary to use some other solvent (a little trial and error may be required if the sealant type is unknown). This may be followed by a light sanding.

If the original frame is constructed from wood, it's a good idea to plug old screw holes. Use ¼-inch to ⅜-inch wood plugs set with epoxy or good wood glue. Sand them flush. Drill new mounting holes in the frame to match those in the insert. This will provide a clean bite for the screws.

Layout

If you don't plug the old holes, the new insert must be marked and drilled to match existing screw holes in the frame. The old insert can be used as a template to mark the new insert. Clamp the two together and drill holes in the new insert using the holes in the old one as a guide.

If the placement of holes in the new insert will be different from the old, as might be the case for wood framing after filling screw holes, start by marking hole locations on the protective paper covering attached to the face of the new insert using pencil and rule. Drill holes in the plastic (polycarbonate or acrylic). Drill additional holes along the outside perimeter of the insert at approximately 6-inch intervals. The inboard placement of these holes will depend on the width of the framing where the insert rests.

(Note: It is critical that all holes be made oversized to allow for the difference in thermal expansion between the glazing material and the substrate. Failure to do this will cause the holes to crack. The expansion rate for acrylic and polycarbonate are similar, but the expansion rates of both fiberglass and steel are roughly six times less than the plastics. This means that in general terms you can expect a ⅛-inch-per-foot of length dimension change be-

“...when 3M 5200 caulking has been used in the original installation, it may be necessary to use means other than brute force to remove the old insert...”

tween the glazing material and the boat over a 100-degree F change in ambient temperature. –Ed.)

When properly sized and sealed, attachment points may be through-bolted using machine screws and nuts, a method of attachment that is structurally superior to the use of wood or sheet metal screws. The use of wood or sheet metal screws is acceptable, but don't be afraid to improve upon the manufacturer's design if you know a better way.

Fit-up

The new insert can now be fitted in the hatch frame without the use of sealant. The insert will be held in place temporarily using masking tape. If required, new holes can be drilled in the framing material using the holes in the insert as a guide.

Thoroughly clean the frame mounting surfaces before the trial fit. A minimum clearance of ⅛-inch per foot of span is required between the outside edge of the insert and the inside edge of the framing in order to allow for thermal expansion of the plastic. Once the insert appears to be properly aligned (measure the gap all the way around), apply several pieces of masking tape that overlap the outside face of the insert and the frame. This marks the exact location of the insert and act as a roadmap for the final installation.

Record the insert orientation by marking one of the strips of tape with an ink pen (realign this mark when doing the final installation of the insert). Once the tape has been installed and marked and holes have been drilled in the framing material, cut each piece of tape between the insert and framing using a razor blade. The insert can now be removed for application of a sealing material.


Don't make the mistake of foregoing the application of masking tape markers, as it is very easy to misalign the insert during final placement. Depending on the type of sealant used, it

may be impossible to reposition the insert after it has come in contact with the sealant. It's not a bad idea to have a partner to assist with initial alignment and the placement of the insert.

Sealant application

Assuming the insert and frame have been pre-drilled, it's time to set the new insert permanently. Because many sealing compounds may contain hazardous materials, it's a good idea to apply them in a well-ventilated area and to wear eye protection and gloves.

Some caulking and sealing materials can damage plastics and should never be used with plastic materials. Silicone is the only sealing material that can safely be used with all types of plastics. Silicone adheres particularly well to plastics, is highly elastic, and is long-lived. A new product manufactured by BoatLIFE, called Life Seal, is a combination of silicone and polyurethane and is safe to use with plastics. It is claimed to be superior to silicone alone in terms of life and elastic properties.

Materials that should not be used in combination with polycarbonate or acrylic inserts are polysulfides and stand-alone polyurethanes (Life Seal seems to be the exception). No matter what sealant is used, read the product label before use, paying special attention to any incompatibilities. 

Resources

Polycarbonate sheeting

TAP Plastics

<<http://www.tapplastics.com>>

Weather stripping

<<http://www.westmarine.com>>

The West Marine weather-stripping product is called Hatch Tape. Similar material can be purchased at auto parts stores.

Neoprene and rubber washers

These specialized washers are available at most hardware stores such as ACE and Home Depot. Ask for the hard-to-find items section.

Other products

Life Seal, manufactured by BoatLIFE; **Starbrite Plastic Scratch Remover** and **Starbrite Plastic Polish/Restorer**

The fine details

by Kim Efishoff

THE INSERT INSTALLATION DETAILED HERE WAS DONE USING A bedding of $\frac{3}{4}$ -inch wide by $\frac{1}{4}$ -inch thick weather stripping. The expansion gap between the polycarbonate insert and the hatch frame, as well as the fastener holes, was subsequently filled with BoatLIFE Life Seal.

1. Cut the weather stripping to length and lay out the cut pieces on 4-mil plastic sheeting, sticky side down. The weather stripping can later be removed from the sheeting.
2. Check the location of the fastener holes in the hatch framing, mark the weather stripping, and punch holes in the weather stripping using a standard hole punch. The hole produced by the hole punch should have the same diameter as the fastener used to secure the insert to the hatch frame.
3. Place the weather stripping in the frame, sticky side down, carefully lining up the holes in the frame with the holes in the weather stripping.
4. The weather stripping is now secured in the hatch frame with the fastener holes in the weather stripping and the hatch frame aligned. The protective covering attached to one side of the weather stripping should be visible and facing up. Remove the protective covering.
5. Carefully line up the insert with the previously installed tape markers as well as the fastener holes in the weather stripping and the hatch frame and set the insert in place.

An assistant should help align the insert as it is placed in the frame.

6. Place a small amount of silicone caulking in each fastener hole prior to installing the fasteners (just enough to form a small collar around the fastener shank when it is pushed down into the hole).

7. Insert a screw into each of the holes before tightening. In the project pictured, stainless-steel machine screws were through-bolted into the hatch frame and secured using a combination of raised-shoulder neoprene washers, stainless-steel and neoprene flat washers, rubber washers, and self-locking nuts. The rubber washers were installed next to the insert surface on the outside and the hatch framing material on the inside (see illustration).

Tighten the fasteners sequentially applying equal pressure around the perimeter of the insert, similar to the way the nuts are tightened on an automobile wheel.

8. Stop tightening when the weather stripping material is compressed to approximately $\frac{1}{16}$ -inch. The compression of the weather stripping, application of silicone caulking material to the fastener holes, and the use of rubber washers in combination with the fasteners will seal the insert against leakage.

9. Mask the outside perimeter of the insert and the inside

edge of the hatch frame with masking tape. This will leave the gap between the insert and the frame exposed while protecting the surrounding surfaces.

10. Fill the gap between the insert and the hatch frame with silicone or a silicone/polyurethane compound. Smooth the caulk bead with the tip of a gloved index finger. Smooth the caulk before it has had time to form a skin, which usually takes around 10 minutes. If the caulk cannot be applied to all four sides of the insert at once and smoothed before a skin forms (possibly due to the large size of the insert), divide the process into separate applications, one at each side of the insert.

When done properly, the seam should have a slightly concave appearance and the caulking should be spread very thin at the juncture of the seam and the edge of the tape.

It is important to allow the caulk to cure completely before removing the tape. This requires at least 24 hours. If the tape is removed before the caulk has cured, the edges of the wet caulk seam will lift, resulting in a ragged, unprofessional look that cannot be corrected. Not properly thinning the caulk at the juncture between the caulk seam and the edge of the tape when smoothing with the index finger will cause the seam edge to tear when lifting the tape after the caulk has cured.

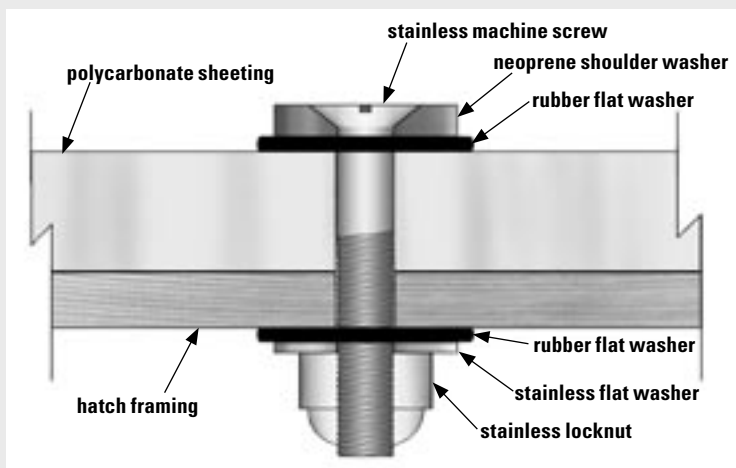



Illustration by Fritz Seegers

Note that raised-shoulder neoprene washers were used to set the screw heads. This provides a pleasing finished look, but there is a more practical reason for using this type of washer. Raised-shoulder neoprene washers are manufactured with a solid, flat surface opposite the screw head, which compresses the rubber washer as the screw (and/or self-locking nut) is tightened. Standard stainless-steel raised-

shoulder washers, commonly used in the marine industry, are concave on the side opposite the screw head and will not properly compress the rubber washer. If stainless-steel raised-shoulder washers are used, be sure to place a stainless-steel flat washer between the raised-shoulder washer and the rubber washer. The stainless-steel flat washer should have a diameter slightly larger than that of the raised-shoulder washer, and will then properly compress the rubber washer.

It is critical that all washers used are properly sized to match the screw shank diameter. Using oversized washers will increase the risk that water will penetrate what should be a watertight seal. The rubber washer can, in fact, have a diameter that is slightly less than the screw shank diameter. This will insure a tight seal when this washer is compressed. 

Cordage for the rest

A FEW YEARS AGO, AFTER CAREFULLY inspecting my running rigging, I decided it was time to replace much of it. I identified each line and recorded its diameter, length, and color. (Regarding color: long ago, I found it a lot easier to tell a non-sailor, eager to help, to release the yellow line rather than the boom vang.) With my list in one hand and checkbook in the other, I arrived at the local marine store. I was soon standing speechless in front of a wall of spools of rope. Just about every color of the rainbow was represented, as well as a variety of diameters and materials of construction. I was amazed at the selection of cordage available. While I was comfortable with the basics — nylon, Dacron, three-stranded twist, and double-braid — I was at a loss when it came to the newer high-modulus fibers. I decided that, before I opened my checkbook, a bit of research was in order.

All you need to know about ropes for

by Gregg Nestor

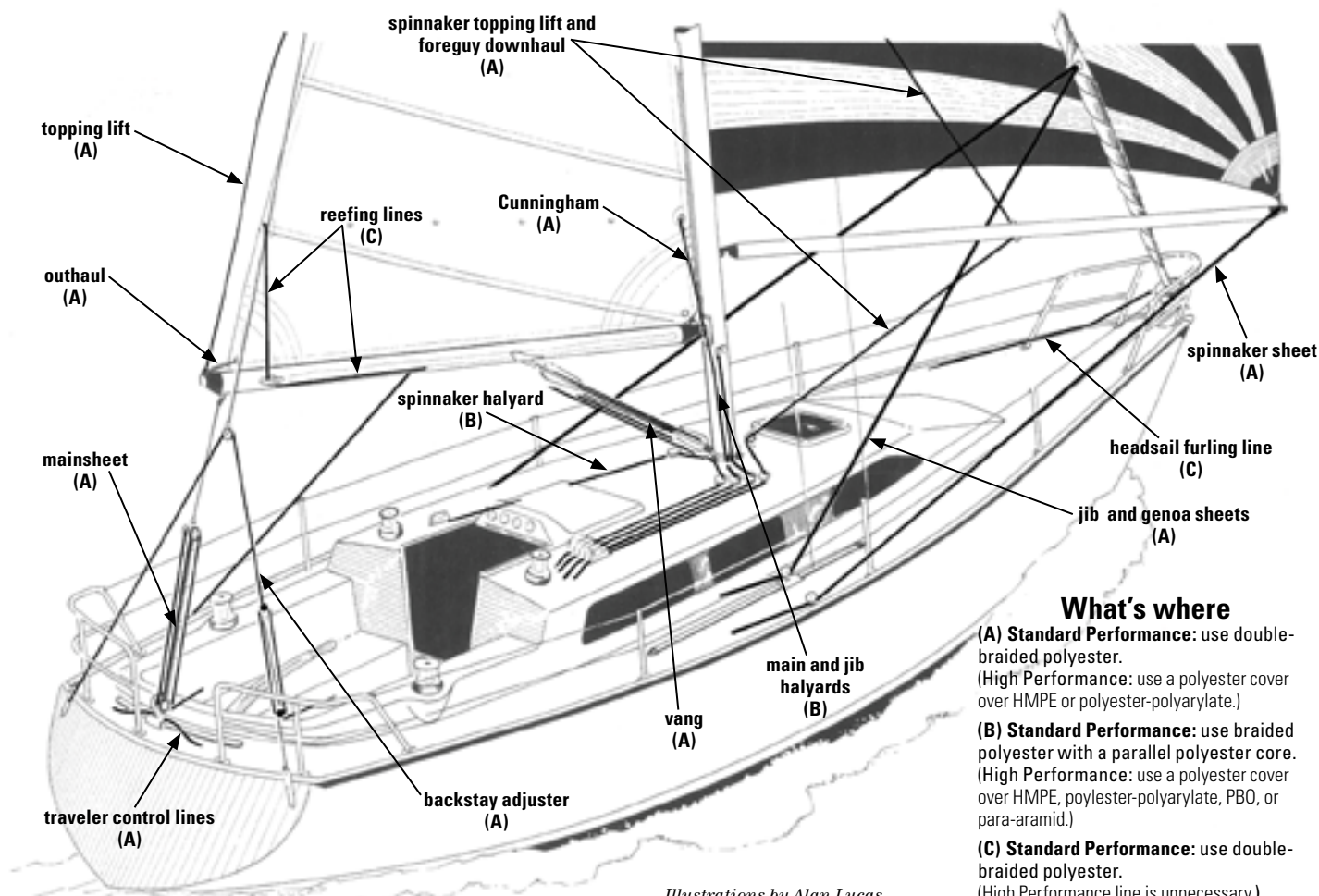
Types and construction

All rope (other than wire rope) begins as individual fibers. In the manufacturing process these fibers are first twisted into yarn. Following the formation of yarn, a number of yarns are then twisted into strands or plaits (braids). Finally, the strands or plaits are combined to form rope, either by being twisted or braided.

The most common of ropes is the three-stranded twist. Three-stranded twist rope maintains its form because it's always under self-tension. This self-tension results from the alternate twisting of the individual fibers, yarns, and strands. This creates internal friction among the components and, as they work in concert with each other, forms the rope. Three-stranded twist

is inexpensive and easy to splice. It can become difficult to knot and coil properly, especially when it stiffens with age. Its twisted form of construction makes it the ideal candidate for docking and mooring lines as well as anchor rodes. In these applications, stretch and shock absorption are valued attributes.

Like three-stranded twisted rope, braided rope is also made up of fibers, yarns, and strands; however, they are laid out differently and are not under self-tension. Single-braid is braided with 12 strands. Half of the strands revolve to the right and half to the left. In the case of double-braid, the cover can comprise 16, 20, 24, or 32



What's where

(A) Standard Performance: use double-braided polyester.

(High Performance: use a polyester cover over HMPE or polyester-polyarylate.)

(B) Standard Performance: use braided polyester with a parallel polyester core. (High Performance: use a polyester cover over HMPE, polyester-polyarylate, PBO, or para-aramid.)

(C) Standard Performance: use double-braided polyester. (High Performance line is unnecessary.)

Illustrations by Alan Lucas

of us

your boat

strands with half revolving to the right and the other half to the left. A rope constructed from 8 strands is called plaited rope. While braided rope is round, plaited rope is flat. Polypropylene ropes are often plaited.

Easier to coil

Single-braid exhibits less stretch than three-stranded twisted, is easier to coil and store, works better in self-tailing winches, and is kinder on the hands. However, it can be difficult to splice, is more expensive to produce, and has limited popularity.

Double-braid, which is a hollow braided cover over a braided core, makes up the bulk of all running rigging used aboard contemporary sailboats. This construction method produces a softer and more flexible rope that exhibits greater strength and less stretch. The core and cover share the load equally, assuming that the materials of construction are the same. Or the core can be composed of a host of different materials to take advantage of differing properties. A high-strength core material can carry 90 percent of the load.

The core can also be woven at low angles or even laid-up as parallel fibers to further reduce stretch and increase strength. There are ropes with low-twist three-stranded cores that are claimed to be 40 percent stronger than double-braid and with only half as much stretch. Double-braids are the easiest on the hands, afford excellent grip, and can be woven in a multitude of colors for quick identification. The cover of double-braided rope also can be finished as smooth or fuzzy. Fuzzy ropes won't be as strong as smooth ones, though they are easier to handle and work better in rope clutches and jam cleats. Double-braided rope is a bit more expensive to manufacture than three-strand, and splicing takes some practice.

Construction materials

Rope used to be made of natural fibers. These included such materials as

cotton, flax, sisal, hemp, and manila. These days, synthetics rule the high seas.

The evolution from natural fibers to synthetics started in the late 1950s with the application of three-stranded twisted nylon as halyards and sheets. For halyards and sheets, nylon was soon replaced by polyester. Nearly half a century later, advancements in synthetic-fiber technology continue to put new cordage aboard sailboats. While none can equal the durability of polyester, when it comes to ultraviolet and saltwater exposure, these new breeds of synthetics have each found a niche in this complex arena of sailboat rigging.

Nylon

Nylon can be chemically described as a polyamide (a polymer of amines). Its basic ingredients are coal and water. Nylon was developed by E. I. du Pont de Nemours and Co. Inc., in the 1930s and has the honor of being the very first synthetic fiber. The name became

“While there may be some high-tech racers rigged entirely with HMPE or polyester-polyarylate, the majority of cruisers coming off the assembly line are rigged mainly with double-braided polyester.”

instantly generic; DuPont declined to register it as a trademark. Nylon is strong, affordable, and offers excellent resistance to abrasion, rot, and flexural fatigue. Nylon is

prone to stretch. Three-stranded nylon will stretch 16 percent of its loaded length at 15 percent of its breaking strength. This stretchiness can be useful when it comes to absorbing shock loads imposed on mooring lines and anchor rode. Nylon is susceptible to UV-degradation and readily absorbs water. This latter tendency can reduce the rope's strength by as much as 10 to 15 percent. Also, when soaked, the individual nylon fibers swell, and the rope temporarily shrinks a little in length.

Another downside to nylon's absorbent nature is that, over time, impurities are drawn into the rope. This results in discoloration and a progressive stiffening of the rope. Nylon has a specific gravity of 1.14 (meaning it weighs 1.14 times the weight of fresh water) and, when dry, is lighter than

A brief review

For jib, genoa, main, and spinnaker sheets, control lines for traveler, Cunningham, outhaul, vang, topping lift, foreguy downhaul, and backstay adjuster:

SP: (FOR STANDARD PERFORMANCE) use double-braided polyester

HP: (FOR HIGH PERFORMANCE) use HMPE or polyester-polyarylate covered with polyester

For main, jib, and spinnaker halyards:

SP: braided polyester cover with a parallel polyester core

HP: use polyester cover over HMPE, polyester-polyarylate, PBO, or para-aramid

For the preventer, lazy-jacks, and flag halyards:

nylon or double-braided polyester

For the headsail furling line, fender lines, topping lift, reefing lines, and headsail downhaul:

double-braided polyester

For docklines:

nylon (three-stranded twisted or braided)

For anchor line:

nylon (three-stranded twisted or braided)

For the mooring pendant:

nylon (braided) or nylon covered with polyester (Polyon)

For Lifesling line, heaving lines, rescue lines, and dinghy painter:
polypropylene (plaited)

polyester. Nylon is not recommended for running rigging. It makes great docklines and anchor rodes. When protected from ultraviolet rays by means of a polyester cover (Polyon), it makes the ideal mooring pendant.

Polyester

Dacron is the U.S. trade name for polyester fiber, another synthetic created in the DuPont laboratories. While nylon has become a generic term, Dacron has not; it is a registered trademark. It is not as strong as nylon, but polyester performs very well in high-stress applications, such as running rigging. It is resistant to rot, abrasion, and flexural fatigue. Unlike nylon, polyester is UV-stable, does not absorb water, and stretches much less. Even greater stretch-resistance can be achieved by pre-stretching the rope to its elastic limit and heat-setting it. However, this leaves the rope markedly stiffer and more difficult to splice.

Polyester takes to coloring very well and is ideal for color-coding lines, making them instantly identifiable. While polyester has a specific gravity of 1.38, making it a heavy material, it is usually the first and most economical choice for virtually all running rigging. Pre-stretched polyester ropes or ropes made from a low-twist or parallel polyester filament core with a braided polyester cover are ideal for halyards.

Rigging your boat can be as simple as making sheets and control lines from polyester double-braid and halyards from a braided polyester cover with a polyester parallel filament bundle core. Use nylon for your ground tackle and mooring lines.

Polypropylene

Polypropylene is an inexpensive, hard-wearing fiber that is weaker than both nylon and polyester. It is stiff, slippery, brittle, and hard to knot. Polypropylene is heat-sensitive and can melt if run rapidly over a winch or through a block. It exhibits poor UV-stability and is very susceptible to fading. Its low resistance to weathering further prevents

“Rigging for your boat can be as simple as making sheets and control lines from polyester double-braid and halyards from a braided polyester cover with a polyester parallel filament bundle core. Use nylon for your ground tackle and mooring lines.”

it from being widely used. However, polypropylene has stretch characteristics approaching those of polyester. It doesn't absorb water, and it has a specific gravity of less than 1.0. Polypropylene's claim to fame is that it's extremely light... it floats. This makes it an excellent candidate for rescue lines and dinghy painters.

HMPE

High modulus (high-strength) polyethylene is more commonly known by the trade names Dyneema and Spectra. It is a high-strength, low-stretch synthetic fiber that resists weathering and abrasion much better than polyester. Coated HMPE exhibits reasonable resistance to UV-degradation. However for the long term, a polyester cover works best. It is expensive and second only in strength to PBO (polybenzoxazole). In addition to its cost, HMPE tends to creep (elongate) under sustained loads. With a specific gravity of 0.97, it is a much lighter fiber, one more reason that it's often found aboard racing yachts. For example, a $\frac{7}{16}$ -inch halyard comprising an HMPE core with a polyester cover is not only stronger than a $\frac{1}{2}$ -inch double-braided polyester line but, due to its inherent lightness and smaller diameter, is 40

percent lighter. In light air HMPE spinnaker sheets might allow the sail to fly when heavier polyester ones could lead to the sail's collapse.

Para-aramids

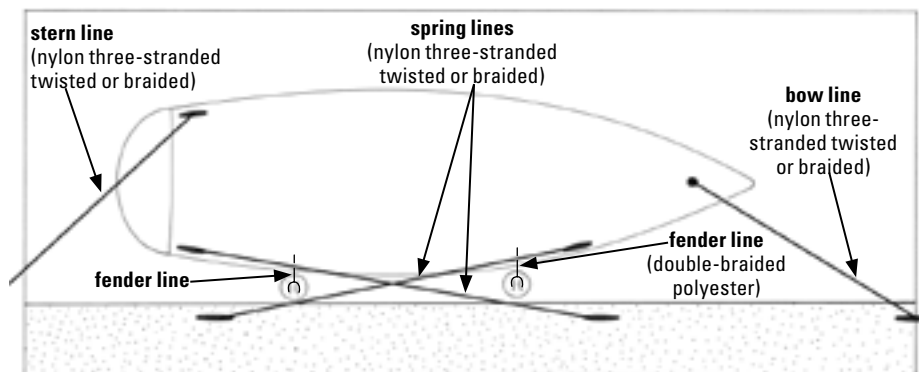
This family of high-modulus synthetic fibers consists of Kevlar and its sister fibers, Twaron and Technora. Para-aramids are said to be stronger than steel by weight. While these fibers are quite vulnerable to UV and abrasion, they are exceptionally stretch-resistant. Para-aramids are brittle, do not bend well, and are difficult to splice. They tend to break down when flexed over small-radius blocks. Technora is the exception and can handle turns better than Kevlar and Twaron. Also, as a core material, para-aramids tend to cut through polyester covers. On high-tech racing boats, these fibers are usually sheathed in shrink-on black plastic. Even though these synthetics display outstanding strength-to-weight properties, their many drawbacks and high cost make them less practical for cruising boats.

Polyester-polyarylate

Vectran is the only brand of polyester-polyarylate high-modulus fiber used in the construction of marine rope. Its high-strength, extremely low-stretch, and little or no creep characteristics are similar to those of the para-aramids. Like the para-aramids, Vectran is degraded by UV and has a limited flex life. However, it displays much better abrasion-resistance and, therefore, will last longer when turning around sheaves. Like all the newer high-modulus fibers, Vectran is expensive. But, unlike most, when covered with polyester, it can perform most running rigging tasks aboard high-tech racing boats.

PBO

Poly-para-phenylene-2,6-benzobisoxazole (or polybenzoxazole for short) is the strongest of the synthetic high-modulus fibers. In fact, it's 20 percent stronger than its nearest competitor, HMPE.



It displays exceptional stretch-resistance and very low creep. However, it is susceptible to UV-degradation, needs chafe protection, and has a limited flex life. On high-performance ocean racers, PBO, covered in shrink-on black plastic, is used as standing rigging, where it is substantially lighter than stainless-steel rod rigging. However, considering its cost and maintenance, PBO is best relegated to boats where the pockets are as deep as the water sailed.


The bottom line

While there may be some high-tech racers rigged entirely with HMPE or polyester-polyarylate, the majority of cruisers coming off the assembly line are rigged mainly with double-braided polyester, although a few manufacturers are beginning to offer HMPE halyards.

Since most good old boats didn't come off the manufacturing line recently, they probably sport this mixture of fibers: halyards and sheets of double-braided polyester, docking and

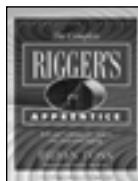
anchor lines of three-stranded twisted nylon, and heaving lines and dinghy towing bridles of plaited polypropylene.

While high-modulus fiber ropes are slowly making their way to cruising boats, they're pricey. Once the economics of scale kick in, price will probably come down.

For now, at least, most cruising sailors will be content with good performance double-braided polyester, while banking the difference between it and those high performance, cutting-edge fibers. 

For further reading...

For more on cordage, refer to the classic by Brion Toss, *The Complete Rigger's Apprentice: Tools and Techniques for Modern and Traditional Rigging*. This and other books can be found at <http://www.goodoldboat.com/bookshelf.html> or by calling 763-420-8923.



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Selecting a surveyor

A short lesson on surveying the surveyors

by Susan Peterson Gateley



YOU USUALLY GET A SAILBOAT SURVEYED because someone, most likely an insurance or finance company, has told you to or because, as a potential buyer, you want one to establish her value. Surveys do not come cheap, \$14 to \$15 a foot is the going rate for a survey in the upstate New York area where I cruise.

Assuming you really do have to get a survey, you want it to meet your needs. This is not a given. There are competent and not-so-competent practicing surveyors, all of whom willingly accept your hard-earned dollars, so the whole process is a bit of a crapshoot. However, you can tilt the odds in your favor with a little preparation and a few questions before the survey takes place.

The quality of a survey depends largely on the experience and background of the person doing it. Some surveyors are accredited by groups, such as SAMS (Society of Accredited Marine Surveyors) and NAMS (National Association of Marine Surveyors) who may nevertheless overlook glaring faults and deficiencies during your boat's checkup. And there are experienced and knowledgeable old

salts with nary an initial appended to their names who can give you a thorough and completely adequate assessment of the vessel in question. Be forewarned however: some insurance companies require the surveyor to belong to one of the professional accreditation agencies. Others say that as long as they receive a written re-

port including the surveyor's actual "narrative description" of what they inspected on the boat (not just a standard checklist form) and accompanying photos, they'll accept it. If you are getting the

survey for insurance purposes, check the company's requirements first.

Part-time businesses

I've paid for two insurance surveys. Both men doing them had worked beside experienced surveyors for a number of years before starting their own part-time businesses dealing mostly with fiberglass yachts. Both had extensive boating experience, and one had done a number of boat restorations. One was affiliated with SAMS, the other was not. Both men generated reports consisting of checklists, a market value based on data from the

Internet and other sources, and several paragraphs of narrative description.

The professional surveyor organizations have attempted to impose standards on the essentially unregulated business by requiring that an accredited surveyor have a certain amount of actual field experience and follow guidelines of the Coast Guard, the American Boat and Yacht Council (ABYC), and the National Fire Protection Association (NFPA) for construction equipment and other safety-related matters on board the boat.

The SAMS group also requires its members to take an exam and to submit examples of past surveys for review. It allows less-experienced surveyors to join as associates and affiliates. By working with experienced surveyors, they can then upgrade their skills over time to become full-fledged surveyors. These associations also have different areas of surveyor specialization for various commercial craft or yachts. Both SAMS and NAMS require their members to attend meetings and programs to keep them up-to-date on regulation changes, marine industry problems, marine insurance, and other pertinent information.

Geographical listings

These two organizations maintain websites with geographical listings of members so you can find a surveyor near you. SAMS is the larger of the two associations and, because of its lower entry barriers and graduated levels of affiliation, you're probably more likely to find a SAMS-accredited surveyor in an area where marine activity is pursued for pleasure.

There are two categories of survey, the pre-purchase evaluation of a boat being sold and the so-called insurance or condition-and-value survey, done at the request of a bank or insurance company. Both are intended to establish the value of your boat. They may differ some in what they include.

The condition-and-value survey tends to be a bit more standardized, thanks to the requirements of the financial institutions requiring it for an appraisal. It consists of an out-of-the-water survey, where the boat's overall

"The quality of a survey depends largely on the experience and background of the person doing it."

*“There are competent
and not-so-competent
practicing surveyors, all
of whom willingly accept
your hard-earned dollars,
so the whole process is a bit
of a crapshoot.”*

condition and its accompanying equipment are evaluated and appraised. A lot of it consists of compiling and describing inventories. It rarely involves

a sea trial. The surveyor should find and note any conditions considered hazardous or a safety threat.

As part of the process, at least for insurance surveys, the surveyor may also survey the boatowner. Insurance companies want to know how the boat will be used, if she is appropriate for the waters she operates on, and whether the operator has had any safety courses or other documented education or proficiency, such as a certificate from the U.S. Power Squadron or a Coast Guard captain's license.

Sea trial and haulout

Pre-purchase surveys done for buyers will include the appraisal and inventory information and may also involve a sea trial and/or a haulout as well. In both types, the surveyor will be seeking flaws and potential problems or safety issues. How many he or she finds will depend in part on the level of experience with other boats similar to the one you have. So before you hire surveyors ask about their past surveying experience, areas of expertise, and what types of boats they're most familiar with. Also ask them for a sample of their work on a past survey. Most reputable surveyors will provide an example with the client-identifying information blacked out.

You won't have much problem finding surveyors with experience in evaluating fiberglass hulls, but if you have a wooden or steel-hulled boat and live in an area of limited commercial marine activity, it may be harder to find a competent surveyor. Evaluating steel hulls requires special gear such as steel-thickness meters, pricey pieces of equipment not owned by many part-time surveyors.

Wooden hulls are an art unto themselves, and I'll say no more about them except that if you have owned a wooden boat in a region where most people sail fiberglass boats, and if you've pulled your share of garboard fasteners and dug away at the rot pockets

for a few years, you'll probably be better able to evaluate one than most of the local surveyors. If you are not an experienced wooden-boat owner and are

thinking of buying a woodie in an area where they are few and far between, you might do better to try to find a knowledgeable owner and/or boat-repairer to look her over with you, rather than hiring a surveyor.

Avoiding a survey

You might be able to avoid the expense of a pre-purchase survey if you pay cash (or use a credit card) to buy your boat and if you can insure her through your homeowner's policy. Sometimes boats under 26 feet can be added to homeowners' policies, and you may be able to get at least liability insurance on a bigger older boat as part of an "umbrella policy."

A pre-purchase survey can turn out to be a good investment for a buyer, however, providing him or her with useful bargaining chips with which to drive the price down. If the surveyor uncovers a serious defect, such as an area of bad deck core, you may be able to renegotiate the price down several times over the cost of the survey. And even if you've owned your boat for a while and think you know her well, getting her re-surveyed because of insurance requirements can be an interesting experience. Old problems you'd ignored or perhaps a new one or two you weren't aware of may come to your attention as a result. You may be glad you got a checkup for her.

One surveyor I spoke to

During an out-of-the-water survey, the surveyor is able to check the hull for blisters and moisture content. In these photos Bruce Sodervick is sounding the hull and checking a moisture meter as part of a condition-and-value survey for a boatowner.

told of a pre-purchase survey he'd done on a powerboat. In the dark bowels of the yacht in a small inaccessible area forward of the cockpit, he found a plugged hose attached to a through-hull. The hose, possibly once connected to a bait well and subject to years of vibration, had a deep crack around much of the base where it was bent over sharply. "It was a 1¼ inch hose, and if that had let go, it would have caused all kinds of commotion," the surveyor told me.

Do it yourself

If you've been using and fixing boats for a while, and you aren't required to get a survey for financing or insurance on a boat you want to buy, you might be able to do a pre-purchase survey yourself. If you find something you aren't sure of, some surveyors will come in and do a little consulting at a per-hour cost considerably less than a full-blown survey. Be clear on what you want; don't ask them for or expect a full survey or written report. Limit your questions to a specific area or two. Because a surveyor could also be held liable by insurance companies for



an overlooked safety issue, some may refuse to do a partial survey.

A typical condition-and-value survey on a fiberglass boat hauled out will probably take three to five hours depending on her size and how many complicated systems are on the boat. It consists of an examination of the hull, decks, shaft, prop, and rudder. The surveyor will look for blistering below the waterline and soggy core in the decks. He or she will probably use a moisture meter to detect and measure the water content of the laminate. The surveyor will also probably sound the hull, tapping on it at various points above and under the water as meters may be unreliable on wet and painted surfaces. Bruce Sodervick, a surveyor in upstate New York, believes extra time spent on hull soundings on the outside of the boat saves time on the inside, as these tapings provide information on the key structural elements of the boat.

"Sounding the hull will tell you how far inside the glass laminate the bracing and inside stringers are. You'll hear bulkheads, attachments, patches...you'll already know a lot about the boat before you look inside her," he says. Moisture meters used in conjunction with sounding and visual inspection of the hull and decks can

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provide a quick check on how serious a possible flaw, such as a stress crack, may be.

Problem areas

On older sailboats, spade rudders and their associated attachments are a common problem area as are worn Cutless bearings. After checking out the hull and keel, the surveyor will probably climb aboard and check over the deck using a moisture meter and visual observation to find stress cracks, delamination, soft spots, and squishy areas. Deck cores around bolted through-fittings, chainplates, mast steps, and other stress points are suspect. Soggy deck cores can be repaired, but it's usually a nasty,

time-consuming job. Therefore, mushy decks can lower the price of a prospective boat by several thousand dollars. Other details on deck of interest to the surveyor will be things like hatch construction, hinges and latches, and handholds. The rig, if on deck, will be studied for condition of the spreaders, stained or cracked swages, and other signs of corrosion. If the mast is standing you may have to negotiate with the surveyor on this item. He may not want to go aloft to look things over without additional compensation. The mast step should also be examined closely.


The surveyor will undoubtedly spend a fair amount of time below-decks on your boat's fuel and exhaust system, as well as on the installation and location of the bilge pump or pumps. More time will be spent on the engine itself and its ventilation and required safety gear such as flame arresters on the carburetor for gas engines. Fuel systems, fuel tanks, and their installation, and the condition and installation of the exhaust system, risers, and mufflers should be evaluated and described on the survey along with the type and condition of all seacocks, hoses, and connecting lines. During my boat's survey, the surveyor explained that he liked to see deckfills

Titania gets a physical

IN THE SPRING OF 2004, A CHANGE OF INSURANCE POLICIES prompted a survey of our 1968 32-foot Chris-Craft sloop. As it turned out, she fared better on her physical than I did. *Titania* had been surveyed several years earlier for a different underwriter. Comparing the reports of the two physicals was interesting. Both experts reached the same conclusion: that *Titania*, now age 36, was essentially in good health with no glaring safety defects (which was more than could be said for one of her owners who needs to eat less butter). Each survey did find different things for us to fix on her though.

One report noted a lack of latches on a cockpit locker that opened directly into the bilge. The other cited a lack of a GFI in the shorepower circuit. One surveyor found stainless keel bolts (they're galvanized). The other overlooked a water tank (probably because of the six cubic yards of clutter reposing atop it). One survey described the whisker pole as aluminum (it's a homemade varnished wooden pole) and omitted a written description of a pesky deck leak that the surveyor spent some time detailing a fix for verbally when he did the exam. The leak was fixed and when pointed out during the second survey and checked with the moisture meter, the laminate showed

lingering moisture several years after being sealed. Here are a few suggestions for getting a good physical for your boat:

- Look around the waterfront for someone who has had a recent survey and ask what they thought of their surveyor. Also check with the friendly boatyard manager, if you have one.
- Ask the surveyor for a sample past report. Does it show some analysis and comprehension or is it just a checklist? And does it cite NFPA, ABYC, and Coast Guard standards?
- Ask brokers, but be a bit wary of their referrals if you are a potential buyer. Find out about the surveyor's past experience, length of experience, and types of boats he has used and/or repaired.
- Make sure the survey will be acceptable to your insurance or finance company.
- Bruce Sodervick suggests hiring a small surveyor (or at least a thin one) who can crawl into all the tight spots. Flexible joints help too.
- Surveys should never be done at temperatures below 32°F, as frozen cores and wet spots will appear solid.
- Clear out the clutter as much as possible. 

clearly labeled, citing a recent incident near my homeport where a powerboat took on 200 gallons of fuel through the pumpout fitting. Battery installations not up to ABYC standard are another fairly common area of deficiency.

A second look

Obviously an out-of-water survey and one done afloat cover different aspects of the boat. You can't easily check a stuffing box or run the engine if the boat is laid up. So if the survey involves both a haulout and a sea trial, the surveyor may have to return to areas previously reviewed for a second look.

The whole process of giving a sailboat a physical is a bit of a Sherlock Holmes exercise. Often when the surveyor follows up on one area, he'll spot several other potential problems. Bruce recalls tracing an electrical circuit through the bilge when he noticed the bilge water was flowing. He discovered, in short order, a poorly bedded seacock and a defective bilge pump. He concluded, "This boat is going down. I wonder how fast I can finish this survey." Needless to say, he made a couple of quick phone calls before that boat's physical was completed.

Bruce, like many surveyors, looks for clues, starting with obvious maintenance and upkeep. If he sees a lot of clutter and dirt, he immediately wonders about deferred maintenance and neglect. As your surveyor follows the trail, crawling hither and yon throughout your boat, he may be distracted and knocked off the scent by a multitude of questions. Some surveyors prefer to work without someone hanging over their shoulders with a constant stream of questions. Show up on time, unlock things, then stay with the surveyor for a little bit to see that he really knows what he's doing. Then leave the surveyor alone.

Others, however like to show and explain things verbally to the client. If in doubt, ask your surveyor whether he or she would prefer to be alone or to have you there.

Thorough inspection

Your surveyor will need to get into lockers, corners, and odd places in your boat. He'll need to check each seacock and its hose below the waterline, and he'll want to examine water tanks, holding tanks, and bulkhead attachments. Gear must be cleared

The boat being surveyed has a leaking keel-to-keel-sump joint. This and other maintenance or repair issues will appear in the surveyor's written report.

out of the way if this is to happen. Although this seems fairly obvious, many potential buyers and owners leave lockers and cabins full of clutter. On the outside, the surveyor needs a good eye as he scrutinizes the exterior of the hull for fairness and suggestions of bulkhead shifting or past patches and repairs. Adequate lighting inside the boat and outside, if she's in a building, is crucial.

The two surveyors I consulted, both experienced surveyors familiar with older fiberglass sailboats, were generally complimentary to the 1960s and '70s yachts with solid fiberglass hulls. Many older boats were holding up remarkably well to the relentless stresses of use, they said. After the mid-1970s some builders started to cut corners, perhaps spot-glassing bulkheads in or skimping on the hull-to-deck joint (an area Bruce says is one place where you'll find the "real identity" of the boat). Cored hulls presented new challenges to graceful aging, they noted.

Good surveyors need to be people of strong moral fiber. They are apt to be pressured by opposing interests and perhaps be urged to be less than frank by a seller who may suggest, "Why don't we just skip through this part of the boat?" or by a broker who has been giving them referrals. One surveyor told me a boat seller tried to sue him after he valued the boat far below the asking price. Unfortunately yacht buying and selling usually involves large sums of money. And money, especially big chunks of it, can provoke strong emotions and



lead to tense situations and rancor. Be respectful of your prospective surveyor's integrity and competence until proven otherwise. But ask him some questions, too, before you give him the job. ⚓

Resources

SAMS

<<http://www.marinesurvey.org>>

NAMS

<<http://www.nams-cms.org>>

RogueWave
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You will not be disappointed if you want a gorgeous new BCC.

For further reading...

Surveying Fiberglass Sailboats, by Henry Mustin, and *Inspecting the Aging Sailboat*, by Don Casey, will be useful tools before you hire a marine surveyor.

These and other books can be found at <<http://www.goodoldboat.com/bookshelf.html>> or by calling 763-420-8923.





The finished headliner, at left, on *Sailor's Joy* makes the initial hard work all worthwhile. The top photos on the facing page tell the tale of leaks and damaged headliner. The bottom photos show wedges to help remove the headliner, at left, and a saw blade used to make the pieces a manageable size, at right.

(about 2-inch) holes had been cut in the cabintop, one for a propane heater vent on the head bulkhead and one for the plug for the old Combi sailing instruments package which had been located on the sea hood in front of the traveler. These had not been sealed

properly and had leaked over the years, causing the Formica headliner to bubble, warp, and crumble.

In addition, numerous (perhaps 75) bolt

holes were present for the cabintop hardware and handrails, and some of these had leaked. The only solution was to remove the existing trim and headliner, fix the leaks, and install a new liner and trim. This would require unstepping the mast and having holes for some time. At this time and after some drying out, repair to several small core sections would be possible. In addition, the 10-foot-long, 12-loop teak handrails were weathered away beyond restoration, and the deck hardware was inadequate and used a lot of small bolts for each block.

On Valentine's Day, 2002, we had the boat pulled and the mast unstepped. I built a frame over the entire cabin and cockpit area and covered it with blue tarps to keep things below dry, if not warm.

Headliner removal

The first step was to remove the trim and headliner. My probings with picks indicated that the headliner was Formica-covered plywood, fastened to the cabintop by some means. The joints between the panels were covered by teak battens with countersunk and plugged screw holes. The aft loops of the exterior handrails were fastened to matching interior handrails by long bolts, and the front three loops apparently fastened by bolts or screws into the cabintop. I matched the For-

New overhead

Step-by-step replacement of a damaged cabin headliner

by Gerry McGowan

WHEN THE SURVEYOR WAS GOING through our 1978 Nor'West 33, *Sailor's Joy*, during the pre-purchase survey, he remarked that it "looks better than it really is..." The boat bobbed gently at the dock in front of the marina with a fresh coat of paint on the hull and bottom, the deck had been scrubbed every day to entice a potential buyer. The interior gleamed of oiled teak and gently curved cabinetry with a quality we had seen only at boat shows years ago. Besides, my wife loved it.

On closer inspection, we noticed the rats' nest of hundreds of wires over the almost inaccessible, huge, rusty engine. The original plumbing was leaking and corroded at every point. All of the 20-year-old equipment appeared to be non-functional. Then there was the cabin overhead: buckled and delaminating from past leaks. The thin Formica film had separated from its base. It crumbled in a shower of white flakes when touched. When a downpour hit, we saw the leaks firsthand.

This was a real do-it-yourself fixer-upper as, according to the surveyor, "the cost of professional repair would probably exceed the value of the repaired boat." This — despite the fact that it was a well-built semi-custom sailboat — reduced its value and marketability drastically. Since many of the systems were fundamentally sound, I figured I could repair or replace the deficiencies for less than the surveyor's estimate, as I don't value my free time at \$65 an hour.

Since I had already tackled several boat projects like this, I had the experience on which to base my confidence. This takes into account doubling my off-the-cuff cost/time estimates for doing any job. I have usually dramatically underestimated the difficulty of any boat project. Call it wishful thinking. Or perhaps it's a spousal approval tactic: "Why, with a few weeks and \$1,000 I can make this like new!"

Cabintop problems

A major cosmetic problem with structural implications was the leaking in the balsa-cored cabintop. Two large

mica by taking a broken-off chip into several lumber yards until the identical tint of white was located and the required quantity of vertical-grade (thinner than counter-grade) laminate could be ordered.

The first difficulty came when trying to remove the plugs from the trim screw holes. These were firmly glued in place. The familiar technique of drilling a small hole in the center and splitting and removing the plug with a small screwdriver damaged the surrounding trim and was time consuming. I finally settled on drilling the plug out right down to the screw head with a $\frac{3}{8}$ -inch bit after first dimpling the center of the plug with a center punch. I used a cheap bit available from many woodworking suppliers for about \$4, as hitting the stainless-steel screws under the plug on most holes dulled the bit.

For the handrails I used the same technique with a $\frac{1}{2}$ -inch bit and discovered double nuts on the outside handrails on the end of 4-inch stainless-steel 10 x 24 bolts run through

"Then there was the cabin overhead: buckled and delaminating from past leaks. The thin Formica film had separated from its base. It crumbled in a shower of white flakes when touched."

the inside handrails. Getting these off required taking a $\frac{3}{8}$ -inch hex-drive socket and filing it down to just under $\frac{1}{2}$ -inch outside diameter while spinning it in a drill press. It then fit into the $\frac{1}{2}$ -inch hole drilled by the bit and unscrewed the nuts, one at a time. The front ends of the exterior handrails were held by 10 x 24 bolts tapped into an aluminum-filled epoxy plug in the cabintop, apparently using the cast-in-place technique described in the West System manual. This is probably better than screws into the cabintop but not as good as through-bolting.

My wife, Marolyn, and I easily re-

moved the rest of the cabintop hardware. It had been bolted through the cabintop and headliner with polished stainless-steel backing plates. The bolt ends were covered with cap nuts. I liked this technique of mounting hardware and used it in the reinstallation. With the hardware and trim removed (about 13 hours, including four hours where two people were required) the cabin headliner was then removed.

Polyester gobs

When the screws holding the panels to the underside of the cabintop were removed, the panels remained firmly glued in place with large gobs of polyester putty. The Formica, however, was partially loose from the plywood backing. I carefully removed it from the plywood to act as patterns for the replacement panels. This was accomplished using hard maple wedges driven between the Formica and the plywood. I squirted lacquer thinner into the opening using a syringe, allowed it to work for a few seconds, then drove the





Gerry created a fair surface for the new headliner by starting with ¼-inch battens, at left. The nearly completed headliner awaits the installation of trim, below.



few spots I drilled holes in the underside of the deck and dried out the balsa core using a 60-watt utility light placed about 6 inches from the opening. I then positioned the new deck hardware and drilled the mounting holes. I replaced the halyard turning blocks and I plugged all those tiny holes near the mast with filled epoxy. I replaced the four individual turning blocks on the cabintop with stacked triple deck organizers, allowing 12 lines to be led to the cockpit instead of the original five. All new hardware was from Garhauer, which provides remarkable quality stuff at amazing

of the epoxy plug. The epoxy plug permanently seals the balsa core from water intrusion in case of a leak into the mounting holes. The existing 2-inch hole for the instrument wire was permanently plugged, and the one for the heater had the balsa dug out for about ½ inch depth and filled with epoxy putty. This process of hardware layout, drilling, plugging, and re-drilling the mounting holes took about four hours.

Headliner installation

We decided to install the new Formica-covered panels on ¼-inch battens to provide a fair surface for mounting and to allow wiring for overhead lights to be run underneath it. Taking into account the thin plywood and vertical-grade Formica to be used for the panels, this reduced the cabin headroom by ¼ inch. The battens for mounting the new headliner were fastened to the inside laminate of the cabintop. The battens were ¼-inch fir underlayment plywood (waterproof) cut into 1 7/8-inch-wide strips and fastened to the inner cabintop laminate with 5/8-inch stainless-steel flathead sheet metal screws, countersunk below the batten surface. Where necessary, the battens were shimmed out from the inner cabin laminate to provide a fair curve over the rough interior cabintop surface.

Wherever hardware or handrails

wedges in further. Using a half-dozen wedges about 12 inches long and 1 inch high, I was able to remove most of the Formica intact. If a section broke apart, I taped it back together. Most of the panels were removed in sections about 2 by 3 feet, carefully marked and set aside. Since the original panels were about 2 by 6 feet, I carefully cut the Formica down the centerline using a saw blade in the Fein detail sander before removal. Handling panels of the larger size wasn't really possible when I was working alone.

I removed the remaining ¼-inch plywood headliner by brute force using wedges, hammers, and crowbars. This was messy and difficult overhead work. Then I sanded the bare interior laminate to remove plywood splinters and gobs of polyester putty left after the grunt work. Perfection was not necessary, just a relatively fair surface upon which to install the battens for the new liner. Removing the Formica and plywood and cleaning up the cabintop took about 10 hours.

Cabintop preparation

At this time, I drilled all unnecessary holes for the old deck hardware oversize and filled them with epoxy. In a

prices. I also replaced the mainsheet blocks on the boom with matching hardware. I drilled the unused holes on the cabintop oversize and plugged them with filled epoxy. In all, 42 holes were permanently plugged with epoxy and six new ones drilled, for a net gain of 36 fewer potential leaks.

After the deck hardware was mounted temporarily, it was removed and the mounting holes drilled oversize (3/8 inch for 3/16-inch holes and ½ inch for ¼-inch holes). The holes were drilled through the top laminate and core but not through the bottom laminate, finishing with a Forstner bit to provide a flat bottom hole. Then I filled the holes with epoxy and high-strength filler after taping over the original hole in the bottom laminate to prevent the epoxy from leaking through.

After the epoxy was set, the hardware was re-positioned and the mounting holes re-drilled through the middle

"This was a real do-it-yourself fixer-upper as, according to the surveyor, 'the cost of professional repair would probably exceed the value of the repaired boat.'"

were located, I fastened a backing plate of the same ¼-inch underlayment to the overhead to provide a solid backing for bolting the hardware through the cabintop, backing plate, and headliner. Laying out and installing

the battens and backing panels took six hours.

I cut the replacement plywood panels of 4-mm (slightly under 3/16-inch) Okume waterproof plywood using the saved old Formica as patterns. I screwed them with ¾-inch stainless-steel flathead screws along the panel edges into the battens. Before installing the panels, I marked the location of the screws holding the battens to the cabintop on the battens with a permanent marker. When the final trim was

"I felt that I could repair or replace the deficiencies for far less than the surveyor's estimate of repairs, as I don't value my free time at \$65 an hour."

installed, I didn't want to try to put a trim screw into an existing stainless-steel batten screw. This would probably break the drill bit and leave a hole in the trim. The panel fit was not extremely critical (a gap of about ¼ inch was fine), since the teak trim covered all joints. I took care to ensure that the screw heads holding the panels were close enough to the edge of the panels so the trim would cover them. Making, fitting, and installing the panels took about four hours.

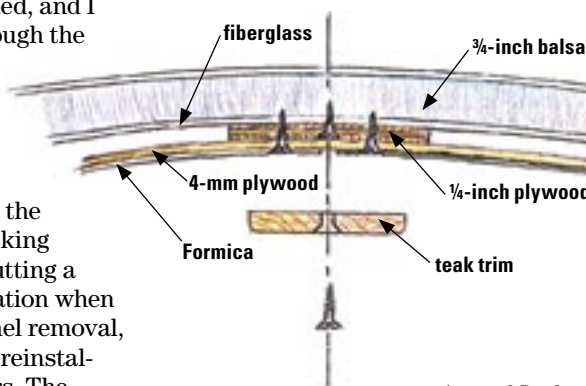
I removed the panels, trimmed them slightly where necessary, covered them with Formica, and re-drilled and countersunk the mounting holes from the back side. At this point I decided to add overhead lighting to the boat, so I ran the wiring alongside the battens to the desired locations for the lights and held it in place with small cable clamps. The panels had 1-inch holes drilled in them where the lights were to be installed, and I dropped the wire ends through the holes as the panels were positioned and reinstalled.

While installing the panels, I marked the location of all batten screws on the face of the panel using masking tape to save myself from putting a trim screw at the same location when installing the trim. The panel removal, Formica work, wiring, and reinstallation took about nine hours. The headliner was now complete except for the trim.

I now had a choice of making new trim or repairing and refinishing the old. I decided to reuse the old trim, since it would give a certain character to the boat and would be less work than buying new teak and machining it to match the original trim. I do not like countersunk and plugged holes in anything which may have to be removed at a later date, so I decided to countersink the mounting holes flush with the surface and use flathead square-drive bronze mounting screws. These are easy to install and remove numerous times without bugging them up, and the bronze face blends well with the teak trim.

I drilled out all the old countersunk holes in the original trim, using a countersink to start the hole and a Forstner bit of the same size to produce a flat bottom hole. (If you do

not use the countersink initially, the Forstner bit tends to move off the original hole and damage the surrounding trim.) If the wood was damaged, I drilled the new hole enough oversize to remove the damage. I did not drill the plug hole all the way through the trim, just far enough to allow the plug to fill the old countersunk hole and provide enough surface to glue a plug in, typically about ¼ inch deep or slightly less. I then glued a teak plug into the hole, chiseled the top of the plug flush, and sanded the surface flat. In most cases I reused the original mounting hole, so I drilled the hole out



Armand Stephens

from the backside and re-countersunk the front surface. In some cases I had to move the mounting hole so I drilled and countersunk a new one. Several places on the trim required drilling or cutting out a damaged area and gluing in a new teak patch. I then fitted the trim before finishing, made any adjustments, and removed it again.

Since the original trim had been finished with a red-tinted Watco oil, I spent considerable time sanding and wiping it with lacquer thinner to get a uniform surface shade. Then I stained it with a mahogany stain. Finally I finished it with three coats of semi-gloss urethane varnish and reinstalled it. The plugging and finishing process took about 13 hours total.

Since I had originally left the V-berth area untouched to store things while working in the main cabin, I had to repeat the whole process to install

the headliner in the V-berth. This took about seven hours, including installing the wiring for two new lights there. Since I had to remove part of the main cabin headliner to hook up the wiring for the V-berth lights, that time was included.

Reassembly

I then had to make new teak handrails for the cabin exterior and refinish the interior ones. The original exterior handrails were weathered to about half thickness and damaged by their removal. Since I did not have a good source for 12-loop handrails, I replaced them with two railings on the cabintop. I decided on a pair of 8-loop handrails to match the length of the existing interior handrails and a pair of 3-loop handrails forward. After the handrails were made, I drilled them to fit the original mounting holes by having Marolyn hold them in place while I drilled up through the original mounting holes into the bottoms of the bases from inside the cabin.

Starting at the aft end, I installed them with temporary screws from the inside of the cabin while Marolyn bent the handrail into position to allow me to drill the next hole. In this way, they were curved into the required shape matching the curvature of the cabin sides. They were then removed and the mounting hole in the base drilled to ⅜-inch diameter using the countersink followed by the Forstner bit technique. I then installed 10 x 24 brass threaded inserts coated with epoxy. The new exterior handrails were finished with three coats of Cetol.

After plugging, re-drilling, countersinking, and refinishing the original interior handrails, everything was ready for installation. The handrails probably consumed about 12 hours to fabricate, drill, and finish/refinish everything. Only about four hours were required to fabricate the new exterior handrails. The rest was spent on the drilling, installation of the threaded inserts, and finishing. Purchased handrails would have worked as well, but would have cost at least twice as much and incurred a significant time penalty, not to mention high shipping costs because of their length.

Final installation of the deck hardware and handrails required two



Gerry made new handrails, at left, as the original rails were thin and damaged. He reused the old overhead trim, fixing the old holes by plugging them and chiseling the plugs flat, below.

were initially dry-fitted and the bolts cut to the required length. Several holes did not quite line up on one railing and had to be drilled slightly over-size, but this only took a few minutes. We then removed the railings, added the polysulfide sealant, and screwed everything in place.

The slightly complicated technique for mounting the handrails means that there are no plugs on the exterior handrails, that everything is through-bolted, and that the handrails can be easily removed without damage to anything. In fact, the entire headliner can be removed and reinstalled without damaging it or having to refinish anything. If you are concerned with using threaded inserts (I am not, since the threads are very large and epoxied in place), you can install them from the top of the handrail and plug the hole before finishing. In that case, the strength would exceed the original through-bolted design.

A rain check


When the boat was uncovered and the rains began (they never really stop during the winter in the Pacific Northwest), the only leak we found was a tiny one at the front of the mast boot plate. A squirt of polysulfide into a small gap fixed that.

Total time required for the project was 82 hours, plus about 8 hours for a second person when removing and

reinstalling hardware and handrails.

How did it all turn out? Extremely well. The headliner is attractive and functional. Everything is accessible and removable without damage. The total costs were less than \$450 including the four new lights and new teak handrails, far less than the surveyor's estimate of \$7,000 for professional repair. If you figure my time and my wife's time at \$65 an hour boatyard rate, he was pretty close!

What would I do differently? I would plan the lighting and install it before any panels were in place. I probably wasted two hours removing and reinstalling everything.

Can you do it? Only you can make that decision. I might point out that I did a similar job on our Ericson 46 about eight years ago, and it took about 400 hours for four times the liner area. There is nothing really difficult or that requires a lot of woodworking expertise. If you work carefully, it is not really difficult, but you will have to have basic tools (table saw, saber saw, hand drill, laminate trimmer or router, and one or more battery-powered drill/drivers). A router is required to make the handrails and a drill press is very handy for precision work, patching the trim, and making the handrails. 



people about four hours. Everything was bedded using a polysulfide sealant, masking where possible before installation to minimize cleanup. The rear handrails were the most complex, as both the inside and outside rails had to bend into the required curve and 4-inch to 5-inch 10 x 24 stainless-steel flathead machine screws had to run through everything from the inside into the outside railings... all this without smearing the polysulfide all over my wife or the cabintop. They

Resources

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Admiral Ship Supply

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A lifetime adventure

by Chad Lawrie

IN THE GREAT OUTDOORS OF Michigan's Upper Peninsula, deep in the backwoods, I sat in the sun, surrounded by rutted trails, a sparkling lake, and trees. Less than 10 feet away was a large sum of money.

"I must be crazy," I thought as I looked toward the camper with the money inside. This would be the largest transaction I had ever made, the biggest pot of cash I had ever accumulated, and I was about to spend it *all* during the same summer I had acquired it.

I was 18 years old and had just graduated with the class of 2003. My first act as a high-school graduate was investing my life savings — along with all of my graduation money, plus a loan from the bank — in a ketch-rigged 1970 Privateer 26. It wasn't exactly what my parents considered a shining example of my maturity. But my father, who was once upon a time a sailor himself, couldn't deny that the boat would bring me the adventures I sought. Little did I know the boat would also bring the more responsible behavior on my part that he sought. A sly trick.

"My first act as a high-school graduate was investing my life savings — along with all of my graduation money, plus a loan from the bank — in a ketch-rigged 1970 Privateer 26."

My first experience sailing had happened the summer I was six, when my father took me sailing a few times on a Sunfish. The next summer we upgraded to a Privateer 13. I remember sailing on this boat only once. My father piled our family of four into the boat and attempted to handle the two sails himself while steering the boat out of the narrow channel. My older sister and I, being young and excited, made things difficult. I noticed the boat had turned 180 degrees, and we were somehow sailing backward out of the channel. I looked at my father pulling lines, cursing under his breath, and waving the tiller back and forth wildly and



Nothing matures a teenager like owning a boat

thought how great a sailor he must be. He even had a crowd watching him!

Terrified crew

That day improved for my dad later on. He had a great time bashing the 13-foot boat through 3-foot waves while the rest of us sat there terrified. I was convinced it was a bathtub posing as a sailboat. We never sailed it again. Over time, the bathtub and the Sunfish, along with our canoe, ended up three hours away in the possession of my Uncle Jimmy who also has the 30-foot 1929 Chesapeake Trader that he and my father used to sail as teenagers. The ironic thing was that he lived hours from any lakes while we lived within minutes of the water.

Years later, I saw some tall ships that had come from all over for a show in my hometown. I was fascinated and attempted to get a crew position on one of these huge boats, but no one wanted a 17-year-old with my experience... or lack thereof. So the next summer I got the bathtub back from Uncle Jimmy and started sailing again. While searching the Internet in the weeks that followed, I found and fell in love with a Privateer 26 located in Michigan's Upper Peninsula and selling for a good price.

So there I was sitting in the sun thinking, "I must be crazy." Every-

one had asked me how I would be able to afford it. But I had figured out the costs, and they weren't that bad. I decided that maybe everyone just *thought* they couldn't afford a sailboat, so they had never looked at the figures. But there were moments when I wondered whether they knew about something I had overlooked.

I was balanced somewhere between feeling terribly scared and terribly excited as my family and I got into our truck and drove from our camping spot to the boatyard in the little town of Escanaba where the owner of the boat waited. He was having second thoughts about selling the boat and asked me many times if I wanted to forget the whole thing.

Attaching shrouds

But in the end, the keys switched hands, and I was struggling to step a mast for my first time. One boatyard worker rushed to attach the most important shrouds while the other one yelled at me every time the mast lifted out of its place. The boatyard was closed that day — both had other places they wanted to be.

After the rigging was up, my mother jokingly said, "Too bad we don't have a bottle of champagne."

In response, one of the workers opened a can of beer, splashed some



on the deck and said, "Here ya' go, congratulations."

My father and I motored my new boat to the Escanaba marina where I would spend the next seven days alone waiting for friends who would help me sail her home.

Kind sailors

It was wonderful. I spent the time getting her in the best shape I could. I washed the deck and polished the bronze dolphins that sit on the rails, along with the rest of the bronze hardware. The unique design of my boat attracted many people who wanted a closer look. One of the kind sailors taught me how to make sure the masts were straight and how to tighten the shrouds correctly. I'm positive one of the masts would have fallen off in the middle of Lake Michigan if he had not helped me. Escanaba was where I first experienced the kindness of boaters. There was always someone to drive me into town to get me whatever I needed from the hardware store or food from a restaurant. Those seven days were like a private slice of heaven.

Afterward, a friendly boater drove me to the airport to pick up my sailing companions. My girlfriend's aunt and uncle, retired hippies who had spent the last 20 years sailing their ketch out of Newport, Rhode Island, had sold their boat and moved to Michigan just months before I asked them to help me sail my new boat 200 miles down Lake Michigan to our hometown.

John had long white hair and a beard. With his sleeves rolled up and shirt unbuttoned, he looked like a sailor who had just arrived from the Caribbean. His wife, Deb, matched him in a feminine way. Both were ready to go.

Too much wind

We spent the next four days waiting for the 25-knot wind to change direc-

tion. We were at the north end of the lake with the wind blowing from the south. The fetch was creating 8-foot waves. We made an attempt to head out when the waves were down to 5 feet but turned back in less than an hour. As we motored back through the channel I realized the wind would be blowing us off the dock so I planned to motor in fast in order to maintain control. Bad idea. We were about to crash into the pier at 3 knots or so.

Adrenaline pumping, I put the motor in full reverse, but I knew it wasn't going to work fast enough. I watched in slow motion and imagined the impact as the space between the boat and the pier shrank from 5 feet, to 4, then 3. I grabbed the stern line and with all my might jumped for the dock that was nearly 10 feet away. I must have looked like a cross between Michael Jordan and a ballerina. Somehow I landed on

*"Escanaba was where
I first experienced the
kindness of boaters...
Those seven days were like
a private slice of heaven."*

the dock. I wrapped the line around the first cleat I saw and pulled it tight. The boat stopped within inches of the pier.

In the following days the weather improved. We crossed the lake and ran aground in a few different anchorages before arriving in Pentwater where Deb would get off and my girlfriend, Leeann, and her father, Dale, would join us for the night and a short trip to Ludington the next day.

Because Leeann was the person I spent more time with than anyone else, I wanted her to like sailing. I tried to think of ways to make the trip pleasant. The two squalls we ran into in the first four hours were not what I had in mind. Leeann made the observation that unlike most of the other sailboats around Michigan, mine has *two* big lightning rods instead of just one. The furling gear jammed when we tried to roll up the jib. Its thrashing around nearly pulled the mast down. I rushed to the mast, lowered the furling gear, and lashed it to the deck.


When the storms passed, we anchored in a poorly sheltered area to fix

the furling gear and to take a little nap. We awoke to eight-foot waves crashing over the boat. We immediately tried to pull up the anchor and get out of there. There was no windlass. Whenever I came close to getting the anchor up, a wave would hit us, ripping the line out of my hands, stalling the motor, and putting us back where we started.

Square waves

The violent waves had Dale at the stern, paying homage to the sea gods, and I feared getting a finger or a hand tangled in the line and ripped off. I cut the anchor line and we motored off. We spent the next four hours pounding through the waves. Not ocean rollers, these were square Lake Michigan waves breaking over the bow. But we made it, and Leeann didn't even get seasick. I left the boat in Ludington for a week. A friend and I later sailed it the remaining 10 hours home.

The rest of the summer held many great day sails with friends. Leeann, who enjoys sailing much more when the wind is less than 30 knots, came sailing many times. She doesn't seem to mind sharing her time with the new love in my life. The mixed feeling of being scared and excited washed over me whenever reality hit me, and I realized this big boat was mine. But I was happy.

I no longer get that scared excited feeling, and I am glad I spent the money the way I did. It has changed my life forever. I'm looking forward to years of future sailing. 



Cruising with pets

FOR BOATOWNERS CONTEMPLATING frequent getaways or The Big Cruise, the most emotionally fraught question is sometimes a surprising one: wait for Fido or Tabby to die or take him or her along?

If home is not home without a companion animal, what are the complications and drawbacks of cruising with one? If you have read this far, you will probably be aware of the rewards of living with a pet, so what follows will emphasize the difficulties. Depending upon one's preference in pets, these difficulties may be small or large. When cruising internationally, I came across a wonderful range of creatures aboard: a tortoise, a duck, dogs, cats, a pair of ferrets, a cockatoo, and a snake.

Most of these long-distance pets were small. In fact, most liveaboard pets were cats. On the Australian coast where *Cooee* and I are currently cruising, every second boat has a dog aboard, frequently a large dog and occasionally two or three of them. My own firsthand experience since living

How to make sailors of your four-legged furry friends

by Jill Knight

on a boat has been mainly with cats, but I have lived aboard with a bird, briefly, and with a monkey, *very* briefly.

Becoming converted

The first time I sailed with a pet was on a delivery trip across the Pacific, from Mexico to Australia. There were five of us on board, and before we left a friend pressed a pretty male kitten onto us. No one was keen on the idea, but the woman had been helpful to us and had too many cats already to care for another. We took Jack along, and it turned out to be a good decision. On long passages he provided a focus as he grew and changed and became a personality; he helped divert us from the small irritations that inevitably arise among people confined to a small space. There was little interest from officials; a cat raised no problems in the countries we visited on the way. But arrival in Australia was another story.

When we arrived we had to haul the boat and prepare her for sale. I had planned for Jack to stay on my brother's (Australian-registered) boat at a mid-water mooring. No way, officialdom declared, Australian vessels are Australian territory. We found a foreign boat willing to take him as a boarder, and quarantine officers

supervised the transfer. Jack reached adolescence during his time boarded out. To their credit, his caretakers stuck to their agreement. There was a certain amount of grumbling in bars, however, and I once heard our pubescent darling described as "a thorn in the side of Australia." Quarantine officers were summoned again after relaunch to officiate when Jack was transferred back home and neutered on the galley counter; they then carried the offending parts ashore under tight security to be put to rest wherever such remains are laid.

Jack sailed out of Australia when the boat was sold to a new owner in the Philippines. He went overboard during that trip — at night, in bad weather — but had become such an important crewmember by then that the boat circled for an hour searching. He was finally spotted when the searchlight reflected off his eyes.

Cooee happened to be in the Philippines at the time and Jack became her ship's cat. I did not even like cats — I was a dog person — but Jack converted me. The Philippines was where I began singlehanded. My increasing

Fletcher, below, a brown Burmese from Cape Town, is *Cooee's* ship cat. She grazes on potted grass daily. Jill has made a special hatchboard with a cat hole cutout, below right, just for Fletcher.





appreciation of self-sufficiency may have been a factor in this conversion: I was becoming less inclined to wag my tail and pant and plead, "Love me, love me!" Although I savored my solitude, I found great pleasure in having a non-needy living creature aboard.

Jack was not keen on water, but I have heard of cruising cats who enjoyed swimming with their humans. I know the breed known as Turkish Vans are swimming cats; these may make good cruising companions, though they have rather a lot of fur. Whatever the breed, there is a nice tradition of cats on seagoing vessels.

Food and litter

Cats are easy to have aboard. The only truly important things in their lives are food and a litter tray. Food is simple: fresh fish when available, otherwise cheap canned fish which is found in every country, with or without tomato sauce. A diet of dry cat food and nothing else is appealing for its convenience and weight but is likely to make a cat sick in time, perhaps

fatally. Fletcher, *Cootee's* cat, also has a potted patch of grass; she grazes on it daily so I guess that says she needs it for a healthy diet.

A cat's food presents no problems of acquisition and storage. However, litter presents difficulties in

both. I have known cruising cats to be trained to use the toilet, but it must be difficult if not impossible for them in rough conditions. *Cootee* did not have a toilet when circumnavigating, and cat litter was unheard of in third-world countries where a lot of cruising and

"Cats are easy to have aboard. The only truly important things in their lives are food and a litter tray."

provisioning takes place. Jack and his successors improvised with this and that, including rice and dried beans in Brazil, before I developed the system Fletcher uses now which is simple, clean, cheap, and requires no storage space for litter. I bought a restaurant-style stainless-steel steaming pan consisting of a solid bottom tray and perforated upper tray, attached cords to the upper tray and half-filled it with small smooth pebbles as washable cat litter. Urine flows into the lower tray and can be washed out. Solids float off when the upper tray is dunked overboard on its cords; in places where this is undesirable they can be scooped off into the garbage. A dollop of cheap vinegar every couple of days prevents plaque and its subsequent smell from building on the trays; a

Jill has figured out how to make a cat's litter tray cheap, clean, and simple with the use of a double tray and smooth pebbles, above left. Reusable litter is a big plus. Myki, at right, became Jill's ship's cat for a brief period. He was unhappy and seasick afloat until she found him a better home ashore. When *Cootee* is at anchor, Fletcher is comfortable all over the boat including on the bowsprit, at left, but when *Cootee* is sailing, Fletcher doesn't leave the cockpit.

dose of chlorine bleach also eliminates odor but will not prevent plaque. Recently I was asked by a magazine reader if I gimbaled the tray; the idea conjured hilarious images. Fortunately, my cat came gimbaled, though I do take her tray belowdecks to the saloon floor in rough conditions and give her a bit of support occasionally while she performs.

Dogs are often larger and present proportionately larger problems with toilet arrangements and food acquisition and storage. Unless the dog eats fish, dog food that does not need refrigeration may be hard to find in some countries. Coastal dogs oblige their owners to take them ashore for walks and toilet rituals once or twice a day, which is not a bad thing except in national parks where domestic animals are usually banned, at least above the high-tide mark. For passagemaking, an American I met had a particular piece of fake grass carpet. Wherever he put it on the deck became the dog's toilet. It seemed satisfactory. Of course, one rarely meets an unhappy cruising pet owner; there are ways and means.

Alternative pets

On a recent delivery trip I did with crew, we picked up a parrot that was offered for sale in a Pacific Island village we visited. Again, he served magnificently in diverting us from



interpersonal irritations. He ate fruit and sweet potato, cooked and mashed. These were simple to provide, but his fallout was messy and a bit smelly. Admittedly, we were not really equipped to give him suitable accommodations which might have contained his flying food and excrement.

In the Philippines I had Zamboy, a monkey from Zamboanga, aboard briefly. I do not recommend monkeys as boat pets, although I have seen tiny females of more docile varieties kept successfully. Zamboy was mischievous to the point of evil: he snatched tools and raced with them to the top of the mast; he picked and chewed at sails; clothespins were there to be removed and tossed overboard; bottles had to be lifted like telescopes so he could squint at their contents which were by then pouring down his front. His cruising career was brief and ended when he was relocated to a village ashore.

Local or international

There is a need to differentiate between long-distance international and local cruising. Dogs frequently join their humans for coastal cruising. They are great company and are seen as a security measure; I have heard of two singlehandlers who required their dogs to stand night watches after being trained and rewarded for spotting other vessels and raising the alarm. The downside with dogs is their pleasure in becoming wet and sandy, but dog lovers seem to see this as a minor inconvenience. While cruising internationally I came across dogs only occasionally and they were almost invariably small.

The quarantine aspects of cruising internationally with pets are generally overstated, I think. There are certainly difficulties entering Australia and New Zealand and perhaps some European countries — I have not sailed into Europe with pets — but they are not insurmountable. I have visited around 40 countries by boat, and in a couple of them I was asked to

ensure that my cat remained aboard. In Fletcher's case, while she enjoys visiting other boats where she is welcome, the last thing she wants to do is step onto that unfamiliar vessel, terra firma. In New Caledonia, she was taken into quarantine unexpectedly for five days, but I suspect this had to do with the politics of the day; I have not heard of it happening to others. Bringing her into Australia to live long term required organization and money, and I would strongly advise early contact with quarantine authorities regarding regulations and costs when an animal is to be imported anywhere. A period in a rabies-free zone such as the Pacific, for example, may significantly cut the quarantine sentence on arrival. Fletcher did 30 days, the minimum.

When cruising internationally, a pet who prefers remaining aboard to roaming ashore clearly presents fewer hassles. On a small boat, a pet whose accessories are simple and take little space is also desirable.


Leaving the boat

From time to time, cruisers need to leave the boat at anchor or in a marina while spending time away. I have had no problem finding animal lovers to take my cat aboard their own boats or to tend to her needs on *Cooee* if my absence was to be short. I have an extra washboard with a cat hole cutout, so I can leave Fletch to fend for herself for a night or two without bothering anyone. Some marinas have a stated policy of no animals, but I have found this rarely means they are banned. The clause is in the rules but is enforced only if a pet inconveniences other guests.



Safety issues

Levels of common sense and flair for derring-do vary widely among animals. None of my pets has been lost at sea though Jack came close after leaping for a boom-roosting bird. Jack was catnapped in Singapore during a haulout and my next cat, Lucifer Longtail, died ashore in South Africa. Fletcher has spent all 10 years of her life aboard, but still never ventures beyond the cockpit coaming while we're sailing. People use life vests, harnesses, and lifeline netting. A particular pet may need such measures, but most cruising animals, in my experience, take care of themselves.

A final note: unlike us, not all animals want to go sailing. For brief cruises, arrangements for care will probably be easy to make and painless. The Big Trip, however, presents larger problems. With a new pet, a suitable home can probably be found. But if old faithful Fido or Tabby draws the line at life afloat, it is best to find out ahead of time. Spend time cruising together before any big long-term departure. 



The mischievous Zamboy, above right. His cruising adventure was, thankfully, brief. Mike and Emma of *Moonraker* paddle ashore, at right. A boat dog provides motivation to explore the shore daily and makes meeting new people easy.

Treat them with care and they'll serve you well

by Don Launer

A BINOCULAR IS AN ESSENTIAL PIECE OF BOATING equipment, and the selection of this item of navigational gear requires some basic knowledge of terminology as well as options available.

Optical terms

Three sets of numbers are used to describe a binocular's characteristics. The typical marine binocular is a 7 x 50. This gives a field of view of 7.4 degrees, or one that covers 188 feet at 1,000 yards. The 7 specifies the magnification: seven times. For on-board use, seven is about the highest magnification that is practical, since a higher one would make it difficult to hold the image steady



enough to see details, such as a buoy number; and in rough seas, even a magnification of seven is sometimes too much.

The 50, in the 7 x 50, is the diameter in millimeters of the front lens of the binocular, the objective lens. The larger this lens, the greater its light-gathering capability.

The third number, which is often unlisted, is also

expressed in millimeters and describes how far the binocular's eye lens can be held from the observer's eye while still enabling the observer to see the entire scene. If eyeglasses must be worn when using a binocular, this number should be at least 18 mm.

Coated lenses

A proper binocular, like a good camera, has optical coatings on its lenses and prisms. This magnesium fluoride coating reduces internal reflections and increases clarity and brightness. The higher the quality and number of the coatings, the better the image reaching your eyes. Inexpensive binoculars may have no coating, with less than half the light reaching your eyes, while an expensive pair may have as many as 20 layers with more than 90 percent of the light being transmitted.

Waterproof

A binocular that is completely waterproof — not “water-resistant” or “splash-proof” — is desirable since, inevitably, the binocular is going to get soaked. This feature can also prevent internal fogging of the lenses or prisms due to moisture entering the case. With a totally waterproof binocular, you are also able to wash the case and lenses with fresh water after rough use. After washing, it's a good idea to clean the lenses carefully with lens tissue.

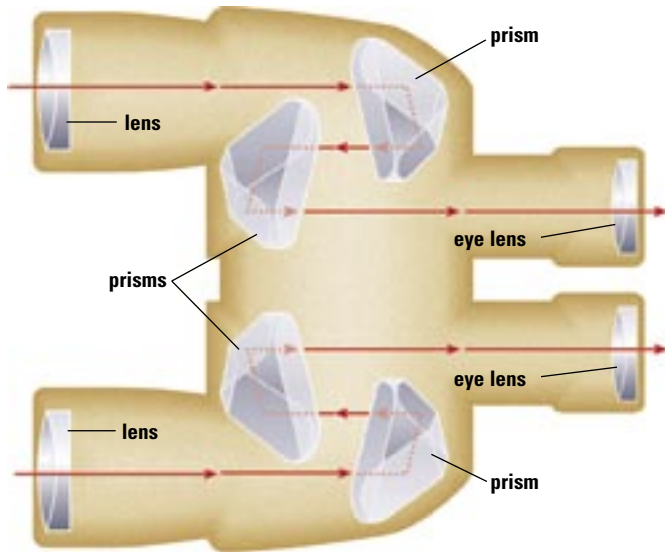
High-quality, completely waterproof binoculars are often filled with dry nitrogen gas and have O-ring seals. One manufacturer even submerges each binocular in 12 inches of water for two weeks to check these seals. Some of the completely waterproof ones also have positive flotation in case you drop them overboard.

Focusing

Often a user will have a different prescription in each eye. Binoculars with a main focusing control should also have one of the scopes focused separately to compensate for this. Some binoculars only have individual eye focusing, with no dual focusing control; but since the binocular is usually used only to observe distant objects, this individual focusing rarely needs to be reset. The individually focused binocular is also more likely to remain completely waterproof than its counterpart.

Electric focusing, with a small motor in the binocular doing the job, is also an option.

Illustration and layout by Ted Tollefson



Covering

Unfortunately, on small boats a binocular takes a beating. To help protect this delicate optical instrument, the outer case of the binocular is often rubber.

Image stabilizing

An electronically stabilized binocular allows the use of a higher magnification power than a non-stabilized one. This makes reading buoy numbers and identifying navigational hazards possible at a much greater distance. Whereas a non-stabilized binocular has a practical limit of about 7 magnifications, an image-stabilized one will generally have a magnification of 14. Originally this stabilization was accomplished by incorporating small, power-hungry gyroscopes into the binocular, but that original system has now been replaced with systems

that use piezo-electric crystals that sense movement and send digital signals to a set of gimbaled servos which adjust the optical platform. These systems generally use AA batteries as a source of power, with a battery life of several hours of usage.


The ability of image-stabilizing binoculars to correct for unwanted motion is expressed in the maximum number of degrees of correction possible, such as ± 1 degree or ± 5 degrees. Whereas the ± 1 degree units can correct for hand-tremor, the ± 5 degree units will also help correct for boat motion. Some models can be switched between "Land," where ± 1 degree is fine and conserves power, to "Onboard," which gives maximum correction.

Although the best of these image stabilizing binoculars are expensive (in the \$1,000-plus range for image-stabilized waterproof ones), many users count them among their most valuable navigational tools.

Specialized binoculars

Binoculars are also available with a built-in bearing compass display (some are digital), in which you can simultaneously identify a navigational point and determine a compass heading. There are also binoculars available with a range-finding reticule which, if you know the height or width of the object you're looking at (such as a lighthouse), will let you determine its distance.

A recent innovation is a binocular with a digital display that can take digital pictures of the object you're viewing.

Regardless of the type of binocular on board, it should be treated as the delicate optical instrument that it is to ensure a long life and clear view. 





Boat kids

by
Mary Jane Hayes





The Rhodes 22

*A trailerable pocket cruiser
from a legendary designer*

by Don Launer

Chris Geankoplis sails his Rhodes 22 on Klamath Lake in Oregon. Notice the flared hull which adds buoyancy.

Mike Wright

IN THE LATE 1960s, WE OWNED ONE OF the first Rhodes 22 sailboats manufactured by General Boats Corporation. We sailed our small cruising sailboat along the New Jersey shore, both intracoastal and offshore, on Long Island Sound, through New York Harbor, and 150 miles up the Hudson River to the Erie Canal. So it was like visiting an old friend again when going aboard a Rhodes 22. But our old friend has had a radical makeover since then and, except for the lines of the hull which haven't changed, it's a different boat from the one we owned more than 35 years ago.

The Rhodes 22 is designed for those sailors who want the amenities of a large boat but without the expense and hassles of one. It is an all-purpose, trailerable boat with innovative thinking that went into its detail, improvements, accessories, and gadgets. Perhaps this is why Rhodes 22 owners seem to be especially enthusiastic and loyal about their boats.

Stan Spitzer and his brother, Elton, both in their 70s, display their creation at boat shows throughout the east. Don't look for men in blue blazers with svelte models lounging in the cockpit. More likely, one of the Spitzer brothers will be wearing bluejeans,

worn at the knees. There will be no need to wait in line for a boarding pass with your shoes off; you're welcome to just go aboard.

The Rhodes 22 is not advertised; there are no brokers and no glossy brochures. Instead, the handout is a 22-page single-spaced photocopied description of the Rhodes 22. This will answer most questions. If it doesn't, Stan and Elton are happy to talk about their baby. Stan's owners are his sales staff; word-of-mouth is the primary method of advertising.

"This is our only model," says Stan, "and we want to give you as much on a



The mainsail's Innermast Furling with the main furled.



The mainsail outhaul.



The tiller-mounted outboard-motor controls and the traveler.

“The Rhodes 22 is designed for those sailors who want the amenities of a large boat but without the expense and hassles of one. It is an all-purpose, trailerable boat with innovative thinking...”

22-footer as you want. Our niche is either somebody who's very new to sailing, is a bit afraid, and wants a boat that's safe and easy to handle and can't capsize or sink... or those who have owned big boats and want to get back to the fun of sailing a small boat, but don't want to give up the amenities they have gotten used to on their big boat. They want an enclosed head, a galley, and shorepower. So our niche is at these two extremes.”

The boats are assembled in Edenton, North Carolina, on Albermarle Sound. Stan and his wife, Rose, who is office manager, live nearby. “Our factory is open seven days a week to anyone, no appointment necessary,” says Stan, “If we're not there when you arrive, just call us at home.”

Fiberglass layup

It takes 27 separate fiberglass molds to construct a Rhodes 22. A cored deck and transom, each about 1-inch thick, are incorporated for stiffness. Very few boats of this size have positive flotation, but the Rhodes is made unsinkable by two molded-in foam sections under the forward bunks and beneath the cockpit sole.

This is one heavy, tough boat. The hull weighs more than 1,500 pounds, and the glass on the bottom is almost ½-inch thick. When a new boat is ordered, the interior and accessories installed virtually customize each boat, based on the options each customer selects.

The Rhodes has a slightly reverse sheer and an unusual flared hull. It's a design similar to the Picnic 17,

General Boats' first boat. This flare makes the hull stronger and keeps it drier. It also makes for comfortable hiking seats and provides extra buoyancy that

makes the boat virtually uncapsizable under sail. When hit by a strong gust, the boat may heel over, but when that flare hits the water, that's as far as it will go. The downside is that the interior cabin space is less than it would be if the hull sides came straight down.

Sail plan and rigging

The Rhodes 22 is a masthead sloop and, when equipped with Stan's main-sail furling, the main is loose-footed. But don't ask Stan for a sail plan for the Rhodes 22. There is no standard sail plan, since each owner selects from a wide choice of available masts and booms — roller-furling as well as standard rigging. When it comes to a published sail plan, Stan says, “Nobody believes we *never* had one.”

Nine stays and shrouds

While many sailboats of this length have six stays, the deck-stepped mast on the Rhodes is supported by nine stays, each with its own chainplate. The Rhodes is the only 22 available with either a conventional mast or “Innerness Furling,” General Boats' name for their roller-furling in-the-mast mainsail.

Most Rhodes 22s are sold with a 175-percent roller-furling genoa and with Innerness Furling (IMF), which allows the total sail area to be adjusted between 0 and 300 square feet (more than any other trailerable in its

Company history


STAN SPITZER WAS AN ENGINEER WHO gave up his job in advertising and moved into sailboat sales as a dealer for sailboats in the 22-foot range. It wasn't long, however, before Stan launched himself into the boatbuilding business by founding General Boats in Oceanside, Long Island, and began building and marketing his unusual Picnic 17 to post-World War II boat buyers.

The Picnic 17 had a modified hull design, with a flat section aft that enabled it to be used either as a sloop-rigged sailboat or as an outboard runabout that could accommodate a 35-hp engine and be used for water-skiing.

General Boats' new 22-footer was born in the 1960s, with the help of legendary sailboat designer Philip Rhodes. At first Phil was reluctant to take on the task, because of the unorthodox hull flare and huge cockpit, but it wasn't long before he began to like the idea, especially since he hadn't designed a small boat in a long time. To make the interior of this small cruiser as efficient as possible, Stan had an aircraft design firm in Kansas City design the interior accommodations.

The actual fiberglass work was done by a succession of different builders, under contract for General Boats, but when the quality wasn't up to Stan's standards, General Boats did its own fiberglass work at various locations in the New York metropolitan area. Eventually they moved to their present Edenton, North Carolina, location.

Once the 22s came on the market the Picnic 17 was discontinued. This gave the mom-and-pop company of Stan, his wife, Rose, and brother, Elton, an opportunity to concentrate their efforts on just one model.

General Boats is a survivor. It has been able to celebrate more than 38 years in a business when other boatbuilders have had to close their doors. Rhodes owners are passionate about their boats and praise the customer service behind them. 

Stan Spitzer, patriarch of General Boats, at the Annapolis Sailboat Show, at right. Elton Spitzer, far right.





The deck sports hatches galore.



Raising the pop-top is a one-hand operation.



Owner Jay Friedland, aboard his R22.

category). The ability to furl the genoa and the mainsail lets the skipper adjust sail area and balance so the boat can be sailed in all wind conditions.

The IMF option for the main is similar to that of roller-furling jibs. The mainsail furling tube is inside a mast chamber; the amount of sail is controlled with the furling and out-haul lines. Stan is so sure buyers will love the furling mainsail that they can buy the mainsail furling option and, if dissatisfied, he will switch them to a conventional rig, free of charge.

With the Innermast Furling system, sailors have the ability either to raise the boom and furling system within the mast 18 inches, so it will be above the pop-top, or they can lower it when the pop-top is down. When raising or lowering the boom, the entire mainsail furling system within the mast (roller and sail) is raised or lowered along with the boom. The downside to IMF is that the mast extrusion is larger than if there were a standard main. This increases windage slightly as well as increasing the weight aloft. As with everything in sailboat designs, it's a trade-off. When a conventional mast and mainsail are used, the boom can be used to roller-furl the main.

The placement of a mainsheet traveler on a boat with a tiller has always been a vexing problem, especially if the mainsheet is fastened to its optimum position at the end of the boom. The Rhodes solves the mainsheet and traveler problem by building sockets into the split backstay; a 5-foot stainless-steel bar is inserted into these sockets, and the car of the traveler travels on this bar, giving it a very wide run. Above the traveler is a backstay tension adjuster.

The anchor is hung on bow pulpit brackets, and the anchor rode goes down through a deck fitting into a V-shaped tray in the forepeak. Alternately, some owners prefer to store the rode in a bag next to the anchor on the bow pulpit.

Cockpit

The cockpit is large and very comfortable with open storage under the seats. The table in the cabin can be moved to a pedestal socket in the cockpit for meals outdoors. An optional boom tent can enclose this large cockpit and create an additional large living area when at anchor or in a marina during inclement weather. Stan dubs this tent the "boom-room." With the tent installed, this extra cockpit area can be used for dining, showering, or sleeping. When used as a bedroom, with the whole cockpit transformed into a mattress, it can sleep two or three in a luxurious 7-foot 4-inch long bed.

Keel and centerboard

The Rhodes has a combination keel/centerboard. With the board up the boat has a 20-inch draft. The ballasted keel is molded as part of the one-piece hull, giving it the strength of a T beam. The uniquely shaped kick-up centerboard, which Stan calls a diamondboard, is solid, with resin and encapsulated ballast. At 70 pounds, it is heavy enough to remain down when sailing, yet when immersed in water, it's light enough that a child can pull it up without a winch. Its kick-up feature is ideal when sailing in shoal water.

Recent rethinking of sailboat keel design has prompted a complete re-

shaping of the Rhodes' centerboard and centerboard trunk. The diamondboard is a keel/centerboard that has a diamond-shaped cross section, resulting in decreased drag. Among other things, it increases pointing ability compared to traditionally shaped centerboards. The diamondboard is also uniquely mounted. It is installed into the keel from the top, from inside the cabin, and can be removed or installed while the boat is on a trailer. When installing the centerboard, the pivot-pin's V-slot automatically aligns the board. A reusable gasket goes over the centerboard trunk flange, and the trunk cap screws down over this gasket, keeping the centerboard trunk watertight.

Motor mount

A particularly nice feature is the outboard motor mount on the port side of the transom, which will appeal to anyone who has ever hung over the stern of an outboard-powered auxiliary and hassled with raising a recalcitrant motor. The engine slides up and down on plastic tracks on the port side of the transom. A 6:1 purchase "magic box" raises and lowers the motor with little effort. The height of the motor can also be locked into any position for motor-ing in very shallow water. This motor mount is proprietary to the Rhodes 22 and is built by General Boats. For those with bad backs, raising or lowering the motor can be done electrically.

Another convenience is that the outboard motor controls are mounted on the tiller, so if you're on the starboard side, there's no need to rush around to the port side for throttle or shifting changes. On the starboard side of the transom is a boarding ladder.

Kick-up rudder

One of the frequent problems on boats with an outboard rudder and an outboard motor next to it, is the possibility of the propeller hitting the rudder when turning. Stan solves this problem with an adjustable bar that

Rhodes 22

LOA: 22 feet 0 inches
LWL: 20 feet 0 inches
Beam: 8 feet 0 inches
Draft (board up): 20 inches
Draft (board down): 4 feet 0 inches
Displacement: 2,900 pounds
 (depending on options)
Sail area (IMF): Main 110 square feet; jib 100 square feet
Ballast: 700 pounds



The outboard-motor/rudder connecting bar.

joins the rudder and outboard, so that turning the rudder also turns the outboard. This eliminates the possibility of the two coming in contact and increases steering control enormously.

The rudder is a kick-up style with a unique rudder clutch that allows sailors to set the kick-up tension.

Belowdecks

The galley is a modular unit that can be removed from the boat for major remodeling. It has a 15-gallon deck-filled water tank under the V-berth and an electric on-demand water faucet. The large countertop has a deep fiberglass sink and a gas stove with a cutting-board cover. Sliding cabinet doors give entry into a very large storage area.

A 12-volt DC outlet and a GFI 110-volt shorepower outlet make it handy to use galley accessories. Under the aft end of the counter is a built-in, yet removable, icebox. As an alternative, AC/DC refrigeration is available.

On the port side of the cabin is a long settee that can be converted into a 6-foot 6-inch double bed. There is sitting headroom enough for the tallest NBA player. The cabin table is mounted into a recessed socket in the cabin floor. It can also be used in the cockpit. When not in use, the table is stowed in tracks in the overhead.

The Rhodes has a fully enclosed head with either a Porta Potti or a permanently installed marine head with a 9-gallon holding tank (the tank is under the V-berth). Either a deck pumpout or an optional electric macerator with through-hull discharge is available. Privacy in the head is created by an ingenious three-panel door. A hatch above the head provides light, ventilation, and sitting or standing headroom.

The electrical control panel for the #27 12-volt battery, has additional switches and fuses for future new circuits, and the battery is kept charged with an automatic charger when connected to shorepower. A second bat-



While most of the Rhodes 22s have a teak interior, above, new models are also available with an uncluttered white look which adds a feeling of spaciousness, at right.

tery is an option. For those who spend much of their time on a mooring, two solar panels are also an optional charging accessory. These panels are strong enough to be stepped on.

Variable pop-top

The main hatch on the Rhodes can be raised to create a hard-top pop-top with 6-foot 4-inch headroom. Even when sailing, the pop-top can be used as a shield from the sun or enclosed with side fabric as a dodger. Unlike many of its counterparts, the pop-top can be raised to variable height.

Sailing qualities

Since the Rhodes 22 has short overhangs, its 20-foot waterline enhances its maximum speed. With the board up and a 20-inch draft, the Rhodes sails just fine, though naturally it can't point as high as with the board down. Both the centerboard and rudder kick up if they strike an obstruction.

With full jib and main deployed the Rhodes sails well in the lightest of breezes. I sailed in Jay Friedland's Rhodes on Barnegat Bay, New Jersey, on a day with just cat's paws on the water in the morning — a wind of less than 5 knots. We began with the full 300 square feet of sail. However, the wind slowly picked up as the day progressed, and I could observe the ease with which the sail area was progressively reduced to keep the Rhodes sailing at its most efficient angle of heel without being over-canvassed.


Although not designed as a racing boat, the Rhodes has a PHRF rating of about 258, which makes it a bit faster than the Catalina 22, O'Day 22, or Chrysler 22, but slower than the J/22.

Revitalization program

A new Rhodes-22 sells for \$28,000 on up, depending on the options selected. Stan also purchases used Rhodes sailboats, has them shipped to the factory



in Edenton, and puts them through a two-step revitalization program that ensures that each boat can be resold under a new-boat guarantee. The final pricing is a function of the year of the boat and the upgrading options selected by the new owner. This rebuilding program is a major part of General Boats' operation; refurbished boats that leave the plant are indistinguishable from new ones. These rebuilt boats sell from \$8,000 and up, depending on their age, condition, rebuilding required, and new owners' options. This program makes the resale value of the Rhodes the highest in the industry, since General Boats competes to buy your Rhodes when you are ready to move up to a larger boat.

General Boats also has a program through which potential customers can sail one of the company's used boats for a season or two, then have their rental money refunded if they buy a new boat. 

Resources

General Boats International

114 Midway Drive
Edenton, NC 27932
Factory phone: 252-482-4372
Home: 252-426-1769
Fax: 252-482-0203
stan@rhodes22.com
<<http://www.rhodes22.com>>

Other websites:

<http://www.geocities.com/blew_skies/topics.html>
<<http://www.rhodes22.org/rhodes/index.html>>
<http://www.rjsgraphics.net/Our_Rhodes_22.html>

A season begins

After a belated refit, sailing starts in earnest

by Geoffrey Toge

IT HAS BEEN A GLORIOUS SUMMER, THE best since 1727 they say ... the stuff of memories, a summer to tell tales of, a summer that truly is how summers used to be but never were. For those of us who are fortunate to live on the coast of Wales, the sea breezes have brought some respite from the heat, while all around has become a pastel postcard world of blue sea, blue sky, and golden sand.

The sailing season was late starting for me, with my boat not coming to the end of a belated refit until July. There were dozens of repairs and restorations on board, and a new auxiliary outboard and sails were ordered.

We were having tea in the garden when the sails arrived. They were delivered from the sailmaker in Chichester, their arrival announced by stumbling and crashing noises in the undergrowth on either side of the narrow lane leading to the beach house. Two young men

hove into view, one carrying a large box and the other poor fellow struggling with a long, a *really* long, tube containing the foresail reefing foil.

It took a few more days to get everything rigged, a few more again to finish off the work on the boat. They say no ship is ever ready for sea. Then the day came.

It was not my first sail since beginning the refit; there had been the dinghy, to keep my hand in, and I had crewed on a friend's Wayfarer. My friend is a natural helmsman but with only a few seasons' experience. Once, when we put to sea, a porpoise surprised him by leaping out of the water inches from the boat. Like most people seeing this for the first time from a small craft, he was startled but soon came to see, as everyone does, that these harmless creatures are a

delight. Then there were a dozen or more leaping and playing around us, turning in the air and water with their smiling faces. After a while, with regret, it was time for us to bid farewell to our cheerful friends and turn back but, in perfect unison, so did they ... like soldiers on parade escorting us home. Real showoffs!

Hoisted sail

The new auxiliary started easily. I motored out into the bay and turned my ship into the light breeze to hoist the mainsail. The foresail unfurled; we were sailing at last.

The foresail set perfectly, drawing well, but try as I might I could not trim the mainsail to a perfect set. I reckoned the peak halyard was not pulling quite sufficiently through the masthead sheave, leaving the yard at just a little too great an angle from the mast. That evening I rowed back out



Illustration by Fritz Seegers

to the boat and spliced a new eye to the halyard, gaining a couple of inches of hoist in the process.

The next morning was virtually a dead calm, one of those mornings where sounds carry across the water: boats getting ready for sea, the clunk of an oar in its crutch, a voice, the rattle of a chain. With the morning haze clearing from the surface of the water, we motored out and once again hoisted sail. There was barely a breath — less even than the previous day — but the mainsail set without flaw. Literally the last wrinkle was ironed out.

This was more like it! How can such a minute imperfection have such an effect on something so massive? With both sails drawing, even in what was a much lighter breeze, that wondrous creation that is a sailing boat was gliding along handsomely. I lowered a mackerel line over the stern, cruised along the edge of the rocks for a while then turned seaward. About four miles out, by my guess, the wind dropped to nothing. I had caught no fish.

It hardly mattered. Alone on a

mirror sea, with the land now little more than a haze astern, I had found contentment. One or two cables to seaward a fin broke the surface, then a glistening back and horizontal tail. One of our porpoise friends had arrived. It is said that when they leap out of the water, bad weather is in the offing. The old seamen say: "When the seahorse jumps, stand to the pumps!" But this fellow looked too lazy to jump.

Seeking a breeze

It was a good time for thinking. In-shore, I could just see some motor-boats putting out, toy boats and one or two impossibly tiny white triangles optimistically seeking a breeze. Going below, I boiled up a kettle, the gim-baled Primus hissing and squeaking with the gentle scend of the deep.

I took stock then. A boat, in her way, may be a work of art, like a book or a painting, but also a crafted blend of the aesthetic and the functional. The polished brass cabin lamps, the gleaming brass galley and bilge pumps, varnished lockers and the

new L-shaped chart table. I have a stainless-steel Charlie Noble venting on deck, serving a cabin heater. The heater is a splendid sculpture in black cast iron with a deep fiddle rail for pots. Made in the United States, it is cozy and practical. Burning driftwood to warm the cabin in chilly anchorages, it is a great expression of the American perspective of the outdoors, highly practical, extending the vessel's independence from civilization. Reading my log, I saw that I once spent 10 days aboard when it worked so efficiently with just a fistful of twigs gleaned from the tideline, to cook or brew up, that on only one occasion did I find it necessary to use the Primus.

Back in the cockpit, I noted that the scenery had changed. At sea, one's eyes are ever shifting around the horizon, scanning for signs of change in the weather or sea. To the north, the long curve to the mountains of North Wales was no longer visible, while to the south the Strumble Head Light, with its spark of light flashing group

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four every 15 seconds day and night, was as sharp as a pin. A quick position fix with the hand-bearing compass gave a respectably condensed cocked hat on the chart some three miles off the coast. I had thought it further.


As I had put to sea early, crossing the shallows of the bar on the very first of the flood tide, time was not wanting and if, as I suspected, a sea mist was coming in, then something of a breeze must be propelling it.

Water sail

I wanted to get inshore to where big ships cannot go before visibility closed in and, as my eyes turned to the auxiliary, I felt a coolness on my arms as the first outriders of the coming breeze rippled the water. The storm jib was quickly rigged as a water sail beneath the boom to catch every scrap of wind, and I sat as far out as I could on the lee rail to try and careen the vessel into a sailing attitude, the way the wind does. That way, I reckoned, the sails would be prepared, set to the right curve under gravity, so the first of the breeze is not wasted swinging spars and filling sails. I shaped a course for home.

Soon the familiar landmarks came into view, marks I have sailed past in different vessels a thousand times since boyhood. We had won, boat and skipper, a race against the mist that had snapped at our heels. Then, finally triumphant, running goose-winged up the estuary against the ebb, the mooring buoy in sight, heaving to in order to strike the water sail and lower the main, running on under the smaller sail before that too was furled, the boat gliding on under her momentum and the slight pressure of the wind on the rigging, the skipper braced on the foredeck, boathook on its lanyard held like a harpoon. Finally, rowing in the pram back up the creek with tendrils of mist closing in. All is well.

She is at her mooring now, a pool of moonlight showing off her strong, purposeful lines against the sparkling water of another ebb. We have known a few hours of perfect freedom. We have been to sea and returned. The floor of my study feels as if it is moving — freedom is intoxicating. The first real sail but not the last.

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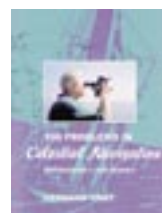


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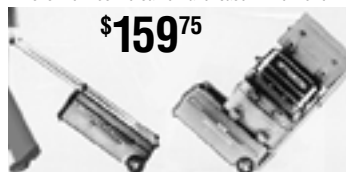


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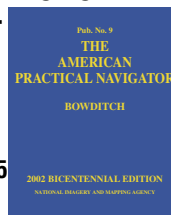


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Blister repair

by Larry Zeitlin

*You can do it yourself —
if you have time and courage*

I'M GOING TO STAY OUT OF THE ARGUMENT about why boats blister. I've heard too many conflicting "scientific explanations" over the years. However, I have been involved in recovering wooden boats and repairing and restoring fiberglass boats since the early 1960s and have plenty of practical experience in blister repair.

There is a world of difference in the technique used to repair dime- to quarter-sized gelcoat blisters and the larger saucer- to dinnerplate-sized deep fiberglass blisters. Blister repair is a task within the capability of most boatowners, and the cost is not excessive. It is time-consuming and messy though. You must also have a modicum of courage to tear up your boat and a yard that will permit you to do the necessary surgery.

Gelcoat blisters (see illustration below) are generally well defined with easily discernible edges. When the gelcoat is removed, the fiberglass beneath is intact and shows few loose fibers.

These blisters are handled by grinding the overlying gelcoat away to an inch or two around the blister, washing and drying thoroughly, brushing on a sealing coat of epoxy resin, fairing to a smooth surface, and then re-gelcoating or painting to match the surrounding area. If the boat is pockmarked with these blisters, the best repair might be to peel the gelcoat, sand the hull smooth, epoxy coat the entire hull, and paint with a quality two-part polyurethane. This type of work is relatively reasonably priced, in the context of boat repair prices. My own yard quotes about \$100 per linear foot plus the cost of the paint job.

Separated laminations

Deep fiberglass blisters are something else. When the blister is within the fiberglass, the fluid pressure separates the laminations and pushes them apart (see illustrations on Pages 54-56). A deep fiberglass blister is usually considerably larger than a gelcoat blister,

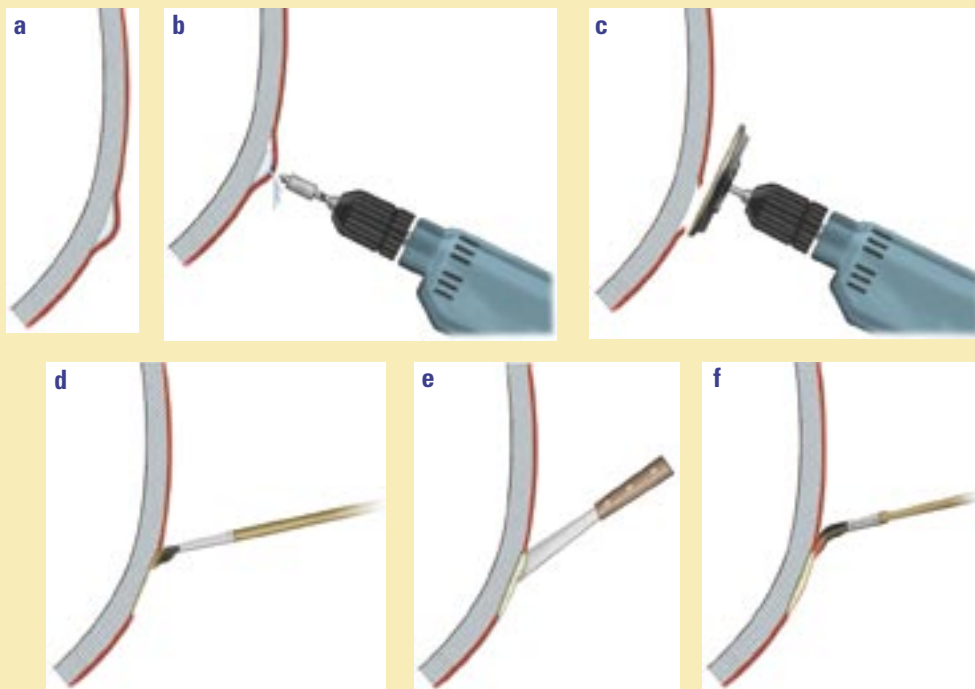
and there is rarely a well-defined edge. These blisters are best located by sighting down the hull while it is still in the slings just after it has been removed from the water. A grazing angle of view will reveal protrusions on the hull that may be difficult to find after the hull has dried. Outline the blisters immediately with chalk or a marker. Some may shrink as the boat dries but will get bigger next year.

When the blisters are identified, drill the center of each one with a 1/8-inch bit, using a drill collar so the bit doesn't penetrate more than half the thickness of the fiberglass hull. Wear a mask or goggles when doing this since a jet of evil-smelling brown acidic liquid will spurt out, usually catching you full in the face. In the unlikely event that you have drilled into a poorly faired bump in the hull and nothing comes out, patch the hole immediately with epoxy putty.

If the blisters are scattered over the hull and not concentrated in a critical location, spot-blisters repair is the most time- and cost-effective fix. If the number of blisters is excessive, say averaging two or more per square foot over the surface of the hull, more dramatic and expensive action must

Gelcoat blisters (a) are the easiest to repair since the fiberglass beneath the gelcoat is intact. Once the blister has been drained (b) grind the overlying layer (c), wash and dry the area, brush on a sealing coat of epoxy resin (d), fair (e), and repaint or re-gelcoat (f).

Note: Below the waterline you must use coatings designed for constant immersion. Two-part polyurethanes are *not* recommended below the waterline.



be undertaken. Boatyard spot-blister repair costs from \$250 to \$500 per linear foot depending on the blister size and concentration. More serious blister repair involves rebuilding the entire hull, and the yard prices can range from staggering to astronomical, depending on the nature of the job. If you have a very fat wallet and/or are averse to hard physical work, read no further.

If you discover only a few blisters before launch and want to take care of the problem expediently, there is a shortcut method of temporary repair. This involves drilling small holes through the top and bottom of the blister, draining it, and flushing repeatedly with alcohol to wash out the unreacted glycol and other contaminants. After drying, inject low-viscosity epoxy with an epoxy syringe through the lowest hole, allowing it to emerge from the upper hole. Then seal both holes with duct tape until cured. This should saturate and seal the fiberglass fibers and form a hard core. The blisters will still bulge, but the hull will not be weakened. At a sailboat's hull speed of 6 or 7 knots, unfairness in the hull doesn't hurt too much.

Long-term fix

For spot repair of a blistered bottom, each blister must be excavated to a layer of sound fiberglass. Before starting, all the bottom paint must be removed down to the gelcoat. A good paste paint remover, such as Peel Away, is probably the best first

"Blister repair is a task within the capability of most boatowners, and the cost is not excessive. It is time-consuming and messy though."

step. When most of the paint is off, finish up with a sanding disc, using 80-grit paper at the finest. The best tool to use for this is an automotive body shop grinder. After the second or third day of grinding you will probably develop a deft touch with this brutal machine and not gouge the hull too badly. If you are a pro, you will probably use a 7-inch grinder, but I've found that these get pretty heavy after awhile; I do most of my work with a DeWalt 4½-inch grinder. You'll need this smaller grinder to excavate the blisters anyway.

Using the smaller grinder and 36-grit discs, grind off the surface of each blister. Once you get through the upper layer of fiberglass you'll see a darkened, wet, and deteriorated layer. The fibers will almost certainly be loose and friable. Gently grind these away until you get to a firm layer underneath. Be careful at this point. You don't want to get carried away and grind entirely through the hull. Bevel the edges of each cavity about an inch or so around the bad area. If the blister is 2 inches across you will end up with a depression in the hull about 4 inches across. When all the blisters are excavated and beveled, wash and

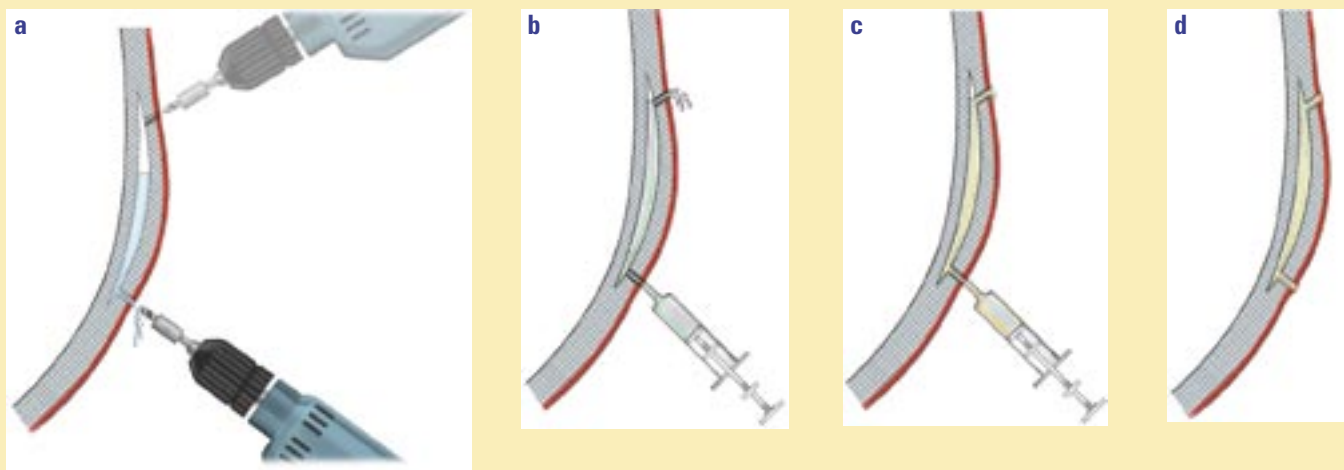
scrub the cavities with fresh water. Wait a day. Then do it again. Your boat will look like a child with chicken pox. Be of good cheer. The heavy work is over.

Just go away

Now cover the boat and go away for several months. It's best to have the boat in a heated shed or trucked to Arizona. Most of us, though, just leave it on blocks for the winter. In northern climes, the humidity drops off enough in cold weather to do an effective job of drying the hull. I'm not sure if this works in the Pacific Northwest where high humidity is endemic.

To keep yourself busy during the winter, prepare a large number of fiberglass cloth circles of varying sizes, some as small as 2 inches and others larger, in half-inch increments up to the size of the largest blister. You will need three or four of varying sizes for each blister cavity. I cut them out of 10-ounce fiberglass cloth with scissors. The edges will fray. Don't worry about it.

In the spring, sponge out the blisters again. Don't saturate them, just remove any exudate and residue. Let the boat dry another week. Now mix up a small bucket of epoxy resin. Go around the boat and paint each blister cavity with epoxy resin, making sure you get it into all the nooks and crannies. On the second trip around the boat lay a small fiberglass circle into the bottom of each cavity as the first coat of epoxy begins to set. Saturate



Deep fiberglass blisters are larger than gelcoat blisters and not as well-defined. The shortcut repair for a few blisters is to drill small holes top and bottom (a), drain each blister, flush with alcohol (b), inject epoxy from the bottom (c) to force air out, and seal the entry holes (d).

the little patch with epoxy.

You will make a number of trips around the boat at half hour intervals, placing slightly larger patches in each cavity until the cavity is nearly flush with the surface. What you are doing is rebuilding the hull so that it retains its original strength. Each patch must be put in place while the epoxy saturating the immediately lower patch is still tacky. When you are done, let the epoxy set until you can just dent it with moderate thumbnail pressure. Now fair the hull with an epoxy putty, building up each blister site just a wee bit higher than the surrounding area. **(Note: Use a filler recommended for below the waterline. —Ed.)** Let this set moderately hard and sand it down to match the surrounding surface.

Slowing new blisters

Now is the time for the application of the barrier coat to slow the formation of new blisters. There are several barrier coat formulations on the market. All have one thing in common. They are less permeable to water than polyester gelcoats. The Interprotect 2000/2001 formulation uses minuscule mica flakes carried in a heavy epoxy paint to make the water migration path longer. The technique espoused by Gougeon uses an epoxy coating, although the user can add copper flakes, if he or she so chooses. Most manufacturers make their own brand of barrier coat. I've used the Interprotect system because it was the most readily available at the time.

Prior to barrier coating, the hull must be uniformly sanded with 80-grit

“Even after total blister repair, most blister-prone boats develop new blisters from time to time, usually no more than half a dozen a year. These can be spot repaired every few years.”

paper, then washed to remove any grit and residue. With the Interprotect barrier coat, the hull must be painted a number of times to build up a 10- to 15-mil thickness. After mixing, the two-part epoxy paint goes on with a roller just like any ordinary paint. It must be allowed to dry a minimum of six hours and a maximum of 18 hours before recoating. The process must be repeated four or five times.

Dry days with temperatures around 70 degrees are required. This means three or four days of good weather are necessary if the painting is done in the open. Before the last coat sets hard, apply a coat of anti-fouling paint. It will adhere well to the barrier coat if applied before the barrier coat dries. Almost the same technique is used with the West System, except that the hull must be lightly sanded and washed between coats to remove the amine blush characteristic of West epoxy. The system offered by System 3 is said to be blush-free, so the washing step is eliminated.

More on the way

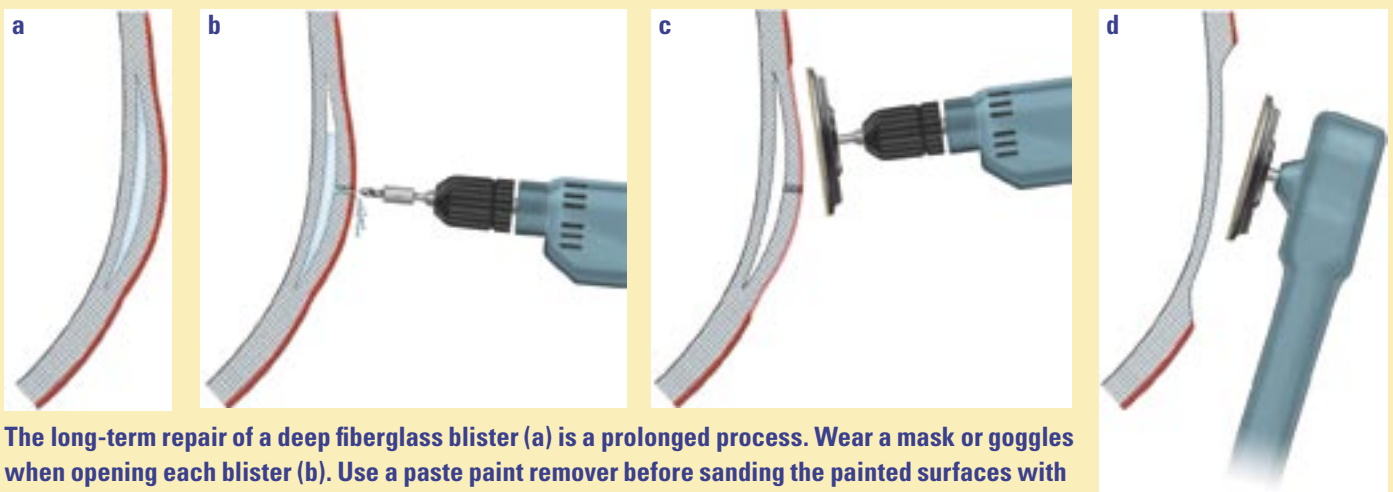
Now you can pat yourself on the back. You are done. You have a blister-free boat — until the next time. Even after

total blister repair, most blister-prone boats develop new blisters from time to time, usually no more than half a dozen a year. These can be spot repaired every few years.

What about those drastic jobs where blisters cover almost the entire hull bottom? It certainly is possible to spot repair everything, but you would end up with a hull composed entirely of patches. This kind of overall blister repair job is almost like restoring a deteriorating wooden hull. So much strength has been lost that the repair really consists of using the old hull as a form and covering it with a new outer layer of fiberglass.

If the old fiberglass hull is so riddled with blisters that it is unsafe, the first decision you must make is whether the boat is valuable enough to restore. Costs of rebuilding the entire hull may easily account for more than half the boat's value. I wouldn't attempt this kind of job on a 30-foot boat unless the boat was worth \$50,000 or more or had other redeeming historical or sentimental values.

The process begins with the excavation of a number of blisters to determine the average depth of the delaminating layers of fiberglass. Have a commercial firm peel off the entire below-water portion of the gelcoat and the fiberglass down to the delaminating layers. Wash and dry the hull thoroughly. Spot repair blisters that extend below this layer. Then apply epoxy-bonded layers of 10- or 12.5-ounce fiberglass cloth to the entire hull, extending to just above the waterline.



The long-term repair of a deep fiberglass blister (a) is a prolonged process. Wear a mask or goggles when opening each blister (b). Use a paste paint remover before sanding the painted surfaces with 80-grit paper (c). Then grind the surfaces off each blister with 36-grit disks (d). More on next page.

"If the old fiberglass hull is so riddled with blisters that it is unsafe, the first decision you must make is whether the boat is valuable enough to restore."

Sticky business

It may take three to four layers to rebuild the hull to its original thickness. Precut the glass, coat the hull with epoxy, and press the fiberglass to the surface as it becomes tacky. The trick is to get the layers of cloth to adhere to the hull against the pull of gravity. I won't describe how to do this in detail except to say that your clothes, hands, and hair will reek of epoxy, and you will itch from fiberglass particles for months afterward. If you get involved with this kind of project, there are a number of boatbuilding manuals that will guide you through most of the steps.

A hull resurfaced in this manner will be stronger than new since closely woven fiberglass cloth has better physical characteristics than mat or roving. The epoxy also provides greater strength than polyester resins. The Gougeon Brothers suggest this approach for the restoration of severely blistered boats, but remember that *they* sell epoxy resins. I have successfully covered several wooden boats with fiberglass, but the process is more involved than just slapping on a couple of layers of glass cloth.

The basic problem with covering old wooden boats with fiberglass is the expansion and contraction of the underlying wood with moisture. Wood expands more radially, across the planks, than it does axially. This is what tightens the seams when a wooden boat is launched. The epoxy encapsulation method for new construction where the entire plank is saturated with epoxy, sealing out the moisture, is impractical in older boats unless you want to fiberglass the inside as well as the outside.

The critical step in fiberglassing is in preparing the surface. The boat must be sanded back to raw wood using #36 discs. This will leave the surface rough and will provide a degree of mechanical locking of wood to the resin and fiberglass. Then impregnate the planks with polyester thinned to almost a watery consistency with styrene. This is sort of like applying Git-Rot to the entire boat. This converts the upper layer of wood to a polyester/wood composite.

Routing and filling

You can achieve a reasonable degree of success in minimizing plank expansion by routing out the caulking of a dried boat, then filling the seams with a buttery mixture of polyester and Cabosil. When this sets it locks the planks in position. There are some very-low-viscosity epoxy resins that will do an even better job of saturating the planks, but these are far more expensive.


The boat is then covered with several layers of 10-ounce fiberglass cloth. The cloth seams are overlapped and wrapped around the bow and transom for strength. When fiberglassing, stapling does help hold the material in place until the resin sets. Use Monel or stainless-steel staples for this purpose so you can leave them in place when putting on the next layer. Ordinary steel will eventually rust, and the

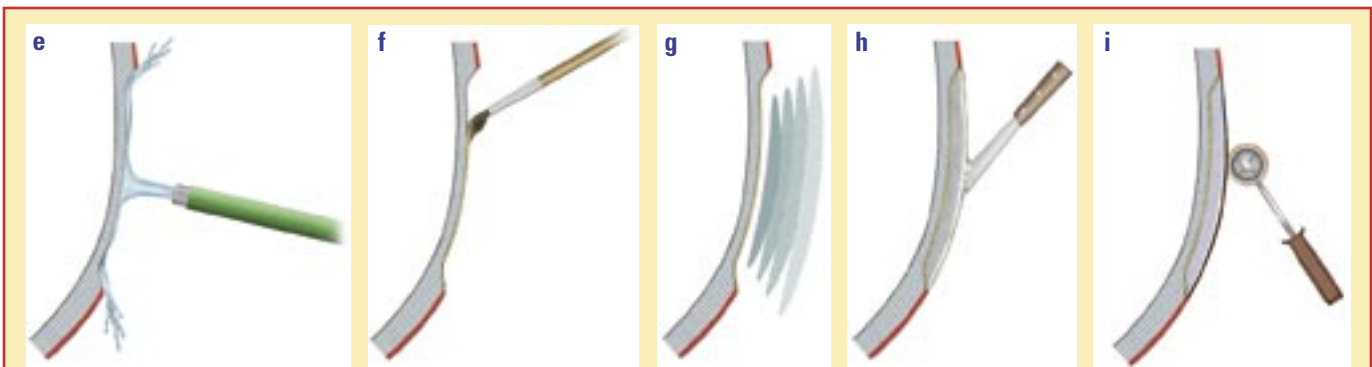
stains will migrate to the surface. The resin should be a thixotropic polyester to permit working overhead.

Each layer of glass should be applied while the lower layer is still tacky. If your budget permits, an epoxy resin would probably be better, but polyester will usually prove adequate. After fairing and sanding, paint the boat with a quality marine finish. If you keep the bilge reasonably dry, there will be no problems with delamination.

My wife and I covered our first boat — a lovely Sid Davis wooden sailboat — in this manner, learning on the job. This was in the early 1960s when the technique was evolving. We kept the boat for a decade, then sold it to buy a bigger boat. Like a first love, we have very fond memories of that boat.

However, unless you do the work yourself, today's high labor rates make covering a wooden boat for restoration impractical unless it has a significant historic or sentimental value. Better to use the hull as a mold and make a new fiberglass one-off boat. Either that or donate the boat to charity for salvage and take a tax deduction.

None of the steps I've described is intellectually challenging. Boatowners who are capable of sanding woodwork and applying bottom paint are fully equipped to repair most hull blisters. Material costs for a good job of spot repair are only a few hundred dollars. The job is very labor intensive, however. That's why the yards charge so much. But if you have the time, the courage, and plenty of old clothes, you can repair all the blisters on your old boat, and we need never bring up the subject again. 



Once you have arrived at clear fiberglass, wash and scrub the cavity with fresh water (e) several times. Allow the hull to dry out before continuing. After another washing and drying spell, coat the cavity with epoxy resin (f) and begin building the hole back with fiberglass patches (g). Next fair the hull with epoxy putty (h), sand, and add a barrier coat (i).

Transforming *the* Yard and Bay Boat



There's nothing that patience, skill, parts, and plenty of money can't fix

by Fred Siesseger

I HAVE THREE LINGERING IMAGES OF *Kalypso*: first, lying idyllically for sale at the end of a private pier on the beautiful upper reaches of St. Leonard Creek, Maryland, almost two years ago; second, sitting stripped bare on blocks with improvised plywood hatches on a cold March morning a year later; and third, entering her slip in Solomons Island on the Chesapeake Bay this fall, looking and sailing better than when she was launched in 1967.

I should have known there would be a lot to learn when I asked the previous owner of the Morgan 34 that first day about the unusual spelling of *Kalypso* on the transom. With humor, he replied that “k” substitutes for “c” in the Greek alphabet. With hindsight I know that “k” is no substitute for “c” in the English alphabet, particularly for words such as “cash” and “calamity” when rebuilding a boat launched more than half a human life ago. Unlike humans, however, old fiberglass boats can be returned to youth by a highly skilled plastic surgeon, plentiful parts, and a parting pocketbook.

First sighting

Her lines are so classically beautiful that I have now learned to expect a thumbs-up sign from other sailors upon entering a new harbor. Her previous owner advertised correctly that she was often complimented by Hinckley owners. In my mind now, comparisons fall short. Charley Morgan (see profile

in March 2005 issue) was already a premier designer/builder when the Morgan 34 was conceived in the early Vietnam War era, just before his America's Cup forays. I marveled at *Kalypso's* transom overhang, teak toerail, and solid shallow-draft hull, all of which are far removed from the efficient layout, spade keel, and thin test-tank hulls of today. I admit that I wasn't in a mood to look closely for furrows or flaws in the old lady. This beauty was best courted in dim light. I was enamored and planned my proposal. I asked myself, “What is sailing about, after all?”

My proposal was made shortly after obtaining an objective opinion one cold January morning. A leading surveyor from Annapolis drove the hour to Solomons, and after a few expensive minutes said, “The hull looks good, and the deck is dry.”

***Kalypso*, a Morgan 34, above and at right, following her transformation at the hands of Fred Siesseger, the apprentice and owner, and Bruce Gay, the boatyard owner and voice of experience.**

Should I admit it? That was enough for me. I decided not to watch the rest of the six-hour survey and didn't read his subsequent report flogging her flaws until after *Kalypso* was mine.

It would have been easy to walk into a full-service marina, hand them the survey, and say, “Go to it,” for the going rate of \$55 to 75 per hour. At that price, however, I could have bought two new boats by the time they'd worked their way through *Kalypso's* long list of problems. It seemed to me that a 35-year-old boat deserved a more personal (and cheaper) restoration, even if its new owner had little knowledge of what to do.

The best solution

It took me a while to find the best solution: Bruce Gay, of the Long Beach Boat Company, in St. Leonard, Mary-





land. With more than 30 years' experience in all phases of boat repair, Bruce has established a niche business, working personally with owners of all skill levels who are willing to put some elbow grease into rebuilding their older boats. I wanted to learn about my boat and help in making the repairs in addition to cutting expenses. He had the expertise. We agreed on a program for replacing all the hardware and rigging, painting the deck and hull, and making major and minor mechanical improvements. It seemed a good deal. Eventually, I was proved right, although I had a few doubts along the way.

The low point came a few months later. In the Ides of March when *Kalypso* was a shell and the weather was from hell, I threatened myself with buying a gallon of stinkpot fuel, a cigarette lighter, and...you guessed it! By then, we had removed all the old hardware and filled the holes temporarily with silicone, cut plywood covers for the hatches (which Bruce was refinishing in his shop), and sanded most of the deck when

the fundamental question hit me: "Why didn't I just buy a new boat at the Annapolis Boat Show last fall?" My funk was fomented after some vandals trashed *Kalypso*. They pried off the makeshift plywood companionway, stole some tools, and fired off the extinguishers in her saloon. Then I had to clean up the additional powder from the police fingerprint expert.

My deal with Bruce was that he would undertake the project personally. While I would assist with the unskilled work (of which there was a lot), the timetable depended on

Bruce's schedule. I had to accept the fact that he had other customers. And if he got sick, bitten by a snake, or impaled on a nail (all of which happened), the project would be put on hold. Add bad weather (major snowstorms, 28 straight days of spring rain, and Hurricane Isabel), and a lot of time sailed by with little progress.

Chain of problems

I learned quickly that fixing a known problem on an old boat almost inevitably leads to finding an unknown one. This is not all bad; it's better to know your problems than not. But it adds time and expense. One project, for example, was to replace the Cutless bearing. In the process we found that the shaft was scored and had to be replaced. The rudder had to be removed to get the shaft out, and we then found that the bolts holding up the rudder had

to be replaced (a specialty machine-shop job). This also involved removing the steering quadrant and then finding that the cable nuts were corroded. Since the shaft

"I learned quickly that fixing a known problem on an old boat almost inevitably leads to finding an unknown one."

stuffing box needed service, I decided that I might as well buy a new dripless stuffing box. What started out as a small \$250 sub-project ended up costing in excess of \$2,500 to fix related problems. Toward the end, the standing joke was that *Kalypso* should be renamed the Yard and Bay Boat.

During this period I could always brighten my mood by shopping. The sailboat parts business was floating high in dot-com waters and good deals were just a keystroke away. Almost everything for *Kalypso's* refit (except the paint, some cabinetry, sail work, new canvas, and cushions) was purchased on the Internet. I saved thousands of dollars buying and installing equipment, as compared with retail vendor and marina prices. Rigging, lifelines, electronics, plumbing, electrical equipment, and innumerable other items came from SailNet.com. Concentrating your purchasing power yields even bigger discounts; I could hardly wait to get my rebate certificates in the mail each week. A lot of practical advice on what to buy came by asking dumb questions in the chat rooms hosted by SailNet.

Bruce Gay peels fiberglass in his shop, at top. The lowest ebb of Fred's refit, center. This is the time during which a boatowner should refrain from playing with fire (Bruce briefly considered gasoline and a cigarette lighter). The finished cockpit, at bottom. These days *Kalypso* turns heads wherever she goes. This beautiful classic won Fred over because he chose *not* to look her over very carefully in the beginning.





Bargains on sale

Hardware and fasteners were replaced at Bosunsupplies.com. Various supplies were purchased on sale from Westmarine.com and Boatus.com. Specialty websites also came in handy for items such as a helm seat from Teakflex.com. Teak door louvers were purchased directly from Thailand at Thaiteakmarine.com. These merchants were all knowledgeable, efficient, and friendly. I also scoured eBay for bargains. My final winning bid was a five-inch fossil shark tooth from the ancient Chesapeake to serve as the boat's talisman.

Of course, if I had sent *Kalypso* to one of the full-service marinas last fall, the work probably would have been finished by spring, and my story would be unremarkable. My only surprise might have been the size of the bill and, probably, I wouldn't even know what was meant by "replace the Cutless bearing, refurbish the steering quadrant, and so on."

I still spent more than twice as much on the rebuild as I did on *Kalypso's* initial purchase. Having been involved every day of the rebuild, however, I am familiar with every moving part in the bilge. I know how my new seacocks and plumbing work. I know where the new electrical wires lead, and what fuses they take. I have confidence in my new portlights, knowing how they were installed. Since all the hardware is new, I have no leaks.

Granted, I still might not be able to fix some of this equipment if it broke at sea, but at least I could identify the problem. This knowledge could be invaluable some night in a storm. Moreover, working personally with an experienced and talented professional like Bruce yielded innumerable tips on maintenance which will save me many dollars in years ahead and add to my boating enjoyment. Most important, I have the satisfaction of knowing that


I contributed to the restoration of my boat and met many interesting people along the way.

Rewarding process

If I ever need more convincing that the process of restoring an old boat is rewarding, I will think of the sailboat next to *Kalypso* in the yard all those months. It was an unfinished 40-footer on a custom steel stand. The owner bought the boat on his honeymoon in London in the early 1970s, and it was shipped to Baltimore on a freighter with the newlyweds. They had high hopes of finishing construction and sailing to New Zealand. Until the mid-1980s, he and his wife worked on the boat together for a few weeks each summer. Then they moved away, and jobs interfered with progress. But they held onto the dream. When the

***Kalypso's* refit included interior work as well: teak-and-holly sole, repainted bulkheads, electrical updates, complete revision of the galley, hot water heater, interior cushions, portlights and curtains, and much more that doesn't show (hoses, seacocks, wires, batteries ...).**

boatyard closed, they moved her to the present location in Maryland and continued to make improvements. He told me with great enthusiasm about all the projects they still plan. It is now more than 30 years later, the boat has never been in the water, and this couple is still happily married. He now looks forward to his grandchildren finishing the work and sailing to New Zealand.


What is sailing about, after all? 

A passion for boats

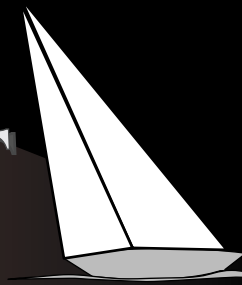
BRUCE GAY BEGAN HIS 30-YEAR CAREER IN THE MARINE INDUSTRY WHEN HIS STEP-father, then the captain of the presidential yacht, *Sequoia*, arranged his first job: working in the Anacostia Boat Yard in downtown Washington, D.C. Watching disgruntled commuters creeping and honking on the bridge near the marina, Bruce concluded, as a young man, that the boatyard was preferable to the business office. While learning the wide range of skills required of a yard professional, he also worked stints in marine salvage and boat delivery.

In the mid-1980s Bruce moved to the Flag Harbor Marina on the Chesapeake's western shore. A couple of years ago he started his own business, the Long Beach Boat Company, in St. Leonard, Md. Bruce likes to work on old boats and encourages their owners to get involved. One of his projects has been the restoration of a 40-foot wooden sailboat built in 1960, working side by side with the owner. He also enjoys working on old engines and always has an Atomic 4 or two on his shop bench. Bruce says, "There is often a lot of work in refit projects which doesn't require my experience or pay scale. So if the owner wants to help, some money can be saved." Asked if he thinks his business model would succeed in other areas of the country, he says, "I think so, but some marinas have restrictions on what boatowners can do. Also, the insurance coverage in my business is not cheap."

Bruce's passion for boats doesn't end with the workday. One of his evening hobbies is building vintage model boats to the sound of classical music in the loft above his shop. When asked why, he says simply, "I don't watch much television, except the History Channel."

Bruce can be reached by calling 410-586-8255. 

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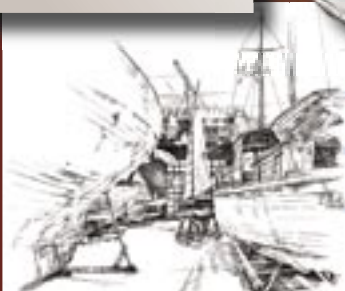


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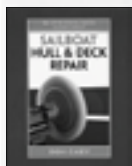
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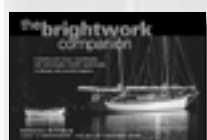
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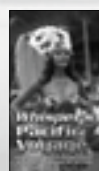


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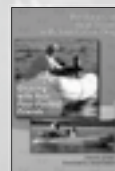


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Ta Shing Baba 30

1978 cutter w/trailer. Almost new 21,000-lb custom trailer, tow/store anywhere, Yanmar, big alternator, beautiful teak and wood spars in great cond. New varnish and bottom paint, RF, many recent upgrades and custom features. Stored indoors in Montana. \$74,000.

Ken Beiser

woodwrights@cyberport.net
406-756-0889

Morgan 30

1969 CB cruiser. 6 sails, overhauled Atomic 4, tandem-axle trailer. Completely equipped for Great Lakes. In Milwaukee. \$10,000.

Ed Freiwald

815-874-9108



Nimble Kodiak

1998. Ted Brewer-designed motor-sailer. One owner. Freshwater only. Yanmar 18-hp diesel, dual steering stations, shoal draft. Standing headroom 6'4". Tan-bark sails, VHF, stereo/CD, AP, Horizon S/D. Upgraded lighting. Pilothouse cushions professionally recovered. Sleeps 4. Alcohol/electric stove, refrig 12v/120v. Bimini, sailcover, mizzen cover. In Holland, Mich. \$39,000.

Mark Mow

mtmow@earthlink.net
574-848-7044



Cape Dory 27

1979. Very lightly used. Under 400 hrs on original Yanmar diesel. Barrier coated, topsides painted (Interlux). Stereo, VHF, new head, unused hold tank, 6 bronze opening, recent Cutless bearing, helm depth, 4 sails in, storm trysail, brass lanterns, PFDs, misc tools, equipment. Much-loved boat sadly for sale due to health. 2 years on the hard. In Shelter Island, NY. \$18,500.

Tom Law



Islander 37

Bruce King tall rig. Completely restored, meticulously maintained. Upgrades: new electrical, refrig, electronics, hardware, lifelines, canvas, batteries, sails, more. VHF, GPS/chart plotter w/Navionics gold chart on pedestal mount. Kenwood 3022 AM/FM/CD w/remote, Sirius ready. RAM at nav station, AP, Universal M25XP 23-hp diesel. Micron CSC bottom paint. Interior: new

canvas, cushions, beautiful mahogany/teak. Fast, seaworthy. Owner anxious; make offer. A beautiful classic. Cape Cod area. \$55,500 OBO.

Kathy Malloy
sailor1@adelphia.net
781-585-8021



Pearson 30

1977. Hull #985. Atomic 4, WS. Mainsail, working jib, 150. New head, sheets, halyards '00. Main and working jib cleaned, reconditioned '02. Sailcovers. Sleeps 4. 15-gal fuel tank, 20-gal water tank w/whaler pumps. Dual batteries. Clean, good cond. Email for photos. In West Harbor, Lake Erie. Asking \$12,900.

Dan Laity

alaity@woh.rr.com
419-332-9615 (days)
419-862-3053 (evenings)

Allied Luders 33

1968. Hull #50. Second owner. 135 genoa, full-battened main, drifter, storm jib, trysail. Profurl, radar, AC, Lofrans windlass, Achilles dinghy w/Nissan OB. Too much cruising gear to list. Rhode Island boat until '98. No blisters or pox ever. Now in SW Fla. \$39,000.

Lee Benet

luders3368@msn.com
239-849-4299

Allied Princess 36

1975 ketch rigged. Solid blue-water cruiser well maintained in good cond. New chainplates, batteries, charger. 1,325 hrs on '85 Westerbeke 46-hp diesel. custom cabinets. In Texas. \$36,900 negotiable.

Robert Olson

308-532-1245
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Harstad 31

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Jock Ames

jockames@yahoo.com
860-575-2896



Mason 38

1981. Great aft-cabin ketch, clipper bow, center cockpit, stern windows, davits, 14 bronze opening ports, 3 hatches, doghouse, 9 sails, Perkins new 108 diesel, Bimini, complete enclosure, awning, stand-up engine room, 5 bunks, diesel stove and heater, 6'3" headroom, 40x27 chart table, 300 charts. Bluewater, coastal, or liveaboard. Mid-Chesapeake Bay near Solomon's Island. Pictures etc. at <<http://www.geocities.com/fairgale80/>>. \$69,000.

Philip Ovalle

fairgale@erols.com
301-375-8594



Alden 41

1939 coastwise cruiser, completely restored, mint condition. \$150,000.

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Allied Princess 36

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Brian & Lynne Bishop

brilynne@hurontel.on.ca
519-524-9732



S2

1979. 8-meter center cockpit, Yanmar, VHF, charger, enclosed head. Fore and aft berths. In Muskegon, Mich. \$9,250.

David Baron

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616-844-1661



Prothero Cutter 26

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Dave Strzok

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Boat hull 42

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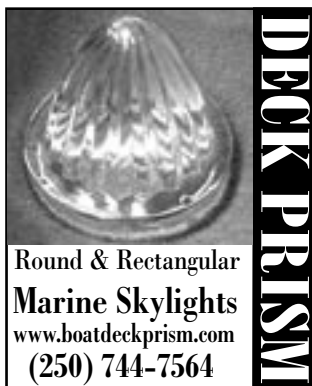
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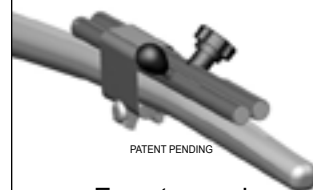
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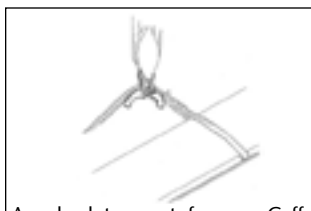
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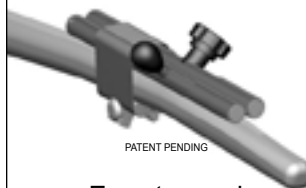
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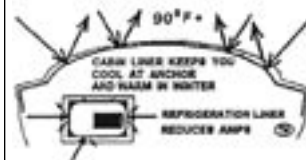
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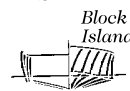


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Planning a head

How a naval architect shapes the boat's bathroom

by Ted Brewer

AS ANY SAILOR KNOWS, THE TERM “head” is derived from the days of sailing ships when men were men and the crew’s rude toilet was a hole open to the seas, right up in the bows of the vessel. A few vessels, those with long stern overhangs, such as the Down-East “Pinky,” had the toilet hole all the way aft, so I have to wonder what it was called aboard those craft. In any case, today the term “head” is used to describe any compartment with toilet facilities, of course, and is also often used for the marine toilet itself. I’ll use w.c. here for the toilet to avoid confusion.

In modern sailing yachts the head can be situated in a number of locations, as preferred by the owner or designer. Over the years I’ve designed heads in many different areas. Let’s look at some of these and consider the advantages and disadvantages of the various installations.

Figure 1 is a typical 31-footer from the ’60s. The head is simply a space for a w.c., almost the standard for smaller yachts of that era and about the minimum for a cruising yacht. This port-side w.c. faces athwartship and that can pose a problem when heeled on the starboard tack. Your knees are high, which can make it difficult to get up off the seat as a result. A strong hand

grab would be very useful. Often such a small head featured a folding basin that could be pulled down over the w.c. and drained into it after use. I haven’t seen one of those for years so they may not be available anymore. One could easily be made up, though, using a small stainless-steel basin set in a wooden panel that folds or slides away after use.

“The Morgan 38 was the first yacht under 40 feet in which I fitted a separate stall shower and, for all I know, may have been the first boat her size to have that feature. The ladies certainly loved it.”

Figure 2 has a more comfortable head, complete with basin, laundry hamper, and a shower. A curtain can be rigged up to keep the head reasonably dry when the shower is in use. I will add that the type of faucet, such

as the Whale Elegance, that is connected to a long flexible hose so it can be used either as the basin faucet or as a shower head, is very useful in tight spaces. Figure 3 shows the w.c. positioned fore-and-aft, and this is much to be preferred at sea. It is equally uncomfortable on either tack but, usually, not impossible to arise from.

Less counter space

Figure 4 improves the shower even further by fitting a shower seat, albeit at the expense of counter space. The Morgan 38, Figure 5, was the first yacht under 40 feet in which I fitted a separate stall shower and, for all I know, may have been the first boat her size to have that feature. The ladies certainly loved it. There’s always room for improvement though, and Figure 6 features a stall shower, basin, hamper, and a fore-and-aft w.c., all in a 34 footer.

Figure 7 shows an aft head on a 35-footer with a semi-stall shower. The aft head is quite common on modern, beamy cruisers but not my favorite set-up as it seems to take up a large chunk of the best part of the yacht. Some also object that it is too close to the galley, but this does simplify the plumbing, and the shower stall is a handy spot to hang your foul weather gear to dry after a miserably wet watch. The head on



Figure 1

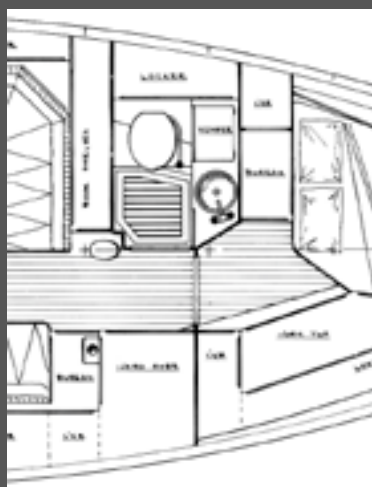


Figure 2

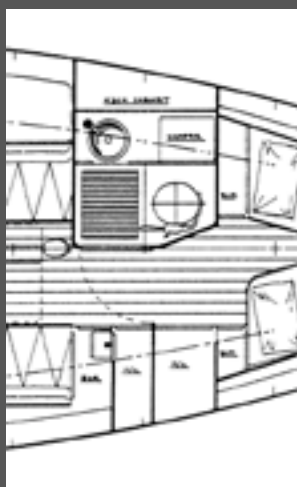


Figure 3

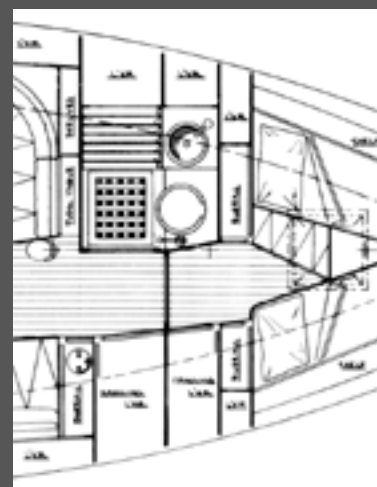


Figure 4

“Showers should never drain into the bilge and be pumped out from there. In warm weather the resulting collection of soap scum and dead skin will quickly result in an odor strong enough to gag maggots.”

the pilothouse yacht, Figure 8, is also opposite the galley but has a lot going for it otherwise. The w.c. is fore-and-aft, the stall shower is quite roomy, the location is amidships where motion is least, and it's handy to both the pilot-house and the saloon.

Forward heads are unusual but this 33-footer, Figure 9, was designed as a retired couple's home afloat. It's the only head on the boat, so guests have to go through the owner's cabin to get to it, not always the handiest situation, especially at night. The advantage is that it pushes the owner's berth farther aft, where the boat is beamier, so they have a real bedroom with a nice, wide double on the port side and lots of stowage, including a vanity, opposite to starboard.

Larger yachts, with aft owner's cabins, often have a head located there. The yacht in Figure 10 has the owner's cabin under the cockpit and shows the head off to starboard with the berth opposite. It's comfortable and convenient, but even better is the very spacious arrangement on the center-cockpit 44-footer in Figure 11 with its large stall shower. Obviously, there is no perfect spot for the head and no perfect arrangement of the facilities, but some are better than others.

Other features

Desirable features in a well-fitted-out head are hand grabs to help one up off the w.c., towel bars, either covered or out of the way of shower spray, and both a toilet-paper holder and paper-towel holder. A good-sized mirror is a must; the back of the head door works well for this. A medicine cabinet is

handy but must have a positive locking, not spring-loaded, door. Where space permits, small individual drawers for each crew member's gear will prove useful as well as a locker below the basin for cleaning materials.

Adequate lighting is desirable and should consist of a minimum of a mirror light and an overhead light. Finally, good ventilation is essential. Either a cowl-type Dorade vent or a low, saucer-type vent with a solar-powered or 12-volt fan works well here. The powered vent fan will help remove moisture and keep mildew down after a steamy shower and help prevent odors.

The basin

The usual basin is a round or oval stainless-steel bowl about 5 or 6 inches deep. This should be set in a counter about 36 inches high. The basin drains overboard through a seacock and should, but rarely does, have a drain trap. Basins that are set well outboard may not drain at all when the boat's heeled under sail on one tack, and sea water may spout up the outlet in heavy going if the basin is at all close to the heeled waterline.

Both problems can be cured by fitting a positive pump, such as a Whale foot pump, in the outlet line. This has worked well for me in the past, but I would also emphasize that, when at sea, the outlet seacock should be closed if the basin is not in use.

The shower

A minimum space for a usable stall shower is 24 to 26 inches by 27 inches. Even this is snug for a large person. Better is 27 by 30 and larger. Unfortunately, most small yachts are tight for shower space and, in that case, the typical curtained-off area in the center of the head may actually be better than a too-tight stall shower with solid walls. A seat in a stall shower is always useful, as it makes it easier to shower off in choppy seas. The shower head can be the removable basin faucet with hose, as described earlier, or a fixed wall-mounted showerhead, preferably with a hose extension to conserve water and also to keep spray from flying all over the head.

The shower grating is usually of teak. I prefer a grating made similar to duckboards (see Figure 2) as it is easier to make, stronger, and much easier to clean of hair and soap curds than the usual checkered-type grating, (see Figure 4). It's also easier for me to draw! Usually, a deep metal or fiberglass pan below the grating catches the water and carries it to a sump where, in turn, the waste water is pumped out through a seacock. Stall showers may simply have a non-skid sole sloping to a drain in one corner but, as a result, they usually only drain properly on one tack.

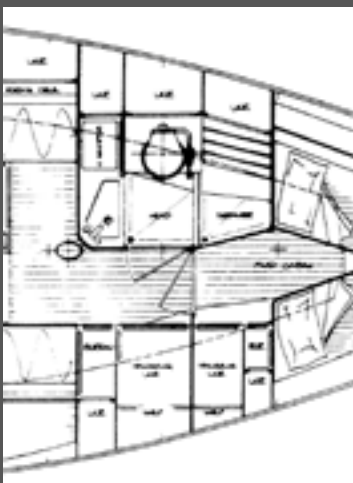


Figure 5

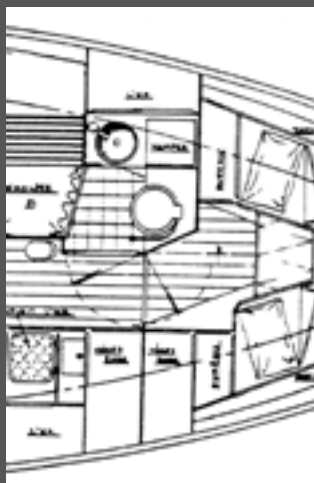


Figure 6



Figure 7

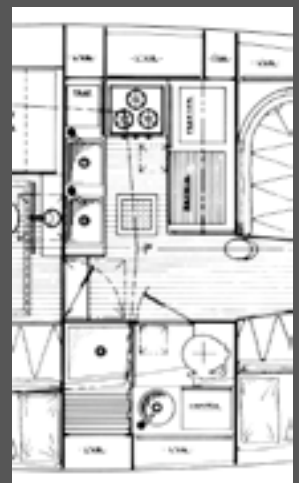
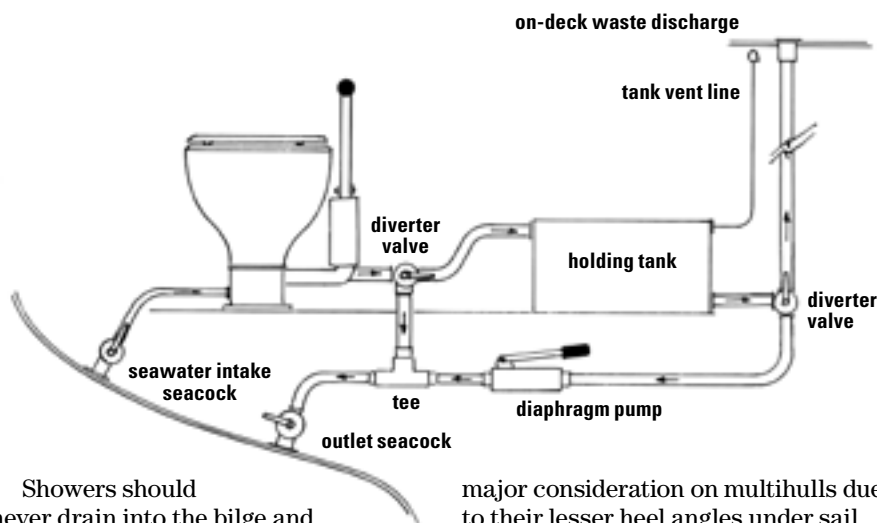


Figure 8



Showers should never drain into the bilge and be pumped out from there. In warm weather the resulting collection of soap scum and dead skin will quickly result in an odor strong enough to gag maggots. Rule and Atwood both make handy enclosed shower sumps, complete with float switch and pump, to eliminate the problem.

Alternately, if the bilge is deep enough, you can drain the shower to a small tank and use a manual diaphragm pump to drain it overboard. The tank should have a removable lid so it can be cleaned out if things do get clogged up, but I'd far rather throw the thing away and buy a new one than face that job. The shower water should pump out through a seacock. Often this is placed slightly above the waterline, in the boot top, to ease back pressure when pumping out.

The water closet

In the good old days of yachting, the w.c. was often a cedar bucket with a fitted seat that could be installed for use and removed when the bucket was emptied overboard. I've sailed aboard boats with such a facility, and I certainly cannot agree with L. Francis Herreshoff's enthusiasm for it. Simple, reliable, but embarrassing and illegal to empty in a crowded harbor. Even a Porta Potti, as ghastly as many of them are, is an improvement over the cedar bucket.

The space needed for a comfortably usable w.c. is 24 inches in width, and an extra inch or two will not go amiss if space permits. As pointed out earlier, it is best on monohull sailing yachts if the w.c. faces fore-and-aft rather than athwartship. This is not a

major consideration on multihulls due to their lesser heel angles under sail.

When selecting a marine w.c. or checking out the one on a yacht you are interested in buying, measure the seat. It should be about 16 to 17 inches front to back and 14 inches across for home-style comfort. Many of the cheaper marine w.c.s have a seat that is only about 13 inches diameter; barely kiddie size, and probably one of the reasons that Herreshoff hated them so much. Also check the height. The seat, not the lid, should be 15½ to 17 inches above the sole of the head. Again, the cheaper marine w.c.s are only 12½ to 13 inches high, including the lid. That makes them difficult to rise from, especially for us old geezers, so they should be set up on a base about 4 to 5 inches high for comfort. If you are paying good money for a yacht, new or used, you should be getting one with a workable, quality w.c. in it and not a miserable, child-sized potty.

The w.c. pump itself should be large and powerful; husky enough to suck in lots of water and flush dead rats out through the works. Again, a cheap w.c. will usually fail this test as well.

Pumps with lever operation, rather than a stirrup type pump, seem to answer this requirement best and, in this category, I would place the Wilcox-Crittenden "Skipper," the Groco "Model K-H," and the Raritan PH-II "Hi-Boy."

Holding tank needed

There are many conflicting and confusing laws about w.c. discharge. Since it's illegal to dump overboard in strict "no discharge" areas, your only choice is a holding tank and visits to a shoreside pumpout station. The diagram at left shows the system, with only two diverter valves plus inlet and outlet seacocks to control things and give you the choice of pumping into a holding tank in restricted waters or directly overboard at sea. Besides, if the holding tank is full, you can empty it at a shore station or turn a valve and pump it out in unrestricted waters. This is the best of all worlds, but label those valves carefully or woe betide.

Although it has been said so many times that it hardly bears repeating, a marine toilet that is fitted below the waterline, or one that will be below the heeled waterline when the yacht is under sail, must be fitted with a vented loop well above the waterline to prevent siphoning and possibly sinking the vessel if the seacock is left open. Even with a vented loop, the seacocks should be kept closed when not in use or whenever you leave the yacht. For this reason they should be fitted handy to the w.c. itself. Finally, for obvious reasons, be sure the intake water seacock is located forward and above the outlet seacock and the latter is on the side opposite the engine cooling water intake and galley seawater intake. ⚓

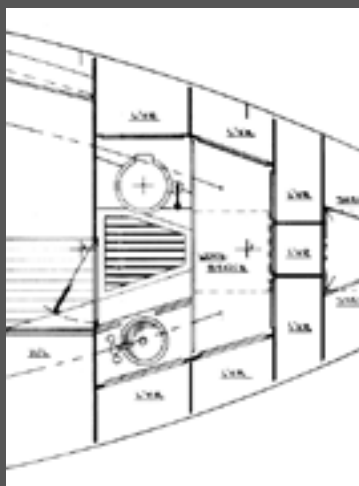


Figure 9



Figure 10

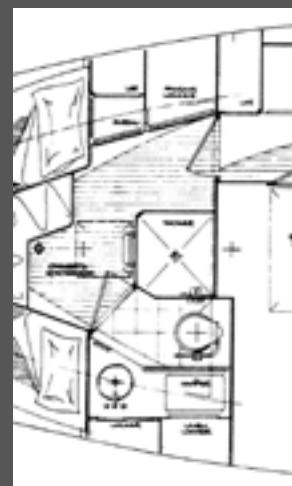
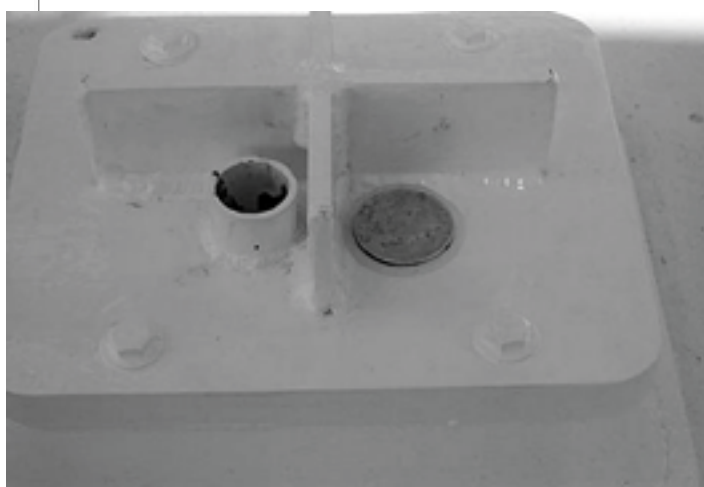


Figure 11

Better mast step

Elegant solution avoids mast replacement

by Jamie Harris



Hilary Nagler

“WELL NOW, THIS DOESN’T LOOK GOOD.” THE MARINE SURVEYOR was kneeling on the deck looking at the base of the mast where it was stepped on the deck of the venerable Spencer 35 I was in contract to buy. His words brought an unwelcome change to the survey. For more than an hour he had been inspecting, poking, and prodding all over *Onrust* (the name is Dutch, meaning “unrest” or “restless”). While he had pointed out a few minor irritants (slightly corroded nuts on the underside of a stanchion backing plate, and a GFI outlet that was needed on the 120-volt circuit in the forepeak), *Onrust* was showing up as solid and well-maintained. But now he had found two vertical cracks on either side of the base of the aluminum mast, each running about an inch and a half up from the cast-aluminum step plate.

“We’ll have to get a rigger to look at this” he said. Soon, Mark Rinsler from Western Yacht Commissioning was aboard. After checking the cracks and surrounding metal, he said we’d have to look closer after the mast was pulled. But he thought the damage was local enough that it wasn’t a serious problem. When the mast was out he would simply cut two or three inches off the bottom to get to solid undamaged metal and all would be well.

Shortening the mast by two or three inches worried me. I could foresee a lot of trouble: shortening the standing rigging, repositioning the gooseneck, and other possible adjustments necessary for a mast that would be several

inches shorter. More importantly, why was the base of the mast sporting these cracks anyway? Was there some structural problem in this lovely, sweet-sailing, 35-year-old boat?

Cause identified

Cracks and corrosion in the base of aluminum deck-stepped masts are not rare. In fact, Don Casey discusses the problem in *This Old Boat*. He concludes that, because of the issues cascading from shortening the mast, “replacing the mast is always a better alternative.” I’ve concluded that this isn’t necessarily so.

With the mast off, we identified the cause of the problem. As originally built, the base of the mast was held in position on the base plate by a tightly fitting oval collar rising about an inch up from the plate inside the mast. This seems to be a very typical and logical arrangement for deck-stepped masts. Over time, though, the collar had suffered from corrosion. In aluminum, corrosion means expansion. The thickness of the collar was greater than that of the mast wall, and the expansion pressure of the collar against the inch or so of mast contacting it was too much for the mast section to restrain. Hence cracks to relieve the pressure.

Mark and I came up with a simple, elegant, and affordable solution to shortening the mast that did not involve replacing it. He designed and built a new mast step that would maintain the mast’s original height and eliminate the threat of repeating the problem.

First he fabricated a solid phenolic base block with a thickness exactly equal to the amount cut off the base end of the mast. Then he built a new aluminum step plate to go atop the phenolic block with both bolted through the deck. The new plate, however, did not utilize a collar to hold the mast in place. Instead, it features two vertical plates intersecting at 90 degrees to form a stubby cross on top of the plate. Only the ends of the cross contact the mast section. Continuous contact around the whole inner circumference

With the mast suspended by a crane just above his head, Jamie quickly leads the ends of the spreader and masthead wires through the mast step into the junction box on the cabinroof, at right. The new step with *Onrust’s* lucky coin, above.




of the mast, as with the old collar design, isn't necessary. The load is all downward.

Minimal contact

Forces that could cause lateral movement of the base on the step are infinitesimal compared to the compression load holding the mast in place. Thus only minimal contact area is needed to keep the mast where it belongs on its step plate. For this, the ends of the crossing vertical plates are quite enough.

To finish off the installation, four small weep holes were cut into the very bottom of the mast, each placed to drain one of the quadrants on the step plate created by the vertical crossing plates. A 1-inch-diameter hole was cut in the phenolic base and the new plate so wires could pass through the deck for connection inside.

While we were at it, all the old wiring inside the mast was replaced and run inside a new PVC conduit riveted within the mast. A braided messenger line was also put in to pull through any future wiring I might need for new mast-top installations.

On re-stepping the mast, the stays set up perfectly. The new base and plate look great on the cabintop with two coats of white epoxy paint. *Onrust's* lucky coin (a 1922 silver dollar we found when we pulled the old step plate off the mast) was cleaned, polished, and bedded in clear sealing compound on the new plate inside the mast where we trust it will continue to bring *Onrust* fair winds and following seas for years to come. 



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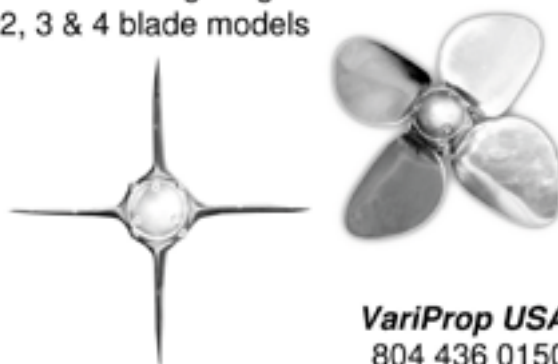
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The digital marketplace

*With a dot and a com
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by Silver Donald Cameron

WITH THE ADVENT OF THE INTERNET AND DIGITAL PHOTOGRAPHY, the marketplace for good old boats has gone global. Twenty years ago, my search for a used sailboat would have been restricted to the Maritimes, perhaps augmented by forays into New England and Ontario (for more on that search, see the article in *Good Old Boat*, January 2004). Even that restricted search would have been extremely time-consuming and tedious, and I would never have found *Magnus*, a Viksund MS-33, at all.


No more. If you bring up Google and type "sailboat sale," you get more than 60,000 hits. Many are irrelevant (sailboat tie clips on eBay and the like) but hundreds of sites are for real, such as Sailboats4Sale, Boat Trader Online, Boatsearch, Online Boat Search, and many more. Magazines such as *Soundings*, *Gam on Yachting*, and (of course) *Good Old Boat* offer classified ads online.

There are similar sites for Europe, Britain, and elsewhere. (I found a Westerly Vulcan in Southampton and another in northern Germany, but that was farther than I wanted to go.) The most comprehensive listings seemed to be on two broker-driven sites: Yachtworld.com and Boats.com, where I ultimately found *Magnus*.

Digital photography is now an integral part of the process, allowing you to see every detail of a boat on the opposite side of the continent, first on the website and later by email. If you want a close-up of the instrument panel, the broker can have it on your screen in 20 minutes. One surveyor used a digital camera with a built-in voice

recorder, recording his comments on each photo as he shot it. And when you eventually make an offer, it can be "subject to satisfactory viewing of 12 more digital photos as specified by the purchaser," as well as sea trials, survey, and the like.

Late in the search I engaged a buyer's broker, John Roy, of Ocean Yacht Sales in Halifax. I continued the web-searching on my own, but when I identified a really interesting boat, John could usually get a candid assessment of it by calling the listing broker. He was also invaluable in arranging the customs clearances and other transactions involved in importing a U.S.-owned Norwegian-built boat into Canada. His services cost nothing extra; he simply split the commission with the selling broker.

Good old boats, brave new world. Buying a boat is never easy, but digital technology makes it more painless — and more thorough — than it's ever been. 

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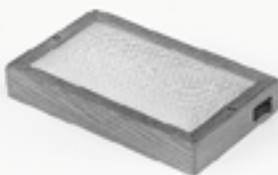
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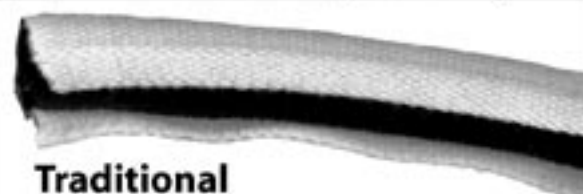
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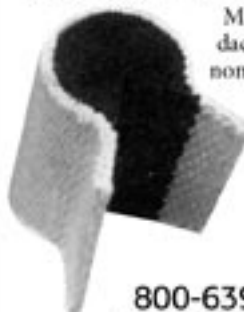
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Brightwork: A sailor's system, Continued from Page 11

your surface needs to be dry and hard. This between-coats sanding is fast and easy, so don't skip it. Visualize the flat surface you have been trying to maintain and improve from the very beginning. Visualize the block knocking down the high

points of the wood grain and flattening the whole surface. Don't go outside the flat areas. Use a scrap of sandpaper to lightly flatten the rounded areas.

This light sanding improves varnish adhesion, and the surface will become flatter still. Now you can begin to see why flat matters. Deep shining brightwork, the kind you can see your face in, starts with a flat surface. It also will hold the longest finish. Thin the second coat about 10 percent. Don't be afraid of thinning any coating, especially varnish. If it drags on the surface, add a little thinner anytime.

Do the third coat the same as the second but with little or no thinner. A quick surface sanding makes this new layer even flatter. Time spent on this coating process is minimal. It takes less than an hour from start to finish on both of my coamings to sand lightly between coats, tack rag the dust, and apply the coat of varnish. The trick is finding the days that will allow for drying time. This is the reason the removal, scraping, and sanding are best done before good coating weather arrives.

More coats needed

I have found that fewer than five or six coats will not likely hold for even a short New England sailing season. Seven, eight, or more coats are safer and will not add much work time. But they do add drying days. The later in the spring the coatings are applied, the more likely good drying weather will prevail. Applying coatings can be worked in around other non-dust creating boat projects. A cover system that can be rolled up in the sun and rolled down late in the day extends marginal drying weather (see Tom's enclosure article in the November 2004 issue of *Good Old Boat*).

Scheduling a complete removal and recoating is best done backward. Allow sufficient time for coatings, which require good drying weather to be applied. Deduct these from your anticipated launch date. This will give you an idea of when your brightwork renewal preparation needs to be complete.

The objective at the coating stage is to achieve a flatter surface with each coat. Apply fast even coats with minimal sagging or runs, which have to be sanded out later.

Damage control in this case is avoiding varnish drips. Use painter's tape and check it every few days. Remove and reapply this tape any time it becomes hard to remove. Avoid brushing too slowly in order to maintain a wet edge. Avoid applying varnish too late or too early in the day when moisture can damage the finish. Watch out for dust damage. Vacuum the area thoroughly and apply your coatings in little wind.

At this stage, dry warm weather is essential. Your chosen days must be as windless as possible. A good cover system can extend marginal conditions.

After seven, eight, or more coats, my coaming looks terrific. I can keep it that way for many seasons just by adding a coat or two — on my maintenance system — every season.

Maintenance system


Maintenance is simply another coat applied once or twice

a year, depending upon the severity of the weather in your area. It's a quick and easy step. Southern climes will require more maintenance coats. Even in New England, two coats are best. If this simple step is skipped, all the hard work you just did will be wasted within a year. The tools required for maintenance include a sanding block with 220-grit paper, strained varnish, a clean mixing bucket, and tape.

The objective at this point is to lightly sand and flatten the surface and to apply a renewing coat of varnish to achieve an even better level of finish than the year before.

Damage control involves keeping the area free of wind-born dust, so keep the decks clean. Schedule this work for a dry, warm day with little wind.

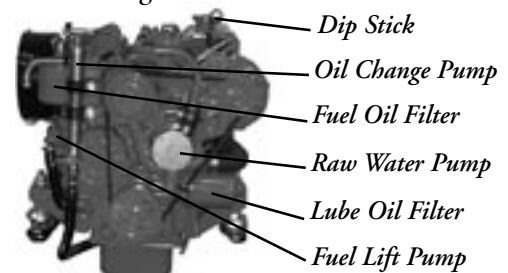
Brightwork is an art form. There are many great books on the subject, some of which I refer to quite often. One of the best is Rebecca Wittman's book, *Brightwork*. Rebecca, a professional, achieves beautiful results (see Page 61 for more information). Boatyards specializing in the art of brightwork are another good place to study the incredible results the professionals attain.

The top priority for me, a do-it-yourself owner and sailor, is developing an efficient system of brightwork maintenance that fits my schedule. After spring launch, I don't want to think about boat work much. A beam reach across a new sound or watching the sunset in a familiar snug anchorage leaves little room for other thoughts. On the water, in the yellow light of the late-day sun, that cockpit coaming with the sparkling blue water behind it looks fine indeed. 

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A traditional boathook



How to build it and stow it conveniently

by Glyn Judson

YEARS AGO I WAS THUMBING THROUGH A SAILING PUBLICATION and saw a photo of Larry Pardey standing on his side-deck grasping a stowed boathook. A closer look revealed *how* he had stowed it. For years I had meant to do the same thing with a neat, traditional-looking boathook for my boat. This was the inspiration.

No doubt others would like to know how to make their own boathook and store it conveniently. The boathook itself is made using an off-the-shelf cast-bronze hook and a length of 1 $\frac{3}{8}$ -inch clothes pole from your local lumber yard. All you'll need is access to a stationary sanding disc to custom fit the pole to the hook. Here's how to do it.

Making the taper

The biggest problem is matching the inside taper of the hook to the pole. Draw a line on a piece of paper and lay the axis of the hook centered on it (see photo at left). Put a chopstick or any small-diameter straightedge, like a pencil, in the hole. Press it against one side and trace that angle to the paper. Do the same thing on the other side of the tapered hole. Use the chopstick again, placing it down the center to measure the depth of the hole this time.

Let's say the largest inside diameter in the hook taper is 1 inch and the depth is 4 inches. Mark a line at a right angle to the centerline mark where the



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traced, tapered lines are 1 inch apart. Make another short line 4 inches into the tapered trace, and you'll have the exact shape the pole end will need to be if it is to fit into the hook.

Draw a series of parallel lines out from one side of the traced taper. Now fold the paper on the centerline and tape it to the table edge closest to the disc.


Move the pole into the spinning disc, keeping it parallel to the lines. Spin the pole with your fingers as you press it into the disc. Within just a few minutes you'll have a tapered pole that fits the inside of the hook perfectly. If the point of the pole is too long, shorten it a bit so it will fit in all the way.

Varnish the entire pole with a minimum of three coats. Then use a good bedding compound to seal the joint of the pole and hook to keep water out. Add a series of French hitches near the aft end of the pole using 1/8-inch Dacron line to keep the pole from slipping through your hands while in use.

Mounting the pole

Use two rings to hold the pole in place on a shroud. The lower one can be smaller, but the upper one needs to be large enough that the pole can slip through it smoothly.

The shroud needs to be threaded through the rings, so remove it from its chainplate. Slip both rings onto the shroud and then reinstall the shroud. Use seizing wire to attach the rings at the top and bottom. The smaller bottom ring is there to accept the point of the hook (see photo on facing page). The larger top ring will hold the pole and should be positioned in a place adjacent to the French hitch (see photo at right).

The downward weight of the boathook will keep it there, out of the way through the worst of sea and weather conditions, yet it will always be readily available when you need it. 



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A 'special needs' boat card

by Rebecca Burg

Make a custom information manual for your boat


IF FRIENDS OR FAMILY MEMBERS HAD TO START YOUR BOAT'S engine, would they know what to do? For haulout, is the lift operator confident about where to position the slings? The underwater profiles of custom-built and older, less-common boats may be a mystery to many. Local boatyard horror stories of bent shafts and ruined rudders propelled me to action.

To avoid potential disaster, I borrowed a computer and typed out a few simple instructions concerning my boat's "special needs" when starting the engine and operating it. I found a clean and anatomically correct line drawing of the boat model on the Internet and pasted that onto the page. This drawing accurately portrayed the boat's keel shape, prop, and rudder and would later prove

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3. Turn key to RIGHT and start engine. It should fire up in a few seconds.
4. Assure that water is coming out of exhaust pipe at stern.
5. To turn engine off, pull black knob located under key.



invaluable to the lift operator in the yard. Also on the page I included useful specifications such as displacement, draft, and length.

The card was laminated, and a piece of Velcro on the back allows me to hang it in the cabin. Drawings and specifications for different boats can be found in the many boatowners' groups on the Internet. For starters, *Good Old Boat's* website has a convenient list of owners' associations and resources at <<http://www.goodoldboat.com>>.

Now if a family member needs to start my boat's engine, she'll be able to with ease, thanks to the instructions on the card. She'll know to open the seacock and how the diesel's tricky preheater works. And the lift operator can position the slings with assurance. No worries, mate! 

Rebecca Burg is a lot more comfortable when friends are using her boat and when professionals are handling it at haulout time now that she has created a boat card, shown above, with vital information about operating the engine and placing the lifting straps.



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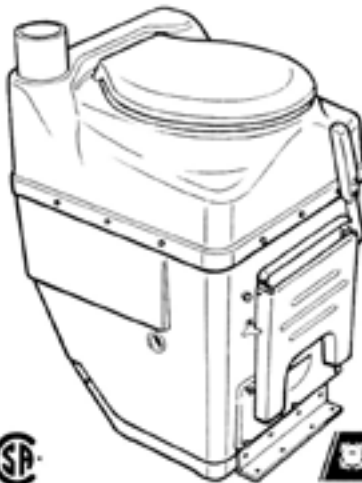
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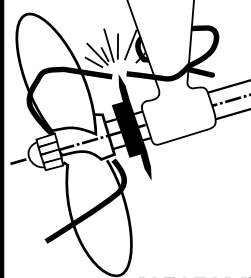
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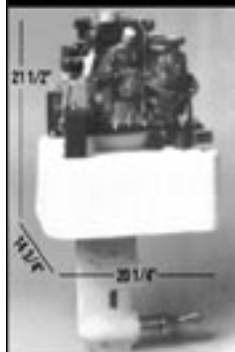


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True meaning of “capable”

In your January 2005 issue Ted Brewer compared the Cheoy Lee 32 to the Endeavor 32 and Crealock 34. He said, “A study of the numbers indicates they are all quite capable of comfortable coastal cruising and offshore island hopping...”

My question is: What set of numbers would make them, or any boat, “quite capable” of *offshore* cruising?

Anthony Palmiotti
Monroe, N.Y.

Ted Brewer responds

The good offshore/coastal cruiser would have a Capsize Screening Factor number well below 2.0, say in the 1.75 to 1.9 range, a Comfort Ratio figure commensurate with her size, a good ballast ratio, sail area/displacement ratio, etc. and no real extremes. I think it just boils down to common sense as it relates to all the vessel's characteristics.

Ted Brewer
Gabriola Island, British Columbia

Bad design

I was reading the article on the windlass switch (January 2005) and thought I'd comment. I have built quite a bit of battery powered machinery over the years, and it appears to me that the problem with the switch illustrated is not the marine environment. It appears to be a bad design. Most DC motors are controlled by contactors, switches built a lot like this one, but with a solenoid providing the actuation. When you switch DC power you want to do it as fast as possible, especially when switching it off. Every time the switch changes position, an arc is generated which has a temperature of thousands of degrees. This vaporizes a little metal off the contacts each time.

The switch illustrated has a very slow operation, guaranteed to arc badly every time. *No wonder* they don't hold up! DC contactors are readily available in ratings of 50, 100, 200, and even 600 amps. The coils are available in momentary- and continuous-duty with voltages of 12, 24, 36, and 48 volts. Install one of these with a rating of double the motor amperage rating, and it will last a long time. I have some out in the field that work many times a day and are still going strong after 16 years. Use the existing deck switch to handle only the small solenoid current used by the contactor. The deck switch will then last a long time too.

By the way, it amazes me how long it takes to read *Good Old Boat*. I go through the other mags in about a half an hour. *Good Old Boat* takes several hours, at least, because I find myself actually reading the articles all the way through. Great magazine!

Gary Lucas
Hightstown, N.J.

Use only aluminum oxide sandpaper

There are a couple of articles in the January 2005 issue that address refinishing aluminum masts. They both refer to sanding the aluminum to get rid of corrosion. This can be effective, but one must be careful to use *only* aluminum oxide sandpaper on bare aluminum. Other types of paper can leave tiny bits of the abrasive imbedded in the aluminum, which sets you up for a bad case of dissimilar metal corrosion.

I work in aircraft structures, and it seems that about two thirds of our work involves corrosion. My personally pre-

ferred method of removing corrosion is Scotchbrite RoLock disks. They work quickly and easily.

It's important when removing corrosion from aluminum to get all of the corrosion removed and the surface sealed with primer and paint. Any remaining corrosion pits are a breeding ground for more corrosion. You must be aware of how much material you are removing while grinding corrosion, as you are weakening the piece. Typically, in aircraft you can remove 10 to 15 percent of the material thickness in a small area and be within acceptable limits. These limits would probably be about the same for masts and spars.

Jim Slade
Kelowna, British Columbia

Gandy Dancer: who will build her?

Who will be building Reuel Parker's *Gandy Dancer*? I expect the little dinghy will become very popular. Any builder in the works?

Mark Hannon
Longmont, Colo.

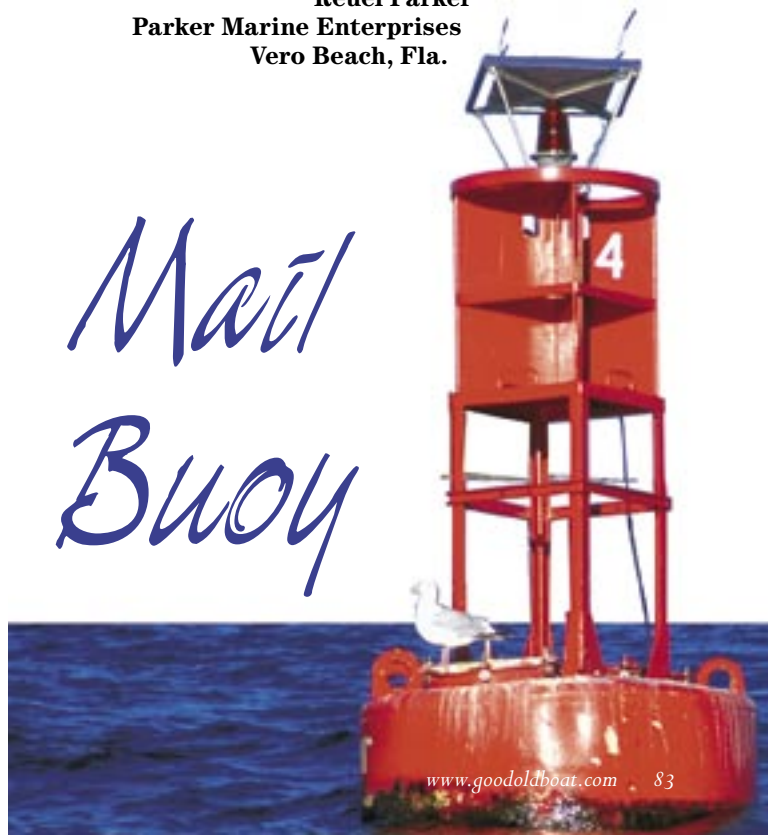
Reuel Parker responds

I sell a set of Dory-12 plans once in a rare while (have been for years). Not a big mover — maybe a set or two a year. Designing small craft is as economical a deadend career as it is possible to stumble into... good thing I like it (and can do other things).

Also, we build. Mostly big boats — both sail and power — but also boats like *Gandy*, sharpies, single sculls, kayaks, etc. And we do wooden boat restoration work — we're just about to start on a 36-foot Herreshoff damaged by the hurricane in the Bahamas last year. I will build another *Gandy* for myself as soon as time permits — maybe late this year. Meanwhile, I'm finishing up a major re-fit/re-rig/re-power on *T'ien Hou* so I can escape to the Bahamas in April/May and then sail home to Maine in June.

Reuel Parker
Parker Marine Enterprises
Vero Beach, Fla.

Mail
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Boat on the cover

Australian Harry Speight adds to the editors' note in the October Newsletter: "Several readers asked what that boat on the cover of the September 2004 issue was ... Los Angeles sailor Simon Golledge, who is a new owner of a Sparkman & Stephens 34, solved it for us. 'The

S&S 34 is still made in Australia, though with a modified coachroof/cabintop.' " To this, Harry adds:

The S&S 34 is indeed still being made in Australia by the Western Australian company, Swarbrick & Swarbrick. This company is well known (at least in Western Australia) for their design and construction of yachts suited to the fairly challenging weather and sea conditions on our west coast. There is a good review of the company and the new S&S 34 in the Australian magazine, *Cruising Helmsman*.

Harry Speight

West Perth, Western Australia

Montgomery website

I started a website last November to showcase the efforts people have made with their sailboats. The site is dedicated to the Montgomery Sailboats Owners Group. Included are several restored Montys M7-11, M-12, M-15, M-17, as well as some good examples of other fine craft. <<http://www.MSOG.funtigo.com>>.

Bill Lamica

San Francisco, Calif.

New gadget

We were intrigued by a new gadget for oldish boaters. You know the ones: they've already been issued their first set of bifocals. Office on the Go created the Magnifico Magnifier, a large magnifying lens to help corporate types see their personal data assistants (PDAs). As it happened, these things are selling very well to the boaters among us to help us see our tiny portable GPS screens. The company has developed several designs to work with the portable GPS units on the market. Cost is around \$30. For more about this handy device, visit <<http://www.officeonthegogo.com>> or call 800-679-1909.



Editors

Spirit and enthusiasm

After being away from sailing for more than 13 years, I purchased a 1975 Irwin 28.5 from Torresen Marine in Muskegon, Mich., in September of 2004. Due to the unusually nice fall weather we were able to sail the boat a good deal in those waning weeks of summer.

I was surprised to receive a sample subscription in the mail, courtesy of Torresen. I'd never read the magazine before and was instantly impressed by how it captures the spirit and enthusiasm of people who sail these good old boats. Perhaps it's a niche, but it's a darned good one, and

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... and the Skipper said to the Mate, "Hang on to the tiller, mate ..."

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I'm happy to see a publication that really caters to restoring, maintaining, and sailing these neat craft.

Hats off to you for a nice publication and thanks to Torrens Marine for "hooking me up." Oh, and I just re-subscribed!

Dan Sherburn
Spring Lake, Mich.

Uncle Bob

Speaking of spirit and enthusiasm, meet Uncle Bob, pictured at right. He's a member of the Endres family. Mary Endres is our art director (the one who makes the page layout happen in each issue — if we're communicating the message of each article as well as we possibly can, Mary's the one to thank for that). She's a designer and a darned good one, but she's not a sailor. Uncle Bob's the family sailor and boat refurbisher, so he has a subscription. She says he's delighted with the sub, and we're delighted to have him. Uncle Bob is a pediatrician who retired not long ago now that he's in his 80s. That will leave more time for sailing this canoe sailboat and refurbishing another in his garage. Welcome aboard, Uncle Bob!

Editors

From a favorite author

Good Old Boat arrived yesterday, and I have just about read every word in it. What a great magazine, particularly for someone who is sailing an absolutely pristine 1981 Cape Dory 22 in the blustery northeast trades. *Searcher* is the biggest thing I can launch and retrieve over a beach with the aid of a backhoe and a friend's Bertram 31. It's quite a show; people come from all over the island to watch and wonder.

Brian Endres



Catalina Hunter O'Day MacGregor

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offshore disaster. Thanks again for your fine magazine and the flattering review.

Jule Miller,
Author of

A Voyage Toward Vengeance
Charlestown, Nevis, West Indies

Busting our buttons?

I hope you and the entire staff at *Good Old Boat* are busting your buttons with pride. You should be. With the emergence of your publication being so timely and the presentation becoming even more enticing each season, no doubt you've discovered "the rest of us!" have a voracious appetite for the offering.

Well, it feels good to be found. Let me say thanks to you all for a first-class publication designed to address our needs and enrich our dreams.

Several of your latest issues contained articles on the very things that needed attention on our little boat. How did you know? Because of your

efforts, we're all more likely to approach those inevitable refits and maintenance jobs with greater knowledge, new perspectives, and confidence.

At our house the stack of back issues is tattered and well handled. Neighbors see me moping about around the empty mailbox days before delivery. It's all good.

Bill and Liz Ronstadt
Tucson, Ariz.

A business is born

I'm a subscriber to *Good Old Boat*. I am starting a business which produces sailing dinghy masts and booms fabricated from laminations of Sitka spruce. The original design was developed for the 9-foot 1-inch Ranger Minto sailing dinghy, once very popular in the Puget Sound region. My intent is to eventually make reproductions of the Minto but one step at a time, and my first step is the spruce rigging.

I have a simple site at <<http://www.richpassage.com>>, 360-769-3972.

Mike Ellis
Port Orchard, Wash.

But it's pricey

By the way, when your magazine first came out I continually choked over the fact that it has the highest price on the newsstand, but I kept buying it because I like the content. Now I look forward to each issue and just don't think about the price. Just goes to show you that an old dog *can* be retrained. I hope you don't forget your initial mission statement as your magazine grows and prospers — frankly, most of the rest of the yachting magazines have become hugely boring to me, primarily because I just can't relate to most of their content anymore. Maybe I'm out of step.

Jim Bates
Slidell, La.

Send questions and comments to Good Old Boat, 7340 Niagara Lane North, Maple Grove, MN 55311-2655, or by email to jerry@goodoldboat.com. Please limit messages to 150 or fewer words. We reserve the right to edit.



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Snakes, nightmares, and double-braid

We've finally made the dreaded eye-splice

by Jerry Powlas

WHEN I WAS A VERY YOUNG BOY, MY FATHER TOLD ME A STORY about two snakes. They formed a circle, heads to tails, with each snake eating the other. As this progressed, the circle got smaller until finally it disappeared altogether. I think it was a piece of folklore from his childhood. Even as a little kid, I didn't think the snakes would disappear.

The first time Karen and I tried to put an eye-splice in double-braided rope was about 10 years ago. All we lost were a few frustrating hours and a few feet of anchor line. As it turns out, you really shouldn't even *try* to splice double-braid unless it is very new. First lesson.

Over the intervening years I have paid others for these splices. They went for \$20 a pop, which — after our one and only attempt — I considered extremely reasonable. I was happy to splice three-strand, and even 12-strand single-braid, but I stayed clear of double-braid.

Eventually, as fate would have it, we found ourselves in possession of a whole spool of nylon double-braid that was just enough to make dock and anchor lines for the Mega. It was time for a rematch. At least this time the rope was new. Karen had the first go at it. She used the instructions in *Chapman's Piloting and Seamanship*. It seemed easy. She banged out four eye-splices in no time. I was impressed. Then she said she was not so sure about the quality of the double-braid eye splice in *Chapman's*. It is indeed easier to do, but near the base of the loop there is no core at all. Only the cover remains. To our way of thinking, since half the strength of the rope is in the core and half in the cover, the splice was down to half strength. We learned that there are eye-splices and then there are eye-splices. You bet your boat on these lines. We started over.


I looked for other references. Clifford W. Ashley had the great good fortune not to have to deal with double-braid. I think the technology came after his time. I started printing out directions from cordage manufacturers taken from their Internet sites.

One-pagers

Still operating on the assumption that this ought to be simple, we favored the shortest explanations ... we liked the one-pagers. We made more splices but did not like the looks of those either, although we could see that if we could

make them correctly they would be stronger than the splice in *Chapman's*. At this point it was a tag-team grudge match. Us against the ropes. We would clear the kitchen table, get out all the fids, wands, knives, several sets of instructions, and what was left of the spool. One would read the directions. The other would destroy more rope. Then we'd change roles and try again. Slowly more good rope moved from the spool to the trash can. Even after I'd seen the splice done several times, I could not claim to understand it. I began to have dreams and then nightmares about the double-braid eye-splice. The snakes came back. I still thought \$20 a pop was cheap, but Karen and I can be very stubborn.

I looked for more references. *The Rigger's Apprentice* by Brion Toss has a section called "The Double-Braid Eye-splice Made Human." It runs to eight pages. It employs a special tool. I already had the tool, but we did not want to believe it takes eight pages to describe how to make this splice. On the other hand, we had tried shorter versions and were not willing to trust our boat to what we had produced. At this point, we were getting pretty familiar with various versions of this splice. Brion's instructions are lengthy and involve different techniques, but they wind up making about the same splice that the cordage companies' instructions do. The difference is that the first one we made turned out pretty well. As of this writing, we have made three more. We tend to limit ourselves to one a night. That way I don't have nightmares. We read the instructions word for word with each splice. There is no memorizing this thing. We have already learned that Karen is good at some parts; I am better at others. A pattern is emerging.

I do not claim conquest or even mastery at this point. Way too much rope has gone under the knife for that. If there were to be a 100th splice I'm sure we would still be reading Brion's instructions word for word. Still, we have come a long way. Thank you, Brion. 



In defense of the daysail

To travel hopefully is a better thing than to arrive...

by B. J. Armstrong

AVIATORS CALL IT AN "OUT-AND-IN" OR "THE \$100 HAMBURGER." It's a day trip of only a couple hundred miles or maybe less... flying to the next town or even the next state for lunch and then back home. Hangar space, ramp fees, maintenance, and fuel prices all add up to make that \$5 hamburger cost a bit more, but we keep flying anyway. Very few have the time and money to take off on a coast-to-coast trip. However, there is still the allure of flying somewhere new, testing navigation skills, and operating around unfamiliar airports. Pilots on a day trip are out to experience the world through adventure, while gaining new confidence and new skills but without emptying their 401(k) or giving up their happy and comfortable lives.

What a day for a daysail

Sailors call it a daysail. But sadly, at times it is looked upon as a second-class affair. Flipping through the pages of nautical publications, we read about big boats, big budgets, and exciting voyages around the world. We read them for the same reason we listen to Captain Buffet. They feed the dream with the promise of adventure and exotic locales. Accordingly, we should always be looking for a bigger boat, better gear, and a lower interest loan to finance it all.

I sit on *One Love's* port rail and watch the waves crash past, and I can't help but disagree. *One Love* is 22 feet long, 2,400 pounds, and 100 percent paid for. I have my handheld GPS, and I can see our home marina on the horizon. But that's not the point. Three miles behind me lies the Hamp-

"I sit on One Love's port rail and watch the waves crash past, and I can't help but disagree. One Love is 22 feet long, 2,400 pounds, and 100 percent paid for."



ton River and a new port that I've just tackled. I've learned a few things and had a good lunch. It wasn't quite "the \$100 hamburger," but it was still worth more than the \$5 I paid. The water is blue. The sun is sinking to the west. The sails are full. And I could be anywhere. That's the point... I could be anywhere.

Our fellow followers of wind and sky seem to remember that bigger and longer is not always better. It can just as easily mean more hassle and less fun. Robert Louis Stevenson said, "To travel hopefully is a better thing than to arrive..." As Harry Belafonte sings farewell to Jamaica on the portable stereo, I sail on for my afternoon of travel and — even though I know I will arrive back at my desk on Monday morning — I am still hopeful. ⚓

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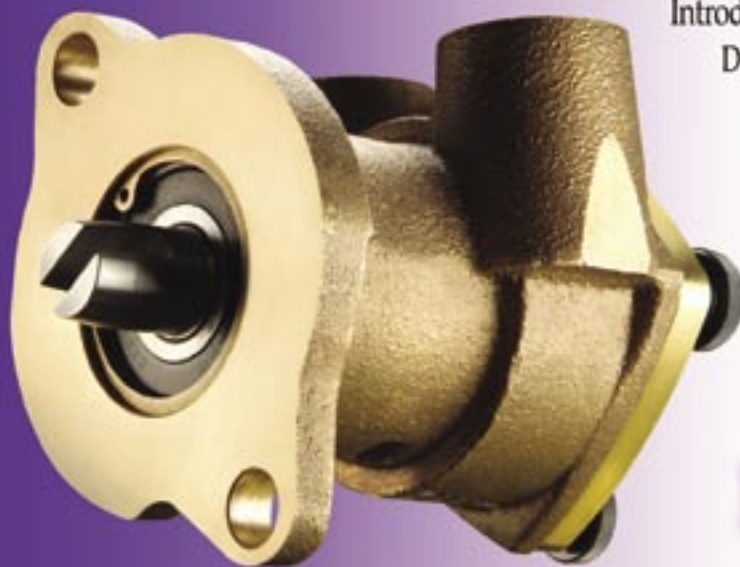
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