GOOD OLD BOAT™

THE SAILING MAGAZINE FOR THE *REST* OF US!

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Issue 83 March/April 2012

GOOD OLD BOAT™

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101049	5	53" x 1-1/16" x 2-3/8"	76.36	**48.99**
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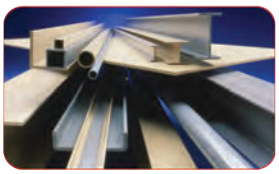

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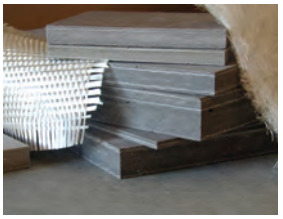

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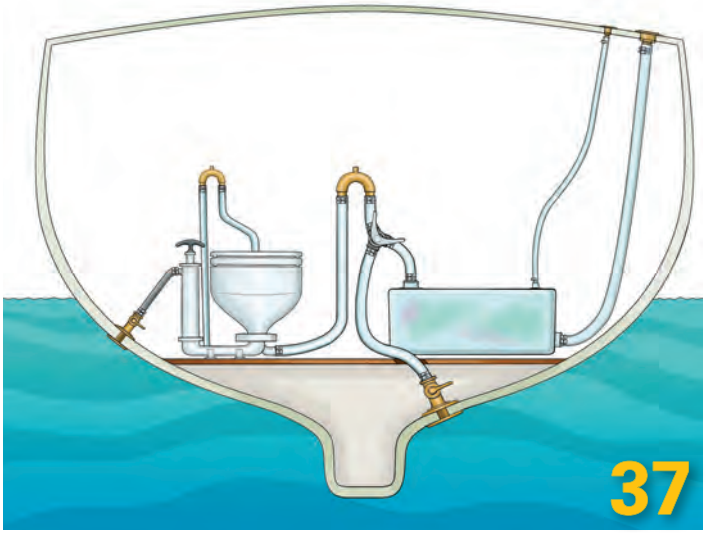
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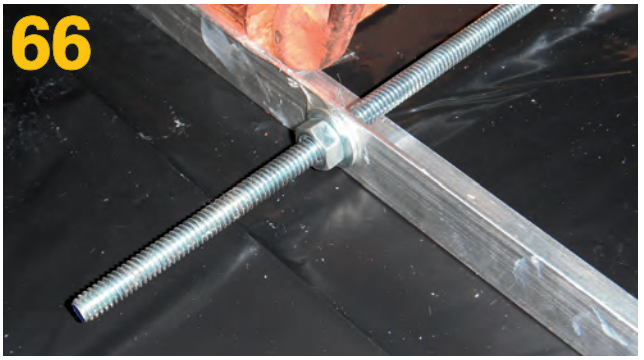

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What's more

About the cover . . .

Wish you were here? *K-Aloha*, Brett Pruitt's 1977 Cal 20 doesn't get to vacation in Hawaii, she *lives* in Hawaii all year. Brett says she had quite a racing history with her first owner. These days, with Brett, she sails the windward side of Oahu and is shown here a mile offshore from Kaneohe.

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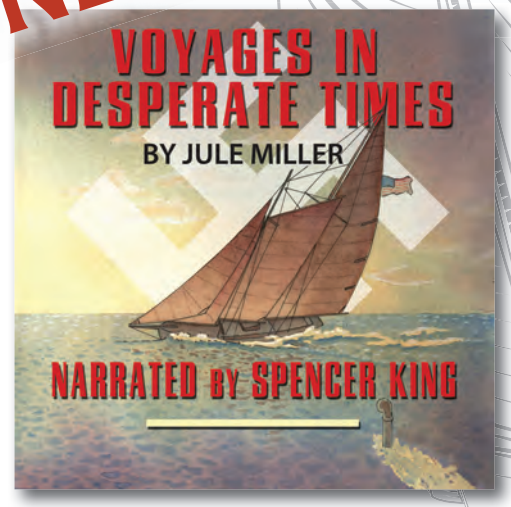


Voyages in Desperate Times

A New Novel by Jule Miller (Historical Fiction)

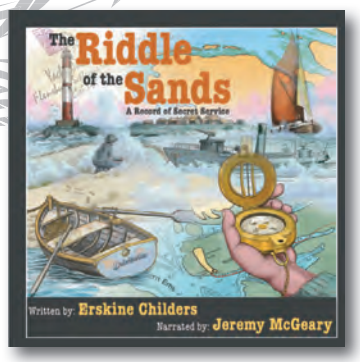
In the early days of World War II, the U.S. Navy and Coast Guard were woefully short of vessels to fight the battle with German U-boats along the U.S. East Coast, a battle the United States was rapidly losing. Having no other option, the government hastily commandeered private power and sailing yachts and sent them out into the North Atlantic to locate submarines and rescue survivors of the carnage.

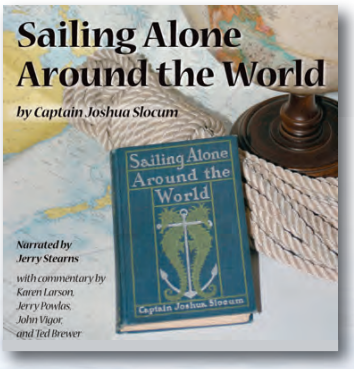
The 54-foot schooner yacht, *Tiger Lillie,* instantly became Coast Guard Reserve *Vessel 3114*. The regulations required Ensign Nicholas Worth and his six-man crew to repeatedly take her out into the Atlantic that winter and spring but, as the old Coast Guard axiom says, the regulations did not require them to come back.

The Riddle of the Sands

by Erskine Childers (Historical Fiction)

While sailing in the Baltic Sea, two men uncover a secret German plot to invade England. *The Riddle of the Sands* (written in 1903) was heralded as the first true spy novel, written by Childers to encourage the British government to bolster their presence in the North Sea. This story features equally thrilling scenes of espionage and adventures at sea.





Sailing Alone Around the World

by Joshua Slocum: (Historical Non-fiction)

In 1895 at the age of 51, Captain Joshua Slocum began a 3-year, 46,000-mile solo circumnavigation aboard his 37-foot sloop, *Spray*. The first man to ever successfully complete a solo circumnavigation, Slocum recounts the adventures he had along the way in this novel. His eloquent narrative is filled with vivid battles against man and nature and stands as one of the greatest sea stories of all time. Sailors and non-sailors of any age will enjoy this gripping tale.

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83 – VOLUME 15, NUMBER 2
GOOD OLD BOAT (ISSN 1099-6354; USPS 019327)

PUBLISHED BIMONTHLY BY
Partnership for Excellence, Inc.

EDITORIAL OFFICE:
7340 Niagara Ln. N. • Maple Grove, MN 55311-2655
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Phone: 701-952-9433 • Fax: 701-952-9434
www.goodoldboat.com

Periodicals postage paid at Osseo, MN 55369, and at additional mailing offices.

POSTMASTER, SEND ADDRESS CHANGES TO:
Good Old Boat
8810 27th Street Ct. N.
Lake Elmo, MN 55042-9473

SUBSCRIPTION RATES (1, 2, 3 YEARS):
U.S. AND CANADA – $39.95/$74.95/$110US
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www.audioseastories.com

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For example, **AudioSeaStories.com** is the place to go for back issues of our magazine. These days, you don't have to order a back issue CD and wait for it to arrive in the mail. It can zoom from our computer to yours in a matter of minutes or seconds. So let's see here: it's much faster, it arrives already loaded on your computer, and you save about $5. It's no wonder we've sold so many back issues since we added them to **AudioSeaStories.com**.

Holiday boat parades


DICK DIXON

Over at the **GoodOldBoat.com** site we created a list of holiday boat parades after running an article on the subject in our November 2011 issue. By holidays, we don't mean just Christmas and New Year's. A lot of parades favored by northern sailors take place around the Fourth of July. Send us your favorites and we'll add them.
www.goodoldboat.com/resources_for_sailors/boat_parades

And much more!

Over the years, we have collected a number of other good lists of interest to sailors: consignment stores, disabled sailors' organizations, boat owners' associations focused on specific models of good old boats, sailing blogs, marine suppliers . . . you name it. And, as in the case of the holiday boat parades, we welcome your additions. Just let us know: **karen@goodoldboat.com**.

Good Old Boat newsletter

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Every other month, when you don't get a copy of the magazine, we try to make it up to you by offering our online newsletter. We send you an email message saying that it's posted. To do that, we need your email address. If we don't have a valid email address, you may not be getting the message, so please let us know what email address to use: **karla@goodoldboat.com**.

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A little relief from winter

Warm up those earbuds and chill . . .

by Karen Larson

About this time of year, the northern sailors among us get a bit weary of winter. We start attending boat shows. Even shows that don't have many sailboats have a certain appeal right now. You'll find us draining our savings accounts for vacation money. A cruise anywhere warm will do. We're ordering parts for our springtime projects and we're surfing the web.

This last item on the list is what's on my mind. You already know about the GoodOldBoat.com website . . . but did you know about our second site: AudioSeaStories.com?

We created this site about five years ago and gave it that name because we were producing audiobooks and thought they should reach a wider audience than might discover them just through *Good Old Boat*! We thought hiding our audiobooks somewhere in the depths of GoodOldBoat.com would make them hard to find and discourage sales. If you have spent much time there, you have to admit that our GoodOldBoat.com site is rich and vast and even a bit overwhelming. We got that part right: our new audiobooks would have been very hard to find. But sales of audiobooks never exactly went stratospheric anyway.

However, it takes special software to make a download site that can collect someone's payment and offer a downloadable file. Once we'd mastered that process for the audiobooks, we wondered what else we could offer as downloads. We started with our back issues that — until then — had been available only on CDs. We reasoned that the PDF files on a CD could easily be downloaded for reading on iPads, Kindles, and other readers. The price for the downloaded file is a bit less than for a CD since there's no shipping and handling. So we posted our back issues. That's when our AudioSeaStories.com site took off!

As in all things with this magazine, Jerry and I only *think* we're in charge. Truth is, we're usually breathlessly trying to catch up. So based on this unexpected success, we have begun to refer to AudioSeaStories.com as *Good Old Boat*'s downloads site and stepped up our production of back issues. We're up to 2007 so far and expect to finish all the way through 2012 by the end of this year. We've separated individual issues and are offering them as downloads too, so you don't have to buy a full year at a whack if you only want one article.

We're developing collections of articles such as our histories, boat reviews, and the 101 series. We may even add music downloads at some point. And there's some "free stuff" on the site for download too.

Of course, there are the audiobooks that started it all. Whether we've made one cent on this side of the business is debatable, but we're still recording books we really like and want to share with our readers. We've just completed our 13th book and number 14 is in the works.

It all started with Joshua Slocum's *Sailing Alone Around the World*. Other favorite circumnavigations and true adventures followed. John Guzzwell reads his own *Trekka Round the World* and Greg Smith reads his book, *The Solitude of the Open Sea*. Dave and Jaja Martin team up to bring us *Into the Light* about their trek north of the Arctic Circle and Geoff Safron produced Russell Doubleday's classic *A Year in a Yawl*.

We produced three thrillers too: *The Riddle of the Sands* by Erskine Childers, *Telegram from the Palace* by Geoffrey Toye, and *A Voyage Toward Vengeance* by Jule Miller.

Add to those a trio of books for youngsters around 8 to 12 by John Vigor: *Danger, Dolphins, and Ginger Beer* was the first, followed by *Sally Steals an Elephant* and *So Long, Foxtrot Charlie*.

I even narrated an audio we called *Bookends* because it was a recording of the first 50 View from Here (editorial) and Last Tack columns that bookend the magazine, one at the front and one at the end. Both sets of columns are mostly the nautical musings of the editors (Karen and Jerry).

That list comes to 12 audiobooks. The newest, and our proudest achievement so far, is *Voyages in Desperate Times*. Jule Miller, an accomplished author and researcher, wrote this work of historical fiction about the little-known activities of the Coastal Picket Force (aka the Hooligan Navy) during World War II. The U.S. government conscripted wooden sailing yachts and put them into service along the East Coast searching for German U-boats and picking up survivors from ships torpedoed by the U-boats.

Book number 14 is also a work of historical fiction. Written by William Hammond, *A Matter of Honor* is the first of a series of excellent novels along the lines of the Patrick O'Brian series. We can't wait to bring this newest addition to you.

If you have the winter doldrums, no matter where you are, please cruise over to our sister sites — GoodOldBoat.com and AudioSeaStories.com — and see if we have something there to cure what ails you.

GPS precursor, pinstripes,

Good old pre-GPS

I read the article "Coordinating Coordinates" about GPS by Devin Ross in the January 2012 issue. While in the U.S. Navy in 1971 aboard the USS *Albany*, CG-10, I was sent to Johns Hopkins University in Silver Spring, Maryland, to learn how the GPS predecessor, NAVSAT, worked. Since this was prior to microchips, the radio receiver for the NAVSAT gear was in a case about the size of a modern desktop PC tower. The receiving antenna was 192 feet above sea level. The NAVSAT computer was about the size of a small dorm refrigerator and weighed more than 100 pounds. The paper-tape printout with lat/lon data came from a Victor 10-key adding machine. The Victor had solenoids positioned above the keys that were actuated by information from the computer to get the printout of our position in degrees and minutes. There were just three operating satellites and, at times, many hours passed before a useable satellite went overhead with only a 15- to 20-minute window to obtain a fix — if everything went well. The quartermasters on board loved the system for its accuracy and ease of operation even then. When the system was certified as accurate on the *Albany*, a fix was easily obtained well within the length of the ship — 675 feet — and was usually much more refined to within 10 meters of the bridge. I doubt many of us sailors, commuters, or hikers, would ever lug around that much weight these days just to be sure of our position on the earth. We can thank progress and modern electronics for providing much more useable hardware on land *and* sea!

–Paul Slowick, Fairfield, Iowa

Do you get smarter with age?

I started sailing when I was about seven years old. That was in the early 1940s. Yes, I am now 77 years old. I have sailed in all kinds of boats, from a sail on a canoe with a paddle for a rudder to a Styrofoam 10-footer with a lateen sail. We bought a C&C Corvette in 1990 when I was 56 and sailed it until 2004. We were having trouble cranking in the jib every time we tacked, so we thought a trawler would keep us on the water a bit longer. A friend took us out on his Nonsuch 26 and we were hooked. We bought a Nonsuch 26, *Xtasea Tu*, in 2004 and have sailed her ever since. It is a simple boat to sail: one sail, and when you tack you just turn the wheel and you are away on the other tack without spilling your coffee. Now it's 2011 and I am seven years older. When the wind pipes up, instead of reefing, we just push the button that starts the iron tops'l, let go the halyard from the cockpit, the sail falls into its cat's cradle, and we are off nice and comfortable. The same thing when the wind goes light: on goes the iron tops'l and we motor to the next anchorage and enjoy a nice glass of wine and happy hour. I have done all that heavy-weather sailing and the waiting-for-the-breeze-to-pipe-up. Now, I don't have to prove anything. And the best thing is my wife stills enjoys sailing!

–Chuck Jones, Trenton, Ontario

Hitchhikers

I enjoyed very much the Reflections story,"A Law of the Sea" (January 2012) by Mathias Dubilier. His sentiments rang true. I had a similar experience once while crossing Lake Michigan and thought I'd share one of my pictures. In our case we had two hitchhikers, which turned out to be yellow warblers. They were great company and wound up staying with us for a couple of hours. I have a feeling they had done this before, though, maybe to rest up a bit but probably more to snack on dead bugs in the nooks and crannies. In any event, they certainly knew how to ingratiate themselves and were welcome guests.

–Bob Mayerhofer, Chicago, Ill.

Pinstripe paint tape

Reading Stephen Perry's article on repairing/painting his Pearson 28 deck (November 2011) brought back three-year-old memories about the satisfying experience I had refreshing the deck on my Cape Dory Typhoon. I too used the Petit Easypoxy. It was easy to work with and I had pleasing results using very similar procedures.

Having done some auto-body painting in restoring some classic vehicles, one recommendation I would offer to save some time and effort would be to make use of a 3M tape used for pinstriping and outlining flames or designs in a custom auto-body paint job. The tape is ¼-inch wide, very thin, and extremely flexible. It can be easily shaped around a 90-degree radius and even tighter radii when needed. With a good eye and steady hand, you can create your own outline without the use of pencil marks or patterns. Another good feature is that paint will not bleed through when the tape is properly applied and secured. Additional taping, with either blue or green tape, is required over the ¼-inch tape since it does not provide a very big border when rolling or brushing on the paint or non-skid.

–John Harrar, Hatboro, Pa.

and hitchhikers

Fiberglass cloth weight

I'd like to ask Ken Textor about the weight of the fiberglass cloth he used for the LPG box he built (May 2011). This project sounds like a great way to save some money on my conversion from CNG to LPG for my 1989 Hunter 35.5.

–Bob Pulyer, Towson, Md.

Ken replies

Fiberglass-cloth weight for the exterior LP locker is not too crucial. What we're trying to achieve is added strength to the veneers, so you need not be too fussy. With that said, try to achieve a total fiberglass-cloth weight of between 6 and 8 ounces between the two layers of veneer. If you have to do that with two layers of 4-ounce cloth, rather than one of 8-ounce, that's OK. Wetting out with the epoxy is going to add significant strength regardless of whether it's one layer or two. In the most recent Defender catalog, a 3-foot x 3-foot piece of 6-ounce fiberglass cloth was $6.50. Best of luck with your project.

–Ken Textor, Arrowsic, Maine

Chainplate repairs

I have a question about the Tartan 34C feature boat, *Sin Sal*, in the January 2011 issue. Toward the end of the article, there is a paragraph that says, "But the first repair these two took on after purchasing *Sin Sal* was the water intrusion at the chainplates. Max says this is a weak spot on the Tartan 34C." Is it possible to get Max to comment in detail about this repair?

–John T. Strand, St. Paul, Minn.

Max answers

Thanks for asking the question about water intrusion at the chainplates on our boat. You didn't say whether you have a Tartan 34C, but maybe the same problem has occurred on another boat.

In any case, the original design, I believe, had balsa core in the sidedeck right where the chainplates come up from the support knee. Cutting through balsa core is asking for trouble. It must be sealed with an epoxy product or the core will absorb water. Then add the best caulk available.

In our case, our boat's decking around the chainplates was soaked and we later found rotten core. We had the marina cut out the rotten core from the area around the chainplates and re-core it. This was a (maybe) 1- by 2-foot area on each side.

However, the slots where the chainplates come through the decking were sealed with epoxy . . . right up against the plates. There is no room around the plates to insert flexible caulking. I believe the mistake here is that the deck will flex, either when you walk on the deck or while sailing. When you are not able to add caulking between the epoxy and the plates there is a greater potential for water intrusion. We caulk, as best we can, around the chainplates and hope it keeps the water out. As it turns out, we have to keep a close eye on any water leakage and then go through the process of removing the old caulking (cleanly) and then re-caulking . . . maybe every other year. We hope the core is intact and dry!

continued on page 74

With the editors heading to Portland, Maine, for the Maine Boatbuilders Show in mid-March, our attention has been drawn to this foggy image of the sentinel marker and its helper osprey at the entrance to Townsend Gut off the coast of Maine. Bill Bowman sent this photo of the watchkeepers. Send a high-res photo of your favorite aid to navigation and, if we print it, we'll send you a Good Old Boat cap or T-shirt.

C&C 35 Mk II

A true cruiser/racer, with emphasis on the latter

by Allen Penticoff

Skylark already had a long Great Lakes racing career when Al and Lorelei Goodman of Beloit, Wisconsin, acquired the 1974 C&C 35 Mk II in 1998. Her blue topsides were attractive and the long tapering ends appealing. As they say, "If it looks right, it'll sail right." And *Skylark* looked right.

Skylark is based in Racine, Wisconsin, on Lake Michigan, where Al and Lorelei use her as intended — a cruiser/racer. During much of the short Lake Michigan sailing season they take *Skylark* out for local daysails and the occasional one- or two-week harbor-hopping cruise along the lake's sandy shoreline.

Three times a season, Al and crew let *Skylark* stretch her racing legs by participating in some of the longer Lake Michigan sailing events. The Hook is a 190-nautical-mile race sponsored by the Racine Yacht Club that departs Racine and hooks around the end of Wisconsin's Door County peninsula to finish at Marinette, Michigan. The Queen's Cup, run by the South Shore Yacht Club of Milwaukee, runs roughly 70 miles across Lake Michigan from Milwaukee to one of the western Michigan harbors. The Double Hander runs from Chicago to Port Washington, Wisconsin.

As Great Lakes sailors will tell you, conditions can be easy or tough, depending on which way the wind blows, and those conditions may change several times in the course of one passage. The C&C 35 is well suited for Great Lakes and saltwater sailing.

This Canadian toughness is genetic. The evolution of the C&C 35 began when George Hinterhoeller commissioned the design team of George Cuthbertson and George Cassian to pen the Invader 35, of which 24 were built. He also built the C&C-designed Redwing 30 and 35 just before partnering in 1969 with Bruckmann Manufacturing, Belleville Marine, and Cuthbertson and Cassian to form C&C Yachts. Following the creation of C&C Yachts, the Redwing name stuck with the 30-footer, but the 35 lost its name and was simply known as the "35" and, later, the 35 Mk I.

The principals of the new company guessed correctly that focusing exclusively on racing boats would put it in a difficult and limited market. Thus, the C&C 35 became the first of many boats the industry would call cruiser/racers, with powerful rigs, quick handling, and good boat speed, but fitted out for cruising comfort. Their boats also have the distinction of being among the first to use balsa coring in the hull and deck to save weight while providing structural stiffness. C&C Yachts quickly sold all they could build.

The C&C 35 production run totaled 351 deliveries of both models: the Mk I (1969 to 1973) and Mk II (1973 to

Facing page: *Skylark*, a C&C 35 Mk II sailed by Al and Lorelei Goodman out of Racine, Wisconsin, shows off the design's perfectly proportioned sheer, freeboard, and bow and stern overhangs.

1975). In addition, 15 Mk IIs were built by Anesty Yachts in Poole, England.

A new design, the C&C 35 Mk III was produced from 1983 to 1987 and the cruising C&C Landfall 35 from 1981 to 1985.

George Hinterhoeller left the group in 1975 to again form his own company. C&C Yachts continued as a respected and profitable builder until a takeover in 1982 and the economic uncertainties of the 1980s led to receivership in 1986. In 1998, Fairport Marine Company, which already owned Tartan, bought the brand name and currently has four Tim Jacket designs in production.

Design

The Mk II is a development of the Mk I and therefore only slightly influenced by the IOR (International Offshore Rule) that was introduced in 1970. The Mk I's scimitar-shaped rudder was replaced with a more vertical semi-balanced spade rudder and a bustle was added forward of the rudder. The Mk II has a taller rig and more ballast than the Mk I. It also has higher freeboard and, as a result, greater length on deck (35 feet 6 inches versus 34 feet 7 inches) and increased cabin volume.

In theory, the Mk II should be faster, but real-world results have shown the Mk I does quite well against its younger sibling. The Mk I has a shorter waterline but also is quite a bit lighter; their displacement/length ratios are nearly identical: 226 vs. 223. But there's a big difference in sail area/displacement ratios: a generous 19 for the Mk I against 17.5 for the Mk II.

Both models feature beautiful, sweeping sheerlines, raked bows, and reverse transoms at the same angle as the backstay, an effect that is pleasing to the eye while it maximizes the load-handling ability of the backstay chainplate.

Construction

Being of early fiberglass construction, the C&C 35 Mk II was built with solid hand-laid mat and woven roving. The bulkheads are marine plywood, and are tabbed to the hull but not to the deck because of the fiberglass overhead liner. The deck is laid up with mat and roving and has a balsa core.

The flat edge of the deck lands on top of an inward-turning hull flange, with a butyl sealant between, and the joint is bolted on 4-inch centers through the toerail. The foundation for the furniture is a molded fiberglass liner and the surface of the overhead liner is textured to look like vinyl.

The keel is an external lead casting secured with stainless-steel bolts.

Deck

At the bow is a sturdy stemhead fitting of cast aluminum. There's no anchor locker, but a hawsepipe allows the rode to be stowed in the forepeak. There are four substantial cleats and double lifelines with stainless-steel bow and stern pulpits. The cream-colored deck is easy on the eye while the non-skid that's

As with most C&C designs, the deck of the 35 Mk II is nicely sculpted, at left. Note the two Dorade vents and two hatches for light and ventilation. During his test sail, Allen found the small seats in the cockpit corners to be of limited value when steering, below left. Also, the rudder head is right where the helmsman stands, but is accessible for fitting the emergency tiller. *Skylark*'s companionway has a single acrylic washboard and a sea hood with an instrument pod, below right. Halyards are led aft through clutches to self-tailing winches.

The saloon layout is straightforward with a U-shaped, convertible dinette to port and a settee to starboard, at left. The head of the quarter berth is the seat for the compact nav station, at right. The V-berth measures 80 inches by 70 inches, below. This view, looking aft from the V-berth into the saloon, shows the stowage areas and counter surfaces in the forward cabin.

molded into all the working surfaces is aggressive enough for wet sailing work. Slotted aluminum toerails (developed by C&C and adopted by others in the industry) provide sturdy attachment points for running rigging blocks in addition to being a substantial component of the hull-to-deck joint. Teak handholds run along the rounded cabin trunk on both sides. Ventilation and light enter the cabin from a large forward hatch above the forward cabin and another smaller hatch over the saloon. Two Dorade vents are mounted forward of the mast.

The companionway is on centerline. The smoked translucent hatch slides into a sea hood that has an instrument pod mounted on its aft end. On *Skylark*, a smoked acrylic washboard closes the companionway entrance above the seat-level bridge deck. There is enough teak on deck to please the eye without it being a chore to maintain.

The 8-foot long cockpit is roomy and fairly comfortable. It has small seats in the aft corners but no seat behind the helm. Both cockpit seats open to storage lockers below, allowing access to the engine via inner panels. However, Al says the best way to access the Atomic 4 is through the panel behind the companionway ladder.

The deep cockpit well has four scuppers; the starboard and port pairs are connected to single hoses and through-hulls. To use the swim ladder, it's necessary to climb over the stern pulpit.

I was surprised to see a white steel cylinder in the port compartment. Al explained this is the CNG canister for the stove (being lighter than air, CNG is not subject to the same ventilation requirements as LPG).

Rig

You can tell you're on a racing boat when it takes more than one hand to count the winches. *Skylark* has eight Barient self-tailers, four on the cockpit coaming, two astride the companionway, and two forward of the mast. The two forward winches serve the spinnaker-pole topping lift and a spare halyard. Otherwise, all of *Skylark*'s halyards are led aft to the cockpit through rope clutches. The mainsheet is shackled to a traveler mounted on the bridge deck, making for easy sail adjustments.

Skylark has a keel-stepped, single-spreader mast with double lower shrouds and solid rod rigging. A substantial hydraulic backstay tensioner is ready to take the sag out of the forestay and flatten the mainsail as needed. The 150 percent genoa is on a furler. *Skylark* has a rigid Garhauer boom vang that eliminates the need for a topping lift.

Accommodations

Heading below, the first impression is of a lot of teak. The furniture is nicely finished in teak-veneer panels and solid teak. A teak-and-holly laminate (veneer on plywood) sole runs the full length to the forward cabin and over a shallow bilge.

The layout can be described equally as classic or conventional, with a U-shaped galley and U-shaped convertible dinette to port, a nav station at the head of the starboard quarter berth, and a long settee forward of it. Outboard of each seating area are closed bookcases with access to the hull-to-deck joint. The upholstery, a bright red, white, and blue plaid fabric, is original and in excellent condition.

Forward of the saloon to port is the head, with standard equipment but no shower. Opposite is a wet or hanging

locker. The V-berth is 80 inches wide by 70 inches long. Cabinets with drawers are fitted on both sides at the head of the berth. A folding door closes off the cabin for privacy.

Cabin ventilation is provided mostly by the overhead hatches and Dorade vents. Two long fixed portlights on each side of the saloon let in light. An opening port is fitted in the head and a fixed port above the wet locker. Standard lighting in the saloon is four incandescent lights, to which Al has added some fluorescent lighting. The main bulkhead provides a nice spot for the Goodmans' small flat-screen television.

In the galley, the refrigerated icebox forms the aft arm of the U while the sink and a deep storage area occupy the forward arm, with a Regal 2 four-burner CNG stove between them. There are plenty of cupboards and storage pockets for galley necessities. *Skylark* uses only a manual pump for the fresh water.

Teak grabrails on the overhead make moving around relatively easy while under way.

Without an anchor locker or lazarette, I was not completely surprised to find *Skylark*'s Danforth anchor hiding under the dropped saloon table. The Goodmans use the saloon double as their berth and don't use the table much, so it is the preferred place for the anchor. The shorepower cable is kept there as well.

Under way

We took off from Racine on a bright September morning heading south along the low Wisconsin shoreline. With the wind from the west at 10 miles per hour, we didn't encounter any significant waves. Al says *Skylark* handles Lake Michigan's larger swells and chop with aplomb with little tendency to hobbyhorse. The boat tacked reasonably quickly for a yacht of its size; the fin keel and spade rudder help it come about without hesitation. The steering system has good feedback and there is little weather helm. *Skylark* tracks straight ahead as long as her sails are properly trimmed.

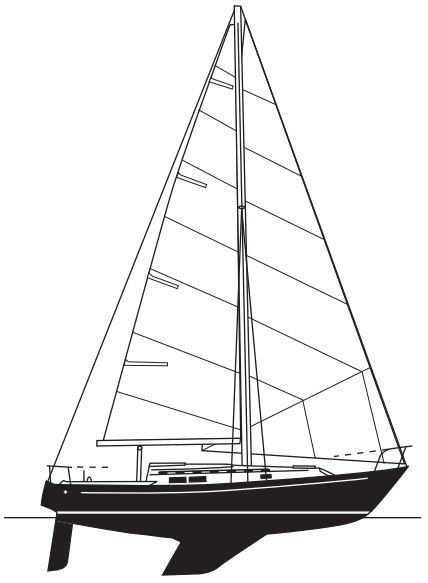
With light wind and the genoa fully unfurled, *Skylark* heeled to 20 degrees and was able to pinch up to 40 degrees apparent wind. Like most boats under genoa, she was in the groove at 60 degrees apparent, where we saw 6.3 knots. Al reports seeing almost 9 knots while surfing and regularly makes 8 knots with the spinnaker pulling. He says he rarely reefs the mainsail below 20 knots, and then only the first reef, never the second reef.

Skylark's PHRF is 126 seconds per mile, plus 3 with the roller furling factored in. For comparison, a Catalina 36 has a stodgy PHRF of 141 and a J/35 a quick 72.

When hoisting the mainsail, I found the sail's standard slug-slides a bit recalcitrant, making a good case for an external T track or, better yet, bat cars.

I found the backstay impinged on the helmsman's position . . . not to mention having to dance around the rudder head protruding from the cockpit sole just aft of the wheel. The small seats in the aft corners are not particularly comfortable when steering under sail. Perhaps a taller person might find the stretch to the longer seats to his comfort. Personally, I like to sit to leeward while at the helm of a wheel-steered boat because it's a nice, comfy, secure spot from which to keep an eye on the jib and to see forward. Because of the narrow stern, sitting on the cockpit coaming worked best for me. I would consider bridging the gap between the small stern seats and the main cockpit seats with hinged teak slats to create a comfortable place to sit while steering.

The engine controls and gauges are readily at hand as are the two self-tailing winches for the jibsheets. The mainsheet is controlled from farther forward, necessitating crew action or leaving the helm. The instrument pod on the sea hood is a nice feature for heads-up monitoring of performance under sail.



C&C 35 Mk II

Designer: C&C Design Group
Builder: C&C Yachts
LOA: 35 feet 6 inches
LWL: 30 feet 3 inches
Beam: 10 feet 6¼ inches
Draft: 5 feet 6 inches
Displacement: 13,800 pounds
Ballast: 5,620 pounds
Sail area: 629 square feet
Disp./LWL: 223
Sail area/Disp. Ratio: 17.5
Water: 40 gallons
Fuel: 20 gallons

Conclusion

The standard engine was the Atomic 4. Some boats were equipped with either Westerbeke or Universal diesel engines and may command a somewhat higher price. Prices for the few C&C 35 Mk IIs listed as of this writing ranged from $17,000 to $33,500. The older Mk I models command nearly the same prices.

The C&C 35 Mk II is a well-built boat but it is almost four decades old. Many problems can arise from that long a life on the water. Since the deck is balsa-cored, a complete sounding of the deck would be prudent to discover any water damage or voids in the fiberglass sandwich. Likewise, leaks may be present along the hull-to-deck joint and cabin windows, and these can be difficult to trace to the source. Boats that have been raced hard should be carefully checked for broken tabbing between the bulkheads and the hull. Some boats were apparently built with mild-steel washers on the stainless-steel keel bolts; a quick inspection will confirm whether they have been replaced with proper washers or not.

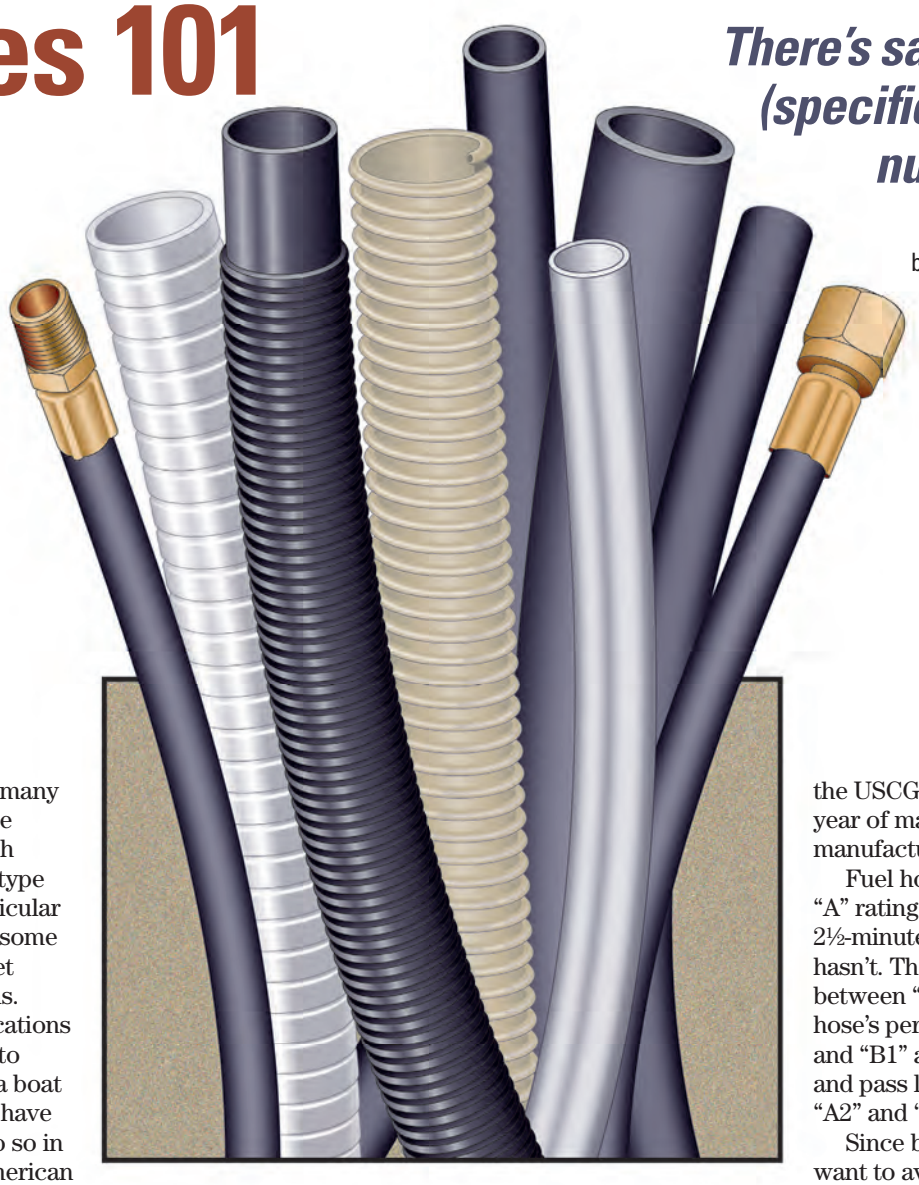
Despite the brief list of shortcomings, the C&C 35 Mk II is a great boat that should sail well for many more years. *Skylark* certainly carries her years quite well.

Allen Penticoff is a freelance writer, sailor, and longtime aviator. He has trailersailed on every Great Lake and on many inland waters and has had keelboat adventures on fresh and salt water. He presently owns three sailboats, an American 14.5, a MacGregor 26D, and a 1955 Beister 42-foot steel cutter that he's restoring.

Hoses 101

There's safety in (specification) numbers

by Don Launer



Hoses are used in many places aboard the typical sailboat. Each hose should be of a type designed for its particular application and, for some uses, must even meet federal specifications. Even hoses in applications that are *not* subject to regulation can sink a boat if they fail, so if you have to replace a hose, do so in accordance with American Boat and Yacht Council (ABYC) recommendations.

In the U.S., hose sizes are usually specified in increments of ⅛ inch and almost always indicate inside diameter. In most of the rest of the world, sizes are metric.

Fuel

From a safety standpoint, probably the most important hoses on board are those that go from the fuel tank(s) to the engine. Originally, federal law required these hoses to be either U.S. Coast Guard (USCG) Type A1 or, under special circumstances, USCG Type B1. From the fuel inlet on a gasoline engine (usually at the fuel pump) to the carburetor, the hose must be either USCG Type A1 or USCG Type A2.

The Environmental Protection Agency (EPA) has added a requirement that, in most cases, the hose must also meet evaporative emission standards and be labeled USCG Type A1-15, A2-15, B1-15, or B2-15. This same type of hose must be used for fill and vent hoses to the fuel tank. In the U.S., hoses must be lettered in English, in block letters, showing the USCG type of hose, the year of manufacture, and the manufacturer's name.

Fuel hose with an "A" rating has passed a 2½-minute fire test; "B" hasn't. The difference between "1" and "2" is the hose's permeability. "A1" and "B1" are less permeable and pass less fuel vapor than "A2" and "B2."

Since boat manufacturers want to avoid this numbers game and don't want to stock a large variety of hose, most use Type A1 everywhere. This is a plus.

Propane stove and heater

Liquefied petroleum gas (LPG), or propane, is the most dangerous fuel that can be used for galley stoves and cabin heaters. It's also the most common. The line that runs from the LPG tank to the stove or heater can be either copper tubing or flexible hose. If the galley stove is gimbaled, then flexible hose must be used. Although copper tubing might seem safer, it can suffer from stress fatigue and corrosion. Connections for copper tubing should be "long-nut" flare fittings because "short-nut" fittings are more prone to fatigue failure due to vibration. When copper tubing is used, it should be Grade K or L and conform to American Society for Testing and Materials (ASTM) B88-75A specifications for seamless copper tubing.

Hose in your propane system should be specifically approved for LPG in compliance with Underwriters Laboratories standard "UL 21 LP-Gas Hose." LPG will rapidly

LAYOUT AND ILLUSTRATIONS BY TED TOLLEFSON

break down other hoses chemically, resulting in leaks and disintegration. Flexible hose must have permanently attached end connectors, such as swaged fittings. Hose clamps are unacceptable. LPG equipment suppliers sell hose in many lengths with this type of fitting installed by the manufacturer and tested under pressure. Attaching end fittings to an LPG hose is not a do-it-yourself project.

LPG hose is usually made from high-pressure thermoplastic and some varieties have a copper lining.

Wet exhaust

Hose is used in a water-cooled exhaust system in the section after the engine's exhaust riser where cooling water from the engine is injected into the exhaust. To comply with ABYC standards, this hose should have the label "Marine Exhaust Hose" along with either Society of Automotive Engineers "SAE 12006 R1" or "SAE 12006 R2." R1 hose has no spiral-wire reinforcement and is subject to sagging or kinking. R2 hose has spiral-wire reinforcement that allows it to be bent without kinking.

Engine raw-water intake and head intake

Hose for the engine's raw-water intake as well as for the head inlet should be marine-grade rubber with a minimum of two-ply and spiral reinforcement to prevent kinking or collapse. Auto heater hose is generally thin-walled and not an acceptable replacement. Since these hoses are below the waterline in your boat, you should not skimp on quality. As with all critical hoses, they should be double-reverse clamped, that is, with two hose clamps arranged so the screws are 180 degrees apart and facing in opposite directions. The clamps should be all-stainless-steel.

Cockpit drains

A portion of the hose in most cockpit drains is below the waterline, making flooding possible if a hose ruptures. For these hoses, follow the same guidelines you would for any other hose used below the waterline and inspect them regularly.

Potable water

Potable water hose must be approved by the Food and Drug Administration (FDA) for drinking water. If a pressurized-water system is installed, the hose must be able to withstand the pressure. The hose for cold-water lines is usually nylon-reinforced PVC, while that for hot-water lines is usually FDA-approved reinforced rubber hose.

The quality and pressure rating of freshwater hoses is especially important if a boat is connected to dockside water, even when a pressure-reduction valve is incorporated in the system. A burst hose can sink a boat hooked up to pressurized dockside water and left unattended. Dockside water should never be left connected to an unattended boat.

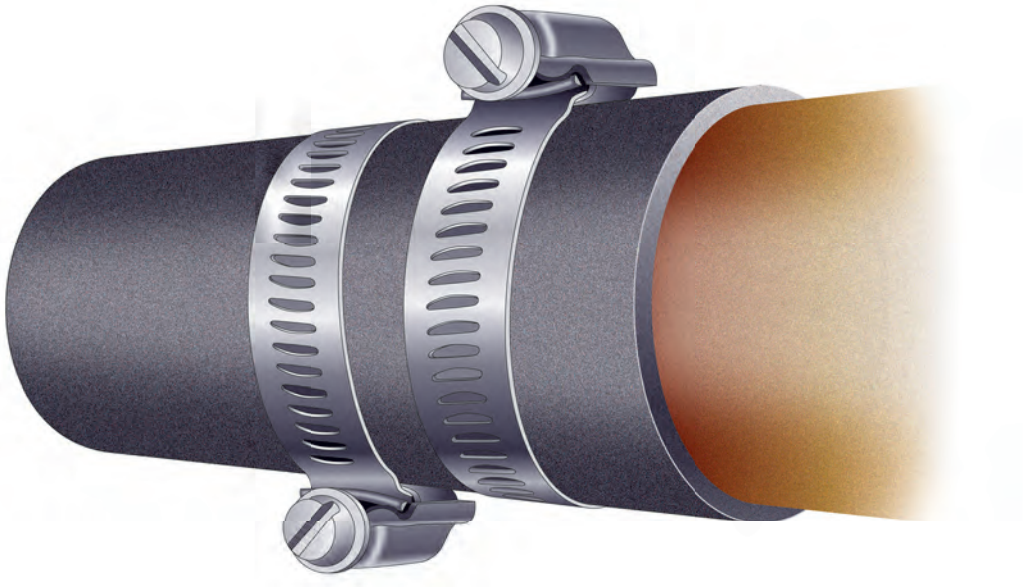
Sanitation hose

Sanitation hose should be so labeled. Understandably, these hoses are constructed to have low permeability to odors. A hose's permeability, however, can change with time, particularly when chemicals, such as anti-freeze or alcohol, are pumped through it annually at winter-layup time.

Quality is key

When replacing hoses it's imperative to use the correct type of hose. This is no place to skimp on quality, since the proper hose and the quality of that hose is what stands between you and a fire, explosion, or sinking.

Don Launer, a Good Old Boat *contributing editor, built his two-masted schooner,* Delphinus, *from a bare hull and has held a USCG captain's license for more than 36 years. He has written five books, including* The Galley: How Things Work *and* Navigation Through the Ages, *and frequently gives talks on the history of navigation.*

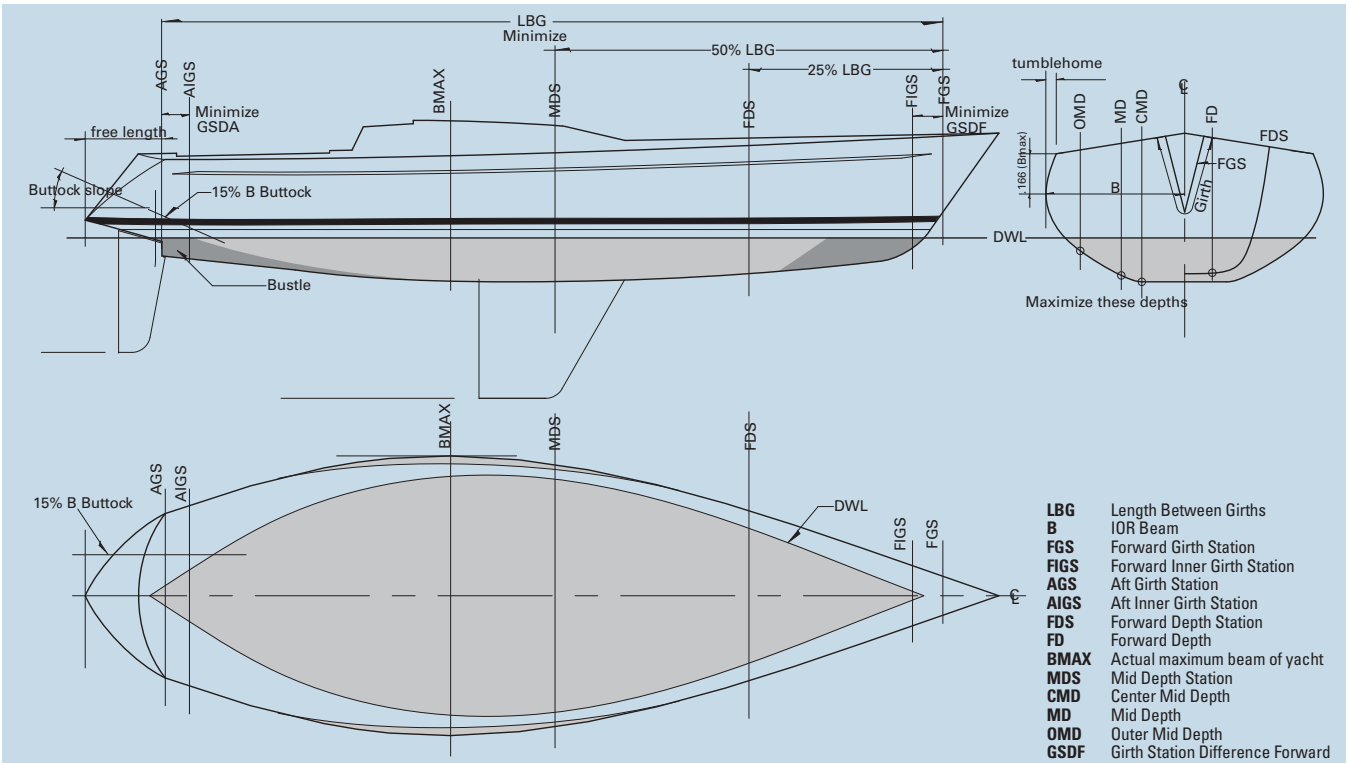


Double-reverse hose clamps add extra security to below-the-waterline connections.

Idiosyncracies of the IOR

How rating-rule number crunchers shaped sailboats

by Robert Perry



Measurement points on a typical 41-foot IOR hull circa 1974

I have been looking forward to writing this. If your boat was designed between 1970 and 1985 it probably shows the effect of the International Offshore Rule (IOR). Even if your boat was never intended as a "race" boat, the effects of the rule probably show. What is current on the race-course usually creeps into the mom and pop boats. Kind of like a rear-deck spoiler on a Toyota. For this reason, it might be of interest for you to understand how the IOR worked and why it produced the hull shapes and rigs we have come to recognize as IOR types.

A lot of good old boats show IOR earmarks that come from this era and, in almost all cases, they make fine family cruising boats. Some of the more hardcore IOR boats can be bought at a real bargain and they adapt well to cruising due to their well-laid-out and practical, if Spartan, interiors. If your boat was designed by Gary Mull, Dick Carter, Alan Andrews, Ron Holland, Doug Peterson, Nelson/Marek, Brit Chance, German Frers, or S&S, to name only a few American designers who worked with the IOR, then it's safe to say it owes at least some of its shape to the IOR.

With the CCA producing some very rule-specific designs in the U.S., and England's Royal Ocean Racing Club (RORC) starting to produce its own rule-loophole-exploiting freaks, the handwriting was on the wall. Both rules needed major revisions. At the same time, international competition between offshore yachts was a problem because a CCA boat was not competitive racing under the RORC and vice versa. This was mainly due to the way each rule measured length and sail area.

This will be a demanding read but I'll do my best so that we both can understand it.

On the surface, the IOR looks far more complicated than the old CCA rule. I was going to use the Mark III version from 1985 for this article as I have that version of the rule in the office. But the more I wrote using the 1985 formulas, the more I was convinced that you, dear reader, would quickly be lost. I was getting lost. The IOR went through major changes during its lifetime and by 1985, in an effort to plug all the loopholes, had become hopelessly complex. It is no accident that the IOR came along at a time when computers were first being used in design offices. Chuck Paine, while working for the Peace Corps at the University of Tehran, wrote the version of the IOR program we used at Dick Carter's. "Hey Mohammed, check *this* out!"

The IOR started as a relatively simple rule, taking the things that make a boat fast — length and sail area — and dividing them by the things that make the boat slow — displacement and beam. So, as in the CCA rule, length, sail area,

displacement, and beam are the primary elements to the rule. The bigger the slow numbers, beam and displacement, for a given length and sail area, the lower the rating. It's that simple. But rather than bury us in a world of abstruse formulas measuring, in some cases, minutia of design with multiple correction factors, I am going to take a bold step and, by writing my own ultra-simplified version of the IOR, try to convey the intent of the rule.

R = L+RSA(CGF)(EPF)/(B + DSPL)

The following definitions from the rule might help you understand what follows.

L (Length) = LBG + FOC + AOC
DB (Base Draft) = .146(L) + 2.00 ft
DSPL (Displacement) = L(B)(MDIA)(32)

All about L

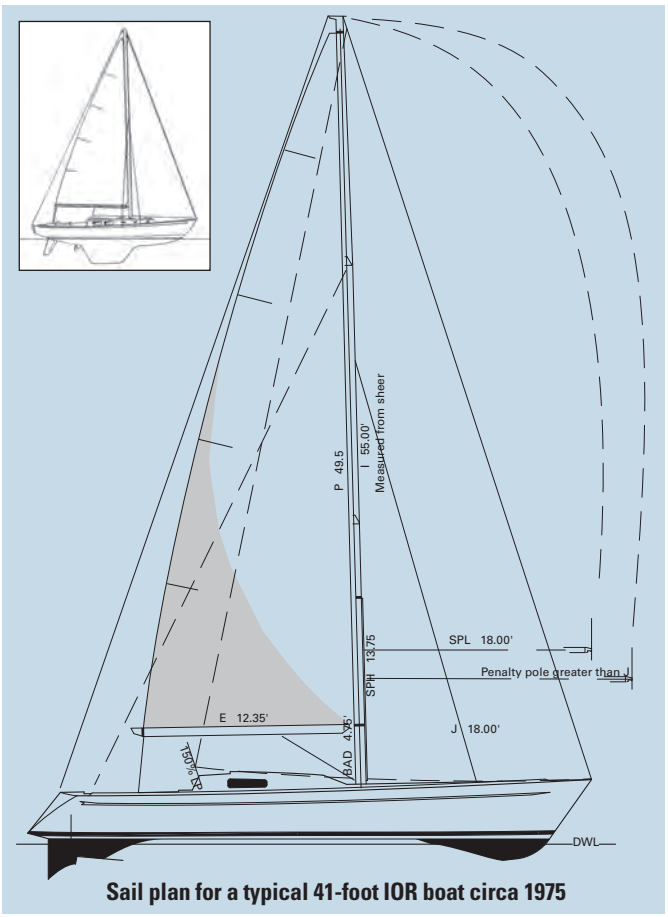
It was how length, or L, was determined that got complex, and this is really the heart and soul of the IOR. To determine L, the rule used pairs of girth measurements at each end of the boat: Forward Girth Station (FGS), Forward Inner Girth Station (FIGS), Aft Girth Station (AGS) and Aft Inner Girth Station (AIGS).

The girths were functions of the rated beam, B. FGS was located where the girth length was .5B and FIGS was located where the girth length was .75B. The farther apart the girths in the ends, the fuller the ends of the boat appeared to the rule, indicating a longer sailing length. To reduce L, the distance LBG between FGS and AGS had to be minimized by moving the girths inward. Hull length beyond the girth stations did not enter into the rule. This is why you see some IOR boats with really long stern counters. Length aft of the AGS was not counted.

In the stern, Girth Station Difference Aft (GSDA), the distance between AGS and AIGS, needed to be minimized to make the rule think the boat was coming to an end quickly. This is why you see so much distortion in the sterns of IOR boats. If the two aft girth stations were spread apart, the rule thought the boat was "longer" and L would be increased. Designers placed the AIGS where the girth would include the skeg area forward of the rudder and used a skeg of precise dimensions to increase the girth at this location. You can easily see the location of the AGS on most IOR boats. It's almost always right at the rudder stock where the bustle is truncated to reduce the girth. Usually, this girth is also at the outboard corner of the transom.

One buttock was taken through each of the aft girth stations at 15% of B from the centerline. The slope of that buttock between Buttock Height Aft (BHA) and Buttock Height Aft Inner (BHAI) was used to indicate the slope of the counter or run. The steeper the buttock slope, the more was deducted from LBG. When all these elements are combined, you get, in many cases, a distinct dimple at the aft girth stations. Even today it looks weird, unnatural, and very "unfast." This area was devilishly difficult for a designer to draw and control. There was none better at it than Yves-Marie Tanton. I learned to do it by watching Yves-Marie.

Bruce Farr and a handful of other designers from New Zealand designed light IOR boats with sterns too wide for the girth stations to fit within the rule's parameters. But the penalty these boats took with their powerful broad sterns was more than compensated for by the addition in sailing length and the increase in sailing righting moment. These boats were competitive upwind with their fractional rigs and they were much faster off the wind than the narrow-sterned, heavy, older IOR types. The era of the ultra-pinched stern would soon come to a very welcome end.



Sail plan for a typical 41-foot IOR boat circa 1975

The IOR sail plan was tall and skinny compared with that of the Cal 40 (inset), which was designed during the heyday of the CCA rule.

Implications of beam

Rated Beam (B) was very important to the IOR because so many other measurements were functions of B. B was measured at the Maximum Beam station (BMAX) but at a point below the sheer by the amount BMAX divided by 6. This is why you see so many old IOR boats with tumblehome. The apex of the tumblehome is right at the B location; above it, the hull was tucked inward to reduce the beam at the deck. For a few years, this was thought

to be the shape of speed. Doug Peterson changed that with his One Tonner, *Ganbare*. He eliminated the tumblehome and just came up pretty straight from the B point to the deck. This allowed crew weight to be positioned farther outboard for hiking. Tumblehome quickly disappeared from the IOR hull.

Displacement (DSPL) was calculated by measuring depths of the hull at a Forward Depth Station (FDS) and a Mid Depth Station (MDS). The forward depth (FD) was measured forward at a point 10% of B off centerline. This led to designers squaring off the forefoot, producing flat bottoms forward. At MDS, three depths were measured at various points taken at functions of B. If you look at an IOR midsection you can see the shape very distinctly turning on those depth points. If you drew a shape that ignored the depth points, you would have a heavier boat than the rule would give you credit for. The trick was to try to go from one point to the next. We called this "connect the dots" designing. When it was done right, the boat would measure heavier than it actually was. While you wanted a boat that measured heavy, you did not want a heavy boat. This is why so many IOR boats have absolutely flat bottoms. Once you hit the farthest inboard depth point, Center Mid Depth (CMD), the hull was flattened off. The shape was very interesting but I can't say it was attractive, and it only made sense in the context of the IOR. Using these depth measurements, the IOR came up with a DSPL that was intended to represent the boat's displacement.

This Swan from about 1980 shows the effect of the IOR depth measurements, above. The hull turns sharply at the CMD point and the bottom is flat. IOR sterns were often pinched right at the rudder, below.

Inclined toward tenderness

There was always controversy about the IOR Center of Gravity Factor (CGF). The boat was heeled at the dock and the data from inclining was used to determine a Righting Moment (RM) at one degree of heel. This RM was put into a formula to determine CGF. Up to a point, a low RM allowed you to take the minimum CGF of .968. But you did not want to go below that point. Since CGF was a direct multiplier of L, it was important to take the maximum allowance. This made for initially tender boats. Designers often used internal ballast to raise the VCG and reduce initial stability. Doug Peterson actually had a pile of lead bolted to the deck of *Ganbare* to raise the VCG.

The initial reason for the CGF was to access scantlings and handicap the boats that were lightly built with a lot of ballast. The rule wanted to promote strong boats and penalize flimsy boats. But it didn't end up working that way. The boats were still relatively lightly built and the ballast just moved up to reduce the RM.

Draft (DM) was measured to the bottom of the keel and compared to a Base Draft (DB) calculated as .146 times L plus 2 feet. So for a boat with a 36-foot L, your DB would be 7.25 feet. If your actual draft exceeded this, you would pay a punitive draft penalty. Early IOR boats almost always had DB for draft, but as time went on, taking the draft penalty became common.

You could do a centerboard or a daggerboard. Bruce King did two very successful designs with twin asymmetrical daggerboards and Bruce Farr did several successful single-daggerboard boats. But centerboards and daggerboards qualified as "movable appendages" and were quite heavily penalized with a Movable Appendage Factor (MAF).

The drag of the propeller installation also figured into the rating with the Engine Propeller Factor (EPF). Heavy engine weight (EW) was beneficial and it was advantageous to have your engine as far away from the boat's midpoint as possible. We even saw IOR boats with engines in the bow, under V-berths, to maximize the Engine Weight Distance (EWD). Whether your prop was on a strut with an exposed shaft or you had a saildrive also entered into this part of the rule, as did the type of prop (folding, feathering, or fixed), the diameter of the prop, and the depth of the prop. Most boats, in order to get the maximum allowance of the EPF, carried folding props as low as possible. At Dick Carter's office, we would bury a hydraulic motor in the aft end of the keel and come out with a straight shaft to get the prop as low as possible and in the "shadow" of the keel's disturbance.

There is little question, especially toward the end of the IOR, that the hull measurements were complex. What started as a fairly simple rule became a monster. The rule was changed so

KEVEN PIPER

frequently to plug the loopholes that IOR boats were almost throwaways after one season of racing. This made for a very expensive sport if you wanted to stay competitive at the top level. It was not unheard of for a boat to be halfway through construction only to find that the rule had been changed, eliminating the advantages designed into the new boat.

Tall skinny mainsails

The sail-area portion of the IOR is quite simple if you ignore all the little "but ifs." It was taken from the CCA rule and produced a Rated Sail Area Total (RSAT). The dimensions of the rig now were the familiar I, J, E, and P. Genoa overlap was LP. To keep the rigs fairly conventional, the IOR established a minimum mainsail area early on and charged you for a minimum mainsail whether you had it or not. Black bands were put on the mast and the boom to indicate the head, clew, and tack positions. But in the early IOR days, the designers almost always took the minimum mainsail area and went with large foretriangles and big overlapping genoas. In contrast to the CCA, IOR genoas usually had an LP around 150% of J. No sail-area credit was given if you went below 150% LP.

The tall skinny early IOR main, with severe batten length penalties that restricted roach, was often called a "ribbon main" and was not very effective upwind or down. Rule limits on batten length and mainsail girths combined with limitations in sailcloth technology produced a mainsail that was hard to shape to a wide variety of conditions. The answer to varying the power of the rig lay in a large inventory of headsails. The far simpler fractional rig trend with smaller foretriangles and larger mainsails, started by the Kiwi designers, combined with rule changes in mainsail measurement, soon became the dominant geometry for the late IOR-era boats and did away with huge headsail inventories.

LARRY MORAN

In a typical scene from 1983, *Razzle Dazzle* is flying a spinnaker and a blooper. Note the big hole in the water amidships . . . into which the boat can easily roll.

Rule defeaters

If you want to see what happens if you take advantage of all the IOR sail-area loopholes, do some research on *Cascade*, designed by Jerry Milgram. *Cascade* was an extremely homely looking "ketch" with no foretriangle. *Cascade* carried a wide variety of staysails and spinnakers off the tall mizzen. *Cascade* had 800 square feet of actual sail area but the rule rated it at 300 square feet. *Cascade* was very effective on the racecourse until the rig loopholes were plugged. In *Cascade*'s second season, the rule dictated a minimum foretriangle area so you would pay for headsails even if you did not carry them. Does this sound familiar? Like the Luders-designed *Storm* of the CCA days, *Cascade* had a big hull under what the rule saw as a small rig. But while CCA *Storm* was all headsails with no main, IOR *Cascade* was all main and mizzen with no headsails.

Cascade was a solid punch in the nose to the IOR and the final blow was most probably the Fastnet Race of 1979. In a fleet of 303 yachts, five were lost and 19 were abandoned. Fifteen sailors lost their lives. The finger of blame pointed at the IOR, although none of the studies of the race were specific in their findings against the IOR. The general consensus, right or wrong, was that the IOR was producing boats that were not ocean-worthy. This, plus a series of high-profile "scandals," where owners were found to be playing fast and loose with the measurement procedures, finally did the IOR in. More boats were measured and rated under the IOR than to any other single rule.

The representative IOR boat from the middle of the IOR era was a strange boat compared with boats we see designed today. They were not bad boats but they did have some idiosyncrasies. The pinched ends meant that all the "meat" of the hull was right in the fat middle where the wave trough was at hull speed. This made for a boat that was prone to rolling when sailed dead downwind in a breeze — the boat had to roll significantly to start immersing enough midships volume to dampen the roll. The trick was for the helmsman to always try to keep the IOR boat under the spinnaker to reduce the chance of rounding up or, even worse, rounding down . . . the death roll.

Keep in mind that both the hull shape and the extra-large foretriangle with tiny mainsail contributed to the IOR boat's reputation off the wind. To counter this rolly characteristic, and to gain some additional unmeasured sail area, sailmakers came up with the "blooper." This was essentially a spinnaker flown without a pole and set to leeward of the real spinnaker behind the skinny ribbon main. The area of the blooper balanced, to some degree, the area of the spinnaker and helped keep the boat from rolling. Bloopers were photogenic too.

As the IOR boats transitioned from the racing scene to cruising life, the CGF did not work out so well. Nobody wants a tippy boat and IOR boats were initially tippy. With its high VCG, the IOR type also did not have great ultimate stability. But for the way most of us use our boats, IOR boats are fine stability-wise. They are easy to heel but settle down around 25 degrees when on the wind. Most older IOR boats are quite fast upwind in light to moderate air and they can be beautifully balanced boats on the wind. Many IOR boats have been converted to successful bluewater cruisers.

Congratulations if you made it this far. I hope the piece was easier to read than it was to write. Many thanks to designer Alan Andrews for his help with this piece.

Bob Perry is a contributing editor with Good Old Boat. *He cut his yacht-designer's teeth in the early 1970s while working at Carter Offshore, a hotbed for successful IOR racers.*

Pearson 26

A perky pocket cruiser built in great numbers

by Tom Wells

It's often said that numbers don't lie. Using that adage as a benchmark, the Pearson 26, with more than 700 hulls produced, qualifies as a very successful design. It was therefore no surprise to find three Pearson 26s at the Grand Lake Sailing Club in Oklahoma as Commodore Tom White welcomed us to the club's facilities on the beautiful Grand Lake O' the Cherokees. The lake offers 18 miles of good sailing between the club's marina and the Pensacola Dam at its western end and even more sailing to the east.

Bill Snow, Marshall Orcutt, and Mike McCall own the three Pearson 26s at the club. Unfortunately, none of the owners could be present when the stars and the weather aligned during our visit to provide suitable conditions for the test sail. This was not a problem, however, because GLSC member Roy Goding stepped in to sail Bill Snow's Pearson 26, *Pied Piper*, with the able assistance of club caretaker Tim Chambers. Marshall Orcutt's *Alice O* was made available for interior photography. The club also provided its race committee boat for our use during the photography session.

Design and history

Cousins Clint and Everett Pearson began their business in a small way, at first building dinghies in a garage and eventually forming Pearson Yachts in 1956. They continued building smaller boats, but in 1959 they joined the first wave of fiberglass cruising-boat production when they introduced the 28-foot 6-inch Triton, a Carl Alberg design. Several production cruising boats followed the Triton.

Change came quickly to Pearson Yachts during the 1960s when it was sold to Grumman Allied Aircraft Corporation. In 1964, Bill Shaw, a designer with several years of experience at Sparkman & Stephens, joined the company. In the same year, Clint Pearson left to form Bristol Yachts and when Everett Pearson also parted ways with Grumman two years later, Bill took over the management reins as well.

1n 1970, Pearson Yachts introduced Bill's Pearson 26. Between 1970 and

The Pearson 26, *Pied Piper*, owned by Bill Snow, heels to a fine sailing breeze on Oklahoma's Grand Lake O' the Cherokees.

1982, 1,774 hulls were sold, making it Pearson's most-built model, eclipsing even the popular Pearson 30.

In 1975, Pearson also introduced the Weekender, later called the One Design. It was based on the Pearson 26 but with a longer cockpit and a straight profile in the shortened cabin trunk. More than 300 of these boats were built between 1975 and 1983.

Bill continued designing the bulk of the Pearson offerings through the 1980s and in 1986 he and other investors bought the company from Grumman. The company went into bankruptcy in the early 1990s. Bill Shaw died in 2006.

The centerline motor well makes it easy to operate and turn the outboard, including kicking it up. The offset companionway goes with the dinette arrangement in the interior.

Construction details

The Pearson 26 hull is a sturdy layup of solid fiberglass. The sweptback cast-iron fin keel is joined to the hull with eight bolts and the draft is a modest 4 feet.

The rudder tube is located at the rear of the cockpit sole, just forward of the outboard-motor well. Some boats have had leaks here and their owners have had to repair saturated balsa core. The deep scimitar-shaped rudder provides ample clearance to allow a center-mounted outboard, rather than the offset outboard configuration found on many other small cruisers. Owners have reported rudder-stock problems, and here the Pearson 26 is a bit unusual. Pearson built a solid fiberglass rudder over an aluminum stock riding in a plastic bushing, and wear on the stock is common.

This could be dangerous in a seaway if a worn stock allowed enough movement to fatigue the metal and cause failure and loss of the rudder. Anyone considering a Pearson 26 should be sure to check the rudder stock for wear and also to check the cockpit sole for water intrusion near the rudder tube.

The deck is balsa-cored fiberglass with plywood core in load areas. The hull and deck were joined by through-bolting outward turning flanges on both parts. The joint was finished by covering the flanges and bolts with a sturdy vinyl rubrail and by applying fiberglass mat and resin over the inside of the joint. This produced a relatively trouble-free joint. The outer edge of the deck has a small raised toerail with a short, through-bolted aluminum genoa track.

The interior incorporates a fiberglass hull liner, a fiberglass deck liner, and plywood bulkheads. The liner is cored in areas of the sole where heavy loads are expected. The liner was tabbed to the hull and the bulkheads bolted to the hull liner. After the hull and deck were joined, the bulkheads were fastened to the deck liner. The inboard end of the port bulkhead attaches to a compression post that transmits loads from the deck-stepped mast.

The rig

The mast is an aluminum extrusion supported by a single-spreader rig. The original halyards were external and no mast-mounted halyard winches were fitted as standard equipment. Many owners have run the halyards to the cockpit where they use a coachroof winch for halyard tensioning.

The roomy cockpit, at left, comfortably seats four. Seat lockers and coaming cubbies provide plenty of stowage. The foredeck, at right, has few obstructions while providing the basic necessary hardware: chocks, cleats, and running lights.

The dinette seats two comfortably, at left, but two more can be seated across the aisle on the starboard settee. A small sink above the aft seat is served by a hand pump. There's space in the head for a marine toilet, but no sink, at right. Opposite is a hanging locker. A sliding panel closes off the V-berth. The narrowing of the V-berth forward constricts foot space, below. No access to the forepeak is provided from the deck.

The upper shrouds and single lower shrouds attach to chainplates mounted inboard of the toerail. The rig has a split backstay to clear the centered outboard motor and this allows the easy use of a backstay tension adjuster.

The traveler spans the forward end of the outboard motor well and the mainsheet runs to the aft end of the aluminum boom.

Deck details

For the Pearson 26, Bill Shaw retained the characteristic stepped cabin-trunk profile of the earlier Alberg-designed Pearson models. The mast step is located at the step in the deck, so crew working at the mast need to be mindful of their footing. There are short grabrails on the raised after section of the coach-roof. The forward hatch, positioned over the V-berth, is made of fiberglass with the gelcoat omitted from the center portion to let light into the cabin.

Crew must work around the shrouds when going forward because the chain-plates are in the center of the narrow sidedecks. Even so, access is still better than on some boats of comparable size.

The foredeck is fairly clean. With no hawsepipe or other means to stow an anchor rode belowdecks, an owner wanting to carry and mount a bow anchor must coil and secure the rode on deck. The only items of hardware on the foredeck are chocks to port and starboard, cleats to port and starboard, and a center cleat for belaying the rode.

A stainless-steel bow pulpit and single lifelines, which drop to coaming level at the stern, provide some security. A stern pulpit was optional, but most boats were not equipped with one.

The cockpit seats are 6 feet 6 inches long, providing enough space for crew to stretch out. Sail-locker hatches in both of the seats provide access to a large space below. In early boats, the fuel tank was stored in the sail locker area and both hatches were identical in length. In 1973, Pearson modified the cockpit design to add a dedicated fuel-tank cubby beneath the aft end of the starboard seat. When this was done, the starboard sail-locker hatch was shortened slightly. At the same time, the motor well was enlarged to accommodate larger outboards.

The cockpit well averages approximately 30 inches in width and the tiller extends for most of its length. Crew positioning is important to avoid interference with the helmsman.

Coaming cubbies on both sides provide stowage for winch handles and other items. Lewmar #8 sheet winches mounted on the coamings were standard equipment, though many owners have upgraded to self-tailing winches.

The companionway is offset to starboard because the aisle below is off-center to accommodate the port-side dinette. A low sill at the companionway is not high enough to qualify as a bridge deck. When the boat is in any kind of sea, the lower washboard should be left in place. A track-mounted sliding hatch over the companionway provides access below. There is no sea hood protecting the forward edge of the hatch.

Accommodations

Although the Pearson 26 does not provide standing headroom for the average sailor, the raised aft portion of the cabin trunk does have more than five feet of clearance. The dinette offers fore-and-aft seating for a couple or four very close friends as long as two of them are seated on the starboard settee. The table can be lowered to form a tight double berth. The settee to starboard also serves as a single berth.

Removable lids under the cushions provide access to stowage space beneath the port seats and the starboard settee. Shelves with fiddles are above the seats port and starboard. Near the end of the production run, acrylic sliding doors were added on some boats.

There is a small sink on a counter platform behind the aft table seat, with more stowage available in the counter. Some flat surface space is available on the counter between the sink and the port side of the cabin trunk, but it is not as convenient as normal counter space. On the two boats at GLSC, a hand pump delivers water to the sink, but some owners have installed pressurized

Resources

Pearson Sailboat Owners Association
http://pearson.sailboatowners.com

systems. A 22-gallon water tank beneath the V-berth provides adequate capacity for weekend cruises. A small two-burner alcohol stove can be set on the small navigation table to starboard of the offset companionway.

The cored-fiberglass liner surface and the bilge boards over the access openings form the cabin sole. Many owners have cut and installed all-weather carpeting to dress up the interior.

Large fixed portlights admit ample light but the only source of ventilation is the open companionway hatch. There are no deck vents.

The head is to port between the saloon and V-berth bulkheads. A door at the saloon and a sliding panel at the V-berth can be closed for privacy. A marine toilet and 12-gallon holding tank were standard, but some boats were sold without these features and use a portable toilet instead. There is no vanity sink. Opposite the head is an ample hanging locker.

The V-berth is 6-feet 3-inches long but it narrows to around 18 inches at the forward end. It's adequate for two, provided one person is quite short. Fiddled shelves along both sides provide stowage for personal items. There is a small forepeak for stowage but no easy way to use it for the anchor rode.

The fiberglass hatch over the V-berth can be opened for ventilation and access. Replacing this hatch with a modern one with a Lexan lens might be a desirable upgrade.

Under power

Handling the boat under power is different from steering a boat with an inboard engine. The motor can be pivoted as needed in close quarters, but generally it can be left locked in the for-and-aft position and the rudder used for steering. The small outboard induces little prop walk in reverse and once the boat has steerageway it can be tiller-steered as needed. A small outboard is quite suitable on an inland lake. A larger outboard would be desirable in coastal areas, but some larger outboard engines, like the 4-stroke 9.9-hp models, might not fit the smaller motor well in pre-1973 boats.

The motor can be tilted to raise the lower unit out of the water to reduce drag, but many owners don't bother unless they are racing.

Under sail

We set out for our test sail on a clear summer morning with winds around 10 knots and the temperature already in the high 80s. As the forecast was for 106 degrees that afternoon, a morning sail seemed to be the best course of action. We left the dock, raised sail, and Roy Goding gave me the helm.

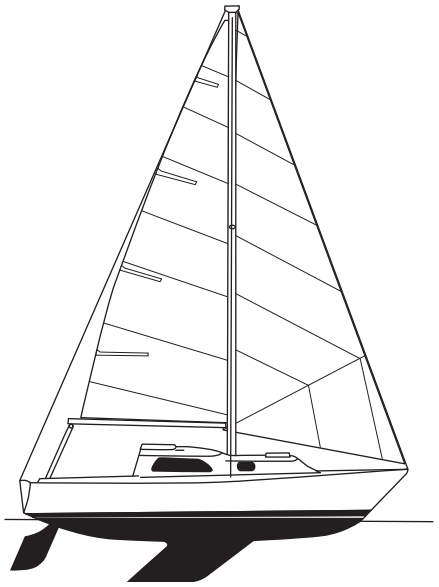
Sailing the Pearson 26 is easy and instinctive. If you've grown accustomed to wheel steering, the first impression is that the tiller takes up a lot of cockpit space, but the solid feel and rudder feedback quickly bring back the joys of sailing a responsive smaller boat. With end-boom sheeting, the mainsheet and jibsheet can be easily trimmed from the helm position. This would be a relatively easy boat to sail singlehanded, provided self-tailing primary winches are installed.

We sailed in 10 to 12 knots of breeze under full genoa and main, and the boat never felt overpowered. As we were going to windward, minor adjustments to the mainsheet and traveler balanced the helm nicely with just a few degrees of weather helm, as is desirable. Tacking was a snap, as the boat pivots quickly on her shallow keel and doesn't lose much in the turn. The boat will sail between 35 and 40 degrees to the apparent wind without losing drive. Above that point she felt a bit pinched, but we were able to regain speed by footing off a bit. Newer sails and some sheeting-angle adjustments might allow the boat to point slightly higher. Some amount of leeway can be expected because of the fairly shallow keel, but it isn't too noticeable on a beat.

Sailing on a beam reach provided good speed and, with the sails properly trimmed, a fingertip on the tiller kept the boat on course. There was just a little chop on the lake, but the occasional big wake from a passing power cruiser provided the opportunity to estimate the motion in a seaway. The boat took these wakes cleanly without pounding or much loss of drive.

The crisp tiller steering, aft-mounted traveler, and easy access to all sail controls make the Pearson 26 a joy to sail.

Owners still race these boats in many areas, and PHRF ratings nationwide are between 210 and 222. The boat rates about the same as the C&C 25 (213) and the older Hunter 25 (235) outboard models, and is still competitive in local fleet racing.



Pearson 26

Designer: Bill Shaw
LOA: 26 feet 2 inches
LWL: 21 feet 8 inches
Beam: 8 feet 8 inches
Draft: 4 feet 0 inches
Displacement: 5,400 pounds
Ballast: 2,200 pounds
Sail area: 321 square feet
Sail area/disp. ratio: 16.7
Disp./LWL ratio: 237
Ballast/disp. ratio: .41

Conclusion

The Pearson 26 is a good value as a pocket cruiser, and its accommodations and seaworthiness make it suitable for weekends and short coastal cruising. It's a solid, durable design, and most of the hulls produced are still sailing. In the fall of 2011, at least nine were on the market in the U.S. and Canada. Asking prices ranged from $8,575 to $2,690 with an average price of approximately $5,700, making it a very affordable entry-level small cruiser. Anyone buying a lower-priced boat should anticipate doing some work to address deferred maintenance issues such as saturated deck core and uncorrected rudder problems, but the work may be well worth the effort.

Tom Wells is a contributing editor with Good Old Boat. *He and his wife, Sandy, own and sail a 1979 Tartan 37,* Higher Porpoise. *They have been sailing together since the 1970s and look forward to cruising upon retirement.*

During the day, the O'Day's main cabin is set up for sailing and sitting, far left, and at night the seatbacks become part of a whole-cabin mattress, near left. The galley slides out when it's time to prepare meals, bottom left, and away at other times, bottom center. Dan's fiddled shelves add to the available stowage areas, bottom right.

From weekender to months-on-ender

Minor modifications add up to a major improvement

by Dan Cripe

In 2004, we sold the 31-foot Bombay Clipper we'd purchased specifically for an extended summer cruise. We intended to leave the sea, content that we had done what we had dreamed of for so many years: spending a full summer on the water on a five-month cruise. On to other adventures. That is the way it worked for a couple of months . . . until we heard that unmistakable siren's call once again.

By the fall of 2005, we were looking around for a new (well, new to us) sailboat. This one would be an interim boat, a weekender, until we could save up for a larger, more comfortable boat.

Southern Idaho is not noted as a hotbed of ocean-going sailboats, or any sailboats for that matter, but we stumbled onto a 1982 O'Day 23. Sitting on her trailer with peeling bottom paint, she wasn't looking at all good, but she seemed to be in good shape otherwise. Her sails were almost new. In fact, the genoa and spinnaker had never been flown. That clinched the deal and we had our interim boat.

Each summer for the next few years we packed her full of stores, pointed her bow north of west and, going to windward at 55 mph, took off toward "Big Water" in the Pacific Northwest for a week or two of cruising. Meanwhile, we were saving all we could toward our next sailboat.

This plan was going fine until the economic downturn came along in 2007. By fall 2009, we decided our interim boat was going to be our cruising boat for the foreseeable future. It was time to make some changes. Redoing the dated (original) interior while creating more storage topped the list. Adding a few other items would make life aboard more comfortable.

Re-engineered cushions

I first pulled out all the old vinyl covering the hull sides and replaced it with layers of insulation and then carpet.



Adding the vanity in the forward cabin, at left, made living aboard easier and hardly affected use of the V-berth, which is too small for two anyway, at center. Behind the new carpeting on the hull sides is a layer of insulation. The rail that supports the bed slats is visible on the settee front, at right. More of Dan's shelves can be seen above the settee back.

When the time came to sew all new cushions and replace the old worn-out foam, the next issue of *Good Old Boat* arrived to show us how to fabricate cushions. While we were at it, we did a little redesigning.

The original interior had fixed back cushions for the settees and a small storage shelf behind each settee. I made up removable cushions that were big enough, when laid down, to fill the space between the two existing settee seats. On the fronts of the fiddles that hold the settee cushions in place I installed rails so boards could be placed athwartships. Laying our new back cushions on these boards made a continuous berth across the beam in the main saloon, a full 8 feet by 6 feet. This was more comfortable by far than the narrow single settee berths. (We use the V-berth for storage; it's too small to sleep two).

On our summer adventure we discovered that by using just one of these back boards/bed boards we had a comfortable seat to use when cooking and doing galley chores; we no longer had to kneel to cook or clean.

The next job was to construct some new shelving, complete with pinrail, to increase storage. When done, our little O'Day looked new. The total cost for this addition came to less than $300.

Ablution solution

Yet there was just one item missing: a vanity. Besides the convenience of being able to stand upright in our Bombay Clipper, we missed her really nice head and vanity arrangement. On the O'Day, we performed our personal-hygiene tasks at the galley sink, but it's a slide-away galley and using it this way for very long becomes inconvenient. It was bearable for shorter cruises, but we were planning for a longer adventure, something more like our five-month cruise of 2004.

When I redid the V-berth cushions, I made four sections rather than just two. This allowed easier access to the storage bins under the V-berth and, with the starboard aft cushion removed, I had room to install a portable vanity. I first considered adding a sink and hand pump, but after contemplating all the plumping associated with this route, we agreed on a portable bowl that we could dump overboard.

In my shop, using some old boxes and the sailorman's secret weapon, duct tape, I quickly constructed a prototype for the new vanity. Keeping the cardboard ends long for scribing on the sections that would touch the hull, off to the boat I went. Using a compass to scribe the cuts and a pair of scissors to cut them, I soon had the prototype fitting perfectly against the outer hull. I could now construct the final product.

I used teak-and-holly plywood along with some mahogany ply, all scrounged out of a dumpster, and added a couple of fiddles from some leftover maple. The only purchased items were the pinrails and hinges. The total cost came to less than $20. If you have to buy the wood, it might run closer to $100.

We really like the sliding doors in the upper section of the vanity. I used ¼-inch teak door-skin material, a section of aluminum track (left over from a past project) as the lower track, and made the upper track from scraps of teak. Behind the doors, I added fiddles to keep items from moving around and to allow a bit of organization. To add a touch of class, the top shelf has a pinrail.

The lower section of the vanity is accessed by a drop-down door. This is where we store the wash bowl (we spent all of 99 cents on a dog's watering bowl we found in a thrift shop). There is more than enough room left nearby for washcloths, soap, and hand towels. The middle section, behind the sliding doors, holds toothbrushes and toothpaste, deodorant, and my shaving kit. The top shelf is a catchall for various items; in other words, we're not yet sure what to put there.

In January of 2010, I was laid off. We suddenly had the whole summer free to go cruising. We launched *Fantasy* in the waters of the Pacific Northwest on May 27 and pulled her out 104 days later. All the work we did over the fall and winter of 2009 — the extra storage, the new cushions, the queen-sized main-saloon berth, and especially the new vanity — made the cruise more enjoyable. From an adequate weekender, we created a comfortable summer cruiser. (Now, if we could only do something about the 4-foot 10-inch headroom . . .)

We had a need and, with a little ingenuity, found a way to fill that need. By scrounging around for material, we spent very little and yet wound up with very usable improvements to our good old boat.

Dan Cripe and his wife of 39 years, Teresa, have owned a series of boats, all named Fantasy, *which they have sailed with their four children at home in Idaho and also on the "big waters" of the Salish Sea. Their current* Fantasy *is an O'Day 23. Dan's "early retirement" from the building industry in 2010 has given him lots of time to devote to sailing and writing.*

Chameleon:

A nesting hard dinghy that's enduring and endearing

by Leslie Linkkila and Philip DiNuovo

Bacio, the authors' modified Chameleon nesting dinghy, fits aboard *Carina* between the mast and the dodger.

Many years before we cast off our docklines, sailed out the Strait of Juan de Fuca, and watched Cape Flattery disappear astern, we debated our choice of cruising equipment. One of our most important decisions was a yacht tender.

Every option had advantages and disadvantages, but our first criterion was that we had to be able to stow it on the deck of our 34-footer where it would not interfere the with safe handling of the boat under sail. For this reason, we did not want to stow a dinghy on the foredeck but, rather, between the mast and dodger.

We had other attributes in mind for our tender. It would have the capacity and stability to carry both of us, and possibly heavy payloads, through choppy anchorages. It would tow easily and move well through the water, even plane, with the smallest possible outboard engine. We would be able to row it effectively, into a stiff wind and up-current, should the outboard fail. It would be stable enough for us to climb into it from the water after swimming or snorkeling. It would be light enough to carry short distances but rugged enough to be dragged up on stony beaches. For long-term service, it would resist degradation in the elements when used every day and would be easy to maintain and repair. As to the benefit of a dinghy with a sailing rig, we had differing opinions.

We briefly considered a roll-up inflatable, but its poor performance when rowed in windy conditions concerned us. Also, better-quality Hypalon inflatable sport boats were expensive and subject to UV degradation. This choice also seemed to mandate the purchase of a large, heavy outboard engine that would dictate carrying significant quantities of gasoline when going offshore. A large outboard would also necessitate some sort of lifting apparatus, a further deterrent.

Next we considered folding-dinghy options (such as the Porta-Bote or the German Banana Boot), but the long dimension when folded would dictate that it be stowed along the lifelines. This would pose a safety hazard in rough seas and create something to trip over when going forward; we discarded this option.

A solution in two parts

About this time (this was 1996), we became aware of nesting dinghies in general and Danny Greene's designs in particular while reading two of Dan Spurr's books: *Upgrading the Cruising Sailboat* and his biographical tale, *Steered by the Falling Stars: A Father's Journey*. A nesting dinghy is made in two or three separate sections that are bolted or clamped together to form the entire boat. For stowing aboard (or for transport), the sections are separated and nested together to take up minimal space.

The nesting hard dinghy seemed to us at the time, and in fact still does, like the perfect solution to the tender dilemma, particularly for smaller-sized cruising yachts. Eventually, we found an address for Danny Greene (a naval architect and nesting dinghy pioneer) and requested plans for Two Bits or For Pete's Sake. We learned these plans were no longer available. His designs had evolved over 20 years into the pram he called Chameleon.

Chameleon is a nesting pram,10-feet 4-inches long when assembled, with a gracefully angled bow transom and hard chines but with a pleasing sheerline.

a tender in two parts

It's designed to be made of marine plywood, fiberglass cloth, and epoxy and has many desirable, and some unique, features: aft buoyancy tanks, a forward storage compartment, removable fore-and-aft oriented seats to allow for adjusting trim under power, and curved mating bulkheads defined by laminated beams. The sections are simply bolted together in three places to form the complete dinghy. Design options include a sliding rowing seat and a sprit-type sailing rig.

To quote the designer: "Over the years, I experimented with . . . {nesting dinghy} dimensions, hull shapes and construction details. I tried boats up to 16 feet in length and with two and three nesting pieces. Some towed beautifully, some sailed very well, some towed well, some were stable, some handled rough weather easily, some were light and compact to stow, and some were very easy to build. None, however, combined these qualities in a way that satisfied me, until Chameleon."

We bought the plans and the optional full-sized patterns for cutting the panels and built our first Chameleon, *Diva*, as a full-sized rowing version. Because it was our first boatbuilding project, and also our first try at stitch-and-glue construction, we worked slowly and methodically for about a year in our unheated garage on nights and weekends. We followed the plans carefully and made no substitutions or changes. We inevitably made mistakes, but soon learned our way with epoxy resins, filleting blends, and fiberglass cloth as *Diva* became a reality.

As promised, she stowed compactly, rowed effortlessly with 7½-foot oars, and towed like a dream. Importantly, when stowed securely behind the mast she did not interfere with sail handling. When assembled and under way, she was solid, and it was impossible to tell that she was joined at the mating bulkheads. In short, we were thrilled with her, except for one problem. When we sold our Hallberg Mistral sloop, *Aria*, and acquired *Carina*, a Mason 33 cutter, we found *Diva*'s nested length was just a trifle too long. It interfered with the use of a reefing winch mounted on the mast beneath the boom.

The full-sized Chameleon was too long to nest behind *Carina*'s mast, so Philip and Leslie modified Danny Greene's plans to make *Bacio*, above, which has the same freeboard and beam but is only 8 feet long. *Bacio* has been used nearly every day for almost eight years and has proved to be a rugged, reliable, and stable tender, below. Plus she's a pretty boat with a graceful sheerline.

Chameleon reduced

To solve that problem, we decided to construct *Bacio*, a shorter version of the Chameleon. (Note: The purchase of Danny Greene's plans allows for construction of *one* dinghy; additional boats require a small royalty payment to the designer.) We did not know it at the time, but others had reduced the size of the Chameleon as we had done . . . with mixed results.

One version we learned about, called the Gecko, was cut down by reducing all Chameleon dimensions proportionally, yielding an 8-foot 6 inch Chameleon. Though seemingly logical and appropriate on paper, the result was a dinghy with unacceptably low freeboard and insufficient clearance for oars when rowing. In the end, after devoting much labor to adding freeboard, the builder was very pleased with the boat.

Our strategy, done solely by instinct, was to maintain the Chameleon's freeboard and beam but to essentially chop it off at both ends to reduce the overall length to an even 8 feet. We hoped this would allow us to retain most of the Chameleon's carrying capacity and stability but make it fit the available space on *Carina* when nested. Concerned about modifiying individual panels, and particularly the size and configuration of the transom, we photocopied Danny's plans so we could make a few small models out of lightweight cardboard and masking tape. Eventually, we became confident enough in our design modifications to cut

plywood. In the end, we preserved the bow dimensions but made the transom slightly bigger than on the original.

Another change we made when constructing *Bacio* was to use 4mm okoume plywood. Okoume plywood is made from the African hardwood *Aucoumea klaineana* and is used in aircraft, kayaks, and acoustic guitars. We used this in place of the specified thicker ¼-inch marine plywood for all the panels with the exception of the bulkheads, bow, and transom. We chose okoume because of its very high strength-to-weight ratio and a desire to reduce weight, though we did so at the expense of rot resistance. Because we used this type of plywood, we sealed every surface of *Bacio* with epoxy and fiberglass, except for the insides of the flotation chambers. Failing to seal the flotation chambers proved to be a bad decision; eventually, water incursion in the chambers allowed fungus to attack the wood.

For inwales and outwales, we chose ash, which is light, knot-free, and strong. We stitched the panels together with monofilament line instead of copper wire to save time. We cut curved knees for aesthetic reasons and through-bolted pad-eyes at all four corners of both halves (eight in total) to facilitate lifting and launch. Also, during construction, we placed a thick piece of corrugated cardboard of the exact dimensions of the mating bulkheads between them before we screwed the bulkheads together. This helped create a "soft" center space to guide our saw and prevent damage to the bulkheads when cutting the boat in two, a problem we had had when building *Diva*.

When building *Bacio*, we eliminated the forward seat, since we rarely used it in *Diva* and often removed it for carrying provisions or jerry cans of water or fuel. We installed Wichard folding pad-eyes on the aft section to which we attach stainless-steel lifeline turnbuckles via large snap hooks. This allows us to lash *Bacio* very tightly onto pads on deck. The forward dinghy section is held captive by the aft section and needs no pad-eyes. We estimate *Bacio*'s weight to be 80 pounds or less.

Practical in practice

To launch *Bacio* from her nested position on deck, we flip over the aft half and, using a lift bridle and our main halyard, lift and hang this section outboard and out of the way. Next, we flip over the forward section and lay it athwartships of *Carina* with its mating bulkhead outboard. We then swing the aft section in and mate the bulkheads with the three ½-inch bolts. We use wingnuts that we tighten onto stainless-steel fender washers and also nitrile rubber washers to help seal out water. Once the dinghy is assembled, we move the forward lines of the lifting bridle to the dinghy's bow and lift the entire dinghy up and over the lifelines and lower it to the water. It takes us about 15 minutes to assemble or disassemble *Bacio*. (With *Diva*, we would put both halves overboard in the water and one of us would climb in the aft half, align the two half boats, and bolt them together.)

To launch *Bacio*, Philip and Leslie first turn her aft half upright and hoist it with a halyard.

With *Bacio*'s stern suspended, they flip her bow half and turn it so the bulkhead faces outboard.

Once the two halves are mated, they switch the forward bridle legs to the bow for launching.

We can also hang *Bacio* from a main halyard (resting against a fender slung parallel to *Carina*'s toerail) for security and to minimize fouling of the bottom and the outboard motor. We use no anti-fouling paint on her bottom.

For propulsion, we outfitted *Bacio* with 7-foot oars and a small 3.3-hp two-stroke outboard, the latter still easily purchased outside the U.S. Though she will not quite get up on plane (most likely due to our amateur design modifications), she still moves along at 5 knots or so under power. By shortening her waterline, we also sacrificed some performance in short choppy seas. We wouldn't recommend it, but we have transported almost 675 pounds, though only for a short, flat-water passage. She'll easily carry 450 pounds.

We have used *Bacio* nearly every day for almost eight years while cruising from our home port in Puget Sound, Washington, through Mexico, Central and South America, and the South Pacific. She has required periodic maintenance but has been a rugged, reliable, and stable tender. Plus she's a pretty boat with a graceful sheerline. One of us still pines for a sailing rig, especially when she sees a Chameleon under sail, but she still does not have it.

Bacio's fine finish has degraded some as we have had to do repairs without fiberglass tape or the best epoxies, but she is as tough as ever and still going strong. She's a working boat, she's held up well to the elements, and her rugged construction probably saved Philip's life when he was hit

***Bacio*'s rugged construction probably saved Philip's life when he was hit broadside by a speeding powerboat in Nuku Hiva, above. The collision stove in the starboard aft hull panel, leaving the forward half of the boat undamaged. When repairing *Bacio*, three photos at right, Philip and Leslie made do with the limited supplies they had on board together with what was available in their remote location. She was afloat again in a week.**

broadside by a speeding powerboat in the Marquesas.

Periodic maintenance

Maintaining our Chameleon has primarily involved keeping her painted, which prevents UV degradation of the epoxy resin. Any spot exposed for even a few months in the tropical sun is subject to delamination. Single-part paints have not proven hard enough for everyday use on the hull, so we've resorted to two-part paints with epoxy seeming to be better than polyurethane for durability. For the inside, rubber roof paint seems to hold up best to standing water while single-part paints quickly peel off where rainwater or dew accumulates. A layer or two of fiberglass cloth tape along the keel did not prove to be substantial enough for frequent landings on sand and rocky shores. To mitigate wear, we added an 8-inch-wide strip of 24-ounce coarse woven roving to the keel to strengthen it for impact and to serve as a chafe guard. The surface is not fair but it's hardly noticeable and does the job.

We have had some problems with rot, though much less than you might expect. The first serious case was due to a crack that developed in the seam of one of the flotation chambers in the aft section. Water quickly accumulated during a long wet Central American summer. While doing routine maintenance, Leslie noticed a softness in the panel, began tapping with a screwdriver, and found a large area of rot. With a borrowed Fein tool, we quickly excised the rotten piece (the inner side had not been coated with epoxy) and constructed a replacement, stripped the adjacent paint, and used a filleting blend to install the replacement. Strips of fiberglass cloth reinforced the fix and *Bacio* was watertight once more.

The other instance of rot involved the forward storage area. Due to ingress around the seal of the commercial hatch we had chosen to install (rather than the hatch suggested by the designer), water accumulated inside. This led to fungus growth that eventually attacked the okoume hull panels of the forward section despite their coatings of epoxy and fiberglass. While in the boatyard for routine maintenance, we stripped the paint from the outside of the hull using a heat gun, dried out the storage area, and re-epoxied and reinforced the fiberglass of the entire forward section. (We also installed a strip of wood forward of the hatch to which we snap a Sunbrella cover that helps minimize leakage.)

Repairable construction

As for major repairs, the collision in the Marquesas crushed in the starboard section of the aft half, shattered one oar, popped the knee, and caused *Bacio* to capsize and nearly sink. The flotation chambers kept her afloat. (Philip was

Resources

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plucked from the water, unharmed, by the stunned crew of the offending vessel.)

Even though we had limited supplies, we stripped all the paint from the crushed section and gently re-assembled the remaining bits, like a jigsaw puzzle, against a piece of sacrificial plywood, screwing the brace to the damaged piece. We sealed the ragged edges with a liberal application of the locally available epoxy filler (Epi-Fill by International), then faired the surface and glassed both sides with 2:1 no-name epoxy we had purchased in Panama. The bits of knee and gunwale we still had fit together in another puzzle and we built up and sculpted thickened epoxy to fill the gaps left by lost pieces. After a week of work in a hot parking lot on Nuku Hiva, under the watchful eyes of nearly everyone on the island, she was back afloat. We could see her minor scars but no one else seemed able to see the repair.

Nesting dinghy enthusiasts are a small club but we find many Chameleons (and other designs) as primary or secondary tenders in active use by cruising yachts in far-flung ports. In Fiji, we tied up each day next to a Chameleon, made of aluminum, named *Rin Tin Twin*. This is a well-loved family vehicle for liveaboards who commute to their business ashore.

The two Chameleons we have built and used have proved their worth and we encourage any slightly-resourceful sailor looking for an economical solution to the tender dilemma to consider the Chameleon. With a little skill and a small amount of concentrated effort, anyone can build and maintain a Chameleon that will be joy to own (and sail) while providing years of reliable service.

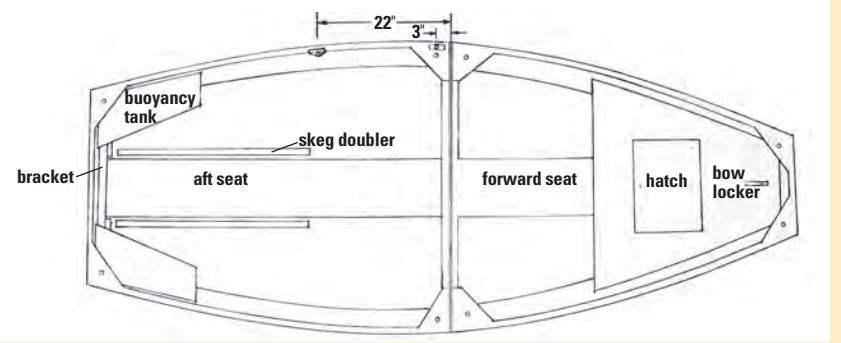
Philip DiNuovo and Leslie Linkkila came to cruising and boat ownership as adults and quickly developed a passion for small-boat travel. In 2003, they quit their professional jobs and left the Pacific Northwest behind and are now in the South Pacific.

A Chameleon nesting dinghy can be assembled or disassembled with both sections in the water.

Chameleon

LOA: 10' 4"
Beam: 4' 2"
Nested dimensions: 5' 4" x 4' 2" x 1' 8"
Sail area (sprit rig): 50 sq ft
Weight (rowing version): 100 lb approx.
Weight (sailing version): 120 lb approx.
Carrying capacity: 500 lb approx.
Motor size: 2-4 hp

The Chameleon is a nesting pram with a gracefully angled bow transom, hard chines, and a pleasing sheerline. The design includes desirable and unique features including aft buoyancy tanks, a forward storage compartment, removable fore-and-aft seats for adjusting trim under power, and curved mating bulkheads defined by laminated beams.
Danny Greene, Offshore Design Ltd., PO Box GE 213, St George, Bermuda GE BX
dtgreene@ibl.bm



Deferred maintenance meets microburst

Mother Nature has no respect for job schedules

by Scott Gordon

ILLUSTRATIONS BY TOM PAYNE

If you spend enough time on the water, you'll have stories to tell: good and bad, hair-raising or hilarious. It comes with the territory. My story was made possible by a combination of factors that, while insignificant individually, morphed into a series of boat-threatening dominoes within a furious five minutes' time. If anything, this account should once again confirm the notion that, when it comes to boat maintenance issues, the devil lies in the details. The smallest of details. Wherever the boat might be.

First, a little background. I'm a 50-something professional sailboat hobo. A sometime delivery captain, surveyor, buyer/rebuilder and seller of old thoroughbreds, wrench twister, fiberglass fiddler, hands-on rigger, and hired gun for boat owners smart enough to avoid the tasks associated with this laundry list. I still have all of my fingers and most of my faculties intact. So far.

As I write this, I'm on a project that entails the refit of a 47-foot cutter. She was built in 1981 in Taiwan. She is heavy, hand-laid, and tweaked for the charter trade with two staterooms, too much teak, over and under bunk crews' quarters, three heads, two showers, and a consequent systems diagram that would rival the Apollo space program. After years of sailing and "foot disease" trade-ups, her owner opted for the saner side of boating and purchased a 52-foot trawler with twin screws, central air conditioning, and the accoutrements of the civilized. Smart man. As a result, the cutter is being prepped to be put on the market. This is where I come in. A spring 2010 survey identified a few issues that needed attention, including the rehab of some frozen tapered-plug seacocks. This is a common item on most refit lists and relatively easy to accomplish if the boat is out of the water.

From her home port in Port Aransas, Texas, to the haulout facility in Rockport is a 15-mile run on the Intracoastal Waterway. Rockport has a no-ferns, no-frills,

> **“Bang! One perfectly aimed hailstone to the right lens of my reading glasses.”**

yes-you-can-do-it-yourself yard with a ship’s store that actually stocks a few boat parts. At 47 feet, the boat’s foretriangle is just large enough that a close-quarters stern-to end-for-end at the dock was necessary in order to avoid disassembly of the forestay so she could be hauled out. There were two yardmen on hand. No problem. This was obviously not their first rodeo. She was clear of the water and on jack stands in 10 minutes.

Curb appeal and safety sometimes intersect. In this case, it came in the form of a badly worn wire-to-rope furling line for the genoa. This line was ugly, identified, and put on the to-do list. As is often the case on older furling units (particularly for headsails that exceed 140 percent), the drum size mandates wire at the drum to provide the forestay revolutions necessary to completely furl the sail. Yawn. We’ll get to it. It’s on the list.

A twist(er) of fate

Fast forward 24 hours to the afternoon of January 9. Small craft advisories and a wind/rain combination are forecast for the overnight hours. Not a big deal. The boat is, after all, hauled out and resting on six angle-iron jack stands. The ladder is tied off. Miscellaneous deck gear is stowed or secured. Scuppers are free, sheets cleated. I turned my attention to the seacock rehab. A little heat, a little lapping compound, a little grease, and the end of another day in the romantic life of an old-boat therapist.

But at 4:30 a.m., bedlam! Hail the size of golf balls propelled by 70-plus mph winds is bashing the deck. (I later learn that a tornado touched down one mile to the south of the yard, lifted, and touched down again one mile to the north, wreaking no small amount of havoc including broken masts, shredded Plexiglas of every variety, and a dozen boats blown over). The 47-footer of personal interest to me is chattering on the jack stands and groaning against the force-10 breeze. Tools vibrate off the table in the saloon. This is a deafening Clorox-bottle-meets-Mother-Nature physical event. Violent and impressive. Despite the conditions, however, all is well. That is, until I hear a rifle shot somewhere on the foredeck and note an immediate increase in the boat’s movement.

No hero, but no choice. With a foul weather jacket and headlamp, I survey the foredeck. The wind velocity has stretched the cleated sheets enough to expose a pocket of opportunity to the breeze, and that sliver of canvas has provided enough surface area to translate the force into a side-to-side slapping that sounds like the world’s largest towel fight combined with a vicious hammerhead port-to-starboard jerking of the bow that threatens to jump her off the jack stands. *Not good.* The fact that the wind is directly on the beam doesn’t help.

Needless to say, the headsail must be furled. Pronto. From halfway between the bow and the cockpit, where the furling line is cleated, comes another rifle shot. The worn-out, on-the-list we’ll-get-to-it furling line has parted. I watch the line scream-slither past me down through the fairleads toward the bow. The wind, of course, takes immediate advantage of this new opportunity and does its level best to deploy the entire genoa. The boat is no longer just lurching from side to side; it is making determined leaps to jettison the jack stands.

Act now. Think! Take decisive action. Simultaneously, be prepared to bail from the deck if the boat succeeds in spitting the stands. Hope for the best.

Releasing the sheets doesn’t have nearly as dramatic an effect as I expect. While both are nearly horizontal before the wind, the pocket doesn’t disappear, it is simply huffed to a different position. There are two reasons for this predicament: the UV cover of the genoa has found a grip around the baby stay and the wire furler lead has jammed between the roller furler and the housing. Perfect.

(**Note 1:** If you have a roller furling unit that requires a wire lead, make sure the wire diameter is larger than the drum/housing slot. Because s*#t happens.)

An adrenaline moment

In the backs of our minds, we always wonder how we’ll react in certain situations, particularly those that involve some level of danger or one-shot-must-do scenarios. In this case, the issues are clear: the headsail must be released and furled or 20 tons of classic cutter will be on her side within minutes. Great! This thought is followed by a scramble for tools: long screwdriver, 14-inch channel-lock pliers, stainless-steel pry bar, 3-pound sledgehammer, snatch block. Hurry up!

I tie the broken bitter end (rope) of the parted furling line to a fresh length of ½-inch spare halyard and tension it with one of the genoa winches, sprint to the foredeck, lie on the deck to get a close look at the furling wire jam. Bang! One perfectly aimed hailstone to the right lens of my reading glasses. I become a one-eyed busy boat desperado.

(**Note 2:** Don't buy your reading glasses at the drugstore if you really need them in order to see.)

Freeing up the wire jam is surprisingly straightforward. Adrenaline, leverage, and a sledgehammer make a formidable trio. Even when furled, the headsail continues to flog (thanks to the shredded UV cover) but the boat is once more stable on the jack stands and in no danger of self-destructing. A remedial stop at the sailmaker, a new furling line, and all will be well. With any luck, by the time the sail repairs are completed I should be able to lift my left arm above my head and manipulate something that weighs more than a pencil.

The moral of the story? It's an old tune: I knew it was dog-eared and needed to be replaced. Look! It's right here on the list. See?

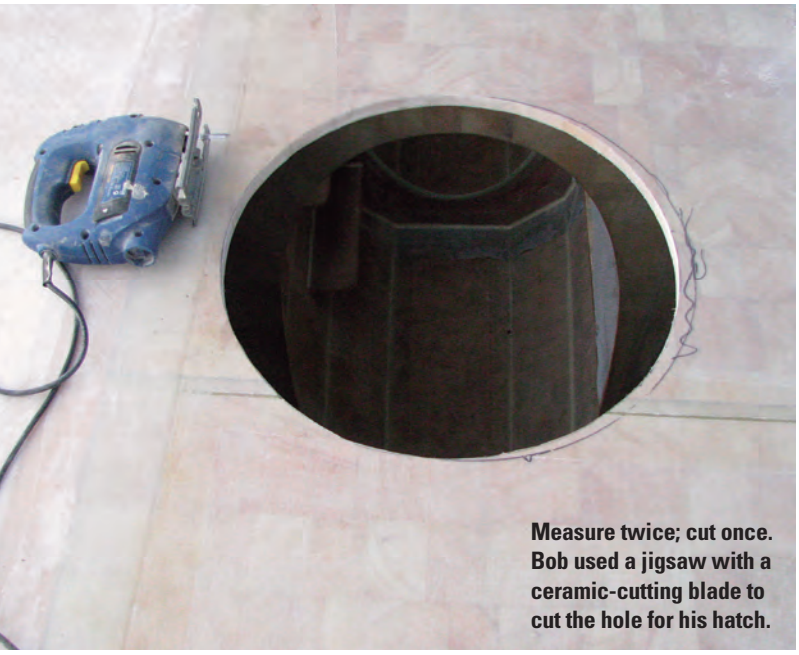
(**Note 3:** if the boat has roller-furling headsail(s) and has to be put on the hard, think seriously about removing them while you're still in the water. This is a hassle but could be a very rewarding preemptive strike and well worth 10 minutes of attention. At the very least, add this idea to your list).

Scott Gordon learned to sail on Lake Champlain more than 30 years ago. His wanderings as a "professional sailboat hobo" have taken him throughout the Great Lakes, the East Coast from Canada to Key West, and throughout the Caribbean. His home base is Kittery Point, Maine.

Do it right the first time

"Do it right the first time?" I tend to learn more from *not* doing it right the first time. Then again, in boatbuilding there are degrees of "right," as the definition varies based on the standards of the builder . . . and everyone has an opinion *after* the fact!

While building an 11.99-meter catamaran, I've learned a lot about a number of operations. At least one discovery on this adventure seemed like it might be of interest to good old boaters who wish to make an occasional alteration or repair due to the age of the vessel, the standards of the builder, or simple boredom (what with winters and all).



Measure twice; cut once. Bob used a jigsaw with a ceramic-cutting blade to cut the hole for his hatch.

Using a tile-cutting disc on an angle grinder, Bob cut between the balsa core and the laminate.

Most of the readers of *Good Old Boat* have production sailboats of cored composite construction or with solid hulls and cored composite decks. The core might be one of a variety of materials, the most common among them being PVC foam or (shiver me timbers) balsa. Balsa is great for stiffness but it demands particularly high standards of care in working, and the other materials need to be treated with respect as well.

One of the great pastimes of boat owners is cutting holes in perfectly good decks. Among these, hatch installations demand the most care, in my humble opinion, as I found out.

A core issue

My boat's decks are cored with balsa in some areas and with PVC foam in others, due to a change of taste mid-project. As the hatches I was fitting were in the balsa sections and reasonably close to supporting structures, I felt I could get along with the minimum standard: remove enough balsa core to include the area where the hatch-base fasteners will be and fill the cavity with epoxy mush, or what we down under (in Australia) call "bog."

But first I had to cut the hole. I made a template out of light ply, traced the hole with a marker pen, and used a jigsaw mounted with a blade intended for cutting ceramics — it's faced with carbide instead of teeth. Fiberglass will turn a toothed blade into rubbish in a couple of minutes' work, but these things will last for a long time.

Next, I wanted to remove the core from around the perimeter of the hole. My first approach to that job was to use the tool anyone must own to qualify for boat ownership: an angle grinder. We'll call that "Bob's law." (A quick trip to the hardware store and $5 or $10 later, you can also own a tile cutter, a 4-inch steel disc with a little diamond in it. Of course, you already have a 36-grit sanding disc.)

I mounted the tile cutter to the grinder and carefully cut into the balsa under the laminate, all around, then used a wood chisel to remove the balsa to the most uniform depth possible.

The next step was to clean off any stray balsa clinging to the edge of the laminate. I didn't want water wicking into the core through those fragments. That's what the sanding disc is for.

Then it was time to mix up the bog.

It takes more thought but saves time (and face)

by Bob Norson

A stiff mush

For a job like this, I use a 50-50 mix of fumed silica and glass bubbles or microspheres (don't confuse these with phenolic microballoons, which are a different material), brand names of Cab-O-Sil and Q-Cell respectively. Cab-O-Sil makes a sturdy mix that is hard to sand. Q-Cells just take up space and impart little support but sand easily. So I split the difference. The mush should be the consistency of, say, peanut butter: pretty darned thick.

Epoxy is really the best resin for this purpose. You could use the same resin that's in the laminate — if you know what it is. If you don't, epoxy is essential as it will adhere to any resin, where other resins might not adhere perfectly if mismatched. Epoxy is also the least permeable, and the whole idea is to keep water out of the laminate.

I like to use my well-protected palm for pushing the mush into the space. I trim off the excess with a small spatula and wait for it to go off. It won't reach full strength for several days, but by the next day it's sandable, and I prefer to sand it then as it's so much easier. I always protect myself from breathing grinding dust and particularly the dust from material that isn't fully cured.

A weakness

Once I had gone this far with my hatch hole, I decided it wasn't strong enough. Using my patented impact meter (fist against panel) it rated a 3 on a scale of 10. So I did what every good boatbuilder does in a crisis: I went to a neighbor and borrowed a tool.

The little trimmer/router I bludged (an Aussie term for borrowed or begged) worked a treat, but I wonder, in the age of the nanny state, how anyone can buy and use such a thing and yet be forbidden to let their kids play with a 12-gauge shotgun after school. Anyway, I succeeded in cutting a groove all around in the mush and can still count all 10 fingers. The bit my neighbor had wasn't the ideal depth or thickness (I'll have to advise him to upgrade his selection of bits) but I found that by starting at the top and working down, it worked reasonably well. Starting at the bottom and working up, the little wheel at the end of the bit has no purchase to follow.

Once he'd cut the balsa, Bob removed it with a chisel, taking care to avoid the sharp edges of the fiberglass.

Finding he had to "go back in," Bob used a small trimmer/router to carve out the hardened epoxy mush.

> "I did what every good boatbuilder does in a crisis: I went to a neighbor and borrowed a tool."

> "The aperture more than passed the patented impact test."

Bob pressed in the final layer of "bog" with a spatula. Gloves are important when working with any resin.

I just happened to have a roll of unidirectional fiberglass tape. This may be a little uncommon for most boat owners, but it is readily available from marine suppliers. First, I cut the tape to fit with tapered and overlapping ends and fitted it dry to the cavity to check the fit. I then mixed a small batch of mush and, with my protected fingertip, pushed a light layer into the cavity to fill any irregularities and to help the tape adhere in position.

Next, using a cheap paint roller, I wetted out the tape on a plastic-covered table. I rolled up the tape on the table as neatly as I could without wasting time and carried it to the job, where I carefully fitted the rolled tape into the cavity. Once the uni tape had gelled, I mixed up another small batch of mush and covered the tape with a layer of that, using a spatula to fill and protect the finish so it could be sanded fairly flat.

After three days, the aperture more than passed the patented impact test; it was very rigid. As the fasteners will penetrate only solid mush, the core will be protected and the cured mush will bear the compression from the fasteners without collapsing.

And 10 years from now (or many more we hope), the hatch will perform well and not leak from distortion of the deck it is mounted on and the deck, still firm and trouble-free, will be preserving what will be, by then, our good old boat.

Bob Norson and his wife, Kay, both grew up with boats in North America but discovered liveaboard cruising in Australia where they now live and publish a boating paper devoted to the lifestyle. Between publishing The Coastal Passage *and building their own 12-meter cruising cat, they stay busy but hope to languish in boredom soon.*

Additional notes and tips

I found it useful to explore both techniques for core removal. With the tile-cutting blade on an angle grinder, it is possible to gain much more depth than with the router. This has the advantage of allowing a wide enough field of mush to be able to drill through it later for the mounting screws without further work. If the mounting screws are outside the field of mush, you are in for much more work removing the core and back-filling with mush around every fastener hole. (***Note:*** *For more ways to deal with reinforcing cored decks for fasteners, see "Hardware on Soft Decks," March 2010, and Mail Buoy, May 2010* ***–Eds.***)

For spatulas, I prefer the white plastic ones. They are usually made of polypropylene and resins can't stick to polypropylene. Simply set the spatula aside after use and the next day flex the tool — the hardened resin will pop off.

As most deck surfaces are not perfectly flat, some fairing may be needed to ensure proper mounting of hatches or other gear subsequent to the work described here. If the mounting arrangement includes a doubling material, like a wooden frame, the aperture may not need the extra reinforcement of the unidirectional tape, but applying the mush sealer is still good procedure.

Besides deck work, I have used this technique on all exposed edges of composite panels. On my project, that meant enough use to justify buying my own router.

Anytime you are working with balsa, consider the ambient temperature. Balsa is light because it is mostly air. Because the cells of the material are not enclosed, when the temperature is rising, the internal gases are expanding or outgassing. This may cause pores to form in your mush as the expanding gases force their way through the mix prior to hardening, leaving an entry into the core. It is best to be safe and do the filling on a falling thermometer when the contracting gases will help you get good wetting of the facing balsa and ensure the best seal. Even with other core materials that may be less prone to gassing, it can't hurt to follow this procedure.

A final note: using any resin in direct sunlight is a mortal sin.

Holding tank essentials

Practical ways to comply with the law

by Gregg Nestor

If you own a boat and your head discharge hose is connected directly and only to a through-hull fitting (as shown below), you're in violation of the law and long overdue for corrective measures.

In response to the American public's growing concern with air and water pollution, President Nixon issued an Executive Order in 1970 creating the Environmental Protection Agency (EPA). Two years later, Congress enacted the Clean Water Act of 1972 (CWA) and authorized the EPA to administer, police, and monitor compliance with the new law.

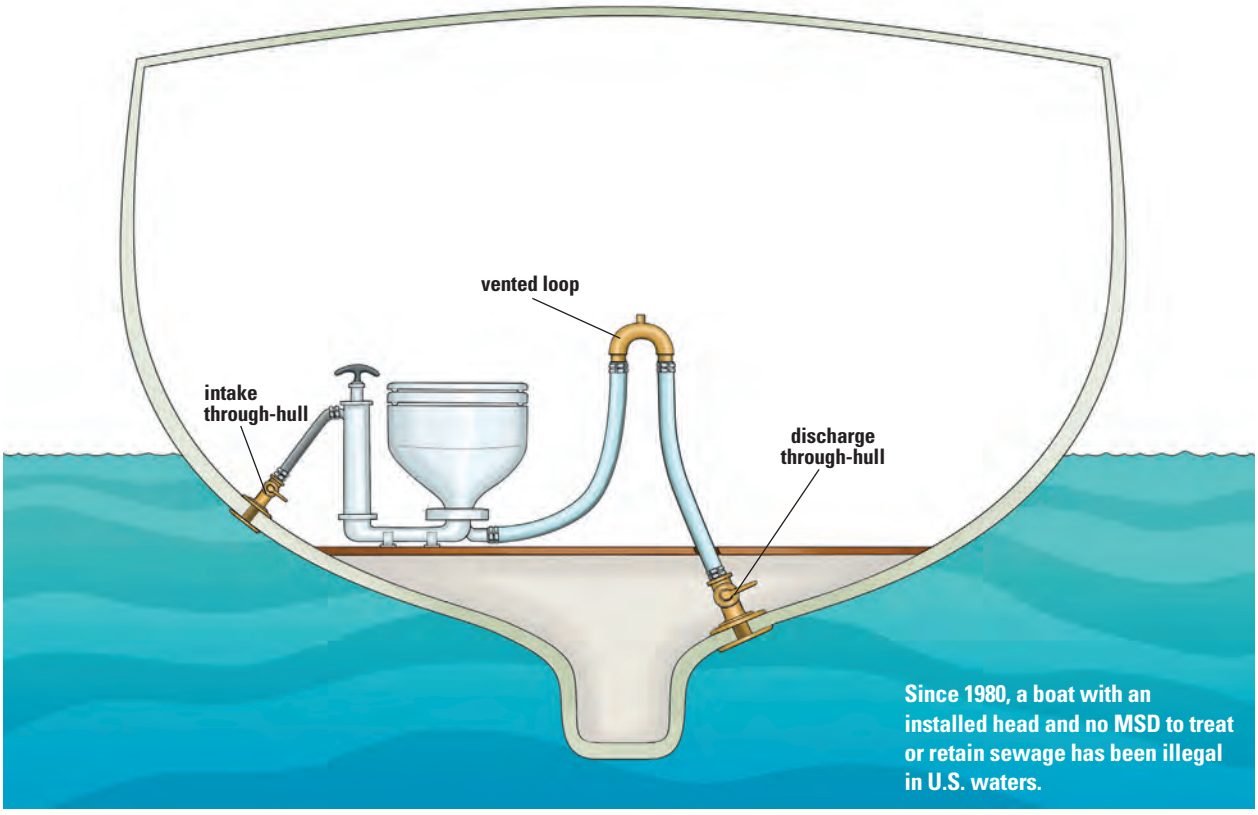
The CWA addresses a wide variety of water-pollution problems, including sewage discharged from boats on navigable U.S. waters. This includes coastal waters, which are defined as waters up to 3 miles offshore. The law also provides for "no discharge" by boats operating on enclosed lakes and reservoirs, on rivers not capable of interstate navigation, and on the Great Lakes. Additionally, states may petition the EPA to declare certain other waters "no discharge zones" (NDZ) if the discharge of treated sewage would be harmful. In short, any boat with an installed head must have an operable U.S. Coast Guard-approved marine sanitation device (MSD).

There are three types of Coast Guard-approved MSD. Type I and Type II MSDs are essentially miniature waste-treatment plants whose discharge effluent meets federal standards for bacteria content and contains no visible floating solids. An approved Type I or II MSD must have a label verifying that it meets Coast Guard and EPA regulations and standards as required by the CWA. A Type III MSD (holding tank) retains sewage for shore-based disposal or discharge beyond the 3-mile offshore limit. A Type III does not require a certification label.

Originally, the law required all boats with installed heads built from 1977 onward to have an operable approved MSD. In 1980, the law was amended to include all boats with installed heads, requiring even boats built before 1977 to have an operable MSD.

Even though it's the law and noncompliance incurs severe penalties, good old boats still exist that were

ILLUSTRATIONS BY FRITZ SEEGERS



Since 1980, a boat with an installed head and no MSD to treat or retain sewage has been illegal in U.S. waters.

not built with an approved MSD and need to add one. In these instances, installing a holding tank (Type III MSD) is the most common means used to bring a boat into compliance with all sewage discharge laws. A holding tank has the advantage of being the only MSD universally acceptable to all governing authorities. It also removes the complication of treating sewage. A holding tank is the least expensive of the three MSDs and can be installed in a few hours by a do-it-yourselfer.

Location and tank size

The location of the boat's existing head often dictates the placement options for the holding tank. Potential holding tank locations for heads situated forward include beneath the V-berth, in the keel cavity, on the floor of a hanging locker, beneath a settee, or even in the head compartment itself. Heads installed aft can potentially use cockpit lockers and spaces beneath quarter berths.

Before settling on a location for your holding tank, consider the ease of installation, future access, and the stowage space that might be lost. Since sewage weighs more than 8 pounds per gallon, the contents of a small 10-gallon holding tank can weigh up to 90 pounds. This much weight can affect boat trim, and it should also dictate the strength of supports and restraints required to hold the tank in place under extreme conditions. Visualize the tank's restraint system. Will it be sufficient when pounding into waves or in an abrupt grounding? Multiply the weight of the tank and its contents when full by a safety factor of two to estimate the total weight to be restrained.

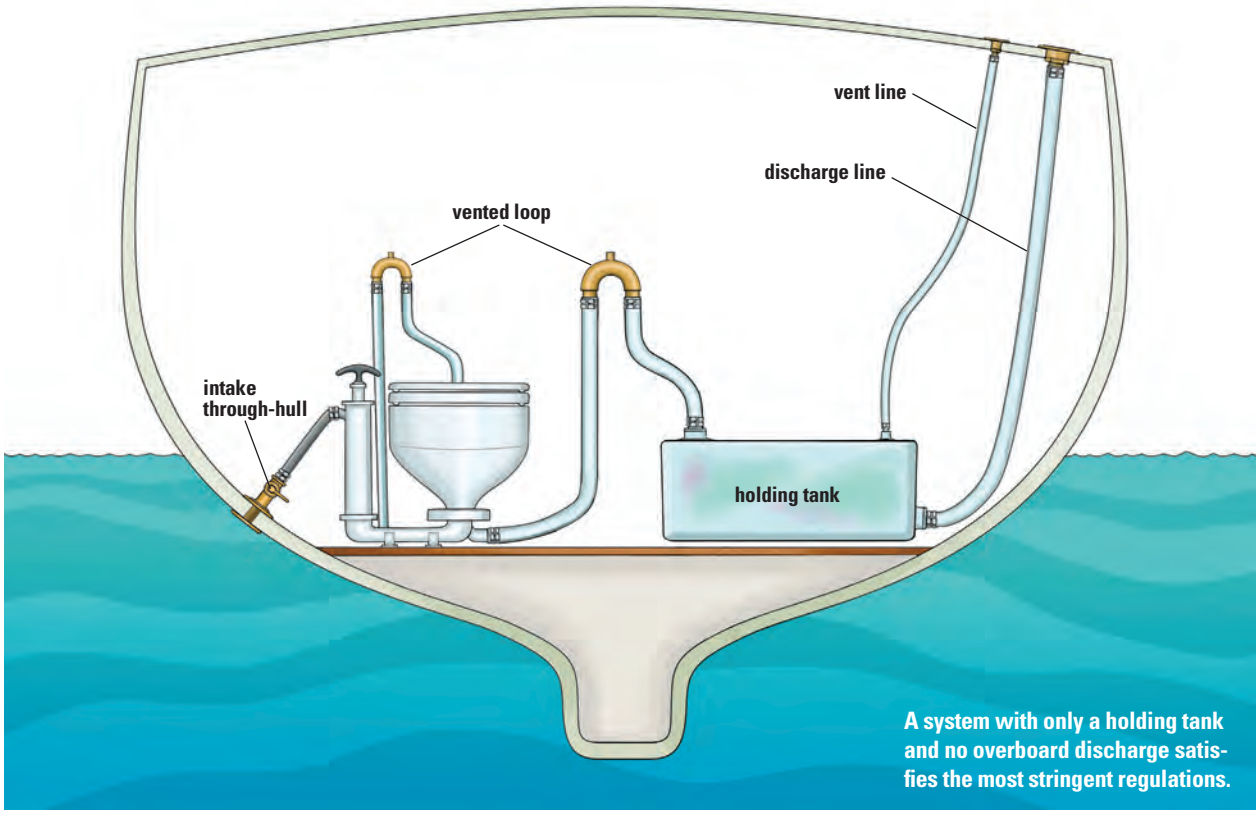
The size of the holding tank is dictated by the boat's intended use — as a daysailer, weekender, or extended-range cruiser — and the number of crew. Sewage and flushing water per person per day can range from 3 to 5 gallons, so take into account the distance between pumpout stations or, if applicable, distance to areas (outside the 3-mile limit) where overboard discharge is legal.

After determining the tank's location and size, select a suitable construction material.

Plastic (linear polyethylene) tanks

The most common material used for making holding tanks is linear polyethylene. This plastic is strong, lightweight, and inexpensive. Poly tanks are rotationally molded and, therefore, have no seams. They typically have a wall thickness of ⅛, ¼, or ⅜ inch. Thicker walled tanks offer greater rigidity and higher resistance to odor permeation. For a tank up to 35 gallons, choose a minimum wall thickness of ¼ inch.

One advantage of choosing a poly tank is that they are available in a wide range of sizes (volume) and shapes. Another is that they are translucent, so you can see the level of the contents. Many manufacturers of poly holding tanks now include molded-in feet, which make mounting them easier and more secure. Disadvantages include susceptibility to freeze damage, if left full during winter months, and the potential for puncture by sharp objects.



A system with only a holding tank and no overboard discharge satisfies the most stringent regulations.

Flexible tanks

Flexible tanks can often be used when other rigid tanks, regardless of the material of construction, will not fit in the space available. Several configurations and sizes are available although the range is not as extensive as with poly tanks. Most come with predetermined openings. However, many manufacturers will entertain customization. The cost of these tanks is about the same as for poly tanks. Their one big advantage is their flexibility. On the downside, however, flexible tanks are susceptible to odor permeation and they are prone to leakage due to chafe and to flexing at the plumbing connections.

Fiberglass tanks

Fiberglass-reinforced plastic (FRP) tanks, while not common, are among the most reliable. Much like the hulls in which they often serve, they are durable and impervious to liquid and odor penetration. Fiberglass holding tanks should be fabricated with vinylester or epoxy resin because they resist osmotic attack, a problem that is a real possibility in holding tank interiors. These resins also produce a stronger laminate than polyester resin. While the finished cost may be more than for a plastic or flexible tank, an FRP tank is relatively inexpensive as a "do-it-yourself" project and can be custom-fit to the space available.

Metal tanks (aluminum)

Aluminum tanks are resistant to odor permeation, easy to fabricate, and can be built to fit any space. Aluminum exhibits greater resistance to corrosion than many theoretically noble metals. It has more chloride-ion resistance than most steels and, therefore, is often used in seawater applications. However, aluminum is best suited for neutral pH applications and corrosion is accelerated under both alkaline (high pH) and acidic (low pH) conditions. The use of aluminum should be avoided in highly alkaline or acidic media. Waste (caustic effluent) and additives and cleaning agents (often acids) greatly aggravate the corrosion of aluminum, so it's not a good choice for a holding tank. In addition, aluminum tanks are the most expensive.

Hoses and piping

Hose types and their materials of construction vary widely. However, selecting the proper hose is quite easy. According to the U.S. Coast Guard, the only legal requirement is that "the correct hose for the intended purpose must be used and installed in accordance with the hose manufacturer's recommendations." (See "Hoses 101," page 14.)

Sewage hoses are constructed from materials that reduce the chance of odor permeation. Their interiors are smooth, thus reducing the chance of blockage. They are usually wire- or fabric-reinforced to withstand the pressure and/or vacuum developed by the head pump, macerator, or vacuum pump at the pump-out station. Prices can range from a low of $5 per foot to close to $20 per foot. When it comes to sanitation, it definitely pays to install the best hose.

Rigid PVC pipe is inexpensive, strong, and impervious to odors. It's widely used in sewage applications on shore, so it's only natural that it be considered for use in this instance. Unless the sewage runs are straight and extremely long, however, don't consider PVC. Short runs with any bends require the use of many inline radius fittings. These must be cemented and can create the potential for leaks, not to mention a lot of "bumps" in the line where sewage can lodge and create a blockage. It's also necessary to soft-couple the PVC pipe to anything rigid (tank, through-hull, or head) with enough hose to absorb shock and allow flexing.

Fittings

Make all sewage piping runs as straight as possible. Avoid the use of elbows, couplers, increasers/reducers, and adapters. Use curved hose, rather than fittings, where possible. If a fitting must be used, "sweep" fittings are preferable to elbows. Reducing the number of fittings reduces the potential for blockage.

Installation tips

Following these simple tips will help ensure a trouble-free waste system.

- Once you have determined the location for the deck pumpout fitting, drill a pilot hole through the deck from inside the boat. This is the best way to avoid hitting wiring and other vital parts. Remove any core material from around the hole and fill the void with thickened epoxy. Bed the fitting to prevent water leakage.
- Rather than using screws, through-bolt the pumpout fitting. A screwed fitting can loosen from the repeated forces of connecting the deck fitting with the pumpout facility.
- Heat the ends of hoses with hot water, an electric hair dryer, or heat gun so they fit more easily over pipe nipples. Liquid soap can be used as a lubricant on rigid fittings.
- Use cable ties to support piping along its entire run to eliminate movement. This also reduces the possibility of connections becoming loose due to vibration and the boat's motion.
- Provide chafe protection where hoses run through bulkheads.
- Don't over-tighten clamps. They can cut into hoses and cause leaks. Make sure that the clamp mechanisms are offset from each other when tight.
- A vented loop in the discharge line can be a source of foul odors. Run a small hose from the siphon-break vent fitting to the holding-tank vent line or to a separate vent fitting located above the heeled waterline. If neither is possible, install a vent-line filter.

Use in-tank fittings made of the same material as the tank. For example, plastic fittings are recommended for installation in plastic holding tanks because the materials have similar coefficients of expansion.

Use two stainless-steel hose clamps at each connection. Avoid clamps that are either nickel-plated or slightly magnetic, as these are susceptible to corrosion.

Vent fittings are available in a variety of materials. Since they are isolated from the tank by means of a plastic vent line, their selection is based on personal preference.

Heads on most boats are installed below the waterline. This creates the potential for leakage past the head's suction or discharge valves. Once this siphoning begins, it can sink the boat if not discovered in time. To avoid this, install a siphon break (vented loop) above the heeled waterline on both the intake (between the pump and the bowl) and discharge hoses.

Some systems incorporate a Y-valve that can be set to direct sewage either into the holding tank or directly overboard (see below). If this is the case on your boat, when sailing in no-discharge zones or within the 3-mile offshore limit, Y-valves must be secured to prevent overboard discharge. Methods currently acceptable for securing a valve include a padlock, a non-reusable wire/lead seal, or removal of the valve's handle.

Installation

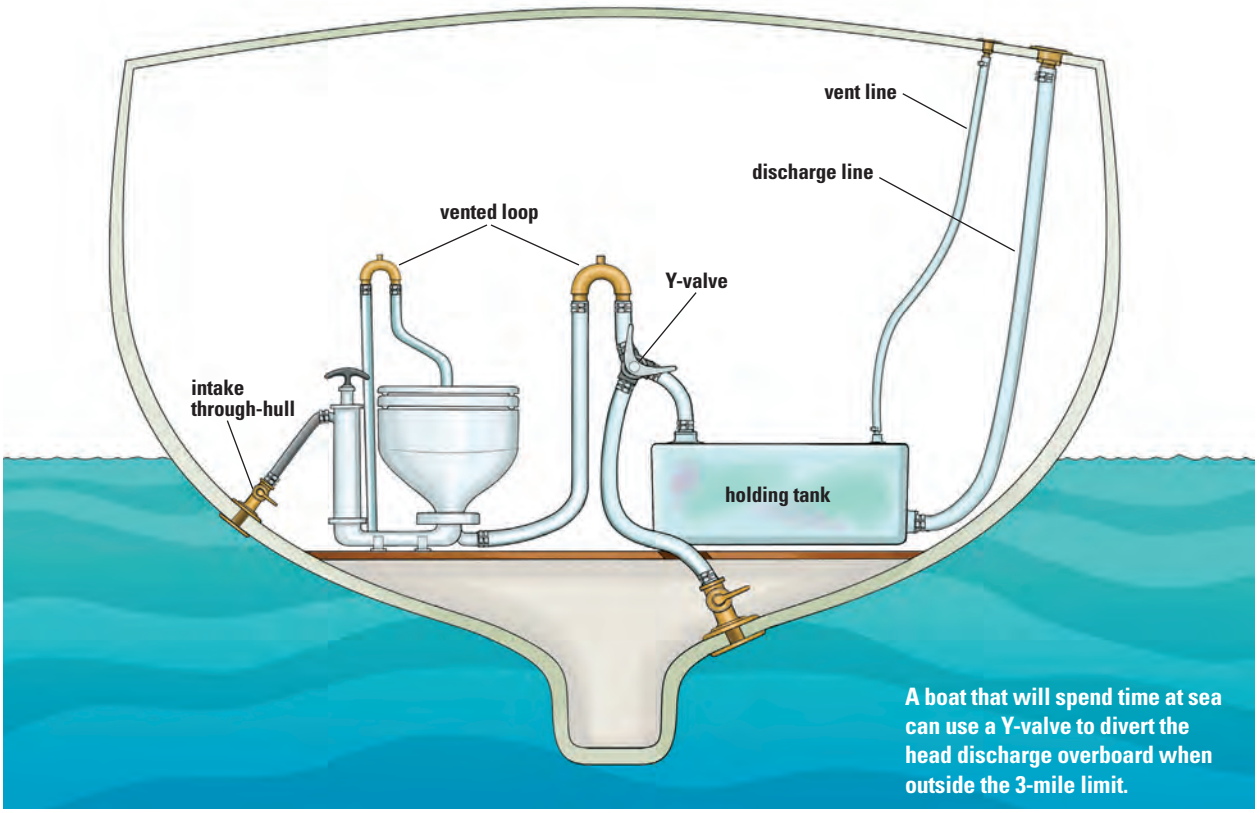
Before cutting anything, lay out the proposed system's piping and other components. Check on both sides of partitions and bulkheads to be sure the installation will not cut into fuel or water tanks, wiring, piping, or hull stringers. If tabbing must be cut, provide additional reinforcement so the boat's structural integrity won't be compromised.

Carefully think through your system design. Examine the area where the tank is to be located. Ensure that the tank will not be punctured by sharp objects, such as protruding screws. To minimize the potential for chafe and corrosion, use a non-absorbent, non-abrasive material such as neoprene between all tank supports, bracing, strapping, and the tank itself. This is a must for metal tanks.

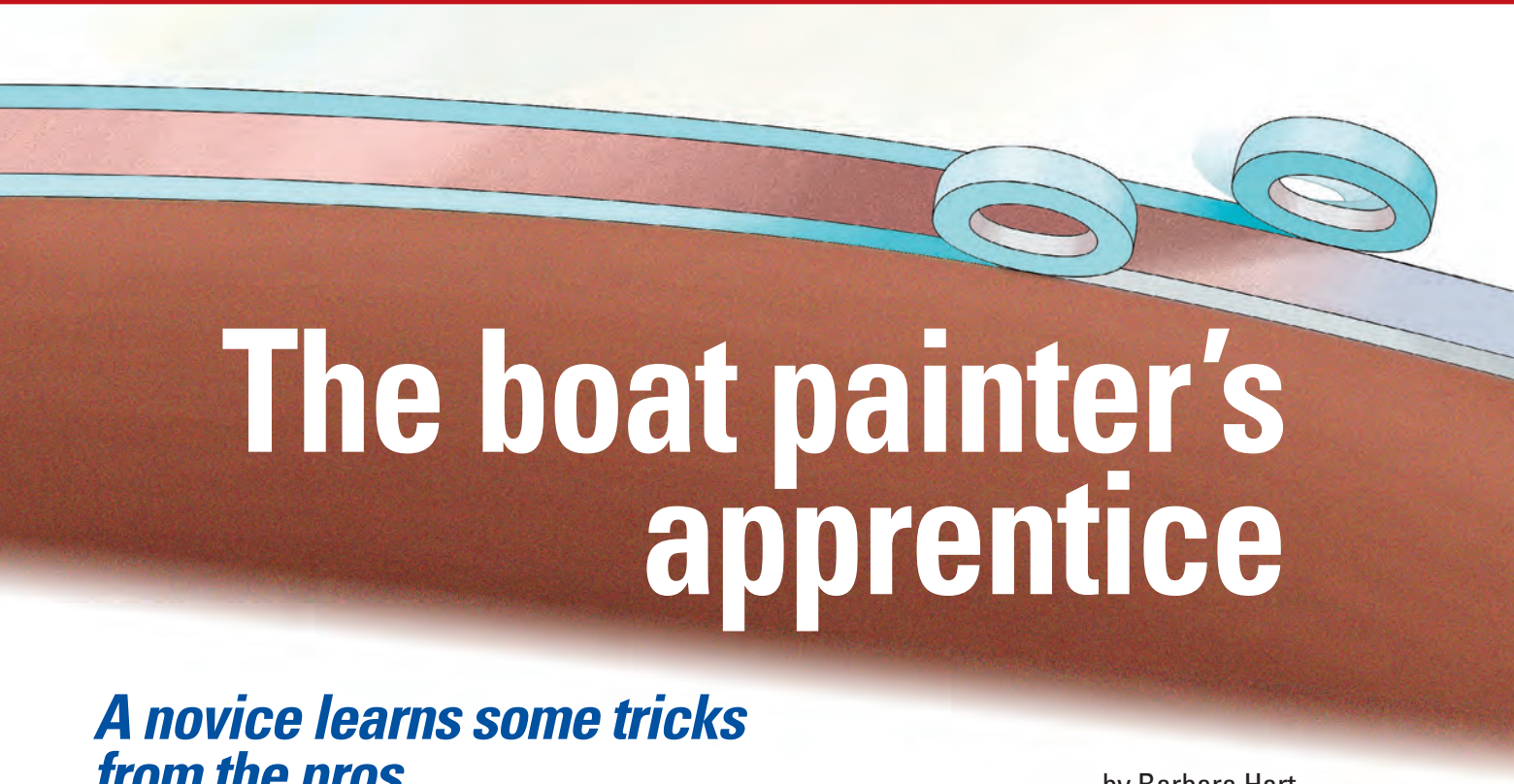
To reduce the likelihood of odor permeation, consider what piping will be filled with sewage between pumpouts. Work toward reducing the number of these "wet" sections of piping. Eliminate tight bends. Use gradual sweeps to minimize clogging. Keep the number of fittings and connections to a minimum. Lastly, provide for easy access to fittings, connections, and components for maintenance and periodic inspection.

Building a good waste-holding system and complying with the law is the right thing to do. It doesn't have to be expensive and is well within the ability of the average do-it-yourselfer.

Gregg Nestor, a contributing editor with Good Old Boat, *has had a lifelong interest in all things aquatic. He and his wife, Joyce, are currently refitting, upgrading, and sailing a 1994 Caliber 35.*



A boat that will spend time at sea can use a Y-valve to divert the head discharge overboard when outside the 3-mile limit.



The boat painter's apprentice

A novice learns some tricks from the pros

by Barbara Hart

ILLUSTRATIONS BY FRITZ SEEGERS

Stew must have had a good reason to schedule his knee surgery while our 47-foot Cheoy Lee was in the yard for two weeks, but for the life of me I couldn't remember what it was. Every liveaboard or cruising boat needs one person who can handle all repairs and maintenance and, on our boat, Stew is that person. He'd hustled to complete technical jobs, particularly those that had to be executed from a kneeling position, but he had not polished the hull or painted the bottom. Those were now my jobs to undertake alone while he sat at our friends' home in a recliner with ice packs, medication, and . . . books.

Three years before, I had labored over these projects as Stew's "apprentice." It does not speak well of my attention to detail or interest in polishing and painting to say that I remembered little of the process. I did know I had two weekends to polish the hull and to apply three different paints to three adjacent sections of the boat: red on the boot stripe, red bottom paint on *La Luna*'s bottom and keel, and white on the reveal between the boot stripe and the bottom paint.

La Luna was hauled at Great Island Boatyard in Harpswell, Maine, where Stew is the yacht broker, so those in the work crew know me and two were quick to offer advice. I had applied blue masking tape (provided by Stew) carefully around the hull just above the boot stripe and had lightly roughed up the stripe and the reveal. I'd wiped away the grit and was prepping to paint the boot stripe by applying another line of blue tape below it when Tom walked by.

"That's good," he said. "You use that cheap blue tape when you sand, 'cause you'll want to remove it before you paint."

"Oh no," said I. "I was careful with that tape and it's staying."

"Well, that tape is going to trap sanding dust and you'll want to take it off. Plus, you should use Fine Line tape for painting."

"C'mon!" I whined. "I'm almost done taping the second line. You can't be serious."

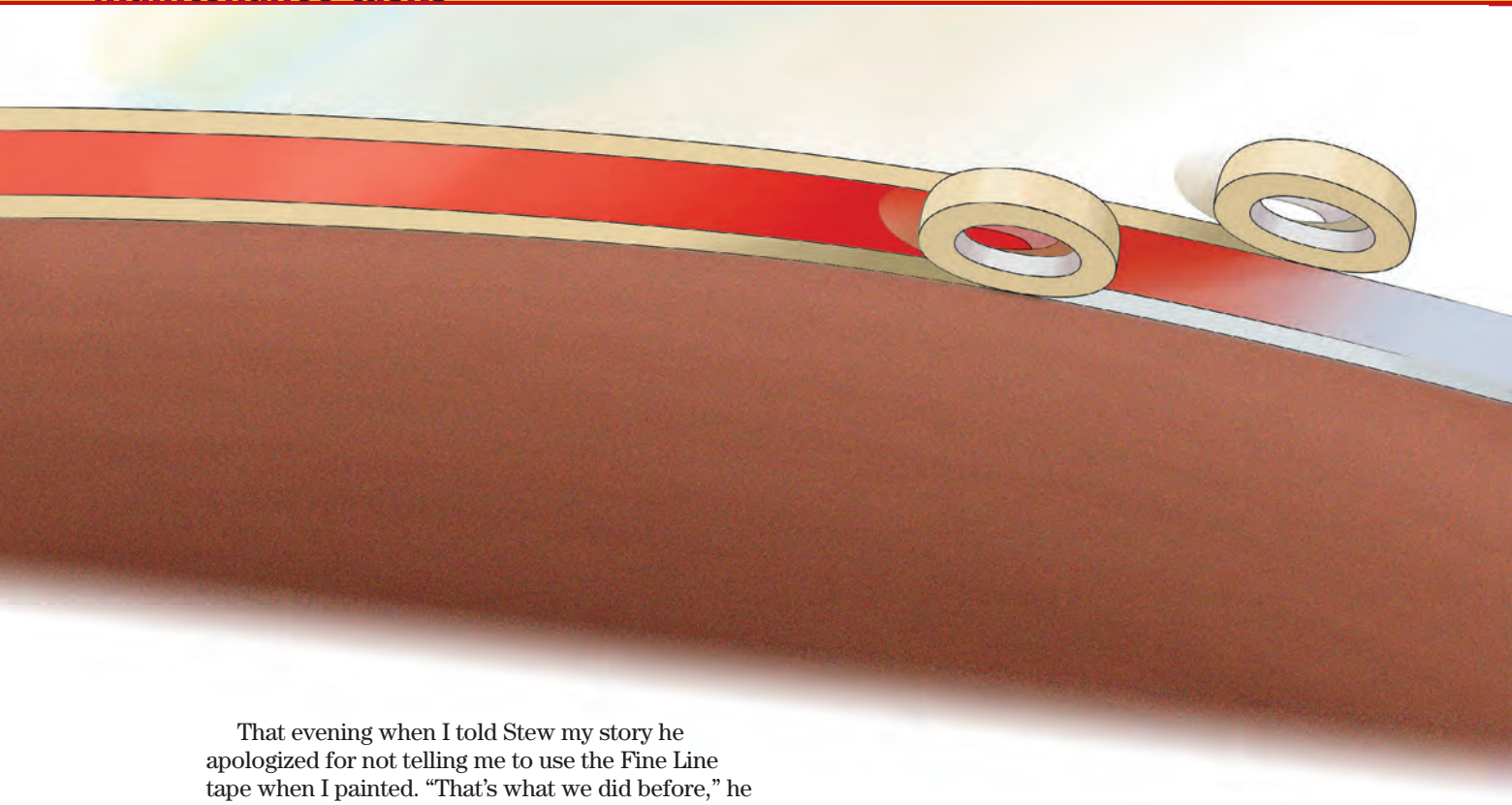
"Yep. I am. You should take off all the blue tape and use Fine Line. And that Fine Line tape is expensive stuff too." He shook his head at the cost.

"This is what Stew gave me. I hate taping and all this climbing up and down. I'm almost ready to start painting." (Told you I whined. Did I mention how large a 47-foot boat can be when it's standing in the boatyard?)

"Look, I'm the laziest and cheapest bastard I know, and I do it the way I'm telling you. To do the job right, this is what you need to do. Get started now and it'll go quick. You'll have it taped in two hours."

I sighed, sucked it up, and re-taped the boat Tom's way with added advice from Kevin, one of the yard's professional painters. I'll never be a professional boat painter but I soon learned that the job is easier when you do it the right way.

Barbara's initial plan was to sand everything below the top row of blue tape, top of page. She planned to save time by leaving that original tape in place and then to follow up with a second row of blue tape to isolate the boot stripe for painting. There were just two things wrong with that plan: the top row would have trapped sanding grit and blue tape is not the Fine Line tape she really needed for a crisp boot stripe.



That evening when I told Stew my story he apologized for not telling me to use the Fine Line tape when I painted. "That's what we did before," he said. I then remembered isolating the white reveal with the Fine Line tape three years before. That time I had done it the hard way by taping off and painting the white reveal first. The resulting line was three quarters of an inch wide in some spots and one and a quarter inches wide in others.

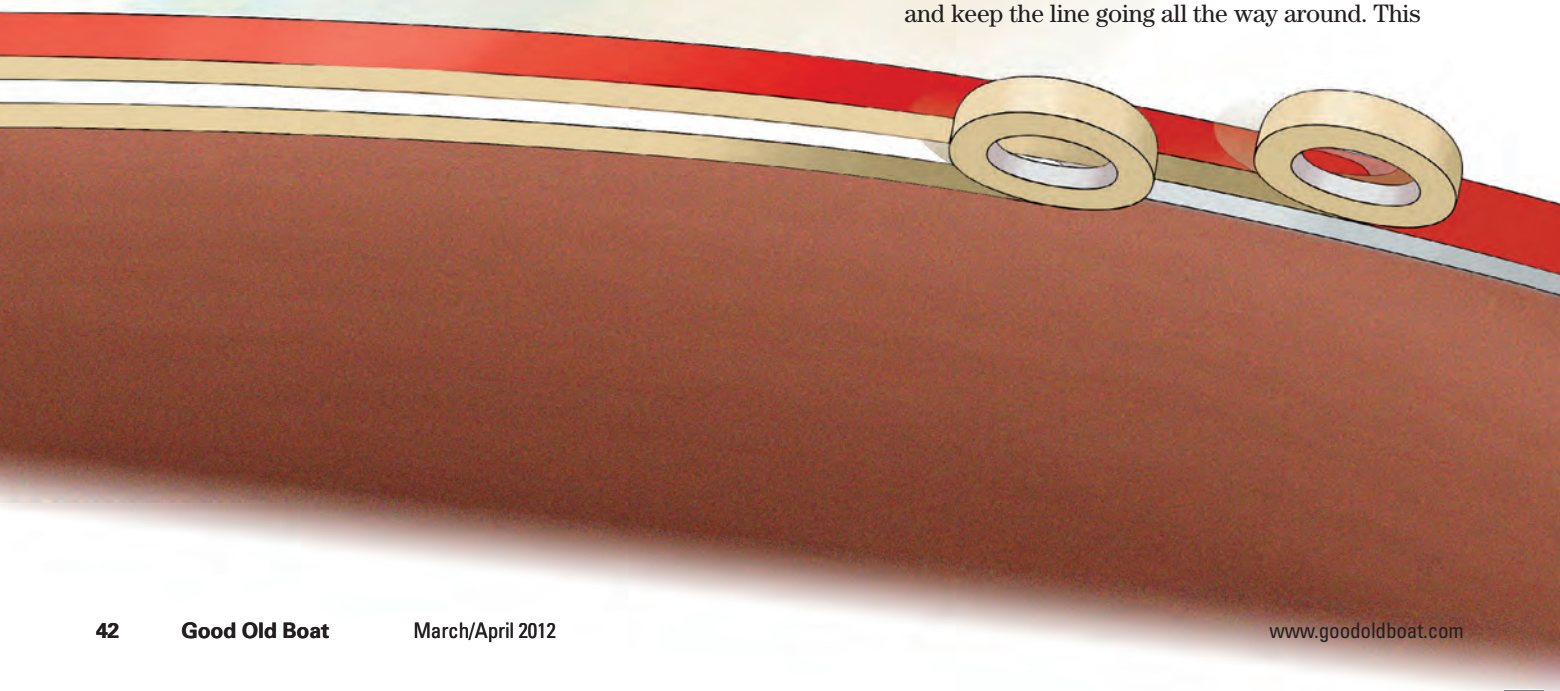
Taping is the key to success

Painting the lines seems to be a project many captains assign to novices. If you're a novice, I can offer some advice to make the job easier.

Fine Line is a 3M product used by all three of my coaches. It comes in widths from 1/16 inch to 1 inch. According to the company's website, "Scotch Fine Line Tape (is an) extruded matte finish polypropylene film masking tape that stretches easily over curves and tears easily by hand for sharp, clean paint lines."

I did not find that it tears easily by hand and used a knife to cut it. I did know that any tape will become one with the hull if left on in the sun. Plan to remove the tape the day you apply it. Here's what I learned from my mentors and personal experience as a paint application apprentice.

- **Kevin taught me how to tape.** If you're taping two lines around the hull, use two rolls of tape simultaneously, one for each line. That way you only have to go around the boat once to tape. Tape continuously. Don't cut the tape when you move the ladder or staging. Let the roll hang and keep the line going all the way around. This



Barbara protected the white reveal stripe by taping over it , top of facing page. She also taped above the red boot stripe to isolate it. On the same day, she painted two places: the red boot stripe and the bottom paint. A week later, she painted the white reveal stripe by taping off and protecting the red boot stripe and the bottom paint, bottom of facing page.

reduces the opportunity for paint to seep between the seams and makes removal a breeze. Use your fingernail or a plastic tool to press both edges of the tape down. "Use your fingernail every time, it's important," said my coach.

- **Isolate the areas you're going to sand.** Use the blue masking tape for this. If you don't tape before sanding, you'll scratch the hull at least once. (I speak from experience.) After sanding, remove the masking tape and remove the dust from the area with paint thinner on a rag.

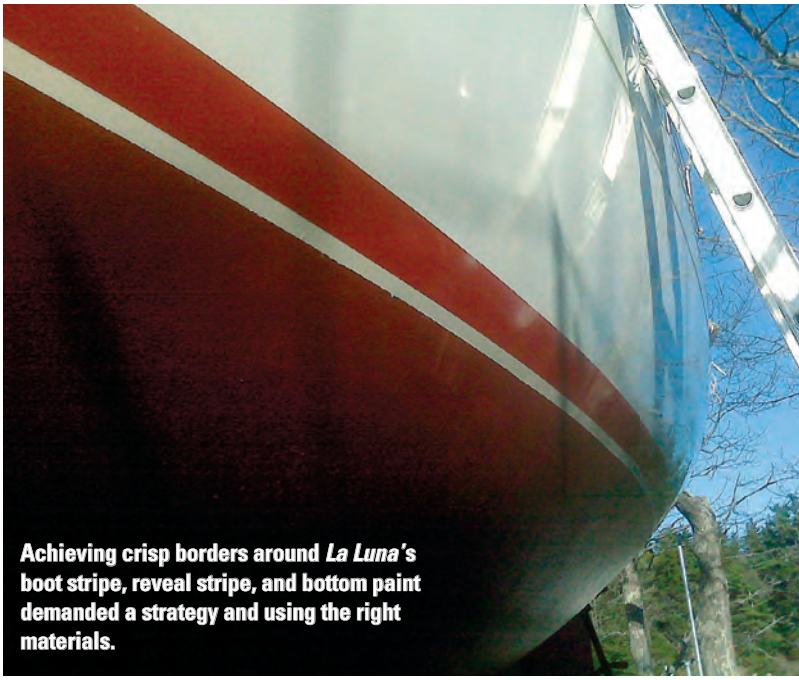
- **Plan your taping and painting for maximum efficiency.** Keep in mind that the paint has to dry thoroughly and harden before you can tape over it.

Puzzle it out

I was painting three adjacent areas and had three days spread over two weekends in which to do this. Since the weather was only in the high 50s to low 60s, Stew, Tom, and Kevin all insisted I wait a week before applying tape to any new paint. This meant I needed a strategy that would enable me to accomplish the job in the available time.

- **Day one – protected the stripe in the middle.** The white reveal stripe is a uniform line around the boat. I carefully applied 1-inch Fine Line tape over that reveal, masking off the lower edge of the boot stripe above it and the top of the bottom paint below it. Following Kevin's advice, I simultaneously applied a line of Fine Line above the boot stripe. With the reveal thus protected from the boot stripe and the bottom paint, I painted the red boot stripe and a band of bottom paint about a foot wide up to the reveal. I removed both lines of tape, which peeled away in nice long sections thanks to Kevin's advice.

- **Day two – painted the reveal stripe in the middle.** The next weekend, I applied Fine Line tape to isolate the white reveal, putting tape on the bottom of the boot stripe and the top of the bottom paint. Both newly painted areas had by then had a week to cure. After painting the white line, I removed the tape and then finished up the remaining bottom-paint job with a roller. That was possible because I'd painted a foot-deep swath of bottom paint below the white line on my first day. (Even I can avoid painting outside the lines when I have a foot-wide safety zone.)



Achieving crisp borders around *La Luna*'s boot stripe, reveal stripe, and bottom paint demanded a strategy and using the right materials.

- **Day three – polished the topsides.** By the third day, all that was left on my list was to polish the hull above the boot stripe. Since that had been painted a week earlier, I had no wet paint to avoid as I polished.

Stew was happy with the project and I was happy the project was done. I'd do it again, though — now that I know how.

Barbara Hart, a native Mainer, never sailed until she met Stew, the man who became her husband. Since then she's sailed and helped maintain a Seafarer 26, an O'Day 17, and La Luna, *a Pedrick-designed Cheoy Lee 47. In 2002, Barb and Stew sold their home, purchased* La Luna, *and moved aboard to live year-round in Maine. In the fall of 2010, they started their world cruise. She blogs about their adventures and projects at <www.HartsAtSea.com>.*

"I was painting three adjacent areas and had three days spread over two weekends in which to do this. I needed a strategy."

Sabres and

Classic classes are given new life

by Durkee Richards

A few paces down the first dock, I was captivated by a bright red hull. *Radio Flyer* is long and lean with the beautiful overhangs commonly found on designs from the 1950s and '60s. She looked fast and nimble. A few paces farther along I saw another . . . then another. In all, there were six of them in adjacent slips, each more beautifully conditioned than the next. Looking out toward the end of the next dock, I saw four more.

Sabres and Scorpions: we had driven most of a day, down into the farm country of central Oregon, to see them. This would seem a strange thing for a sailor to do, unless you happened to know that a fleet of elegant old sailboats closely related to the 5.5-Meter Class racers is based at Orchard Point Marina on Fern Ridge Reservoir, just west of Eugene.

Any casual dock-walker would quickly realize he had encountered something unusual, remarkable, and unique. Truly unique. The sailors of this fleet know of no other such fleet of restored and actively sailed 5.5-Meter cabin boats anywhere in the country or elsewhere in the world. If one *does* exist, they would very much like to know of it.

It began with Scott Colman and the two Columbia 5.5-Meter (C-5.5) boats he owned and sailed on Fern Ridge Reservoir in 1999. These were the flush-deck, molded-fiberglass versions of the 5.5-Meter Class raceboats that Columbia Yachts introduced in 1963. Scott enjoyed sailing his boats but couldn't find anyone on the lake willing to race against him.

One day, two sailors from the Alameda, California, C-5.5 fleet stopped by. They argued that — since they were part of an active fleet and Scott's boats were orphans — Scott should sell them his C-5.5s and move on to something else. It was further noted that the C-5.5s do not have self-bailing cockpits, which makes them rather impractical in an area with an annual rainfall of more than 40 inches. Scott was only too aware of the importance of a really effective boom tent. Reluctantly, he yielded to their logic and watched his boats head south.

Scott was determined to find a more practical boat with the same beautiful lines and superb sailing qualities as the C-5.5. The answer was the "cabin versions" of the 5.5-Meter boats from two manufacturers, Columbia Yachts and Ericson Yachts.

In 1964, Columbia Yachts set its in-house design team to work on a new deck mold for the C-5.5 hull that would incorporate a modest interior with galley, head, and sleeping accommodations for up to four. They called this boat the Sabre. Two years later, Ericson Yachts introduced a remarkably similar boat that it called the Scorpion. The sailing performance of the Sabres and Scorpions is so similar that the Orchard Point sailors race them as a one-design fleet.

A fleet is born

Scott began searching for Sabres and Scorpions in need of good homes. As the owner and operator of Underway LLC Sailboat Shop, Scott had the

Scorpions

Opinel, a Columbia Sabre, on facing page, and *Dagr*, an Ericson Scorpion, represent the two classes of restored raceboats that grace the waters of Fern Ridge Reservoir in Oregon.

resources to haul, store, and restore sailboats. So when he found a 5.5-Meter cabin boat at a good price, he brought it home to his yard. There, the boat would be reconditioned to the point that it could be sailed. He then sought a kindred spirit — another sailor with a love of classic boats — to become its owner.

Scott notes that these boats were very well built. The hulls are solid fiberglass. The decks have, at most, small sections of marine plywood in the foredeck. Hence, even after 45 years of use, the boats he has found have all been structurally sound.

A collector with a specialty, Scott has owned a dozen 5.5-Meter cabin boats over the years. He currently owns eight, both Sabres and Scorpions, including five in his yard awaiting reconditioning and new owners. He also has a line on eight more. Many have come from California, where classic boats are all too often being broken up and hauled to landfills when their owners lose interest in them, don't want to keep paying high slip fees, and cannot find buyers.

Once Scott locates a buyer for one of his boats, he encourages the new owner to base his purchase at Orchard Point Marina and become part of the fleet. Over the past decade, this process has brought the fleet up to 15 active boats: seven Sabres and eight Scorpions. Most owners have gradually upgraded their boats by taking on the tasks for which they have appropriate skills and equipment. They typically engage Scott's boatyard to do the rest of the job. The excellent condition of most of the boats in this fleet is a tribute to the skills of the boat owners and Scott's yard.

Major upgrade projects are done during the winter. In the Pacific Northwest, most keelboats remain in the water year round. However, starting in October each year, the Army Corp of Engineers lowers the water level in Fern Lake Reservoir so the reservoir can perform its primary role of flood control when late-winter and

Many of the boats have wooden toerails but *Radio Flyer*, a Sabre, has perforated aluminum. *Redeemed*, another Sabre, tries out her chute, below.

early-spring rains arrive. Unfortunately for boaters, when the water level is lowered, the marina docks settle on the muddy bottom. Like boaters in areas where the water freezes in the winter, Fern Ridge Reservoir sailors must haul and store their boats each winter. Spring brings the usual anticipation of sailing once more. For members of this fleet, it also brings an opportunity to see whose winter efforts have raised the bar to a new high for boat enhancements.

Most of the 5.5-Meters in the Orchard Point fleet have exteriors in better-than-new condition. They also sport useful equipment and rigging upgrades. Interiors are another matter. Ron Titterington, skipper of *Namaste*, says, "These are not really practical boats. No family today is going to buy one to go cruising. However, they sail wonderfully well and look bewitching in their slips." That well explains why these sailors love their boats and keep putting effort and dollars into sails, rigging, and handsome paint jobs.

Two boats in the current fleet are "fathers' boats." Paul Bartlett inherited his Scorpion from his father's estate. Appropriately, it is named *Legacy*. Bill Guske sails a Sabre his father bought in 1965. Bill sailed aboard her as a kid while growing up in San Diego. The family sold the boat in 1972.

In 2006, Bill and his family were living in Eugene when he learned his Dad's old boat was for sale in San Diego and in need of a lot of TLC. He purchased her, trucked her home, and began her restoration. He started with the tiller and moved to the interior. He credits his wife with the decision to start from the inside out.

The fleet is fortunate to have an independent sailmaker nearby. Lynne Fabricant calls her business Sailmaker's Art. Her shop shares the office building in Scott's boatyard. Lynne often races with the fleet, usually aboard *Dagr* for which she constructed both the mainsail and the jib.

Class origins

The Columbia C-5.5 traces its roots directly to the 5.5-Meter class raceboats. The design for these wooden one-of-a-kind boats resulted from the International 5.5-Meter Rule.

The first boats built to this rule were constructed in 1949 and raced in the Olympics for the first time in the summer of 1952. The class last competed in the Olympics in the 1964 games. Because the 5.5-Meter was a development class, considerable resources had to be invested in the design and construction of each new boat, which made it increasingly expensive to field a competitive boat.

Seeking to make a more affordable version of this appealing racer and daysailer, Columbia Yachts produced a molded-fiberglass version it called the C-5.5. Columbia secured the rights to make a mold from *Carina*, a 5.5-Meter designed by Sigurd Herburn that had been built in Norway in 1952 and brought to the U.S. by Bus Mosbacher.

The C-5.5 went into production around 1962 and about 40 were sold. I was able to visit with Dick Valdes via phone. Dick co-founded the company that ultimately became Columbia Yachts. He is still active in the industry through his involvement with the new Columbia Yachts, founded by his son, Vincent Valdes, that produces a line of high-performance racing yachts.

Dick notes that his company was successful in developing active C-5.5 one-design fleets around the country. He then approached the class association that governed 5.5-Meter racing to secure

approval for fiberglass boats to race with the wooden ones. Unfortunately for Columbia Yachts, the head of the class association at the time was the King of Norway. The idea of fiberglass boats competing against the wooden 5.5-Meter boats did not sit well with the king's traditional view of the sport.

Dick knew this would limit the market for the C-5.5, so he decided to bring out a cabin version of the same hull with a "cruising interior." This boat was called the Sabre and went into production around 1964. Ultimately, about 130 were produced (judging from the Columbia Owners' Registry). As expected with such a lean hull, interior volume was quite limited. However, the Sabre did offer a modest galley with a top-loading icebox, a marine toilet, 17 gallons of potable water, and berths for four.

The mast was stepped on deck. To avoid having a compression post obstruct the space belowdecks, a box beam was molded into the coachroof to carry the mast compression loads to the main bulkhead on either side of the passage to the V-berth. Bruce King was the primary designer for the new deck and the interior.

Such a line-up is a rare treat anywhere. The counter transoms, foreground, are on Scorpions. *Valkyrie*, below, a Columbia Sabre, is sailed by a crew of ROTC instructors.

Bruce left Columbia Yachts about the time the Sabre was introduced and joined Ericson Yachts. In 1966, Ericson introduced its own version of the 5.5-Meter cabin boat that it called the Scorpion. It had a remarkably similar hull and only slight differences in the shape of the keel and rudder, the transom, and the size and number of portlights. The boat was slightly lighter and had a bit less sail area. Both boats had a fractional rig, although the Scorpion had swept-back spreaders and thus only single lower shrouds.

Dick Valdes brought suit against Ericson Yachts. According to Dick, the basis of the lawsuit was that to produce the Scorpion, Ericson Yachts had acquired one of Columbia Yachts' 5.5-Meter boats and pulled a mold from it with only cosmetic changes to the transom. Given the language in the law at the time, Columbia did not prevail. Nonetheless, Ericson soon ceased production of the Scorpion. Dick believes that the decision was primarily driven by economic factors.

Evening racing

My wife, Mary Jeanne, and I met Scott at Orchard Point Marina on a Tuesday afternoon. He patiently answered our many questions and supplied a wealth of background material. When we parted several hours later, we were both looking forward to participating in the weekly Wednesday-night race.

The fleet has set up an Olympic Circle in the center of the lake. This consists of a hub, where the race committee boat anchors, and eight buoys that serve as turning marks. Mark #1 is due north of the hub. Proceeding clockwise, each higher-numbered mark is located another 45 degrees away from the preceding one.

Steve Norris serves as the race committee and uses his 1984 C&C as the committee boat. (Steve says he gets to satisfy his racing urges aboard two different classes of dinghies other nights of the week.) The course Steve set was: Start, #1, #2, #5, finish, twice around. This seemed a bit ambitious to me, but the results confirmed his judgment. The breeze held until sundown and all the boats were able to finish.

There is no set start time at this club. Most of the sailors in the fleet are in early to mid-career. They arrive at the marina and begin preparing their boats as soon as they are able to conclude their workdays. Their boats were

Owners set up their boats differently. The near Scorpion has lifelines and an electric outboard, the far one has neither.

manufactured with wells for outboard motors. However, since all the members of this fleet have faired them over to reduce drag, they have to sail to the start, so the start time is set after all the boats have gathered near the starting line. The gun for our race was nearly 1830 hours.

No motors also means that skippers must sail their boats out of and back into their slips. I commented to Scott that sailing a 32-footer into a slip must be quite a challenge. "Not really," he replied. "They're easy to handle." On race night, my skipper, Ron Titterington, pointed out that Orchard Point Marina is favorably situated relative to the prevailing summer winds. The boats are usually able to broad reach out of the marina and close reach back in. One skipper does use a small electric trolling motor to reduce the excitement associated with getting in and out of his slip.

I sailed with Ron aboard *Namaste*. A veterinarian by profession, Ron usually singlehands *Namaste* with his black lab, Beau. They graciously welcomed aboard another two-legged crewmember of uncertain pedigree and no papers.

When we were ready to back out, Scott gave *Namaste*'s bow a gentle push. Ron put the helm over and called for the jib to go aback. *Namaste* executed a graceful pirouette and we broad-reached toward the end of the breakwater.

Because he singlehands, Ron takes a low-key approach to these races. He uses a working jib and does not fly a spinnaker. This puts him at a competitive disadvantage, since most other boats set overlapping genoas and many fly a spinnaker on the downwind legs. However, Ron got to satisfy his competitive racing urges during his collegiate days racing high-performance dinghies. These days, he races with the fleet for the joy of sailing a lovely responsive classic.

Mary Jeanne was invited aboard the committee boat so she could photograph the grand old boats in action. Ten boats turned out that night, passing close by the committee boat to check in. Once he'd started the race, Steve hauled his anchor and followed the fleet around the course for Mary Jeanne's benefit.

Slender boats like these 5.5-Meter cabin boats usually feel a bit tender in their slips. Once under way with the wind on or forward of the beam, however, they heel quickly to their lines. The boats have relatively high ballast ratios (54 percent for the Sabre and 56 percent for the Scorpion) so they stiffen noticeably once on their lines. The wind freshened midway through the race, but *Namaste*'s heel angle increased only slightly. Her helm remained well balanced and light. However, the fresh breeze did give Mary Jeanne an opportunity to capture some nice images of these graceful classic boats on their lines with topsides gleaming in the late-day sun and showing a lot of well-scrubbed bottom paint.

Several boats flew spinnakers on the downwind legs. I frequently work the foredeck when club racing our J/32. Compared to these 5.5-Meter cabin boats, our J/32 has a generously sized foredeck, complete with double lifelines to help keep me and sails aboard. Most of the boats in this fleet do not have lifelines and some even go without a pulpit. I was quite impressed to see spinnakers in the air just after rounding the weather mark following a spirited beat.

The sun was just below the horizon as *Namaste* sailed into her slip. A crescent moon shining with an orange glow followed the sun down. The docks were busy with sailors chatting about the race results and the lovely evening . . . another fine evening of messing about in boats.

Durkee Richards learned to sail in the Sea Scouts on the Columbia River. His first date with Mary Jeanne, his sailmate, was on a 15-foot 6-inch Snipe. They spent nearly 40 years in the Midwest where they cruised Lake Superior on chartered boats until they bought their J/32 in 1999. After Durkee retired, they moved to the Olympic Peninsula and are now exploring the waters of Puget Sound and British Columbia.

Specifications

	Columbia Yachts		Ericson Yachts
	C-5.5	Sabre	Scorpion
LOA	32' 5"	32' 5"	32' 3"
LWL	22' 7"	22' 7"	22' 7"
Beam	6' 3"	6' 3"	6' 3"
Draft	4' 4"	4' 4"	4' 3"
Displacement	4,500 lb	5,200 lb	4,600 lb
Ballast	2,800 lb	2,800 lb	2,600 lb
Sail area	311 sq ft	347 sq ft	315 sq ft

The data for the Columbia Yachts boats are from the Columbia owners' website, <www.columbia-yachts.com>. The numbers for the Ericson Scorpion are from the SailboatData.com website. At 32 feet, the boats are nearly 10 meters long. The 5.5 comes from a formula derived from the International Rule that dates to the early 20th century:

$$5.500 \text{ meters} \geq 0.9 \cdot \left(\frac{L \cdot \sqrt[2]{S}}{12 \cdot \sqrt[3]{D}} + \frac{L + \sqrt[2]{S}}{4} \right)$$

where L is the length in meters, S is the sail area in square meters, and D is the displacement in cubic meters.

A well-loved Morgan 42 Mk II

She's seen a lifetime of devotion

by David VanDenburgh

PHOTO BY KEN ZIMMERMAN

Ron Rueckwald was drawn to the Morgan 42 Mk II's lines 37 years ago. He and his wife, Dorinda (inset), sail her on Lake Michigan.

John Keats wrote, "a thing of beauty is a joy forever." And although it's unlikely that the poet was thinking about a sailboat as he penned those lines, beautiful sailboats have certainly brought their owners — and a few dreamers — more than a little joy.

In the early 1970s, it was a Pearson Countess 44 that struck Ron Rueckwald's eyes and heart as the essence of beauty. With her pleasing lines, generous accommodations, and solid-looking full keel, the Countess was everything Ron thought a boat should be. But that beauty came at a price, and she was beyond his reach.

Ron was working at an airport and flight school in Rochester, New York, at the time. When a cash-strapped flight student found out that Ron was looking for a sailboat, he said, "Why don't you buy my boat?" Ron agreed to take a look at her, a new but rather unadorned 1973 Morgan 42Mk II. Although she sailed nicely and Ron liked her functionality, his heart remained fixed on the Pearson Countess. Furthermore, he recalls being rather surprised at the Morgan's minimal equipment. She was essentially a bare

***Pied Piper*'s saloon has classic in-line settees with pilot berths outboard, which Ron uses as storage areas, at left. Ron built a magazine rack and entertainment center under the saloon table, at right.**

boat "without even a stern pulpit," he says. Ron thanked the young man for the sail and returned to work.

A few weeks later, the man approached Ron and said, "I'm going to make you a deal you can't refuse." As it turned out, at that price it was a deal Ron *could* refuse, and yet he was warming to the idea that maybe this was the boat for him. He countered with a more reasonable offer, thinking there was no way it would be accepted. He was wrong.

That was 37 years ago and it was the beginning of an unexpected relationship with a classic sailboat. Ron is still a bit struck by his good fortune. "Who, out of dumb luck, looking for something else," he says, "buys a boat that they come to love so much they keep it for 37 years? That says a lot for the boat." Indeed it does, but anyone who has seen *Pied Piper* knows that the other partners in that relationship deserve at least an equal measure of recognition.

A childhood passion

Ron says he was first drawn to boats as a child. "As a kid, I received *Popular Mechanics* and *Popular Science*. I was fascinated by the powerboat and Chris-Craft ads." He recalls sending in a request for brochures that resulted in a salesman showing up at his dad's office one day. "My dad was less than thrilled," Ron says with a laugh.

He discovered sailing after enrolling at MIT. "There was a sailing pavilion with a beautiful little launch that I wanted to run," he says. "I found out that I had to have four sailing ratings in order to qualify, and so I started sailing." By the time he had earned his ratings, qualifying him to operate the launch, his priorities had shifted. The beauty and challenge of sailing captivated him. "I think I operated that launch one time, but by then it didn't matter — sailing was my interest."

Ron says he made the leap into boat ownership with a big boat because, as the father of a young family, he wanted to keep his family safe. Shortly after he purchased the Morgan 42, Ron had her name duly changed from *Copernicus* to *Pied Piper*. As chief Pilot of Flying Operations in Rochester, and often trailing his two young boys behind him, Ron chose a name that reflected two of his passions. He had *Pied Piper* emblazoned on the transom in the characteristic Piper Aircraft font. Ron adds that over the next few years, the name acquired even more significance on Lake Ontario as the competition trailed *Pied Piper* around the racecourse on Wednesdays and Saturdays. Accompanied by a flight student, an accomplished 8-Meter sailor, as his tactician, Ron and *Pied Piper* cleaned up in the Jib-and-Main division during three years of racing on Lake Ontario.

Morgan pedigree

Given her heritage, it's not surprising that *Pied Piper* has always been a strong performer.

Pied Piper's hull was laid up at the Morgan Yacht Corporation facility in St. Petersburg, Florida, in 1971. Two years later, her first owner purchased her and sailed her for a year on Lake Ontario before Ron bought her in 1974. As Ron describes it, *Pied Piper*, hull number 50 of 55 built, was one of five Morgan 42 Mk IIs that were caught between changes in the International Offshore Rule (IOR).

To open up the saloon, Ron cut back the leeboards on the pilot berths, at left. In the forward cabin, he fitted cabinets, at right, that provide useful storage space without impinging on the V-berth.

The Morgan 42 Mk II, which was available as either a yawl or a sloop, owes its heritage to earlier CCA designs, including the popular and attractive Morgan 41, a full-keel centerboard sloop with an attached rudder — itself the descendant of a classic CCA design, *Paper Tiger*. Her designer, Charley Morgan, a long-time member and supporter of the CCA, said that he wanted to design a boat that was more than just a competitive racer but could safely and comfortably carry her crew in even the most demanding conditions. "I wanted her to have good accommodations, excellent sea-keeping ability, and to be sturdy," he says. Charley had an opportunity to find out if he had succeeded with the design: he owned and successfully raced two 42 Mk IIs and, after being beaten around quite a bit in the Gulf of Mexico, he could attest to the boat's seakindly behavior.

As Charley describes her, the Morgan 42 is a transitional design, evidenced by her bolted-on fin keel and strut-mounted propeller that contrast with her pronounced sheer and long overhangs. The changes were rather moderate, however, and the boat shares many of the same classic lines and design features of her older sister, the Morgan 41. In fact, Morgan Yachts used the deckhouse for the 41 on the 42 Mk II, not just to save tooling costs, Charley says, but because it was such an attractive design.

A voyage deflected

In life as at sea, the winds do not always blow fair. Ron and *Pied Piper* left Rochester in 1976, bound for the Caribbean. Floods delayed their trip through the New York Barge Canal, but they eventually transited and had the mast stepped at the junction of the canal and the Hudson River. "I ended up in New York City, then went on to Atlantic City, but by then it was too cold, too late, and I had no crew," Ron says. He wintered aboard *Pied Piper* in Annapolis, where he recalls spending a few sleepless nights listening to the unnerving sound of the hull crunching against the ice.

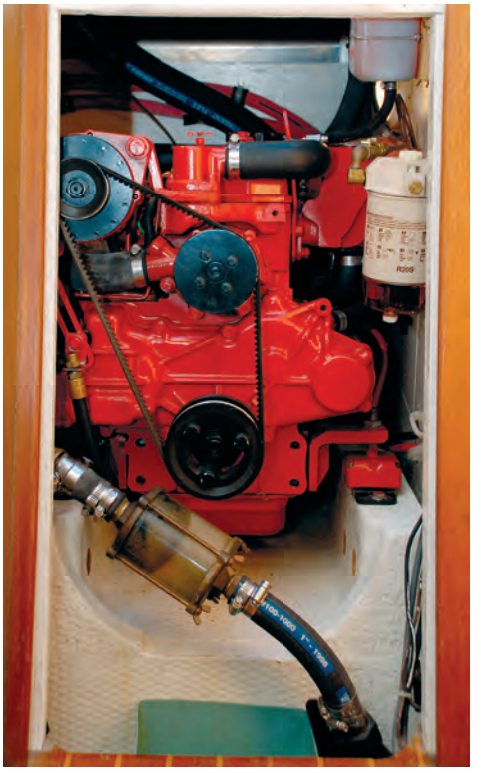
Rather than continue south in the spring, Ron stayed in Annapolis and spent a year cruising Chesapeake Bay before landing a job in Ohio. *Pied Piper* was trucked to Sandusky, Ohio, and deposited in the waters of Lake Erie. The new location put the pristine cruising grounds of the North Channel and Georgian Bay within reach. Ron says he managed to squeeze in four or five two-week trips — sometimes with his boys, other times with friends.

In 1987, Ron married Dorinda, who says she had a love for the water from very early on. She had grown up racing Interlakes with her dad on small lakes in Ohio. Eventually, as she grew older, the boats grew too — first a Coronado 25, then a Pearson 30, and finally a Pearson 35. Dorinda spent her childhood and teen years venturing with her family from their homeport in Sandusky, Ohio, to ports all over Lake Erie.

After Ron took a new job, rather than have *Pied Piper* trucked to her new port in St. Joseph, Michigan, they did what any reasonable sailors would do: they spent three weeks bringing *Pied Piper* on her own bottom across three lakes. "It was a wonderful experience," Dorinda says. "It was a little rushed, but we had a great time."

A lifetime of care

Pied Piper's classic lines and the meticulous care Ron has lavished on her over the past 37 years have drawn the attention of many an admirer at her home port of St. Joseph on Lake Michigan. You often hear the term "Bristol" applied to boats, but few boats probably live up to that honor. Ron could write the book on Bristol fashion. He has brought his engineering background from MIT and his technical experience in aviation to bear on virtually every system aboard *Pied Piper*. Some of the features are obvious. *Pied Piper* appears to defy the effects of time — it's hard to believe that her deeply glossy gelcoat is approaching its 40th birthday. Her teak toerails are finished bright



To enlarge the quarter berth, Ron replaced the original wet locker with a storage cabinet that can be removed, at right. The bracket in the hull side supports a backrest for the nav-desk seat. Ron is meticulous in maintaining even the bilge areas, middle right.

The Westerbeke diesel replaced an Atomic 4 in 1996. Ron keeps it and its surrounding area spotless.

> “Ron has lovingly preserved the original Datamarine wind and depth instruments.”

and flawless, and her topsides reflect a near-perfect image of the water.

Inside, her traditional layout is much as it was when she left the factory, and yet everywhere you look, Ron has tweaked and improved it. In the forward cabin, which is a traditional V-berth arrangement, Ron built finely crafted teak storage lockers in the outboard corners, adjacent to the bulkhead. He sized them so the remaining berth fits a queen-sized sheet, and yet each locker easily accommodates crew clothing. If there's anything obvious about their construction, it's that the quality surpasses the factory joinery.

In the main cabin, Ron turned the unused pilot berths above the port and starboard settees into storage shelves, carefully routing and shaping the leeboards to match the surrounding trim. Beneath the bulkhead-mounted table, Ron built a stereo cabinet that doubles as a magazine rack and storage unit. The invisible joints and smooth corners are indicative of Ron's skill.

Other modifications to the cabin include a removable storage box — again, teak — in the quarter berth in lieu of the factory-installed wet locker. When the storage locker is removed, the quarter berth is large enough to accommodate two guests. And for those peaceful evenings at anchor with the warm company of friends, Ron added a wine cellar, which was, he notes, very much a part of the yachting scene not too many years ago. Yes, Ron has style.

Updated but preserved

Only the consummate good old boater would see style in places like the bilge and the engine compartment.

Ron replaced the original Atomic 4 with a Westerbeke 38-B in 1996. If Ron's theme is order, precision, and elegance everywhere else, there's little reason to expect it would be otherwise in the strictly utilitarian spaces. It's evident that Ron's background in flying, with its emphasis on preventive maintenance and regular inspections, is part of his boating philosophy as well. The engine compartment is spotless. Likewise, the bilge is clean and dry — a thick stainless-steel backing plate that Ron installed overtop the original steel plate virtually gleams.

Whereas most owners would likely replace older instruments with new digital equipment, Ron has lovingly preserved the original Datamarine wind and depth instruments and had them refurbished. From stem to stern, *Pied Piper* is the picture of Bristol fashion.

Ron has brought *Pied Piper* a long way and yet, in many ways, he has kept her exactly as she was. She still gleams like new, but now she has the systems she lacked all those years ago: a 110-volt shorepower system and battery charger, wheel steering, stainless-steel holding tank, and many other details too numerous to catalog.

Oh, and, yes, she has a stern pulpit, too, and a classic ensign perched smartly on her taffrail.

Classic performance

Ron and Dorinda graciously offered to take me out for an afternoon sail last fall. As we entered the channel and headed for the lake, Ron hoisted the main and unfurled the genoa. A fresh southwesterly, blowing 10 to 12 knots, swept us along easily at 6 knots. For such a large boat, with a displacement of 18,500 pounds, she accelerated quickly and had a surprisingly light touch. Ron turned the helm over to me. I was impressed with her balance and her responsiveness. The high cockpit coaming provided a comfortable backrest and a secure ride. Her generous and unobstructed sidedecks made going forward easy; however, despite its good looks, the non-skid is not very aggressive, and my trip to the bow proved to be awkward, even for a guy who is pretty nimble on his feet.

The majority of Ron and Dorinda's sailing is to local destinations these days — South Haven, Grand Haven, Muskegon, Saugatuck — but to hear Ron recall passages made to the North Channel and Georgian Bay, it may not be too long before *Pied Piper* leads them once more on a new adventure.

David VanDenburgh started sailing with his parents at the age of 3 and has been afloat ever since. He's now introducing his young sons Jakob and Joshua to the world of sailing. A high-school English teacher, he maintains and sails Ariel, *his family's Cape Dory 36, on Lake Michigan.*

In this view, one that her racing competitors see often, *Pied Piper* shows classic proportions that owe a lot to the CCA rule.

PHOTO BY KEN ZIMMERMAN

The Morgan 42 Mk II . . .

. . . meets veterans designed for similar goals

by Ted Brewer

In this issue we have three 30-foot-waterline cruiser/racers, all designed originally for serious ocean racing with cruising as a sideline. It started in the mid-1960s with the Cal 40 as the first fin-keel/spade-rudder yacht on the ocean-racing scene since WW II.

Designed and built in California, the Lapworth Cal 40s naturally gained their first successes there. But the Pacific Ocean was not, of course, the stormy Atlantic and all that implied. East Coast designers and skippers knew you needed a real boat for the Atlantic . . . not a lightweight screamer but rather a boat that rated well under the Cruising Club of America (CCA) rule that emphasized husky displacement, a short waterline with long ends, and moderate sail area, often in a yawl rig.

But, eventually, a few Cal 40s were shipped east where they proved their mettle and won their share of silver over the best the East Coast had to offer. That opened up some eyes to the virtues of moderate displacement in a fin-keeled hull. As a result, East Coast sailors reluctantly gave up on the string of heavy keel/centerboard yawls that had begun with the famous Sparkman & Stephens 38-foot *Finisterre* in the late 1950s. Designers did an about face and started to create their *own* versions of fin-keel cruiser/racers, but that pesky CCA rating rule was still foremost in their minds. So, in order to obtain a favorable race-winning rating, most of the new fin-keel creations stuck to generous displacement on short waterlines, combined with moderate sail area.

The Morgan 42 and Newport 41 are typical of the East Coast designs of that era and are two of the better examples of the type. Their shark-style fins are a far cry from the trapezoidal fin of the Cal 40 but they proved to be strong competitors and did well under the CCA rule. Unfortunately, the first of the International Offshore Rule (IOR) races were run in 1970 and that rule started to become *de rigueur* for international competition. It was based on a combination of the old CCA and the British Royal Ocean Racing Club (RORC) rules and produced a new type of boat, but not a seaworthy type in my opinion. For a long coastal or offshore voyage, I would greatly prefer one of the three yachts in this review to any of the early IOR designs. The disastrous Fastnet Race in 1979, which resulted in the deaths of 15 competitors and the loss of a number of IOR sailboats, proved their weakness in heavy-weather conditions.

On the other hand, all three of our review yachts show a reassuring capsize figure and a good comfort ratio for their size. Indeed, when it comes to motion comfort, the Morgan and Newport are right up there with boats like the Valiant 40 and Whitby 42, and the Cal 40 is not too far behind. Their performance is a bit more difficult to estimate. The heavier Morgan and Newport, with their high ballast ratios, will show well when it breezes up, beating to weather rail down and plunging through the seas. The lighter Cal 40, with less ballast and stability, will have to reef down earlier on a windward beat but could still show her heels on a breezy reach and, with low wetted surface, should also do very well in lighter air.

Of course, these three yachts are no longer competitive against today's crop of long-waterline, light-displacement, fin-keel, tall-rig racing machines. But they will still be fun to take out on a club race for an afternoon, a weekend, or a week. And, for coastal cruising or even bluewater voyages, their owners will not be disappointed with their stability, comfort, or performance. All three have proven themselves over the years, both racing and cruising, on both coasts, across the oceans, and in every condition of weather and seas. Better yet, when the voyage is over, all three are the type of yacht that, as you row ashore, you can look back at her and say to yourself, "She sure is handsome!"

Morgan 42 Mk II | Newport 41S | Cal 40

	Morgan 42 Mk II	Newport 41S	Cal 40
LOA	42' 0"	41' 0"	39' 4"
LWL	30' 6"	30' 0"	30' 4"
Beam	11' 6"	11' 3"	11' 0"
Draft	6' 0"	6' 3"	5' 7"
Displacement	18,500 lb	18,000 lb	15,000 lb
Ballast	8,700 lb	8,215 lb	6,000 lb
LOA/LWL	1.38	1.37	1.30
Beam/LWL	.377	.375	.363
Disp./LWL	291	298	240
Bal/Disp.	.47	.46	.40
Sail Area	768 sq ft	750 sq ft	700 sq ft
SA/Disp.	17.6	17.5	18.4
Capsize no.	1.74	1.72	1.78
Comfort ratio	32.32	33.0	28.58
Year introduced	1971	1974	1963
Designer	Charley Morgan	C&C	Bill Lapworth

Ted Brewer, is a Good Old Boat *contributing editor. He began designing boats before the Cal 40 was launched and brings the lessons of his long and varied experience to these comparisons of good old sailboats.*

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Night vision

How we see in the dark, or not

by Robert Fisher

We live in a world of constant bright light: sunlight during the day and artificial light at night. As a result, we may not realize that there's a big difference in how our eyes function when exposed to bright light (day vision) compared to dim light (night vision). This is of particular importance to any mariner who is bold (or foolish) enough to venture out at night upon the sea.

To explore the differences between day and night vision, we'll look at the changes our eyes undergo during a 24-hour offshore passage with no artificial light allowed. This will help us decide what artificial light is best to use aboard at night and why.

First, though, we must understand the nature of light and how our eyes respond to it.

Visible light is part of a basic form of energy, electromagnetic radiation (EMR). One measure of EMR is wavelength (see facing page). For us, the visible spectrum is in the wavelength range between about 380 and 740 nanometers (nm). The primary source of EMR at these wavelengths is our sun. White light is all the wavelengths of the visible spectrum together, while colored light is a subset or mixture of some of the wavelengths.

Rods and cones

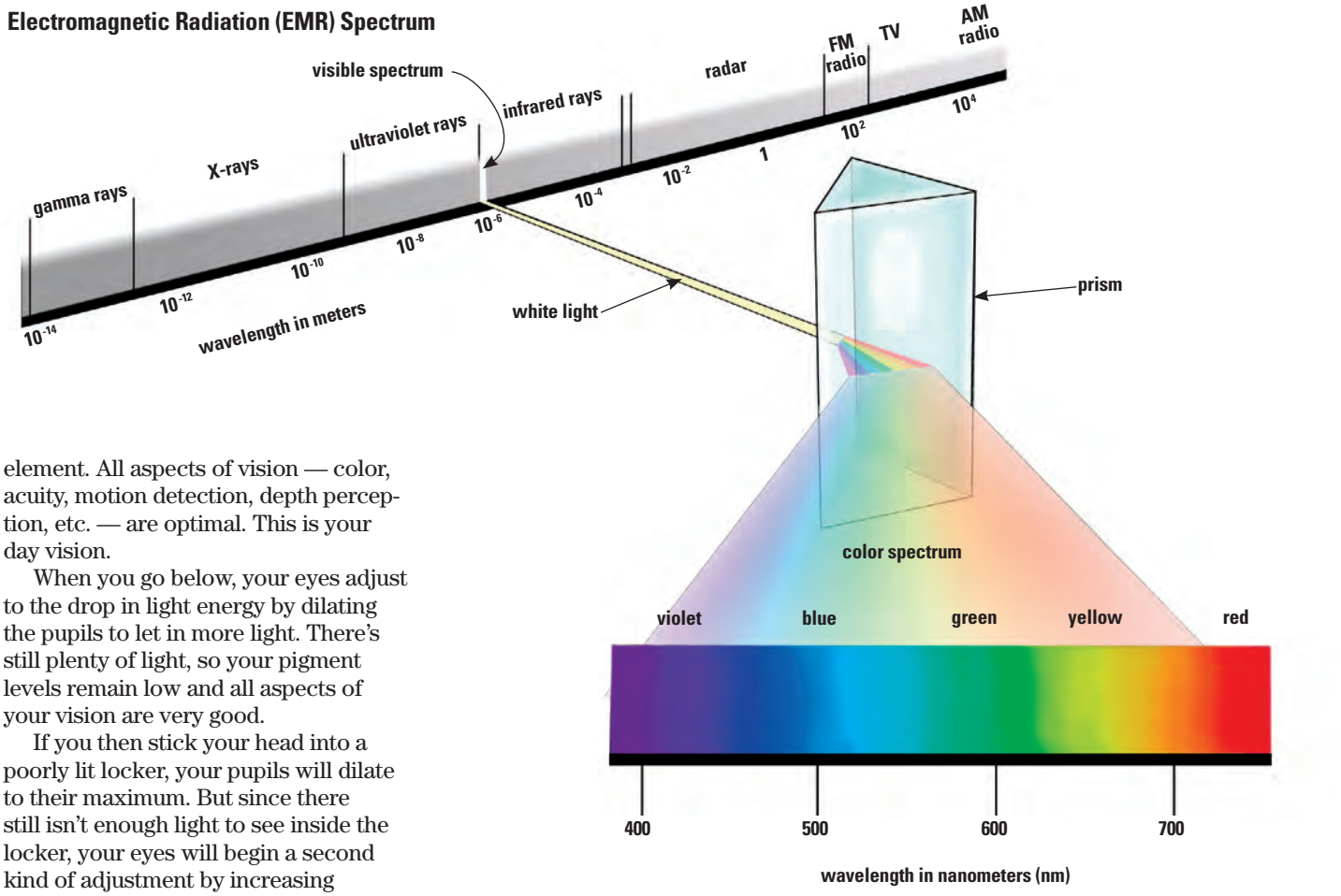
Our eyes respond to light with sensory receptors in the retina called rods and cones. These receptors use chemical molecules called photopigments, or simply pigments, to convert light energy into neural impulses that travel via the optic nerve to the visual cortex. This is what creates our vision (see illustrations on page 58).

There are three types of cones, each with a different pigment that makes it most sensitive to a particular wavelength of light. This "tuning" is what makes cones responsible for color vision. Cones have a relatively low overall sensitivity and need a lot of light to function. They occur sparsely in most of the retina but are densely packed in the middle, an area called the fovea. Visually, this is where we have our narrow center of focus and get our highest acuity (seeing fine details, such as letters or numbers on a chart).

The rods are in the surrounding retina only and are responsible for our peripheral vision. They don't provide color and have poor acuity, but they have a higher sensitivity than cones and are the only receptors that function in night vision. They are good at detecting movement and the edges of light-dark contrasts.

The passage begins

You will begin your passage on deck at noon, bathed in sunlight under a cloudless sky. The pupils of your eyes are constricted to their smallest size to let in the least amount of light and the pigments are reduced to their lowest levels to make the rods and cones least sensitive. Since your eyes are superbly adapted to sunlight, they are in their



ILLUSTRATIONS BY FRITZ SEEGERS

element. All aspects of vision — color, acuity, motion detection, depth perception, etc. — are optimal. This is your day vision.

When you go below, your eyes adjust to the drop in light energy by dilating the pupils to let in more light. There's still plenty of light, so your pigment levels remain low and all aspects of your vision are very good.

If you then stick your head into a poorly lit locker, your pupils will dilate to their maximum. But since there still isn't enough light to see inside the locker, your eyes will begin a second kind of adjustment by increasing pigment levels that will, in turn, increase their rod and cone sensitivity. This is called dark adaptation. Unlike the milliseconds for the pupil response, this process is measured in minutes. You'll have to wait a bit to see what's in that dark locker.

Once back in the cabin, your eyes constrict the pupils and reduce the pigments to readjust to the brighter conditions. This is called light adaptation. It's important to note that, although it takes minutes — up to 25 to 30 in some cases — for dark adaptation, it takes only tenths of a second to a few seconds for light adaptation. *We get increased receptor sensitivity slowly but we lose it quickly.*

Back on deck in the sunlight, your eyes need only the cat-quick pupil response to take care of minor fluctuations in light, such as those caused by shades and shadows and by the sun setting lower in the sky.

The decreasing light energy late in the day eventually will cause your pupils to reach their maximum dilation. At this point, dark adaptation begins and pigment levels rise. Rod and cone sensitivity increases and your vision remains good. As the light continues to wane, the cones will be the first to reach their limits. Around sunset, they quit. Color and acuity are gone. The rods are still functioning and, if it's a clear, moonlit night, you can see and move about on the boat quite well. This is your night vision.

"If it's a clear, moonlit night, you can see and move about on the boat quite well. This is your night vision."

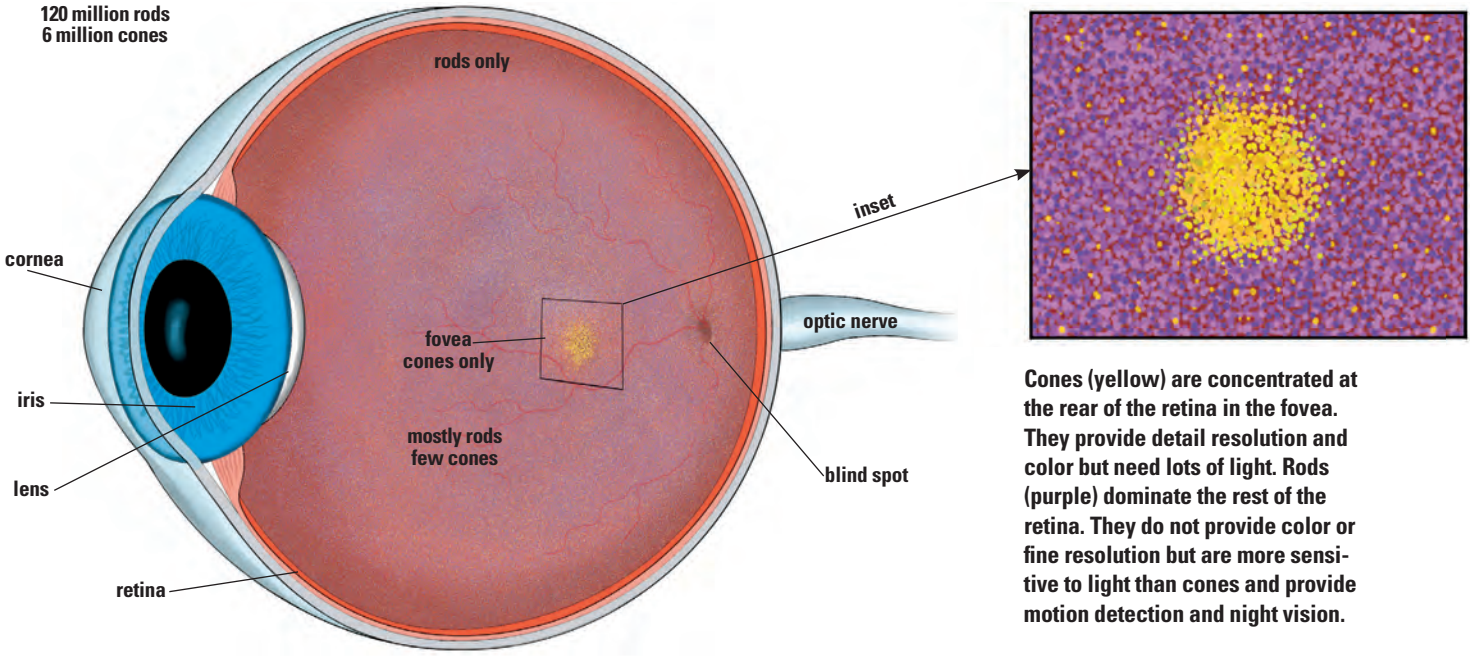
If the moon sets and the sky remains clear, starlight will still give you minimal vision. But it's getting thin. Your pupil size and pigment levels are maxed. Your rods are reaching their limit. Once some clouds roll in, the parameters are exceeded. You're really in the dark now and must wait for first light.

First light brings you back into the lower limits of night vision. As dawn approaches and light energy levels rise, pigment levels drop and receptors become less sensitive. Light adaptation continues and around daybreak there is enough light for your pupils to begin responding. Soon, the sun is high enough in the sky to put you back into day vision again.

Which light will help?

If this 24-hour journey teaches us anything, it's that we don't do very well visually after sunset. Under the best of moonlit conditions, we do OK, but we often need help from artificial light, especially if we want cone vision and its acuity. The question is, what artificial light is best for the mariner at night?

The right light must cause the minimum loss of our vulnerable night-vision sensitivity. Imagine that, after reaching peak night vision (a process



Cones (yellow) are concentrated at the rear of the retina in the fovea. They provide detail resolution and color but need lots of light. Rods (purple) dominate the rest of the retina. They do not provide color or fine resolution but are more sensitive to light than cones and provide motion detection and night vision.

that can take up to 30 minutes), your eyes are exposed to a bright light such as a flashlight or overhead cabin light. Light adaptation happens in an instant. Pigment and sensitivity levels drop. How much depends on how bright the light is and how long it's on. If the light is now turned off, you're left with reduced night vision. You have been literally "blinded by the light."

In a very brief period of time, you have lost a precious commodity. Your night vision has been degraded or, with a really bright light, obliterated. It will take minutes to regain. But what if you're trying to set a course for the faint outline of a gap between two approaching squalls and can't afford to lose precious minutes of night vision?

The guiding principle when selecting the best artificial light is to minimize its negative effect on your night vision. The way to do this is by using the absolute lowest level of light needed to get the job done. It's a matter of physics and physiology. The brighter the light (physics), the more pigment reduction and loss of sensitivity (physiology). Hence, the greater the loss of night vision and the longer it takes to recover.

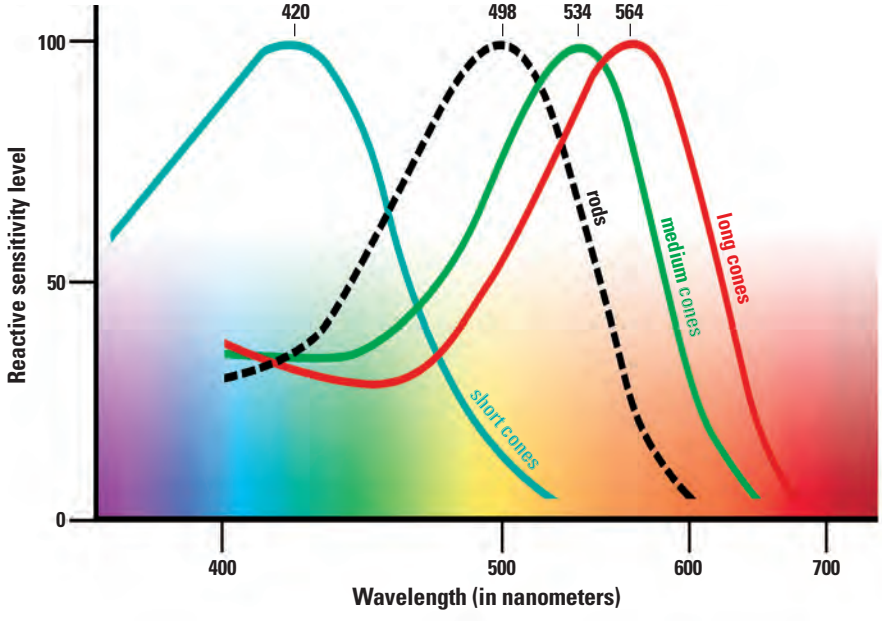
Therefore, the best artificial light to use at sea at night is one that has an adjustable light level. One with a continuously adjustable light level is ideal. Rather than having two or three settings, with perhaps the lowest setting still being too bright, a continuous adjustment lets you fine-tune the light to the ideal minimum-to-get-the-job-done level.

Red light is traditional

What about color? Red light has been used traditionally for nightlights at sea. A look at the illustration below shows why. Two of the cone types have a high sensitivity to light in the red-wavelength region while rods have a low sensitivity to it. Given the right level, a light around 600-nanometer wavelength would stimulate cone vision but leave the rods relatively unaffected. This would leave the rods with less dark adaptation readjustment when the light is turned off. Your eyes would more quickly regain good night vision.

Research has shown that dark adaptation is faster after exposure to red light compared to other colors. But the effect is modest. Unless the light is a deep, pure red, other wavelengths will be mixed in. These wavelengths can stimulate the rods and cancel the shortened dark adaptation effect.

The task at hand also must be considered. If it calls for good peripheral vision, a red light that doesn't



stimulate the rods is not ideal. Tasks involving depth perception — such as moving about the boat or grabbing a sheet or halyard — require good peripheral vision. A broader-band light would be best. This would allow both cones and rods to function and give you your best overall vision.

You can go high-tech and use electronic gadgetry to produce a broad-band, continuously variable light, or you can go low-tech and use an option that's widely available and has been around for ages. It's the variable-wick oil lamp. It has both qualities you're looking for, a relatively broad-band light to engage all the retinal receptors and a continuously adjustable light output that will let you fine-tune to the minimum-to-get-the-job-done ideal level. With the right lens and shade configuration, it should serve equally well at the chart table, in the cabin, and outside on deck.

Enjoy the night

When the sun sets at sea, let your night vision develop early and completely. Safeguard it jealously by using the absolute minimum of artificial light. Then sit back and watch the silvery play of moonlight on the waves, catch a glimpse of that meteor streaking across the Milky Way, or enjoy the bioluminescent display swirling in your wake.

Robert Fisher is a retired psychology professor who first learned about night vision at sea during a hitch in the Navy in the 1960s. He's a member of the Laguna Madre Yacht Club in Port Isabel, Texas, where he sails Zephyr, *a good old 1979 Cape Dory 28.*

UV EXPOSED

Over many years, reflected UV glare degraded even the underside of this deck ventilator.

JIM SCHMITT

It's invisible, insidious, and destructive

by Bill Sandifer

Everyone today knows we shouldn't go out in the sun without wearing adequate protection, but it wasn't always so. Noel Coward wrote a song, "Mad Dogs and Englishmen go out in the Midday Sun," about the English habit of ignoring the customs of native inhabitants of Southeast Asia and other tropical places who took cover from the sun at the time of day when its rays are harshest.

Opinions abound concerning the bad effects of the ultraviolet (UV) component of sunlight and how we should protect ourselves from exposure to it. We should expand this concept to include our good old boats. UV is a hungry destroyer of all things under the sun.

Aboard our sailboats, many items critical to their operation and to our comfort are subject to UV degradation. It's our job to find them and replace them with parts made from less vulnerable materials, or simply replace them within a reasonable time frame with parts made of similar materials. First, it's useful to know what UV is and how it affects us.

A, B, and C, of UV

UV light is electromagnetic radiation with a wavelength shorter than that of visible light but longer than that of X-rays. It gets its name because it has a frequency higher than that of violet light, the highest frequency that is visible to humans.

Three types of commonly classified ultraviolet light — UVA, UVB, and UVC — all originate from the sun and are harmful, but each has some useful characteristics.

UVA, commonly referred to as black light, has a wavelength range of 400 to 315 nanometers (nm). Your dentist uses UVA to harden the epoxy when he fills your teeth, and police find it helpful when they are looking for fingerprints.

UVB, which is in the wavelength range of 315 to 280 nm, is the one that causes sunburn.

UVC, in the wavelength range of 280 to 100 nm, is germicidal. It is used to disinfect milk and has other specific and useful applications.

Even though 97.5 percent of the UV that originates from the sun is absorbed by the earth's atmosphere, enough UV reaches the earth's surface to be harmful.

Susceptible parts

We've all been warned by dermatologists to protect ourselves with UV-resistant clothing and lotions, but what about our good old boats? They too are affected by UV and have no sunscreen. Everything aboard — hoses, tanks, through-hull fittings, lines, fabric, thread, and plastic moldings — is subject to long-term degradation by UV. Even reflected UV is damaging over time. Just as a person sitting under an awning

at the seashore will get suntanned, our equipment will be made brittle by reflected ultraviolet light.

Some of the materials most susceptible to UV damage are sail stitching, lines, trailer hold-downs, and fabrics. My grandson put his weight on a trailer hold-down recently. What should have been a 2,000-pound-test hold-down parted under his 40-pound weight. Sailcovers and UV strips on roller-furling jibs are put in place specifically to protect the sailcloth from UV degradation. Conventional polyester thread lasts between three and five years in the southern U.S. Sailmakers ask for a premium to provide UV-resistant stitching, but this additional expense will extend the life of the stitching to between five and 10 years. The manufacturer of Sunbrella says the material will last approximately 10 years in constant use but — with care and UV protection — I've had a sailcover last up to 12 years. In today's competitive racing world, running rigging is evaluated based on UV-resistance — as well as stretch, strength, and so on — as a prime factor for success.

Other items to protect and check for degradation are plastic portlights, which become brittle with age and crack, and plastic through-hulls above the waterline that are exposed to sunlight. Just a note: plastic through-hulls should never be used below the waterline unless they are made of Marelon, a fiberglass-reinforced polymer designed specifically for the purpose.

Even parts that are not exposed directly to UV can be impaired. My sailboat had a plastic holding tank under the V-berth. While it was not directly exposed to sunlight, the plastic had become so brittle that, when I tried to remove it, the fill fitting broke in my hand. The deck pumpout valve had been fully exposed to UV and also had deteriorated.

While you can't put sunscreen lotion on a plastic fitting, you can remove a plastic through-hull and substitute a bronze through-hull or replace a plastic fill pipe with a stainless-steel one. Develop a list of the types and locations of all of the questionable fittings on your boat then, in an orderly manner, visually check and replace them as needed. Waiting until they fail could prove disastrous.

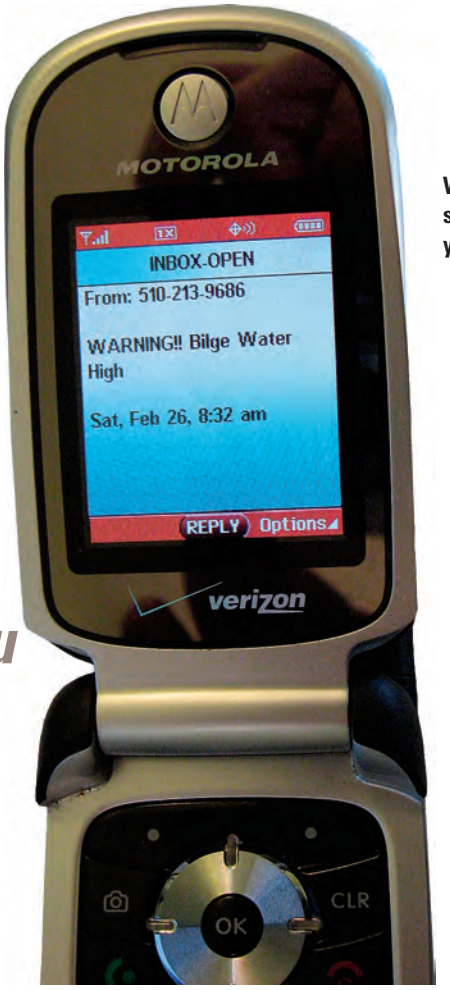
While you are compiling the list and inspecting the fittings, running rigging, sails, and so on, be sure to wear a hat and appropriate sunscreen to protect *yourself* from UV. This is vital for your enjoyment of your sailboat and your enjoyment of life.

Bill Sandifer started sailing at age 8 or 9, and through high school and college taught sailing at Sagamore Yacht Club in Oyster Bay, New York. He has cruised the Far East, the Mediterranean, and the East Coast of the U.S. and has had a boatbuilding business. Bill and his wife, Genie, currently sail an Eastward Ho 31 cruising sloop they've owned for 12 years.

Boat, phone home

Have your boat text you when it's in trouble

by Van Taiariol



With a few inexpensive parts and some free software, you can enable your boat to call your cell phone.

Recreational boats can lead a lonely life. On the weekends, it's party time with lots of guests and action. During the weekdays, they just hang around the docks gently tugging on their lines. That doesn't mean they can't get themselves into big trouble. They can drink too much . . . getting lots of water in the bilge. They can smoke too much . . . by having a fire on board. They can have undesirable guests over . . . with unwanted intruders.

Wouldn't it be nice if your boat could send you a text message when one of these calamities occurred? Commercial systems are available that do this. Unfortunately, they cost more than $800 and have an annual service fee of more than $200.

With a few off-the-shelf parts and some downloaded software, however, you can build a system yourself for less than $100 and obtain service for it for less than $50 a year. If you know a little about DC wiring, are able to solder two wires together, and can download a file off the Internet, you have all the necessary skills. Three components needed along with the software download are a pre-paid cell phone, a SIM card, and a microcontroller. Up to four optional inputs can be connected to the system for sending alarms. Inputs can be a bilge float switch, a magnetic switch on your hatch, or any other contact closure. (A smoke detector with a relay output is available, but for upward of $100.)

The phone

The Motorola C168i is an ideal candidate for this project. As it turns out, the headset jack on a C168i is also a serial port. This simply means it will accept digital signals from the microcontroller. This is the same phone that was originally used in Lo-Jack anti-auto-theft systems. Although these phones are out of production, they're still available from several vendors for $25 to $40.

When buying the phone, make sure it's "unlocked." This means it can be used with any wireless carrier and has not been "locked" by one specific carrier. These phones were one of the original pre-pay "GO-PHONE" telephones by AT&T, so most will have an AT&T logo even if they have been unlocked.

Along with the phone, you need a SIM card and some pre-paid air time. The SIM card provides the phone's identity with a specific carrier, such as Verizon and AT&T. I have found that, for this project, T-Mobile is the best deal. The T-Mobile SIM card is around $6. Add another $10 for air time. The T-Mobile $10 air time is good for 90 days and then automatically expires. You must buy more pre-paid minutes before the 90 days are up. A full year's service costs $40. This assumes that your boat will not be sending you too many messages. Ten dollars' worth of air time is good for about 30 send messages within the 90-day period.

Pre-paid T-Mobile minutes can be purchased online or from convenience stores, drugstores, and other outlets. Other carriers' air time expires within 30 days, making them more expensive for a full year's service. Before making a final decision on a carrier, make sure it offers coverage in the area where you keep your boat. Most carriers have coverage maps on their websites.

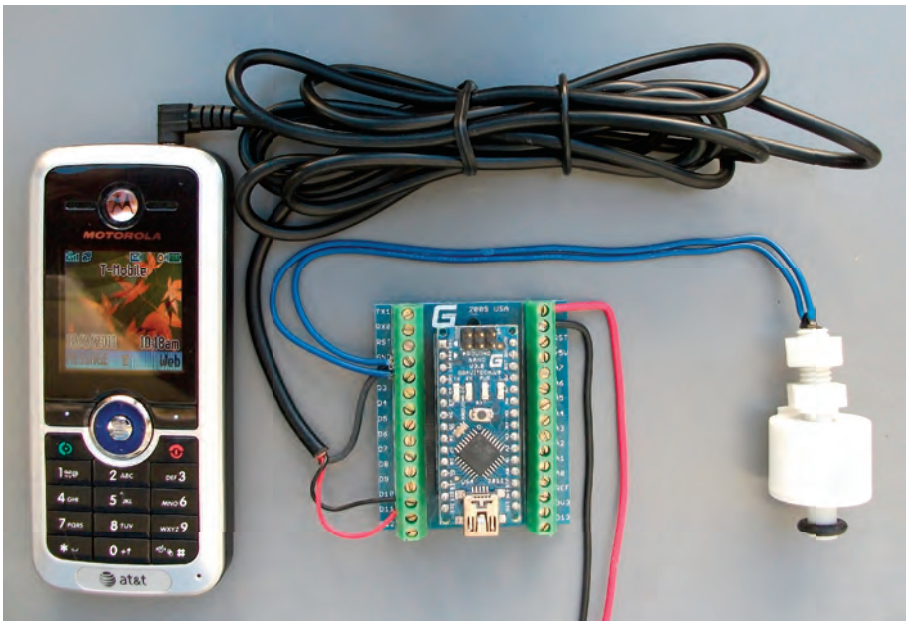
When you are actually on your boat, the cell phone can also be used as, well, a cell phone.

The microcontroller

I selected the Arduino Nano microcontroller for this project. This device is geared for hobbyists but is also used in commercial prototyping applications. If you have never worked with microcontrollers, this may seem a little daunting. Think of it this way: I have no idea how an iPod works but I can still download a song to it. Loading software into the Arduino is as simple as using your computer's USB port. The Arduino Nano, carrier board, and connection cables cost about $65.

The software

You need two downloads. The first, from the Arduino website, is free. This



Connecting a sensor and phone to the microcontroller is easy. The software does the clever stuff.

software allows you to program the microcontroller. The second is a custom program I developed for this project that you can download from the *Good Old Boat* website (see "Resources"). This custom program requires some edits: you have to enter the phone number you want it to call and the message you want it to send for each event (smoke alarm, bilge alarm, or intruder alarm).

Each type of event can call a specific phone number and send out a specific message. As an example: Call 1-234-567-8962, send message "WARNING! Bilge High." If you want a sensor activation to call two phone numbers (the second might be the marina, for example), that will require the input (the smoke detector, say) to be connected to two events on the controller.

This text message is sent by what is called SMS "Short Message Service." Just about all cell phones today will accept incoming SMS messages. An SMS message can be up to 160 characters long. For this project, however, I would limit the message to 60 characters.

Putting it all together

With the phone attached to the microcontroller, any contact closure will cause the microcontroller to send a short message to the phone number you have programmed in it. After transmission, the microcontroller will hang up the phone. The micro will send out only one message for any event.

After a message has been sent, it must be manually reset. This prevents the system from sending multiple messages for an event. Consider this scenario: if a high-bilge-water float is right at the activation point, any rocking of your boat would trigger multiple messages.

The fourth event is time-delayed. This is for an intruder alarm. If a magnetic switch installed on your hatch is triggered by somebody opening the hatch, there will be a 30-second delay before any message is sent. Just like a home alarm system, this allows sufficient time for you to de-activate the alarm before a message is sent when you are the one opening the hatch.

Resources

Unlocked cell phones
N1 Wireless: www.n1wireless.com
Bargaincell: www.bargaincell.com
Newegg: www.newegg.com

Microcontroller
Arduino: http://arduino.cc/en

12-volt DC smoke detector with relay output:
www.go2marine.com

Software, parts list, and more:
www.goodoldboat.com/reader_services/more_online/boat_phone_home.php

If you have shorepower available at the boat, the AC charger supplied with the cell phone will keep the cell phone fully charged at all times. If not, a 12-volt-DC car charger for this model of phone can be purchased at a very low cost. The Arduino and cell phone draw about 25 milliamps at 12 volts DC, so budget about 18 amp-hours of house battery consumption per month. A 5- to10-watt solar panel should do the job for a boat on a mooring.

You can download all the custom software, the parts list, vendor contacts, and instructions from the *Good Old Boat* website.

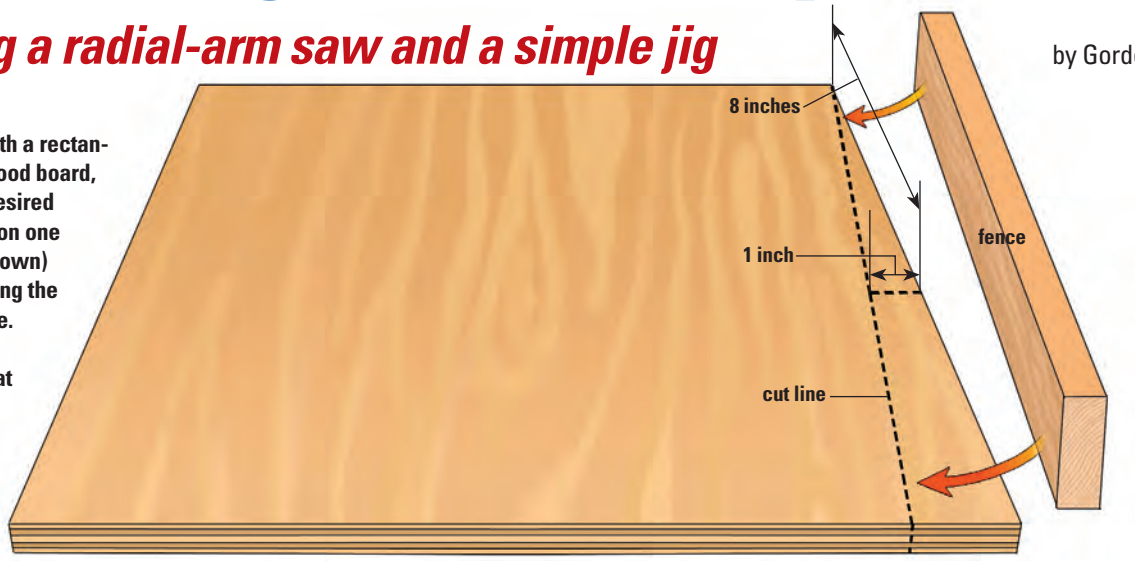
Then, just like ET, your boat can phone home.

Van Taiariol is the owner of Borel Manufacturing, <www.borelmfg.com>, which makes and sells alarms and other products for sailboats, powerboats, and commercial fishing vessels. He has sailed out of San Francisco for the past 25 years and currently owns a Nonsuch 26.

Scarfing made easy

Using a radial-arm saw and a simple jig

by Gordon Otto



FRITZ SEEGERS

Starting with a rectangular plywood board, mark the desired scarf ratio on one side (8:1 shown) and cut along the (dotted) line. Fasten the fence to that edge.

Sometimes, the lumber you have (or can obtain) isn't long enough for the job you want to do. When building a wooden boat, for example, and you want the chine logs and stringers to be continuous, you have to scarf two or more pieces together to get the length you need. You can scarf lumber up to 3 inches wide easily and accurately on a radial-arm saw with the help of a simple jig.

To make the jig, start with a piece of ¾-inch plywood that's approximately 18 inches square or larger. The panel should be large enough to accommodate a fairly long fence that could also be of ¾-inch plywood.

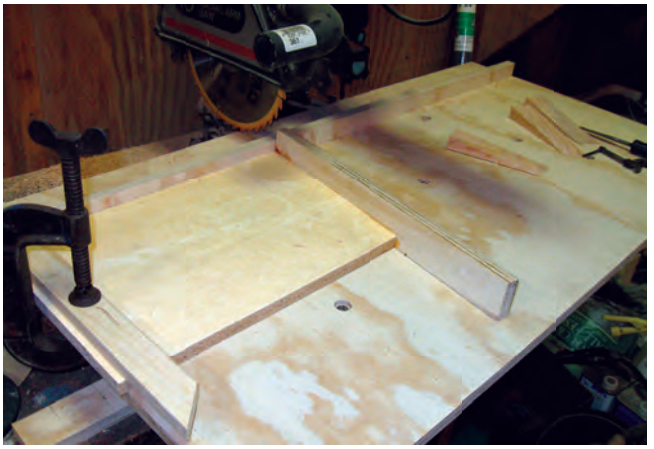
To achieve the typical 8 to 1 scarf ratio, measure 8 inches along one side, then 1 inch in. Connect this point to the corner and draw the diagonal (the dashed line on the diagram). Cut along this diagonal to make the base for the scarfing jig.

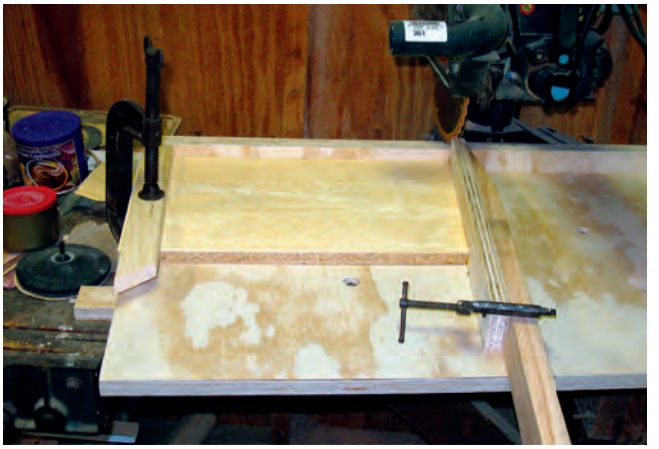
Nail and glue a 2½- to 3-inch-high fence to the angled side of the jig base. Make sure the fence is square to the saw table or the scarfed pieces will have a gap along one side when fitted together.

Position the jig on the saw table, aligning the fence next to the saw blade, and clamp the lumber you want to cut to the fence. Use a sharp combination blade or any other blade suitable for ripping. (The saw blade shown in the photo is a 60-tooth fine-cut blade and not what I used in the end to cut the scarf.)

Advance the saw very slowly to avoid forward surge that tends to alter the alignment of the cut.

Gordon Otto fell in love with sailboats at an early age. He began building and repairing boats in his yard while in high school in Texas. Years later, while earning a doctorate at NC State, he built several Sabots and two 11-foot catboats from an old issue of How to Build 20 Boats. *Now retired in South Carolina, he is building a 15-foot California Pelican.*





To produce uniform scarf cuts, the jig must first be clamped firmly to the work table, at left. The wedges lying on the far side of the table are the offcuts. With the piece to be cut clamped to the fence, at right, advancing the saw slowly will produce a clean cut.

Halyard replacement

Do it in a jiffy with a tape splice

by Jim Hildinger

The tape splice is very simple. Butt the ends of the old and new halyards together on the strapping tape, at left, and fold the tape around the lines. For added security, wrap the splice with electrical tape, at right. The deck or the mast make convenient surfaces to work on.

I needed to replace the internal spinnaker halyard on my Catalina 27 and chose the easy way to do it, using the old halyard as the messenger for the new. It'll work for you too.

Cut nice clean ends on both the old and the new line. Hold the butts together with about six inches of filament-reinforced strapping tape, the kind used to wrap packages. Wrap that with a minimum of two lengths of electrician's tape (four if you are squeamish!). If you are still doubtful, you could substitute two (or four) windings with heavy thread for the electrician's tape. The joint must be flexible so it will bend easily around the masthead sheave. Pulling as hard as I can, I have never been able to break this splice.

Now, if you have offered the right prayer to the right gods, you will end up with a new halyard and a really nice 87-foot tie-down rope for your truck!

Jim Hildinger has been sailing on Lake Tahoe for 51 years, first in an O'Day Tempest 23, then on his Catalina 27. He was president of the International Catalina 27/270 Association for a few years and remains active in the group.

Homemade clamps

A woodworker sometimes has to extemporize

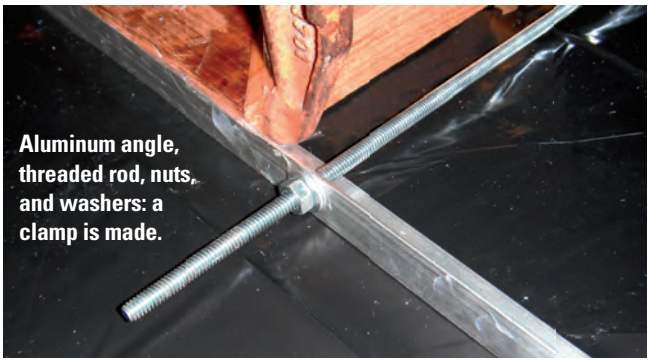
by Connie McBride

We have all wished at times that we had three hands. When tackling boat projects, however, it seems that what we need more of isn't hands but clamps, the mechanical version of "Here, hold this." A famous boatbuilder once answered the question, "How many clamps do you need?" with "More than you have." An entire locker on our 34-footer is dedicated to clamps, but when assembling a cockpit table for a customer, my husband, Dave, still needed more.

The solution was not as simple as buying more clamps at the store. Dave couldn't find the perfect clamp for the job, so he built his own. He was trying to epoxy three border pieces to the leaf of a cockpit table. He realized that, while he could keep one piece tight with standard clamps, it was not going to be easy to clamp the other two while applying even pressure and keeping the pieces aligned and square.

Instead of fighting with standard clamps and worrying about the pieces not gluing well, he built his own clamp. He bought two pieces of 1-inch aluminum angle and two threaded rods. With washers and nuts for both ends of the rods, he was set. He covered the aluminum angle with packing tape so the epoxy would not make it part of the end product.

He applied the epoxy, aligned the pieces, and tightened the nuts on the threaded rod until the two pieces of aluminum were applying equal pressure the length of the two border pieces. He used standard clamps — to both push and pull — for the other piece. The end result was breathtaking: a beautiful table, satisfied customers, and more clamps for the locker.



Aluminum angle, threaded rod, nuts, and washers: a clamp is made.

The improvised clamp complements the conventional clamp.

With his combination of clamps, Dave was able to put the squeeze on three edges of the table leaf, above. The finished mitered joints in the table's border pieces justified Dave's efforts, at right.

Connie McBride, her husband, Dave, and their three sons set off on Eurisko, *their 34-foot Creekmore cutter, in 2002 and have since spent most of their time cruising the Caribbean. Connie posts her news and views on her website, <www.simplysailingonline.com>.*

Temporary diesel tank

A work-around keeps the boat in service

by Larry Schremmer

Adding a fuel-return line to a gasoline tank made it work for a diesel engine.

The diesel tank on my 1968 Seafarer was in need of repair. I had to cut it open to clean it and also had to replace the fuel lines. It was going to take some time to accomplish the work and I wanted to use the boat while this was going on.

Getting the boat in and out of the slip and avoiding commercial traffic is sometimes a challenge without an engine. So I could use the engine for maneuvering in and out of the harbor, I made a temporary fuel tank by modifying a 6-gallon plastic outboard tank.

The only addition required was an insert for the fuel-return line. I bent a length of ¼-inch copper tubing to a suitable shape and soldered it to a 2-inch x 2-inch copper plate. The tubing extends through the plate about 1 inch. I drilled a hole in the tank and attached the plate with stainless-steel sheet-metal screws, using silicone as a sealant. The outer end of the copper tube is held rigid with a clamp that I attached with one of the fasteners that secure the fuel pickup and gauge plate to the tank top.

I removed the outboard hose connection on the tank and replaced it with a hose barb. I purchased two diesel-rated fuel hoses long enough to reach from the tank to the inlet on the fuel pump of my Yanmar diesel and the return line connection.

In use, I set the tank in the cabin on the settee so that it's higher than the engine. This makes it easy to clear the air out of the system.

My auxiliary tank system takes just minutes to connect. I could also use it to carry extra fuel if I sealed the open return tube by clamping a short hose between the return tube and the feed-hose barb.

Larry Schremmer has owned his 1968 Seafarer since 1985. He has been messing about with good old boats, power and sail, for 50 years and sails his Seafarer out of New Haven, Connecticut, on Long Island Sound.

Boats

Sea Wolf 41
1983 Hardin ketch, same as CT-41. Teak decks, cabintop. All-teak interior, in great cond. Volvo diesel has fuel-polishing system. Gen-set, fridge, water heater, separate shower, electric windlass, Harken RF, sails just re-furbed by North, brightwork done last summer. Pram dink, 185W solar keeps the 6 batteries charged. The boat needs loving, new canvas, cleanup, and buff-n-wax. For sale because I am out of state. MD. $26,000.

Carl Heintz
913-709-5263
carlheintz@gmail.com
http://hardin41forsale.wordpress.com

Hallberg-Rassy Monsun 31
1974. A fine example of this proven bluewater cruiser. Yanmar 3GM30F. Many recent upgrades: running rigging, Schaefer furler, toilet and holding tank, Cutless bearing, 135 genoa, and interior cushions. Photos on website. $28,750.

Paul Ducham
708-921-6027
ducham@yahoo.com
www.ducham.com

C&C 34
1979 Sloop, perfect NW family cruiser. Continuously upgraded, modern electronics/AP, Dickinson propane heater, Yanmar diesel. Ready for new adventures! Anacortes, WA. $31,900.

Bruce Ochandarena
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Offshore 33
1989 cat ketch. Fast, stable bluewater cruiser. Fully documented. Sleeps 5 comfortably. Beam 11', Shoal draft 4'. Stack pack sails, plow anchor. Galley w/propane gimbaled range and oven. Stainless-steel sink, fridge, pressure water. Enclosed head and shower. Exc cond. VHF, wind/depth/speed instruments, plus AP. On Hudson River, NY, near Bear Mountain. $25,900.

Bernard Jankowsky
201-664-8662

Cape Dory 28
1977 in very good cond. Yanmar 2GM20F diesel, RF genoa, rigged for singlehanding. In water near Annapolis, MD, and ready to sail. I now own two boats and must sell ASAP. More detailed spec sheet and photos upon request. $14,500.

Dixon Hemphill
703-250-9277
dixonh1925@cox.net

Mull/McClelland 26
1986. *Northern Traveller* is a cold-molded sloop designed by Gary Mull and professionally built by McClelland Yachts (www.genoabay.net). WEST System hull, deck, and coachhouse, cabinet-grade teak-and-mahogany interior. Construction cost in 1986 was $70,000. BMW inboard diesel, head, galley, holding tank, 4 berths, state-of-the-art sails, hardware, and electronics. Meticulously maintained and tastefully upgraded by her owners, who are looking for a larger cruising yacht. Hecla, Manitoba. $25,000.

Bruce Bolster
204-738-4729
rbbolster@gmail.com

Sparkman & Stephens 36
1982 custom-built offshore sailboat. 6' draft. Solid fiberglass hull. New mast w/mainsail furling, new rigging, new sails. Yanmar diesel in exc condition, low hours. Teak interior. Needs some cosmetic work. Solid offshore sailboat. Stamford, CT. $39,500.

David Thompson
917-623-6274
dbthom123@yahoo.com

Blackwatch 23
1981 shoal-draft, cutter-rigged, trailerable pocket cruiser. *Moor Patience* draws 24". 22'7" LOA. Exhaustive restoration in '08/'09 from mast top to keel. Original gelcoat is magnificent. New RF jib and staysail, extensive canvas. Airy cabin sleeps 2. All new teak. Extensive restoration list available. Colorado. $17,500.

Mark Nash-Ford
720-933-3222
Allaboutfun@comcast.net
www.youtube.com/watch?v=a8VbahlCtj

Pearson 35
1969. Centerboard (4.5'/7.4'), 13,000 lb. Fully restored w/new Yanmar 27-hp diesel, windlass, H/C pressure water (100 gal), fridge, running and standing rigging, radar. Force 10 kerosene heater and much more. Two sets of sails, spinnaker w/pole, Achilles dink w/new Yamaha 2.5-hp 4-cycle. 500-lb mooring. Very pretty boat. City Island, NY. Health forces sale. $25,000.

Gary Miller
914-751-2765
gary@wordsandpixels.com

Pearson 28-2
1986 sloop. Great cond. Bill Shaw design. Great sails w/multiple reef points. New RF, new holding tank and plumbing, new running rigging. Refurbished steering system w/suede-wrapped wheel. New windex, masthead nav lights, and wiring. New portlights and screens. New VHF and remote unit. Sun awning. Shorepower. Water heater. Reliable Yanmar 18-hp diesel. Well cared for. Magma BBQ grill! Portsmouth, NH. $22,500.

Christina Persson
splendidboat@gmail.com
www.ecpersson.com/sailboat

Ranger 28
1977. *Gilded Lily.* Fully restored. Feature boat Sept. '06 issue. Many upgrades. Beautiful, fast, comfortable sailer. Enhanced A4. New bottom paint. Dinghy, davits. On the hard, Atlanta. $12,500.

Walt Hodge
770-498-1678
walt@wingnwing.com
www.wingnwing.com

Tartan 33
1980 sloop. Third owner, fresh water. Sparkman & Stephens design, Scheel keel, 4.5' draft. 24-hp Universal diesel, rebuilt '02. Transmission rebuilt '09. Exc cond both aesthetically and mechanically. Teak interior, teak/holly sole, cushions redone. New canvas. Brand-new Garmin GPS, wind speed/direction indicator, AP, VHF, Sony CD/radio, rigid boom vang. Green Bay, WI. $39,000.

Cyndi Bruehl
920-606-2569
cyndidave@gmail.com

Pearson 10M
1974. 33' fast, classic racer/cruiser. PHRF 146. Gear includes wheel, AP, RF headsail, lazy-jack mainsail system, dodger/Bimini/cockpit enclosure, cockpit cushions, fridge, hot pressure water, 10+ sails, anchor and rode, spinnaker pole, reaching strut, VHF, jackstands and misc. equipment. Solid, comfortable, and ready to sail. Looking to downsize and will consider trade for Santana 23, J22, Holder 20, or other fast trailerable boat weighing less than 2,500 lb. Huron, OH. $13,000.

John Schwartz
dunbar.schwartz@gmail.co

Mirage 27
1981 Robert Perry-designed sloop. Standing headroom. Registered vessel w/new instruments, new stove, 5 sails: 3 headsails, main, and spinnaker. Spare engine, Fortress anchor, marine head and holding tank. Freshwater boat on trailer. A solid boat sailed often. Goderich, Ontario. $9,750.

Peter Herring
519-524-7810
joyceh@hurontel.on.ca

Pearson 33
1972 CB sloop in exc cond. Yanmar 3GM30F 27-hp diesel. Awlgrip, VHF, GPS, AP, refrigeration, H/C pressure water, propane stove and oven, 3 water tanks, dodger, Bimini, 4 sails, 4 deep-cycle batteries, 2 anchors. Beautiful custom teak and black walnut interior. In water near Annapolis, MD, ready to sail. Detailed spec sheet and photos available via email. $17,500.

Dixon Hemphill
703-250-9277
dixonh1925@cox.net

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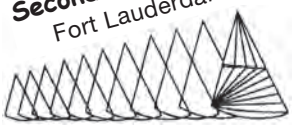

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continued from page 9

To add a note here: A friend's Tartan 34 has just gone through the same process and they re-cored with pressure-treated plywood. They rebuilt with solid fiberglass around the chainplate area to ward off any water intrusion into the core. Great idea. Of course, you still need to caulk.

–Max and Donna Guzman, Cincinnati, Ohio

Solar lights

Just saw the letter about garden lights in the January 2012 Mail Buoy. In San Carlos, Mexico, folks have been using garden lights for years on boats in the outer harbor. They make great anchor lights. Most people use two, usually one in the bow and one in the stern. The higher quality, larger ones will go all night and they usually last for at least a year or more. This might not be technically legal, but it sure makes your boat visible. I've played with them for interior light, too, but have found them not quite bright enough for reading, cooking, or any other close work.

–Jack Prohaska, Tucson, Ariz.

2012 Cal 29 Florida National Championships

We are racing the Cal 29 Florida National Championships on St. Johns River in conjunction with the Palatka, Florida, Azalea Festival, March 3-4, 2012, <www.flazaleafest.com>. There will be fun for the whole family.

Larry Wilkinson sent in this photo of *Misty*, his 1962 steel-hulled Canadian Northern 35, on her mooring on Iowa's Lake Rathbun. Send your sailboat photos to jstearns@goodoldboat.com and we'll post them on our website. If we publish yours here, we'll send you a Good Old Boat T-shirt or cap.

We are scheduling four races for Saturday and two races around the buoys on Sunday followed by the awards ceremony on the Palatka riverfront. Our entry fee is low because there will be plenty of food and T-shirt vendors at the riverfront Azalea Festival.

We already have five Cal 29s signed up for the event and welcome all Cal 29 owners to join in the fun, food, and competition. We also want to invite other PHRF boats rating between 180 and 190 with spinnakers to join us for racing with the Cal 29 one-design fleet.

You can follow us on the Rat Island Yacht Club facebook page, <www.facebook.com/#!/pages/Rat-Island-Yacht-Club/102948869801051>, or on our website, <www.ratisland.com>.

We are establishing the new national register for Cal 29/2-29 sailboats and encourage all Cal 29 owners to share their knowledge and experiences with us. Our email address is info@ratisland.com.

–David Burnham, East Palatka, Fla.

Send questions and comments to *Good Old Boat*, 7340 Niagara Lane North, Maple Grove, MN 55311-2655, or by email to jerry@goodoldboat.com.

Good Old Boat has lost a friend

by Karen Larson

Brian Cleverly was born in Sydney, Australia, on October 17, 1936, and died on November 6, 2011, two days after his 75th birthday.

Brian is known to many of our longtime subscribers as the author of several articles starting early in our history and the author of many letters to the editor. His articles were on subjects as diverse as blisters on the bottom of a boat he was repairing professionally in 1999, a creative ventilation system in 2006, and non-skid in 2007.

In addition to his technical letters to the editor, he sent cool photos of himself crossing the Equator or the Arctic Circle while holding a copy of *Good Old Boat*.

Eventually, he stopped repairing other people's boats and retired to work exclusively on restoring *Magrathea*, his Fuji 32, for a solo voyage. He was planning to report on and help pick up the litter accumulating in the Pacific Ocean.

An Australian, Brian had an interest in bringing products from Down Under to this country. He served as a U.S. representative for the Reef-Rite furler, now being sold by Alfred Poor (apoor@verizon.net). In this role, Brian was one of our earliest and most dedicated advertisers.

Most important, however, was Brian's role as friend of this magazine from the get-go. During our first year of publication, he contacted us with a question about how much it would cost to buy a 10-year subscription. We couldn't contemplate such a thing and dismissed it as a joke. He wasn't joking. Since then, many have subscribed at the 10-year rate that Brian Cleverly established for them (and prodded us into creating).

Brian worked on his Fuji for five years. Jerry and I visited Brian and his wife, Rose, in Sacramento two years ago and spent most of a day touring his boat and hearing about the many refit projects. He certainly thought outside the box. He launched *Magrathea* last September and sent a gleeful letter with photos.

I had planned to do an article on Brian's restoration of *Magrathea* in April when we would be in California for the Strictly Sail Pacific sailboat show in Oakland.

Once the boat was in the water and the mast was stepped, Brian was working on the rigging. I heard from Rose that he fell from the mast top and was airlifted to a hospital but doctors were optimistic. A week later, I heard from Randy Miller, a friend of his whose comments are below, that Brian had succumbed to his injuries.

The injustice of this event angers us; the incalculable waste breaks our hearts. We learned that he was on just one halyard (there being only one available at the time) with no safety. A compression fitting on the shackle apparently let go. Jerry tells me he has done likewise. Others admit they have done the same. Not often. Not willingly. Sometimes events conspire to make a sailor take this calculated risk. Perhaps you have taken "just a short trip" up the mast without a safety line too.

Brian Cleverly's life meant many things to many people. He touched many people in many ways. He made the world (particularly the universe occupied by sailors) a better place. Perhaps one of his legacies will be to offer this one final warning to fellow sailors to be careful in everything you do and don't go up the mast on just one halyard. We don't want to lose any more readers and very good friends to calculated risks.

A friend and mentor

by Randy Miller

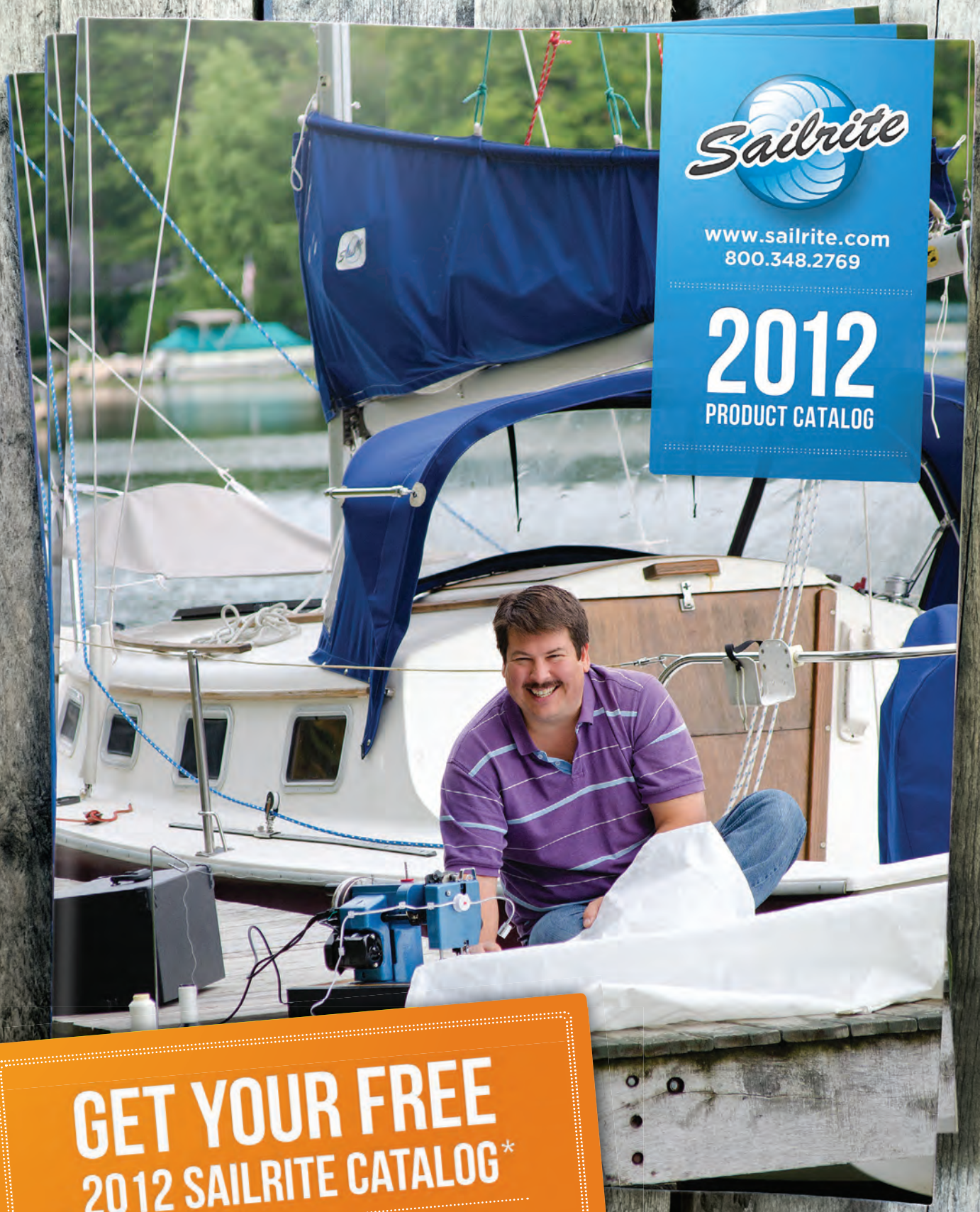
Following his death, I moved Brian's boat to a marina closer to San Francisco Bay. As I motored along, I felt Brian's spirit in every turn of the wheel and adjustment to the throttle. I gazed forward at the beautifully refinished bowsprit and imagined him standing there beaming with the pride of having turned a dilapidated abandoned boat into a gem. People on boats I passed did a double take at his wonderfully restored sailboat.

I met Brian eight years ago in a small Sacramento boatyard that rented space to boaters who work on their own boats. I was working on a 1969 Bristol 24; Brian's shop was just across the way. He was constantly at work on a variety of boats as a business.

As I got to know him, I was amazed at Brian's knowledge of boats. I'm not talking about someone who knows how to do some refinishing or hull painting, I'm talking about a true nautical engineer. I tapped his knowledge every time I could and always walked away amazed by how one person could know so much and have the hands-on experience to match. He was unhappy with the Fuji's cockpit drainage system, for example, so he covered a PVC pipe with cellophane and fiberglassed over it, making fiberglass tubing for additional drains.

His quality level was finer than any marine repair facility I have ever seen. I will miss talking with Brian about sailboats. I truly appreciate the unmatched knowledge I received from knowing him.

Brian, here's to you: a fine sturdy sailor who added a wealth of knowledge and experience to the sailing community. I'll take a moment to think about you every time I raise the sails so your spirit will live on.



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