GOOD OLD BOAT™

The sailing magazine for the rest of us!

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January/February 2015

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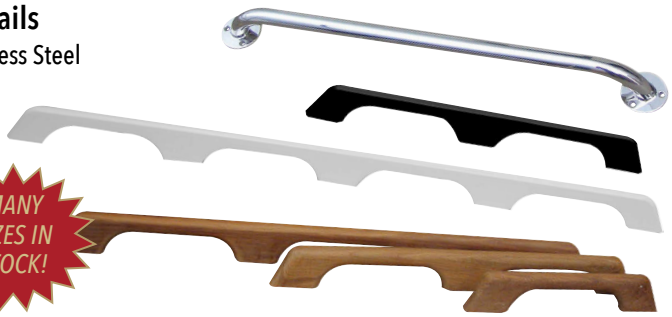

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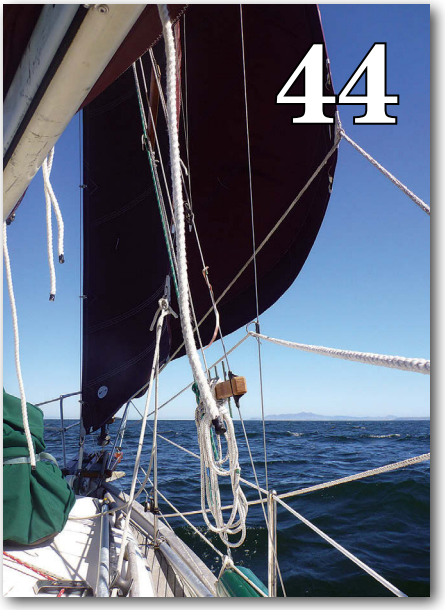

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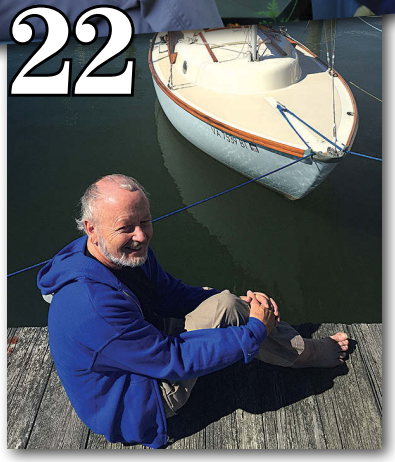
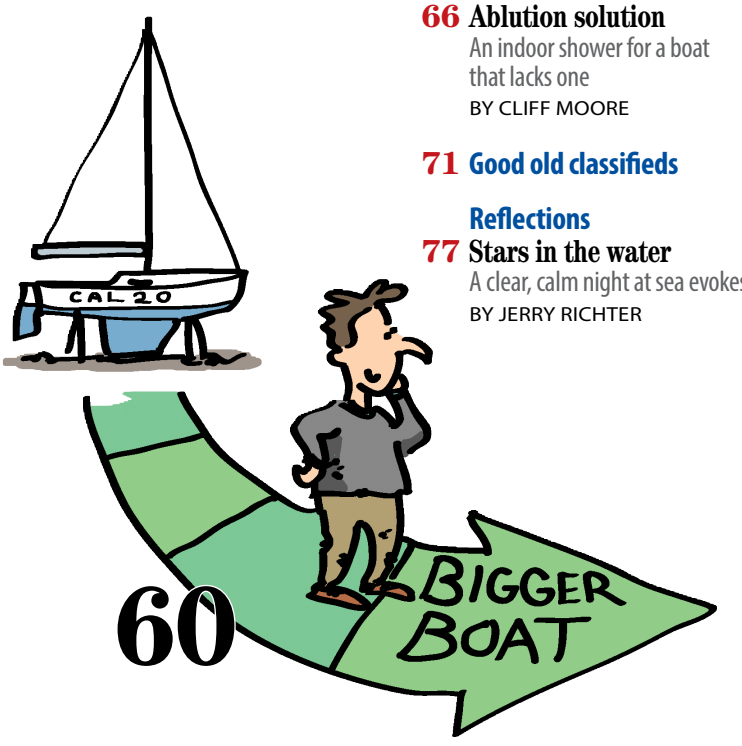


Just for fun

On the cover . . .

Your fearless editors finally launched their project boat and then allowed her to be reviewed. Here, *Sunflower,* a C&C Mega 30, does what she does best. She ghosts in light air. Karen Larson and Jerry Powlas spent their short sailing season this past summer testing, tweaking, testing, changing, and repeating. More about this boat on page 26.

What's more



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Our 100th issue!

Imagine that! Back when we started *Good Old Boat* magazine in 1997, we couldn't have imagined our 100th issue. But now that we've had several big birthdays (our 5th, our 10th, and even our 15th), anything's possible. On page 22 we tell you how we made this issue and a bit about our crew. Thanks to you, gentle reader, for being part of "the sailing magazine for the rest of us."

Good old boats on Tampa Bay

Sailors on Florida's west coast looking for some fun in a good cause might want to give a thought to taking part in the 6th annual St. Petersburg Classic Regatta. Also known as the Good Old Boat Regatta, the race takes place on January 17, 2015, and is a benefit for Meals on Wheels.

Boats — they must be 20 years old or older — will sail around a course in Tampa Bay, after which their crews will get together for an awards dinner and party at the St. Petersburg Yacht Club (which is offering free dockage for the event). For details, visit the St. Petersburg Sailing Association online at www.spsa.org.

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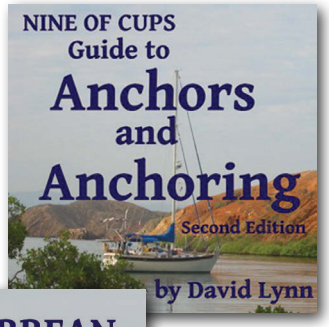
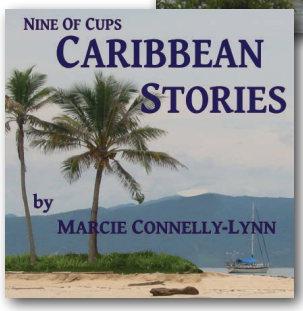
More ebooks available

Circumnavigators David and Marcie Lynn are writing about their voyages and sharing their technical expertise via downloadable ebooks. The newest is David's book on everything anchoring, called *Nine of Cups Guide to Anchors and Anchoring*. Sales have really taken off. Or share their cruise from the beginning with Marcie's ebook, *Nine of Cups Caribbean Stories*. More will follow, so get on board now. These books are downloadable for mere pennies ($4.99 and $3.99, respectively) at www.audioseastories.com.





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For more Good Old Boat gear, see pages 54 and 55.

Milestones

How sailors measure accomplishments

BY KAREN LARSON

The view from here

Nearby dock neighbors and friends spent a summer with a new-to-them sailboat after being boatless a few years due to health issues. The reintroduction had to go slowly . . . as if they were learning to sail for the first time. As a result, they will approach and achieve each sailing milestone all over again but with the unique perspective of prior experience, not unlike being given the chance to be a kid again but with the experience of having passed that way before. It should be a marvelous journey if they take joy in each small accomplishment and don't rush ahead motivated instead by frustration at the time-consuming nature of starting afresh.

Toward the end of the season, I got this note from Liz Towers: "For years, whenever Michael and I visited Duluth's Canal Park we'd gaze wistfully at the sailboats setting out and say, 'Someday *that* will be us.'" A bit of background here: tourists and locals alike line up along the shore at Canal Park to watch large freighters and other boats go out through a narrow canal, under a lift bridge, and past a lighthouse when heading out to the open lake of Lake Superior from Duluth, Minnesota. A protected bay inside allows for plenty of sailing without having to go out into the open lake. Therefore, passing through this portal is a significant milestone for new sailors.

> "Each milestone for each sailor is a limiting frontier until we cross it . . . and the one after that . . . and the one after that."

The joy in having passed a milestone such as this is evident in the rest of Liz's note: "Dozens of people lining the canal were waving to us. No suave, experienced sailors, us. Shameless first-timers, we laughed heartily and I waved back with all my might. It was as if the people on shore and the two of us in the boat were all sharing one merry moment . . . a red-carpet moment to a brain injury patient who's relearning sailing!"

Each milestone for each sailor is a limiting frontier until we cross it . . . and the one after that . . . and the one after that. We can all list the boundaries we crossed over the years that freed us for the next one: we sailed at night, we sailed overnight, we went through a lock, we went out of sight of land, we skippered the boat, we picked up a mooring, we brought our boat home safely and made the docking look easy, we anchored under sail, we sailed off the anchor the next morning, we went aground but got off without incident. Sometimes it was reaching the next island or the one after that or sailing across the bay. You will be able to name infinitely more from your own experience.

Other sailors' milestones include crossing the lake where they sail, crossing an ocean, completing a circumnavigation, or even rounding Cape Horn or threading the Northwest Passage. For trailer-sailers, the milestones might include raising and lowering the mast without incident (one should never say "dropping the mast"), launching and recovering the boat at a ramp, towing it somewhere nearby or far, far away. The list goes on . . . and perhaps includes that first bareboat charter in the Virgin Islands as an escape from winter.

There is even a list of milestones for those do-it-yourselfers among us who maintain our own boats: the first time we drilled a hole in the boat, the first time we made a successful fiberglass repair, the first time we installed a new gadget, the first time we did any plumbing or wiring aboard, the first time we went to the top of the mast, the first time our knowledge was so useful that we were able to advise someone else starting a similar project, and on it goes.

All these milestones are deeply satisfying. No matter the level of the sailing experience, the challenges that are there to become accomplishments are part of the reason we sail. Whether those accomplishments are about expanding our horizons or expanding our knowledge base matters not. What keeps us energized is the joy we take in achieving those milestones and the understanding that we are now able to move to the next challenge. We are motivated, each in our own way and using our own set of priorities. Whether newbies, experienced coastal cruisers, world travelers, or sailors starting all over again for any number of reasons, the sailing hobby we all have in common is best if we take joy in every small milestone as we reach and accomplish it.

And speaking of milestones . . . this is the 100th issue of *Good Old Boat*!

Good stinkpotters, telltales,

Good stinkpotters

I enjoyed your editorial, "Labels Can Divide Us," in the November 2014 issue and thought I should share my own experience. I am a die-hard sailor. However, I owe thanks to my powerboating friends for helping my family ease into coastal cruising with our local club a few years ago. They have provided guidance for us new cruisers and make sure that our trips accommodate both types of boaters.

I am pleased to report that one of our powerboating members, Gerry Moran, recently offered to host us on his powerboat for the weekend for a sailing event that was out of town, and towed three of our good old one-designs 17 miles to the event with his good old powerboat. He even raced the sailboats with us! The spirit of open-mindedness is alive and well at our club.

I sail a 1984 Tartan 33R, *Paper Tiger*. *Good Old Boat* is my favorite magazine. Keep up the good work!

–Jay Fligstein, Northport, N.Y.

And the others . . .

I agree with most of what you wrote in your editorial in the November 2014 issue. Sailors, for the most part, are the most inclusive bunch of people around. I belong to the Cherokee Lake Sailing Club out of Black Oak Marina in Jefferson City, Tennessee. There are no restrictions on boat size or notions of who is and who isn't a "real" sailor. My boat, *The Lusty Slogger*, is the smallest sailboat at the marina. It's an AMF Sunbird 16 built in 1978. Most of the boats are in the 25- to 27-foot range with the largest being a 30-foot Cape Dory. I have never felt like I do not belong because my boat of choice is a 16-foot centerboard daysailer and not a large cruiser or out-and-out racing platform.

For us, the emphasis is on sailboats and not the status or lack thereof of the owners. The membership includes doctors, lawyers, teachers, a financial planner, an airline pilot, one of the best all-around jacks-of-all trades I have ever met, an engineer or two, several women with their own boats, and a small-business owner. None of that matters. Nor do our political or religious viewpoints. Those things are simply not discussed. What is discussed is what's the best headsail (this can be like talking religion for some, I know), whether the skipper of *The Lusty Slogger* is going to fall off the dock again, who is bringing the Scotch this time, and other extremely pertinent topics.

Now for the one area where I must disagree: accepting the stinkpots. Never! Well, not until they learn at least two of the Rules of the Road. So far I have met precious few who have even heard of them, much less know them.

–Norman Stringfield, Del Rio, Tenn.

Telltales: the back story

I read with great interest Don Launer's "Sail Telltales 101" in the November 2014 issue. Don discusses the use and rationale of telltales on sails to indicate separation of flow. The use of telltales on sails can be traced specifically to one man — Fred Buller, a noted International 14 dinghy designer and sailor from the Royal Canadian Yacht Club in Toronto in the 1950s and '60s and the chief designer for the de Havilland Aircraft Company. Fred is credited with the design of some of the most iconic bush planes in the world, including the Beaver and the Otter. Bush planes are essentially STOL (short takeoff and landing) aircraft and the airflow over the wings is critical in order to avoid "stall." Fred would fit tufts of wool to both wind-tunnel models and full-scale aircraft to study the stall characteristics of the wings in highly loaded conditions. Being a sailor, he soon fitted wool tufts to the leading edges of his jibs to detect stall, but this did not work with cotton sails since the wool tufts would stick to the cotton and not function properly. This was not a problem once Dacron sails were introduced in the late '50s and early '60s, and the telltale soon became the standard in sailing. Other International 14 sailors would visit Toronto and take

Fred Buller is second from left in this group receiving a trophy.

and leaky windows

the idea back to their own clubs throughout the United States, Canada, and the world. Fred would also design the Buller I and II International 14 dinghies, manufactured in fiberglass in the early 1960s by Grampian Marine of Oakville, Ontario, one of the first instances of fiberglass being used in high-performance dinghies.

I had the honor of inducting Fred Buller into the Canadian International 14 Dinghy Hall of Fame this past summer at a dinner at RCYC. I never met Fred, who I'm told was a quiet man, but he certainly left his mark on sailing. I received this photo from Paul Henderson, another member of the Canadian 14 Hall of Fame and, with George Cuthbertson and Bruce Kirby, a member of the Canadian Sailing Hall of Fame.

–Rob Mazza, Hamilton, Ontario

The best connection

The customer service technician (an actual human voice) at Verizon — I think her name was Heather — told me I needed a roaming upgrade when I was unable to retrieve or connect to my landline at home from my cell phone. I'd called Verizon because, after leaving the office and making the usual cell phone call to my house, the automated response said the call could not be completed as dialed and to check the number and try again. After several failed attempts, I called other local numbers to be sure they were working. I called my local utility cooperative to verify that the house had power. Then I contacted Verizon.

I reached a sweet voice whose owner said she was in the Seattle, Washington, area. I'm in Florida. As I was by then just a few minutes from home, she said she'd call me back. She called my cell just as I arrived at my entrance gate and was retrieving my mail. I told her I was feeling much better now because my sailboat magazine had arrived! You see where this is going now . . .

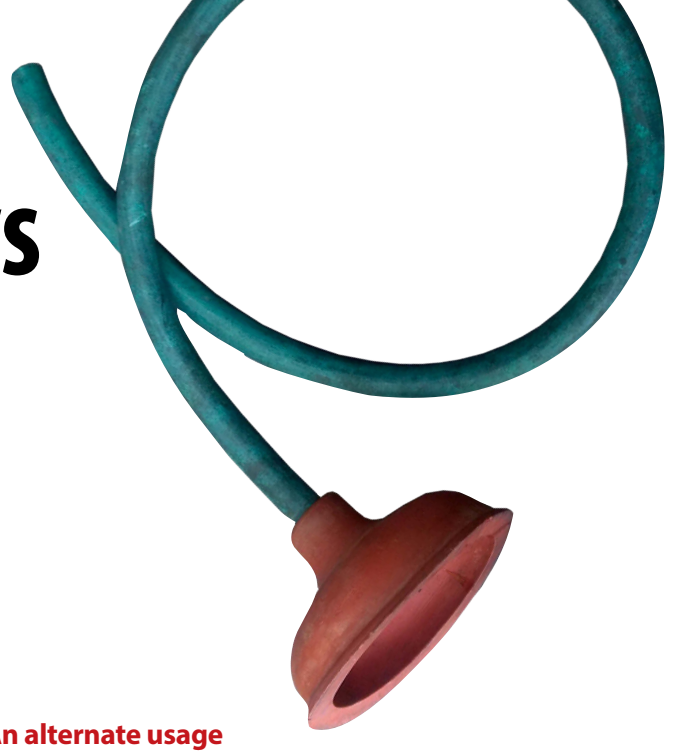
She got excited too, and said she and her husband were working on a good old Columbia. They were planning to live aboard it with their two children upon completion and hoped to relocate to Florida. I mentioned that I had recently learned to sail and planned to purchase my good old boat within the coming year as retirement approached. In parting, I mentioned that I had to go read my new issue of *Good Old Boat* that just arrived.

Her voice rose in pitch when she said excitedly, "That's the same magazine we get! Don't you just love it?"

Well, my cell phone was fixed, but when it comes to making a connection, I'll put *Good Old Boat* up against Verizon any day!

–Roy T. Rhodes, Tallahassee, Fla.

Tom Keevil sent this photo of a pair of eagles face to face like book-ends on a navigation light in the approach to Prince Rupert Harbour in British Columbia. Send karen@goodoldboat.com a high-resolution photo of your favorite aid to navigation. If we publish it, we'll send you a Good Old Boat cap or T-shirt.



An alternate usage

Regarding the article "Winterizing Without Tears" (November 2014), attached is my take on the theme. I simply drilled a hole in an ordinary toilet plunger and inserted a length of garden hose. It does require a person below the boat to hold the plunger over the through-hull, but it's cheap to make and very easy to use.

–Matt Koch, Pointe-Claire, Quebec

continued on page 67

Mimosa,

BY BILL JACOBS

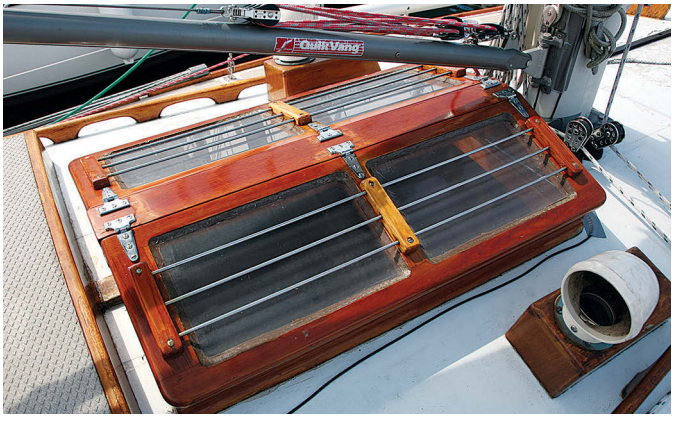
A double-ender that looks and handles like a classic

Steve Capp had never seen, nor heard of, a Vineyard Vixen. And why would he? He and his wife, Carol, started sailing in 1982 on a 16-foot Hobie Cat. It was perfect for sailing on a small lake right off the beach in front of their vacation cabin and on the waters of Green Bay when they towed it to their new summer residence. As they spent more time in Ellison Bay during the summer months, they agreed to buy a slightly larger boat. "We thought it would be nice not to get wet every time we went sailing," Steve says.

They began by looking for a 25- to 29-footer, thinking they'd first gain experience daysailing and later purchase something larger. Steve took many Power Squadrons courses, and their Internet search began in 2007. A friend of his, whose father had recently passed away, was aware of Steve's search. The family wished to sell his boat, and Steve went to northern Illinois to see it. Although he wasn't familiar with the 34-foot Vineyard Vixen, Steve says, "After looking at her classic lines and sailing her, I fell in love with her." She had carried the name *Mimosa* proudly in the hands of two attentive owners. Steve and Carol would continue the tradition.

Prior to finalizing the purchase, Steve hired a surveyor who confirmed that the boat was well built and in great condition. He found a few other Vixens for sale on the Internet and felt the price was fair. He and Carol completed the purchase in the fall of 2008. After further research, Steve was impressed with the boat's unique design and the limited number that had been built. Although she was a larger boat than he and Carol had anticipated buying, the ease of sailing her on test sails gave them confidence. "I figured the real difference would be in docking, but with caution and practice, Carol and I could master that," he says.

After storing her for the winter, Steve, his son Keith, and a professional



Steve and Carol Capp sail their Vineyard Vixen 34, *Mimosa*, on Lake Michigan, at top. They maintain the butterfly hatch, above, with pride.

a Vineyard Vixen 34

captain sailed her 250 nautical miles to her new home in Door County. Steve had not had the experience of a long passage and feels the investment in a captain was valuable for safety reasons. It also presented a great opportunity for learning large-boat handling skills while under way.

A yard with a history

Mimosa was built in 1986 by Martha's Vineyard Shipyard. If that name conjures up images of a field of moorings, tall tidal docks, clapboard sheds, marine railways, and ghosts of large commercial sailing vessels, it's hardly surprising. The yard has been in continuous operation for more than 150 years, so the Vineyard Vixen 34 comes from a strong New England heritage.

Yard owner Tom Hale had a dream he wanted to fulfill of building a cruising sailboat, so he attended the 1972 Newport Boat Show to look at production sailboats. He settled on a 29-foot sloop with a double-ended hull, a decision driven primarily by aesthetics, as he was a fan of L. Francis Herreshoff's Rozinante design. The yard received several orders for the Vixen 29 and started to build sailboats.

In 1975, desiring to build a larger boat, he enlisted the aid of his son Tom Jr., who had recently graduated with a minor degree in yacht design. They settled on a 34-foot version. The first boat was a demo for upcoming shows and, with orders in hand for three more boats, they completed the final production tooling in 1977. Younger son Phil took over production. From 1976 to 1986, the yard built 33 Vixen 29s and 30 Vixen 34s.

The construction details for both boats are similar, with an emphasis on simplicity of design and accessibility of components. The hull was constructed of solid fiberglass, with three layers of mat and woven roving in the topsides, four layers below the waterline, and five layers in the keel, in which the lead ballast was encapsulated. Owners had a choice of white, flag blue, black, or green gelcoat.

In the earliest models, the deck was cored with plywood, which gave way to foam core in later years. The deck met the hull on a 4-inch inward-turning hull flange, where it was bonded with polyester putty and mechanically attached with stainless-steel fasteners every 8 inches to make a very secure hull-to-deck joint. The mast, built by Metalmast Marine, was stepped on deck above a concealed solid-teak timber that extends to the keel. Around 1980, the original self-tending jib was replaced with a roller-furling genoa.

Keeping up *Mimosa*

Prior to her purchase by the Capps, *Mimosa*'s original Atomic 4 gas engine was replaced with a 27-horsepower Yanmar 3JH2E diesel, her icebox was converted to 12-volt refrigeration, and she received a new suit of sails.

Since Steve and Carol have owned the boat, they have had her topsides repainted with Awlgrip, replaced the batteries, and upgraded the electrical and battery-charging system. All the portlights have been replaced with new opening ports by New Found Metals. Steve's next big project will be to replace the Treadmaster deck surface, which still provides good traction but is showing the effects of many years of exposure to the sun.

Typical of New England boats of its era, the Vixen has plenty of brightwork to lend a nautical flair, including a varnished butterfly hatch that is truly beautiful to behold and fills the interior with vast amounts of natural light. Since *Mimosa* has been well cared for, Steve thinks it's worth the time and effort to continue the tradition. Although she is of relatively narrow beam by today's standards, *Mimosa*'s sidedecks are more than adequate for moving around the deck, as the cabin trunk is suitably proportioned. Because of her modern sail-handling system, with a StackPack for the main and a roller-furling jib, all the sail controls lead to the cockpit.

Seagoing features

Befitting a vessel fully capable of offshore work, the cockpit is deep and secure, providing good back support and plenty of legroom. A substantial

***Mimosa*'s comfortable cockpit is secure at sea and also lends itself to socializing when the boat's at rest, at left. The high bridge deck will keep all but the the biggest seas from finding their way below, at right, but does require some agility on the part of crew negotiating the companionway.**

Carol feels the compact galley, at left, is suitable for use on short cruises as well as when entertaining friends at the dock. The simple, spare interior, at right, reflects *Mimosa*'s New England heritage. The pilot berth above the port-side settee is a sign the Vixen 34 is a passagemaker.

bridge deck — a safety feature often found in older boats — minimizes the chance of a rogue wave washing below. A full-width traveler provides excellent mainsail control and a sturdy Whale Gusher pump is close at hand in the event of an emergency.

Descending the companionway ladder into the interior is like stepping into a world of elegant simplicity. There are no fancy finishes or lounge chairs, nor any wall-mounted flat-screen entertainment-center equipment. Next to the companionway to starboard is something rarely found on any sailboat of any size: a dedicated hanging locker large enough to hold a couple of foul weather jackets, along with life jackets, and safety harnesses.

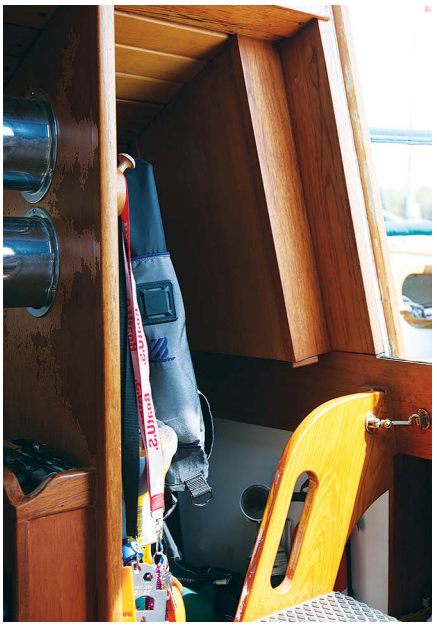
The saloon is brightly illuminated by the butterfly hatch and tastefully finished throughout in Herreshoff style with off-white laminate and wood trim. Another feature traditionalists will find satisfying is a proper pilot berth to port. It's a great place for a nap or to snuggle into while under way on starboard tack. Teak planks cover the entire overhead, adding warmth and style to the interior. It would not be hard to imagine sitting in the saloon with L. Francis himself. Many of the simply detailed panels, including the wood trim and laminate surfaces, are removable to allow access to the engine, wiring, plumbing, and other systems.

A pleasure to sail

Steve and Carol are now in their fifth sailing season on *Mimosa*. Steve says he loves the looks of the boat and appreciates how well she's built. "I take great comfort in the safety of high cockpit coamings and a proper bridge deck, but there are tradeoffs relating to the ease of going below and exiting the cockpit," he says. He notes that the tiller provides a great feel for the boat, but is glad he has an autopilot when they make long passages.

He and Carol have taken the opportunity to sail *Mimosa* each summer on cruises up to a week long and have crossed Lake Michigan several times. "Although I have learned a great deal in the past five years, I still consider myself a novice," Steve says. "I maintain a keen eye on the weather forecasts to prevent problems."

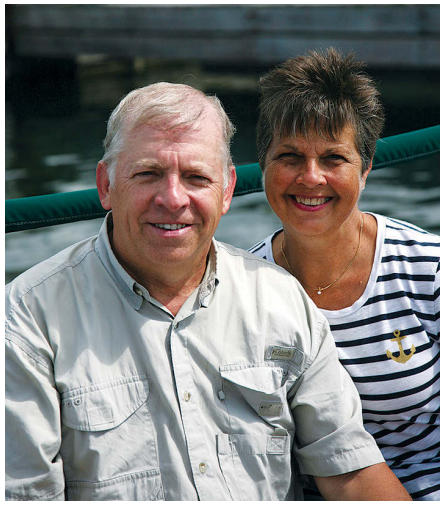
Carol has become an expert crewmember when docking and takes her turn at the helm, although she prefers to do so in lighter winds. No doubt she appreciates the wide side-decks when handling docklines. She likes having electric refrigeration on the boat and finds the galley sufficient for onboard cooking. The Capps have frequently looked at newer designs at boat shows and are amazed at the amount of space in today's 34-footers. Due to its relatively narrow beam



The dedicated wet locker — a rare feature on today's sailboats — drains directly into the bilge, at left. It also provides a convenient home for safety gear and other often-used equipment. Steve and Carol Capp, at right, are pleased to have found *Mimosa*.

compared to current designs, the Vineyard Vixen has less room for storage, dining, and guests, but in spite of those issues Steve and Carol are both very satisfied with *Mimosa*.

Bill Jacobs has spent nearly 50 years in sailboats and powerboats. His marine photography is displayed in galleries, private collections, and museums, and has been printed in boating publications. His articles have been published in boating publications since 2004. Bill winters in Sarasota, Florida, and cruises on a Mainship 34. In the summer he can be found sailing his Cape Dory Typhoon on Lake Michigan off the shores of Door County, Wisconsin.



The Vineyard Vixen 34

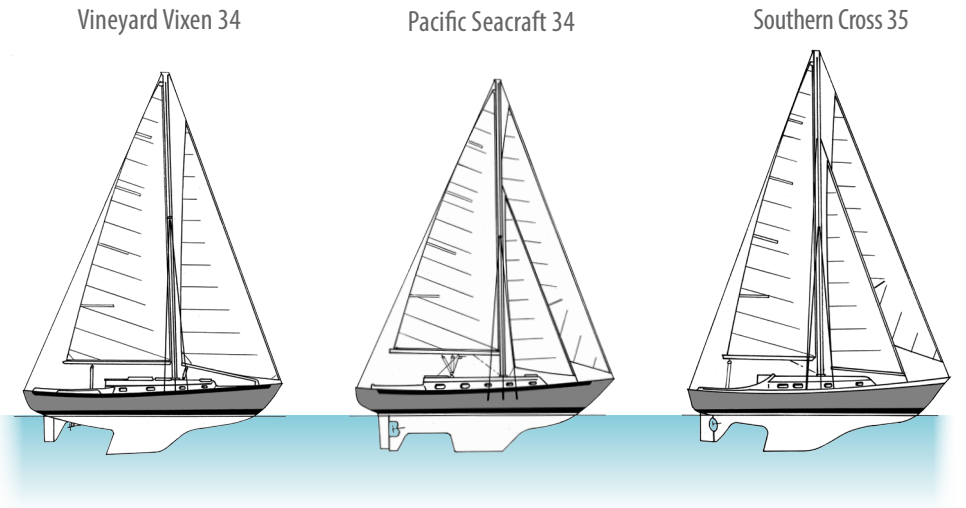
…meets two canoe-stern cousins

BY ROB MAZZA

The Tom Hale-designed Vineyard Vixen 34 is a pretty little canoe-stern yacht much in the style of Bill Crealocks' Pacific Seacraft 34 and Thomas Gillmer's Southern Cross 35, but it predates those designs by ten and three years respectively. I discussed the origins of the canoe-stern yacht in "Double-enders and Canoe Sterns" in the September 2012 issue.

Bill Crealock once famously said that, in a heavy following sea, it's much better to have a bow at both ends of the boat. Heaven only knows what he would make of the current trend of carrying maximum beam right aft that results in vastly larger cockpits and aft cabins and transoms that resemble terraced patios. With regard to "above the water" aesthetics, these three boats owe much to Albert Strange's original canoe yawls of the 1890s and L. Francis Herreshoff's reinterpretations of the concept in the mid-20th century. However, their designers all opted for the more "modern" underwater profile of separate keel and rudder, with the rudder on all three mounted on a full-length skeg. Both the Albert Strange and L. Francis Herreshoff underbodies had a full-length keel with the rudder forming the trailing edge, a hull form that has substantially greater wetted surface.

On the Pacific Seacraft, the skeg transitions into an extension that joins the keel. While this would improve directional stability, it would impede maneuverability and add to wetted surface area. Note that on the Pacific Seacraft 34 and the Southern Cross 35 the propeller is in an aperture in the skeg, which in this respect resembles a vestigial keel, while the Vixen's propeller is supported by a strut forward of the skeg. None of these boats carries the yawl rig preferred by Strange or the ketch rig favored by Herreshoff. Instead, the Vixen has the higher-aspect-ratio sloop rig of its contemporaries while the Pacific Seacraft and Southern Cross have the modern version of a cutter rig with an inboard staysail.



	Vineyard Vixen 34	Pacific Seacraft 34	Southern Cross 35
LOA	34' 4"	34' 1"	35' 3"
LWL	27' 5"	26' 3"	28' 0"
Beam	10' 6"	10' 0"	11' 5"
Draft	5' 2"	4' 11"	4' 11"
Displacement	12,500 lb	13,500 lb	17,710 lb
Ballast	5,500 lb	4,800 lb	5,750 lb
LOA/LWL	1.25	1.23	1.26
Beam/LWL	0.38	0.38	0.41
Disp./LWL	271	333	360
Bal./Disp.	.44	.36	.32
Sail Area (100%)	545 sq. ft.	534 sq. ft.	632 sq. ft.
SA/Disp.	16.2	15.1	14.9
Capsize Number	1.8	1.7	1.8
Comfort Ratio	29	34	35
Years built	1975	1985	1978
Designer	T. M. Hale & Assoc.	Bill Crealock	Thomas Gillmer
Builder	Martha's Vineyard Shipyard	Pacific Seacraft	C. E. Ryder

With regard to the relative potential performance of these three boats, it's hard to overlook the 5,000-pound difference in displacement between the Vineyard Vixen and the Southern Cross. The much greater displacement of the Southern Cross on an LWL that's just 7 inches longer leads to equally divergent displacement/length (D/L) ratios: a respectable 271 for the Vixen and a heavy 360 for the Southern Cross. The Pacific Seacraft, being only 1,000 pounds heavier than the Vixen, falls in between, but toward the heavier side at 333. Note also that, while the displacements and D/L ratios vary considerably, the ballast weights are more consistent, ranging from 4,800 pounds for the

Pacific Seacraft to 5,750 for the heavier Southern Cross. The resulting ballast/displacement (B/D) ratios are 44 percent for the Vixen, 36 percent for the Pacific Seacraft, and 32 percent for the Southern Cross. Even though the Southern Cross has substantially greater sail area than the other two boats, her heavier displacement gives her the lowest sail area/displacement (SA/D) ratio of 14.9, against 15.1 for the Pacific Seacraft and a more performance-oriented 16.2 for the Vixen.

So what would this all mean if these boats were to find themselves sailing together around a hypothetical racecourse? If the numbers are to be believed, the older Vineyard Vixen would appear to have the edge in light to moderate conditions with both a lower D/L ratio and a higher SA/D ratio, as well as a higher B/D ratio. This performance edge would prevail both upwind and down. However, as the wind builds, the Southern Cross could come into her own when, at higher heel angles, her heavier displacement should overcome a higher center of gravity, giving her the stability to carry more sail on her slightly longer waterline.

Looking at the comfort ratios, the Southern Cross at 35 fares best, due to her high displacement, with the Pacific Seacraft a close second at 34, due to her shorter LWL and narrower beam. But at 29, the Vixen's is certainly quite acceptable. The capsize numbers of all three boats are substantially below 2, well within the conservative range, and would make them good sea boats for long passages, which I'm sure all three have accomplished.

It is not often that the older boat comes out on top in performance, but in this case the Vineyard Vixen certainly looks like the more nimble performer. Nevertheless, all three boats are exceptionally attractive and excellent representatives of the modern interpretation of the canoe yawl.

Rob Mazza is a Good Old Boat *contributing editor who, in his long career with C&C and in other design offices, has contributed enormously to the enjoyment of those who sail and own good old boats.*

AIS 101

Ahoy! Who goes there?

BY DON LAUNER

AIS, the Automatic Identification System, allows vessels to "see" and identify each other (and for shore stations to "see" vessels). It was developed as a collision-avoidance tool, and in 2002 was made compulsory for all passenger ships, cargo ships of 500 tons or more not engaged in international voyages, and commercial ships of 300 tons or more engaged in international voyages. Smaller commercial craft and recreational vessels are not currently required to use AIS in U.S. waters.

Three classes of AIS exist:

- Class A, primarily used by large commercial, cargo, and passenger vessels, both transmits and receives data. It uses the highest power, giving it the greatest range, and has the shortest interval between reports.
- Class B also transmits and receives and is primarily used on vessels that are not required to have a Class A installation but nevertheless choose to transmit AIS signals as well as receive them. The Class B reporting rate is slower than that of Class A.
- Receive-Only Class is intended for recreational boaters, who are not required to use Classes A or B but want to be able to identify vessels in their vicinity.

An AIS receiver is essentially a small black box that processes incoming AIS signals so they can be displayed on a chart plotter or computer screen.

How AIS works

AIS operates on VHF-FM marine radio frequencies. Class A and Class B devices integrate a marine-band transceiver, GPS, and a display. The locations of nearby AIS-equipped vessels appear on the display as symbols. "Clicking" on a vessel symbol opens a panel that displays the vessel's name, type, position, course, speed, call sign, MMSI number, and other information that the transmission makes available.

The MMSI (Maritime Mobile Service Identity) number is a series of nine digits that is sent in digital form and uniquely identifies a vessel or coast station. By means of its MMSI number, a vessel or station can be contacted directly via VHF using Digital Selective Calling (DSC). Every AIS transmitter station (Class A or Class B) is required to have an MMSI number (see "Marine Band 101," September 2003).

In typical Receive-Only installations, the output of the receiver is fed to an AIS-compatible chart plotter or radar. Most receivers also have USB outputs that can feed a PC or Mac and some receivers can even be powered by the USB cord connected to a laptop.

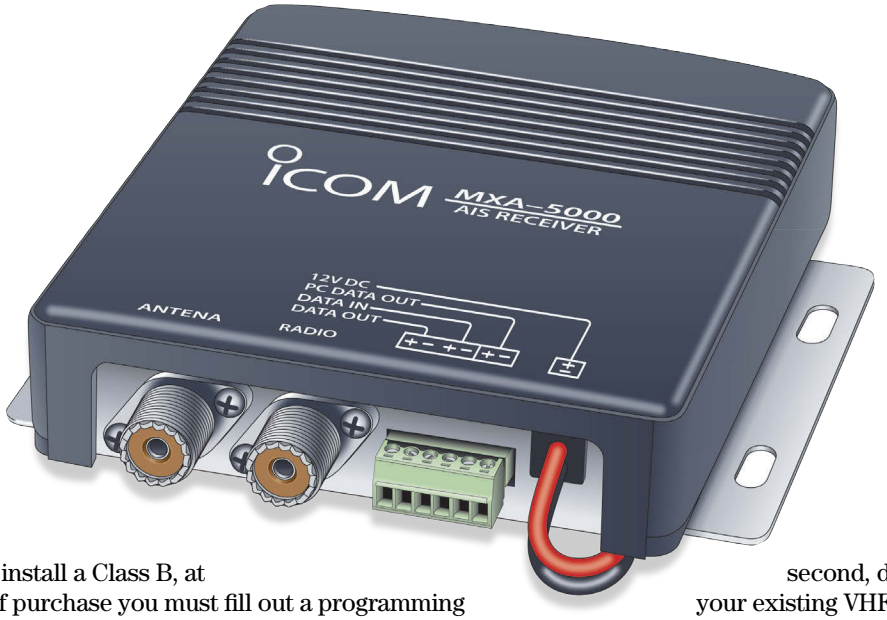
AIS provides a real-time graphical display and can "see" better through rain squalls, around promontories, and beyond islands than radar systems can. Signal range, as with a VHF radio, depends on factors such as antenna height and antenna gain. However, since an AIS system shows only those vessels that are transmitting AIS signals, it is not a substitute for a visual deck watch or, in low visibility, a radar watch.

User choices

AIS can be useful for the sailor who shares congested waters with large commercial craft where potentially hazardous crossing situations are likely to arise. Recreational vessels can install a Class B device or a Receive-Only device.

Class B AIS equipment includes a VHF transmitter and a dual-channel receiver and requires a built-in GPS. Class B transmission power is lower than Class A. It is restricted to 2 watts, giving a typical range of 5 to 10 miles. The FCC requires that Class B (and Class A) AIS transponders sold in the U.S. be programmed by a qualified technician. If you

LAYOUT AND ILLUSTRATIONS BY TED TOLLEFSON



Some AIS receivers come with an antenna splitter built in.

choose to install a Class B, at the time of purchase you must fill out a programming form with your vessel information so a technician can program it into the AIS.

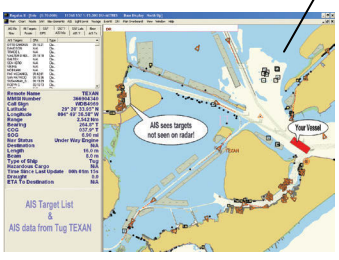
Some recreational boaters install Class B transponders, but Receive-Only units are much less expensive. They receive and display information from vessels within range that are equipped to transmit AIS signal (Class A and Class B vessels). Those vessels, however, cannot see a Receive-Only equipped boat on their AIS displays.

To get the feel for the information available to an AIS receiver, go to www.marinetraffic.com, where you can monitor the operation of commercial shipping using AIS in real time. Keep in mind that — just as with GPS — AIS can be spoofed by hackers relatively easily.

Installing a Receive-Only AIS is relatively simple. The receiver requires a VHF antenna. This means having either a second, dedicated AIS antenna or using your existing VHF antenna. You can't connect the AIS receiver directly to your existing antenna — when you transmit on your VHF, it would blow out the AIS receiver. However, this problem can be overcome by putting in a "splitter" switch that automatically allows the existing antenna to be used for either a marine-band VHF radio or for the AIS receiver. Some AIS receivers have a built-in splitter switch, making the installation even simpler.

Don Launer, a Good Old Boat *contributing editor, built his two-masted schooner,* Delphinus, *from a bare hull. He has held a USCG captain's license for more than 40 years and has written five books. His 101 articles through November 2011 are available for downloading as a collection from the Good Old Boat download website, www.audioseastories.com. Look under Archive eXtractions.*

A Receive-Only AIS system can use the ship's VHF antenna to receive AIS transmissions, in which case an antenna splitter is required to prevent VHF transmissions from damaging the AIS receiver. The output from the AIS receiver can be displayed on a chart plotter or a PC.



AIS screen view

PC

Antenna for ship's VHF radio

Antenna splitter, (may be built into the AIS receiver)

AIS receiver

Chart plotter

Ship's VHF radio

How sailboat rudders

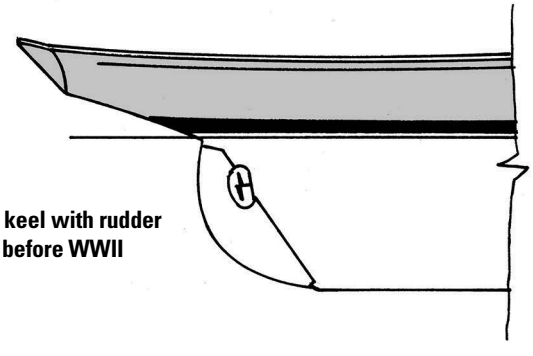
All three of our comparison boats in this issue (see page 14) have separate rudders mounted on leading-edge skegs. Readers of this magazine will know that I enjoy tracking developmental paths in all aspects of yacht design, and the evolution of the rudder is no exception. I won't go all the way back to the Viking and North Sea steering oar, or "steer-board," although it supposedly gave us the term "starboard" — because the steer-board was always mounted on the right side of the canoe stern. (The term "port" arose due to the vessel having to berth with her left side on the pier while in port to avoid damaging the steering oar.)

Ever since the Middle Ages, however, the rudder has been mounted on the trailing edge of the keel, and remained so for most of the 19th and 20th centuries. With the rise of "scientific" yacht design (see "Scientific Design," January 2014), designers started whittling away the deadwood at the aft end of the keel between the keel and the rudder as a way to reduce wetted surface. A graphical plot of this whittling would show the transition from the original full keel and rudder to taking chunks out of the deadwood, as envisioned by Ted Brewer with his "Brewer Bite." This led to enlarging this "bite" to include most of the deadwood aft, leaving only a skeg extension between the newly created fin keel and the rudder (as on the Pacific Seacraft 34 or the C&C Landfall series), and eventually a completely separate rudder mounted on a fixed skeg. The final steps were the complete elimination of the skeg, to create an all-movable cantilevered spade rudder as on most early C&Cs, and then the high-aspect-ratio all-movable rudder seen on all modern high-performance boats.

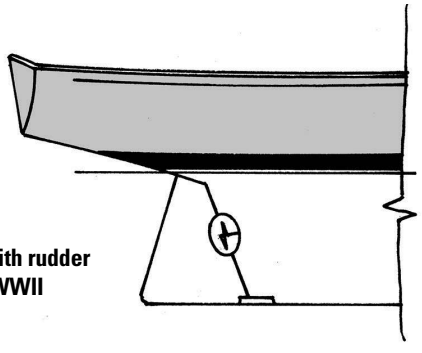
Measurement rules at work

As pretty a picture as this might appear to be, rudders did not in fact evolve in such a straightforward way. Like most developments in yacht design, the process was directly tied to the rules to which yachts were designed. Consider the impact of the Seawanhaka Rule in North America in the mid-1880s and the similar waterline and sail area rule in England at about the same time. Keen students of the history of yacht design know that Nathanael G. Herreshoff turned the yachting world on its collective ear in 1891 with the design and launching of *Gloriana*, in which the forward end of the waterline was severely cut away and the forefoot reduced in order to dramatically shorten the waterline. The object was to lower the rating and achieve more sail area under the new rule. This innovation led to the spoon bow and changed the look of racing yachts, and hence all sailing yachts, overnight (see "The Once and Future Bow," March 2014).

That same year, Herreshoff also launched a little boat called *Dilemma*, the first "fin-keel" racing yacht to have a lead bulb on an iron-plate fin and a separate rudder mounted well behind it. It's a testament to Herreshoff's genius that he immediately saw two methods to exploit the potential and weaknesses of the new rule and implemented both. Isn't that what yacht designers do? The fin-keeler rapidly gained prominence, but not to everyone's liking. These boats tended to be much lighter and shallower than conventional designs and were deemed by the yachting establishment to be an



Full keel with rudder before WWII



Full keel with rudder after WWII

evolved

Current designs arrived via varied routes

BY ROB MAZZA

INVADER AND *VEDETTE*, ROYAL CANADIAN YACHT CLUB COLLECTION. PHOTOS COURTESY OF DAVID WEATHERSTON

unhealthy development that should be discouraged in any future modification to the rule. This was attempted initially by introducing "girth" measurements in the rating rules . . . with only mixed success, as designers like Herreshoff in North America and Charles Sibbick in England continued to gain prominence with their fin-keelers.

As a poetic quirk of sailing history, it was Herreshoff himself who stifled this "unhealthy" trend in yacht design when he created the Universal Rule, accepted in 1906, that for the first time incorporated a displacement measurement in the denominator of a rating formula. This ensured that, for a given length and beam, lighter displacement would result in a higher rating. The International Rule, introduced in Europe at the same time, had the same effect, and the development of the separate rudder was well and truly stymied. However, the separate rudder made a dramatic comeback after the adoption of the CCA Rule and the subsequent building of lighter-displacement ocean racing boats like the Cal 40 and *Red Jacket* in the 1960s. It is now the norm.

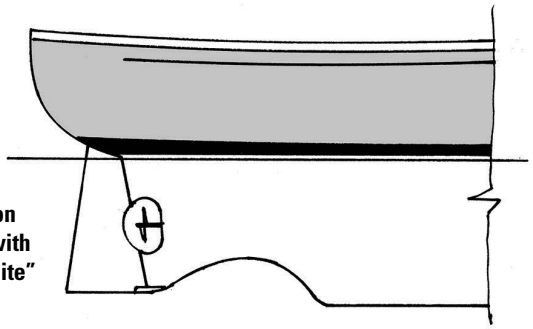
Skeg or all-movable rudder?

The general thinking is that a rudder mounted on a skeg improves directional stability while an all-movable rudder improves maneuverability. There's a good deal of truth in that. A rudder mounted on a skeg is, in effect, a cambered foil, which has stall characteristics that are dramatically different from those of an all-movable rudder.

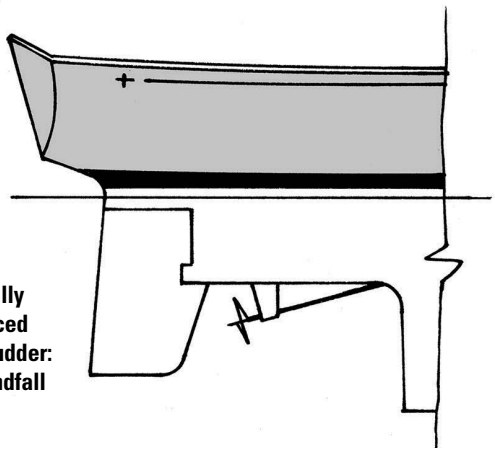
As with all foils, as the angle of attack is increased (by turning the rudder off centerline), flow will eventually separate from the low-pressure side until the rudder "stalls." A symmetrical all-movable rudder inevitably suffers "leading-edge stall" — separation initiates at or near the leading edge and will lead to a "catastrophic" stall and instant loss of lift. In the old IOR days, when boats carried large masthead symmetrical spinnakers, often on overlength poles, the result of a catastrophic rudder stall would be a spectacular beam-end broach!

A skeg rudder will suffer a much more gradual "trailing-edge stall" — the area of stall will creep forward on the foil and will not be catastrophic. The boat will be easier to control off the wind. However, when turning the yacht, it's best to remember that it is not the rudder that alters the yacht's course but the keel. The rudder initiates the turn around the keel, but it is the keel that changes the course of the boat. Anyone who has sailed a dinghy with the centerboard up, or tried to turn a rubber dinghy with an outboard motor, knows all about that. Once a turn is initiated, the boat rotates about the keel and the stern swings in the opposite direction of the turn, decreasing the angle of attack on the rudder or, in the case of the skeg, initiating a negative angle of attack, thus reducing lift and reducing the

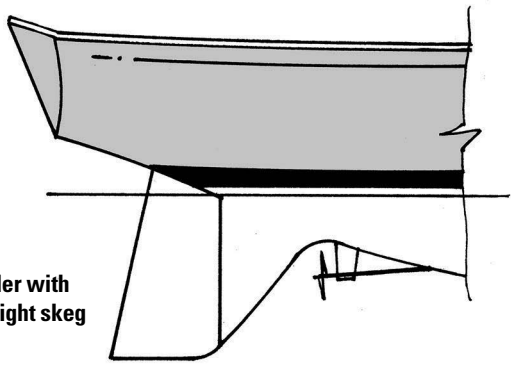
Rudders evolved from a flap attached to the trailing edge of the full-length keel to the all-movable cantilevered elliptical high-aspect-ratio spade mounted farther forward under the hull. Although this appears to be a logical and inevitable evolution in design, that's not how it actually happened.



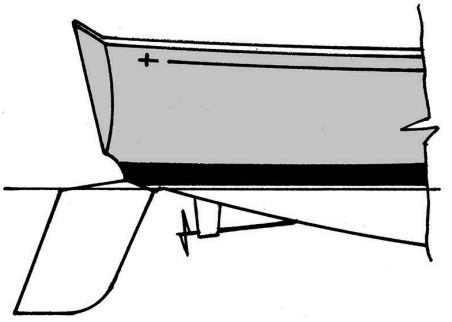
Rudder on full keel with "Brewer Bite"



Partially balanced "horn" rudder: C&C Landfall



Rudder with full-height skeg



Original low-aspect-ratio C&C cantilevered spade rudder

turning force of the rudder. Think of this as the skeg being dragged sideways through the water during the turn.

The angle of attack of an all-movable rudder, on the other hand, can continue to be adjusted during the turn, so the rudder is always generating lift and never impeding the turn. Therefore, an all-movable rudder is better for turning and maneuvering than a skeg rudder, and produces less drag in proportion to the amount of lift it generates — it has a higher lift/drag ratio. In effect, a skeg might be desirable for long runs and reaches, but an all-movable rudder is better upwind or for maneuvering.

Seeking the best of both worlds, while I was with C&C we designed a special rudder for a 46-foot custom IOR ocean racer named *Dynamo*. The portion of the rudder in front of the stock could be either attached to the hull to form a fixed full-height skeg or released from the hull to be affixed to the rudder, where it became the leading edge of an all-movable rudder. This worked well, but for the transition to be made, the rudder had to be temporarily locked on centerline, which always created a moment of heightened anxiety on board.

Shape and balance

To ensure a lighter feel on the helm, the all-movable rudder needs "balance." This is achieved by putting from 12 to 15 percent of the rudder's area forward of the centerline of the stock. The skeg rudder generates less load on the wheel or tiller because the fixed skeg carries a large portion of the lift generated by the rudder and skeg combination.

Long, narrow high-aspect-ratio foils produce higher lift and lower drag than squatter lower-aspect-ratio foils. The deeper the rudder and the shorter its chord length (the distance from the leading edge to the trailing edge), the better the performance.

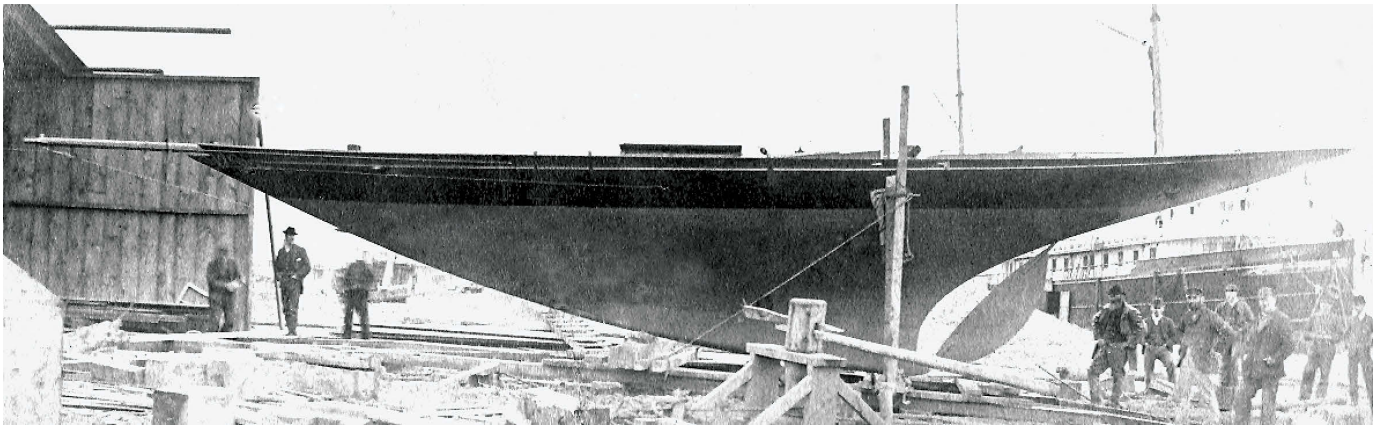
It has also long been known in low-speed aerodynamics that an elliptical longitudinal pressure distribution on a wing is optimum for producing minimum induced drag. The most reliable way to achieve such a distribution, of course, is to build an elliptical wing, which is what Supermarine did in the famous WWII Spitfire. Therefore, an elliptical high-aspect-ratio plan form is thought to be optimal for all-movable rudders. This rudder shape has been generally adopted as the norm on modern racer/cruisers.

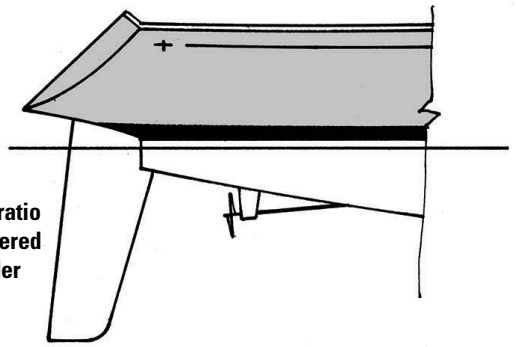
The farther aft the rudder, the greater its ability to initiate a course adjustment with minimum load. However, if the rudder pierces the water surface, it can easily "ventilate" as the low-pressure side "sucks" air down from above, leading to a catastrophic stall. Locating the rudder farther forward under the hull and deeper in the water, while requiring a slightly higher force to initiate a turn, assures that it will be less likely to ventilate at high rudder angles.

Rudder structure

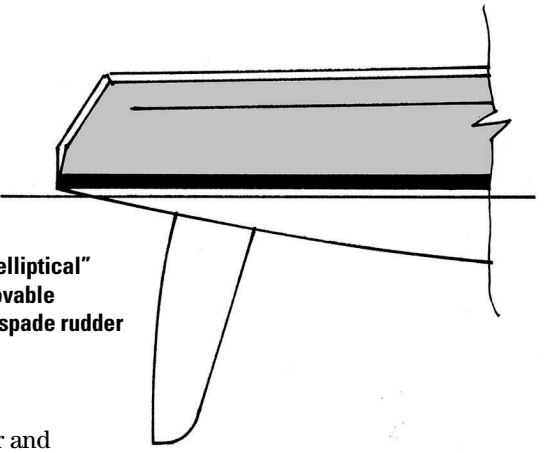
The skeg can also provide structural support for the rudder stock, but it complicates the hull layup. Indeed, for a production boat, a deep skeg must be laminated in a split hull mold, added with the use of a removable mold insert, or bolted to the hull separately. In order for the skeg to help support the rudder, of course, the rudder stock needs to be attached to the skeg, usually by means of a lower rudder bearing attached to the bottom of the skeg.

An all-movable cantilevered spade rudder must be able to support its entire bending and torsional load with the rudder stock itself. In the past, the





Later high-aspect-ratio C&C cantilevered spade rudder



Modern "elliptical" all-movable cantilevered spade rudder

stock for a spade rudder would have been made of stainless-steel pipe, or even titanium, but carbon fiber is being used more extensively today for its lighter weight and greater stiffness. The key is to be very conscious of the material's resilience, making sure that — for more brittle materials like titanium or carbon fiber — the design factor of safety is high enough to accommodate fatigue loads and unexpected impact loads.

The skeg is also often considered as protection for the rudder in case of impact with a submerged item far at sea. However, whether a damaged skeg is any better or worse than a partially bent rudder stock after impact can be a matter of debate.

The ultimate compromise between a skeg and an all-movable rudder, of course, is the partially balanced or "horn" rudder, where the top half is mated to a skeg and the bottom is all-movable below the skeg. To achieve the required balance, the lower half of the rudder must inevitably project forward of the skeg in the form of a "horn" that can pick up floating debris or lobster and crab pots. Usually, a stainless-steel rod or device is fitted that protrudes down from the skeg to prevent anything from becoming trapped between the horn and the skeg. However, like most compromises, the partially balanced or "horn" rudder performs moderately better and moderately worse than either of the two alternatives, depending on the point of sail.

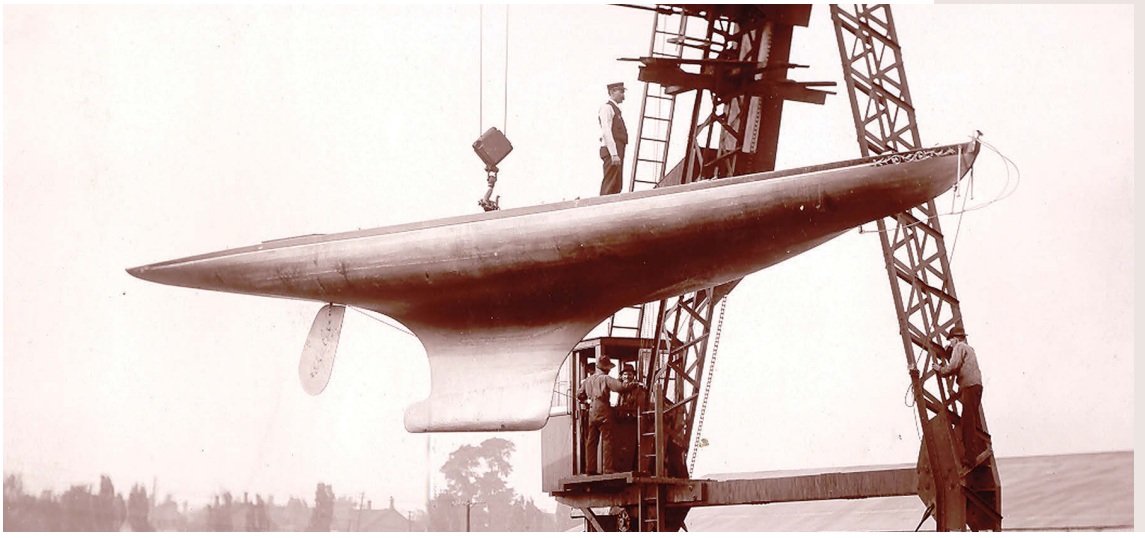
Rudders have indeed evolved from simply being mounted on the trailing edge of the keel, but this evolution has not been in a straight line. As part of the evolution, compromises between downwind and upwind performance have been introduced, the choice of which often boils down to personal preference. Seeing how closely the modern elliptical all-movable spade rudder resembles the rudder on the 1901 Fife-designed Canada's Cup winner *Invader*, we have to ask ourselves if we have really come all that far.

Rob Mazza is a Good Old Boat *contributing editor. His bio is on page 15.*

Vedette and *Invader*

An early attempt at a separate rudder can be seen on *Vedette* designed by William Fife, Jr. and built in Toronto, Ontario, in 1892 (see the photos on pages 18 and 20). *Vedette* had a smaller sister named *Nox* that also sailed on Lake Ontario out of Rochester, New York. Fife quickly abandoned this line of development, but it shows a top-notch designer experimenting with these rudder shapes even before the science of aerodynamics had been established.

The 1901 Canada's Cup winner, *Invader*, designed by Charles Sibbick of Cowes, England, and built in Oakville, Ontario, featured an early and successful separate rudder (see the photos on page 19 and this page). It's interesting to note that *Vincedor*, the original challenger for what would become the Canada's Cup, was also a fin-keeler with a separate rudder, and was actually a copy of the Herreshoff-designed fin-keeler *Niagara* that did so well racing in England in the early 1890s. The Fife-designed *Canada* beat *Vincedor* in two straight races in the best-of-three series in Toledo. Elliptical plan forms are now thought to produce minimum drag, which makes it interesting to see Sibbick using such a shape at the turn of the 20th century.



PHOTOS COURTESY OF KEN DEELEY

Happy 100th!

A ton of magazines

How this issue went together

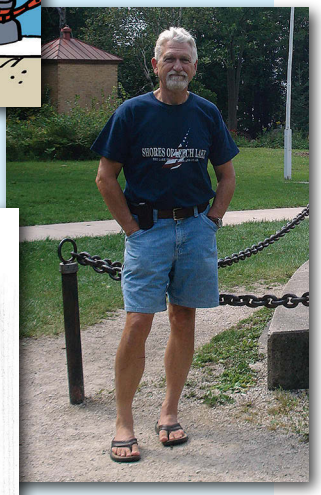
BY KAREN LARSON

SUMMER AND FALL 2013

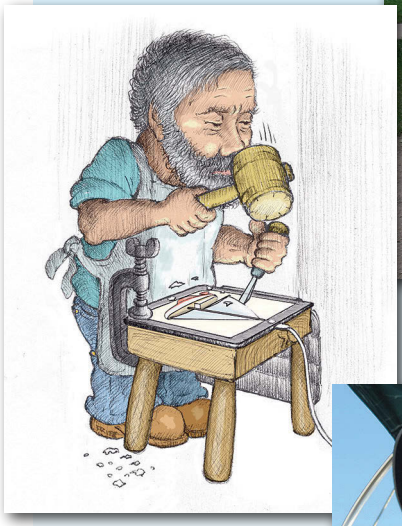
Karen Larson and Jerry Powlas, founding editors.

SUMMER 2014

Rick Beddoe, above.
Tom Payne, left.
Ted Tollefson, below.



ILLUSTRATORS



Fritz Seegers, above and right.

As we complete our 100th issue, we're able to say with pride that we've pretty much got the hang of this magazine publishing thing. Since we're often asked how it works, here's a summary of how this issue went together.

Like many good things, each issue of *Good Old Boat* starts out with a glass of wine for me and one of Scotch for Jerry on many a pleasant evening as we read the articles our readers have submitted for publication. Our criteria include: does it apply to, and therefore will be of interest to, most of our readers, have we already accepted (or recently published) something on the subject, and is the article about a project on a good old boat or about good old boats in general? We don't publish racing articles, cruising logs, or destination pieces. Beyond that, anything goes, as you've no doubt noticed.

Let's say you have an article in this issue. You would have sent that to us well over a year ago, because we always have about a year's worth of material already in our files. When I accepted your article and made you an offer, I made sure you'd sent high-resolution images, then did an initial edit. I may have asked you for a few revisions or clarifications. Your article then went into a file to wait its turn.

The cycle begins

Showtime began for your article this past summer. If it required illustrations, an illustrator (Ted Tollefson, Fritz Seegers, Tom Payne, or Rick Beddoe) got involved at that point. By late September, Dan Spurr, as research editor and manager of the boat reviews, passed the boat-review articles and photos to Tim Bauernfeind, our managing editor. At the same time, I turned all the other article files over to Tim. All told, there are usually around 25 articles with all their associated parts (text, photos, captions, illustrations, tables, graphs, author bio, author address so we can send you a check, any special photo-credit requests, and so on). It's up

SEPTEMBER 2014

Dan Spurr, research editor, top.
Tim Bauernfeind, managing editor, above.

OCTOBER
NOVEMBER
2014

Michael Facius, publisher, top.
Karla Sandness, financial manager, above.
Nancy Koucky, design director, left.

Jeremy McGeary, senior editor, left.
Pat Morris, associate editor, right.

to Tim to make sure that everything is packaged for Nancy and Jeremy, who are up next. Tim passed the whole shebang on to them in late September and, as soon as he got them, Jeremy began the second edit and created the headlines.

Simultaneously, however, the advertising crew was busy with final insertion requests from our advertisers and creating new ads. That team is made up of Michael Facius, our publisher and advertising sales director; Karla Sandness, a jack-of-all-trades with the title of financial manager; and Nancy Koucky, who does the magic with Photoshop and InDesign. There are the many boat classified ads as well as the boxed product classifieds and the larger display ads that appear throughout the pages. The advertising deadline in early October brought all that activity to an abrupt halt, and it was then up to the production crew to make everything that we promised to run fit in this issue.

Parallel paths

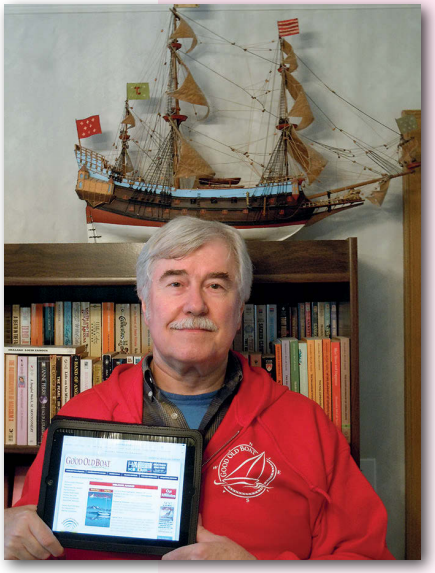
Right after that, in mid-November, the Mail Buoy deadline brought a halt to another flurry of activity. Tim Bauernfeind pulls the letters to the editor together for us. He also works closely with Michael Facius and Pat Morris on the newsletter. In this case they produced the newsletter that came out the first of December and was posted by our webmaster, Jerry

DECEMBER 2014

Patty and Michael Facius, podcast production.

Verónica Jaralambides, web expert, above.
Mark Busta, director of circulation and retail, below.

Allen Penticoff, top, note taker.
Tom Wells, above, entertainer.



Jerry Stearns, webmaster.

Stearns. Michael and his wife, Patty, also created the podcast version of the newsletter during the last week of November. If you're confused at this point in my narrative, join the club. We all run in opposite directions, but the end result is always a unified whole we're proud of. Stay with me on this.

Nip, tuck, and pick nits

Cue the production crew. Jeremy McGeary is the senior editor and Nancy Koucky is the design director. Together, they beat all those parts into shape and sent a first draft with magazine pages out in mid-November for proofing by the two founding editors (Jerry Powlas and Karen Larson) as well as one more editor who had not already been dealing with the articles in this issue. Pat Morris is a professional editor who attacks each proof with a pair of fresh eyes. She likes to think of herself as a grammar nag and we're happy to be nagged every two months like clockwork.

By late November, Jeremy and I made one more quick proof. It was up to us to review what was essentially a completed magazine to make sure the problems caught in the first proof were addressed without introducing any new errors, and to catch (most of) those big mistakes that shout at readers once they appear in print.

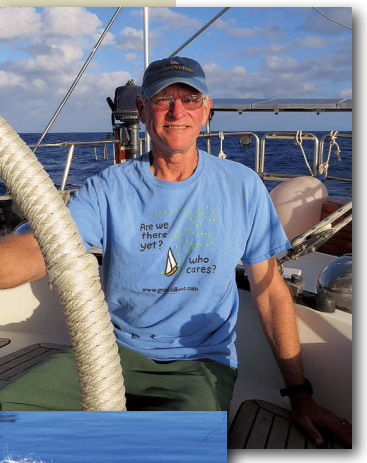
Off to the printer

In early December, the final file of the January issue that you're holding in your hands went to the printer (Publishers Press in Kentucky) along with the mailing labels for all current subscribers. Mark Busta, our director of circulation, and Karla Sandness (wearing one of her many hats) sent the mailing list to the printer. All the steps involved help explain why we think of a spring publication in the winter, a winter one in the fall, and so forth. It explains why your Mail Buoy letters may lag behind by an issue and it explains why we need your subscription checks sooner than seems reasonable. It can only be described as "magazine time."

Once the print version went to the printer, Nancy created the PDF edition for our digital readers. Within two weeks of

CREATING FUTURE CONTENT

CONTRIBUTING EDITORS



Bill Sandifer, top, inveterate tinkerer. Gregg Nestor, above, idea seeker.

Ed Zacko, top, jazzily creative. David Lynn, above, sailing the world. Don Launer, left, teacher.

Richard Smith, top, cockpit comfort connoisseur. Rob Mazza, above, sailboat design authority.

the magazine files arriving at Publishers Press, copies went out the door on trucks to the post office and newsstands. Verónica Jaralambides is the web expert who posted this issue on our downloads site, www.AudioSeaStories.com, that works like a newsstand for single copies and full years of all our back issues. The timing for that was mid-December. By late December — Merry Christmas one and all — those copies arrived in mailboxes and email notifications went out for the digital issue. At the same time, this issue appeared on the newsstands.

Even before you've read the whole thing, we've started the whole cycle all over again. It may be late December in your world, but it's already March in ours! Issue 100 is history and issue 101 is the coming thing.

Our support team

We can't overlook the ongoing addition made by our contributing editors. Most do not show up in every issue but they do show up with some regularity. They are Don Launer, David Lynn, Rob Mazza, Gregg Nestor, Allen Penticoff, Bill Sandifer, Richard Smith, Ed Zacko, and Tom Wells. Tom has the additional honorary title of troubadour, since he plays his guitar at our booth at boat shows and has written many songs about our magazine, our newsletter, our boat show activities, our boats, our parties, and the efforts of our crew.

Nor can we overlook the contributions by each and every one of you who sent a letter to the editor, took a Mail Buoy photo, wrote an article, or contributed in a zillion other ways. We likewise value every single advertiser and hope you show them your appreciation whenever it's appropriate. We wouldn't be here without the advertisers and you, the subscribers, who value what we do enough to send another check that allows us to spin the wheel for yet another publication cycle.

The simple fact is that it takes all of us. Everyone is a part of "the sailing magazine for the rest of us." Thank you for making it possible for us to publish 100 editions of *Good Old Boat.*

C&C MEGA 30

A big trailerable boat with a lifting keel

BY ALLEN PENTICOFF

Reviewing the 1980 C&C Mega 30 owned by *Good Old Boat* founders Karen Larson and Jerry Powlas is something of a daunting project. Here's a boat that for 11 years has been reported on in this publication, in the first person for the most part. Longtime readers are well aware of the project — its beginnings, years of refit, decisions, and musings.

My wife and I met with Jerry and Karen last June in Superior, Wisconsin, where we spent much time aboard *Sunflower* enjoying their company and listening as each explained the innovations and improvements they'd made. My objective with this article was to look for the original boat under all of their work and report my findings for any readers who might be interested in owning this comfy, fast, and trailerable (sort of) boat.

When introduced in 1977, the Mega 30 was considered a rather radical design because of its lifting keel, 30-foot length, and road-legal beam, main image. A view from the quarter, above, shows the marked flare toward the bow that created a broad foredeck on the narrow hull.

Design

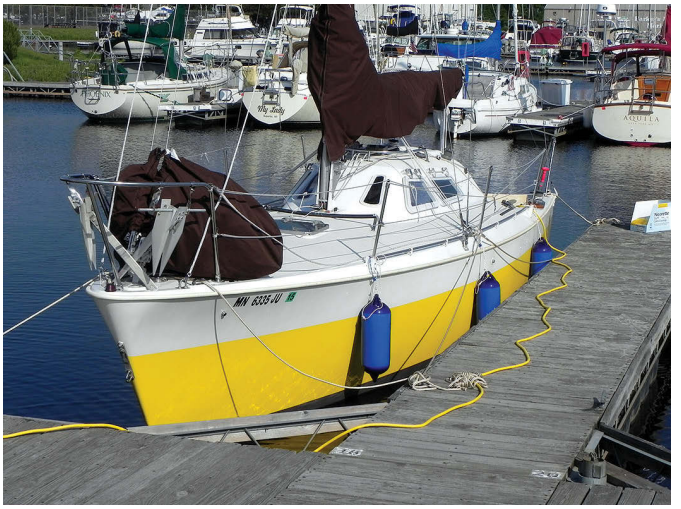
In the beginning . . . there was C&C Yachts, a Canadian builder of racing and cruiser/racer sailboats that was established in 1969. In 1977, the company decided to break into the trailerable-sailboat market in a joint venture with North Sails. The idea was to level the playing field in club racing with an

exciting one-design class. Peter Barrett of North Sails and George Cuthbertson, president of C&C Yachts, were the idea guys behind the Mega 30 concept. All the drawings were done by the C&C Design Group under Rob Ball. *Good Old Boat* contributing editor Rob Mazza was a senior designer with the C&C Design Group at the time and project manager for the C&C Mega 30. The boat would be built simultaneously at C&C's plants at Niagara-on-the-Lake, Ontario; Middletown, Rhode Island; and Kiel, Germany. At the time of its introduction, the Mega was considered a somewhat revolutionary design.

The Mega 30, with its retractable bulb keel, an overall length of 30 feet, and a beam just under 8 feet, was considered to be as big a boat as could reasonably be towed legally. Later, to boost lackluster sales, a U.S.-built version was offered with a fixed keel (the Mega 30 FK), after which time the original version was called the Mega 30 OD (for one design). Just 115 of the ODs were built and only 27 FKs, resulting in a short production run that ended in 1980.

The nice sheer and the bubble-top cabin with dark-tinted wraparound polycarbonate windows make the boat look fast on the trailer or on the water. The topsides are a bit slab-sided due to the need to achieve maximum waterline beam for stability and stay within the 8-foot limit for towing. Narrow beam offers minimal form stability with little initial resistance to heeling, but makes for predictable handling and ease of motion. While the waterline has a fine entry, the top of the stem is a little blunt by modern standards.

Since the boat was designed to be trailered from one race to another, the 2,250-pound bulb keel retracts with the use of a manual jackscrew (most have the optional electrically driven screw). The bulb remains below the bottom of the hull when retracted, yielding a draft of 21 inches. With the keel fully down, the draft is 5 feet. The fixed-keel version draws 5 feet 2 inches but has more ballast — 2,860 pounds. The tiller-steered swing-up rudder is transom-hung adjacent to a large cutout for the outboard motor. A saildrive was optional.



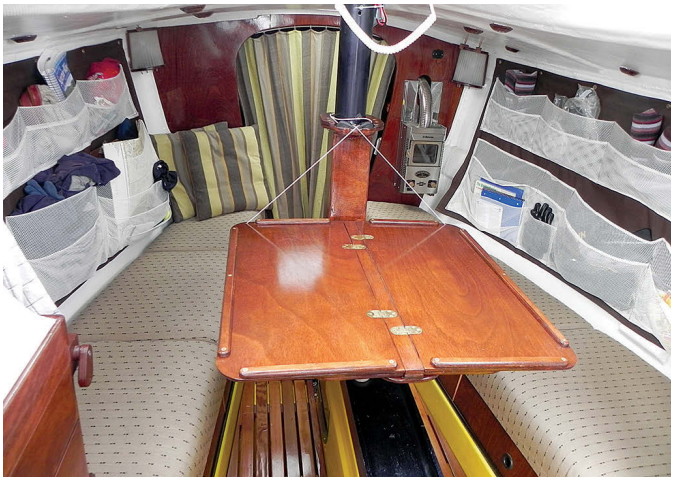
Construction

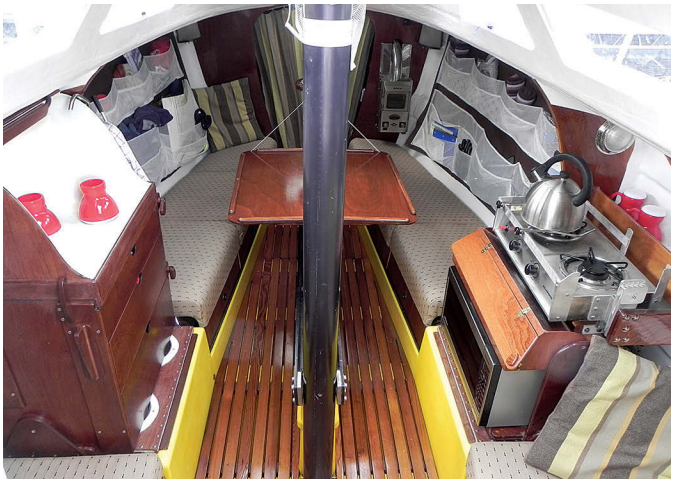
The hull is a single-skin laminate below the waterline and the topsides, deck, and stringers are cored with balsa. The hull-to-deck joint is an outward-turning flange fastened with pop rivets (no washers) and sealant and covered with a vinyl rub strip. Jerry and Karen fiberglassed the entire length of the joint on the inside of the hull and reinforced some areas with plywood. They also made a considerable effort to reinforce the deck at the bow with plywood and glass while replacing soggy core material.

Rig

The single-spreader mast is deck-stepped in a tall tabernacle that allows the mast to lie

The forward hatch and the track for the self-tacking jib emphasize the expanse of the flush foredeck, above center. Because the Mega 30's original wraparound windows tended to leak, Jerry replaced them with fixed and opening portlights of his own design, at left. He also fitted five winches on the cabintop. The mainsheet traveler divides the cockpit, at right. The double tackle (another Jerry addition) is handy to the helmsman.





Jerry made a folding saloon table that pivots around the compression post, at left. It can be used as extra counter space for the galley or for dining, at right. The boat originally lacked storage space for cruising, so Karen made net hammocks that fit behind the saloon settees.

back over the cabin trunk, which is a help when towing. The forestay is attached to the mast about ⅞ of its height above the deck. Originally, the jib came on a roller furler, but Jerry has given *Sunflower* twin forestays and an ingenious rig that, upon the sail (blade jib or genoa) being hoisted to full height, tensions the in-use forestay automatically while easing the other (see "*Sunflower*'s Forestay Tensioner," page 31). It is a remarkable thing to watch this mechanism in action.

The upper shrouds attach at the same height as the forestay and lead aft a little to provide the controlling tension to the forestay. The lower shrouds connect to the same chainplates. A split adjustable backstay is used to flatten the mainsail.

Sunflower, as do most Megas, has a track for the self-tacking working jib. While this feature makes for simple tacking, it gives up some control over the shape of the jib, particularly off the wind. The mainsheet is at the end of the boom and is attached to a recessed traveler that spans the cockpit just forward of the tiller, where it's within reach of the helmsman.

Five winches are mounted on *Sunflower*'s cabintop: a centerline Lewmar #12 for halyards, a pair of Lewmar #7s for reefing, and two Lewmar #10s for the genoa and self-tacking jib. A pair of Barient #25s on the cockpit coamings are used for the genoa sheets in light air and for the Dyneema running backstays. Jerry also installed a double vang/preventer that he attaches to substantially reinforced stanchion bases port and starboard.

Deck

Moving around on *Sunflower*'s deck, with its aggressive non-skid and good handrails on the cabintop, is fairly straightforward. Double Dyneema lifelines connect the stainless-steel bow and stern pulpits. The foredeck is open, with a good sail-handling area forward of the one opening hatch. There is no anchor locker so, on *Sunflower*, two Danforth-type anchors hang from hooks on the bow pulpit.

A stock Mega 30 has non-opening wraparound windows. A major modification Jerry made to the cabin trunk on *Sunflower* was to fit four top-hinged opening ports that swing out and two

As a raceboat, the Mega 30 was originally fitted with a minimal galley. Among the modifications Jerry made were the foldaway counter and "spray booth," at left, where he and Karen rinse dishes with a handheld pressure washer. The booth doubles as a countertop. On the starboard side, the galley has just enough space for a two-burner stovetop with microwave oven beneath it, at right. The keel trunk is in the middle.

> “The lifting-keel’s trunk and supporting structure, which includes two posts and an I-beam, divides the saloon.”

fixed windows forward — all over the original cutouts.

The companionway has a removable hinged “lid” that aids in access to the cabin and improves ventilation, although it must be in the down position to keep out rain. One large board seals off the companionway. Jerry has made a screen/window dropboard for this large space.

The cockpit is roomy and comfortable, with a single lazarette that holds a large fuel tank. A manual bilge pump can be operated from the helm. The port-side transom opening allows any water that comes aboard to exit quickly, while the high bridge deck keeps it out of the cabin.

Jerry’s modified motor mount swings *Sunflower*’s 9.9-hp 4-cycle Yamaha up horizontal with the water. Although the raised motor limits the maximum turning angle of the rudder head, it doesn’t seem to affect normal handling. Stock Megas have a swing-up seat over the motor well. Jerry has installed sliding engine controls on the laminated wood tiller.

Accommodations

A fairly steep removable stainless-steel and aluminum ladder leads down into the cabin, where the open space creates an immediate first impression. Under the bubble, an area with more than 6 feet of standing headroom includes the workbench/sink counter and the stove opposite. In these areas, Jerry has fabricated many additions to turn this raceboat into a cruiser. The lifting-keel’s trunk and supporting structure, which includes two posts and an I-beam, divides the saloon. When the keel is fully retracted, it nearly touches the overhead.

The original settees and other furniture were made of birch plywood, and Jerry has had to scarf in new wood to replace some deteriorated sections. The settee furniture lifts off for easy access to storage. Karen reupholstered all the cushions and reconditioned the cedar cabin sole boards.

On *Sunflower*, the color scheme is carried inside, where the fiberglass furniture pan has been painted yellow.

Mega 30

Designer:	C&C Design Group
LOA:	29 feet 11 inches
LWL:	27 feet 4 inches
Beam:	7 feet 11 inches
Draft (keel raised):	21 inches
Draft (keel at shallow cruise):	3 feet 6 inches
Draft (keel down):	5 feet 0 inches
Draft (fixed keel):	5 feet 2 inches
Displacement:	4,500 pounds
Ballast (retractable keel):	2,250 pounds
Ballast (fixed keel):	2,860 pounds
Sail area :	428 square feet
Sail area/disp. ratio:	25
Disp./LWL ratio:	98

In all, there are four 6-foot-plus berths in an original Mega 30, with the forepeak reserved for a portable toilet and storage. As berths, the settees are minimally wide, and the aft quarter berths on *Sunflower* have been modified to slide out to gain width. Above them are clever folding “baby-changing” tables with large fiddles that vastly expand the galley counter space. The “sink” area has been modified to be an open-sided box that functions as a spray booth where dishes can be washed with a pressure garden sprayer. The flat surface also serves as a work counter and catchall.

Sunflower’s interior cabin sides are covered with storage nets made by Karen (originally there were seatback cushions with pocket bags above them). It does not appear that an original Mega 30 OD has a dining table, so Jerry fabricated a clever folding sapele wood table that pivots around the mast compression post. At rest in the marina, I found the pivoting feature very practical, as the table, even with items left on it, can be pushed aside to allow free movement around the cabin.

Since the original fiberglass overhead liner had deteriorated, Jerry removed it in favor of paint. His elegant solution to the many protruding hardware fasteners was to cut bolts flush with the nuts, then protect noggins with carefully sculpted backing blocks laminated from marine plywood and Masonite (see “Better Backing Blocks,” March 2010).

Jerry has also added a 19-gallon holding tank and two 17-gallon freshwater tanks made of fiberglass, plywood, and epoxy, each of them shaped to fit the available space. The Mega 30 had no real structural bulkheads, so Jerry tabbed the forward cabin divider to the hull and deck and reinforced it. Jerry’s opening portlights greatly improve the cabin’s ventilation.

For general cabin lighting, Jerry fabricated fixtures to house both

The head is in the forepeak. Jerry built a holding tank into the bow.

65-watt 12-volt CFL bulbs and 100-watt 110-volt CFL bulbs. Other lights are LED. He also upgraded the simple Mega 30 wiring with a fairly complex system for AC and DC power that includes extra junctions at key locations for future expansion. He also used big battery cables to upgrade the wiring to the electric winch motor that lifts the keel, vastly improving its performance.

Other improvements Jerry made to the cabin are a custom gimbaled aluminum frame for the Hillerange two-burner stove, a microwave oven below it, and a utensil cubby between them. A convection oven, toaster, and ice chest are behind the ladder. A marine head and a Dickenson cabin heater are forward. Fuel for the stove and cabin heater comes from two 20-pound propane tanks in a power-ventilated locker under the cockpit footwell where the saildrive once resided. One tank can be removed to accommodate a small Honda generator.

Despite all the improvements and plentiful storage that keep all the cruising gear contained, moving about in the cabin still involves crouching to go forward and some move-this-to-do-that activity. However, the keel-lift beam makes a good handhold and beverage holder.

Under way

With its powerful fractional rig, the Mega 30 moves easily in light air. The helm is quite responsive, but there is some excess weather helm unless the sail trim is just right. The rudder felt heavier than I expected and could possibly use more counterbalance area, unless it was simply trailing and lifting a bit. Otherwise, the boat tracked straight and tacked quickly. Sitting on the coaming and steering with a hiking stick would give the best view forward, although some owners report that, with plenty to lean against, standing to steer is more comfortable when heeled. The self-tacking jib makes a change of course easy on the crew. She'll heel right over as the breeze picks up, but eventually stiffens. Sailing downwind, she behaved well and showed no unusual traits. Owners with fixed-keel Mega 30s report they are much stiffer than the lifting-keel version.

I found the cockpit seating to be comfortable and quite good for napping. I'd give it a 5 on the Penticoff Napability Index (PNI: 1-5; 5 = great ZZZs; 1 = don't bother trying). The seat-to-seat distance is good for bracing legs when the boat heels.

The flip-up hatch (that needs a support strut) can be removed, which I'd recommend doing on nice days to improve access to the clutches and lines. Also, the bubble is somewhat in the way for furling the mainsail.

The rudder can kick up for trailering and gunkholing. Pinning it in the down position might be a good idea under way, as some owners suggest, for if the pull-down line is not tight, the rudder will rise, leading to very heavy helm pressure. The keel is not to be fully retracted except for towing or motoring without sails. An intermediate setting

Comments from owners of the Mega 30

"I like the Mega 30's excellent performance and benign handling — even when seemingly hopelessly heeled, she responds to the helm. The self-tacking jib is worth the short cabin roof and the boat sails very well with it, but just enough better with the genoa to make the larger sail worthwhile for racing with a keen crew. The quality and build appear satisfactory after 35 years. The supporting structure gives me confidence in the integrity of the lifting keel, but its bronze roller and mechanical jack require maintenance. Accommodations below are minimal. The standard cushions are narrow for comfortable sleeping, and the narrow hull, together with the keel structure, makes a restricted living area. The lifting keel is only accessible for bottom painting when fully extended. A boat kept on a trailer with its keel raised requires either complex maneuvering or no keel refinishing. The curved windows tend to leak and eventually crack. Replacement windows are expensive. A solution is thinner, bendable Lexan cut to shape, molded around the cabintop, and fastened with multiple screws and nuts."

—Malcolm McHattie, Ottawa, Ontario, Canada

"It's a great boat overall. My only complaint was that cast-iron monster they called a keel, but I understand that price was a driving force in not using lead, which I feel would have shaved a bunch of time off of its rating and stopped the boat from sailing with a nose-down attitude upwind. We put up with this upwind because we couldn't put our crew aft — needed them on the rail. Downwind, we put all available bodies in the aft corner, which made a *huge* difference reaching under spinnaker. We sailed with a PHRF rating of 156 for years, while the lift-keel versions were rated at 138, and took home trophies often. For the money at the time, it was a bargain in anyone's book. C&C did a good job producing a boat that was affordable, well built, and a blast to sail."

—Mike Lively, Pensacola, Florida

The Mega 30's unmistakable appearance attracts attention. The prominent house and flush deck are features of much bigger boats.

with a 3-foot 6-inch draft permits shoal-water cruising, but is probably best used with reduced sail.

Some owners like to reef early in heavier winds while others tough it out and flatten the main with the backstay tensioner and Cunningham. PHRF ratings range from 138 to 144 seconds per mile, the latter number being the same as for a J/30. With a sail area/displacement ratio (SA/D) of 25, the Mega 30 falls into what is considered the high-performance racer range. I recalculated with 500 pounds more for crew and extra gear and, with an SA/D of 23, it is still in that category. While sailing in the company of *Sunflower* with my MacGregor 26D, I found *Sunflower* would do a horizon job on us in no time.

Conclusion

Did I fail to find much of the original Mega 30 hiding under all those changes Jerry and Karen have made? I hope the reader can see through them to the underlying boat. Really, they've not changed as much as you might imagine. They are doing what many trailer-sailors have done: start with a basic no-frills boat and add improvements for comfort, handling, convenience, and safety.

With old balsa-cored decks, you may find soft spots as Jerry did. Other issues are leaking hull-to-deck joints, leaky or cracked windows, and the challenge of applying bottom paint to the retracted keel. Regular replacement of the rollers or slides in the lifting-keel frame is recommended. Boats of this age are often found in yards deteriorating in the sun. The hull will be chalky and the windows crazed — expect a lot of work, as Jerry found when he brought his "hot-rod dreamboat" home. Two listings online recently were asking for around $10,000, while a "barn find" notice on the Mega 30 group list was asking $5,000. Anyone interested in the Mega will find the group online as mega30sailors at Yahoo groups. The Mega 30 is a *big* trailerable boat that you don't have to crawl around inside. The speed is a bonus, so handicap racing with a local club may be its real forte. Fixed up right, the Mega 30 could be your "hot-rod dreamboat" as well.

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

More online … Read what an insider (Rob Mazza) has to say about the Mega 30 at www.goodoldboat.com/reader_services/more_online/mega_30.php

Sunflower's forestay tensioner

by Jerry Powlas

I wanted twin forestays on *Sunflower* instead of a roller furler. The jibs remain attached to their stays using Quick Links.

The problem with having more than one forestay is that, in a conventional double-forestay rig, half of the available tension is always on the stay that is not in use. When a forestay is loose, the jib sags to leeward, causing poor windward performance. I wanted a device that would put all the available tension on the stay that had a sail hoisted on it, and came up with what we call a forestay tensioner.

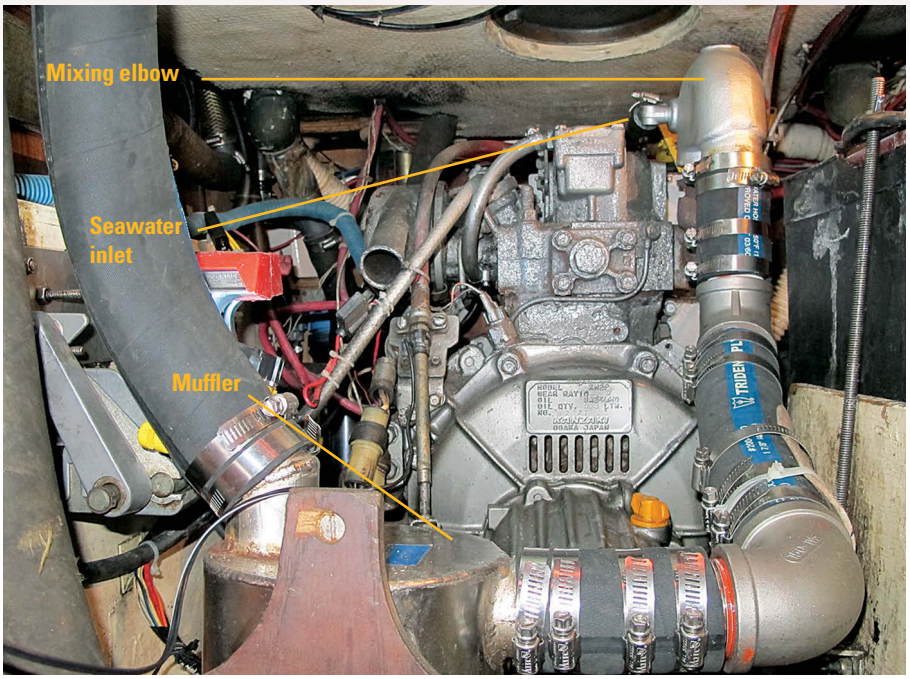
When *Sunflower*'s tensioner senses forestay tension, the stay with the greater tension automatically trips the other tensioner to the loose position. In the tight position, 5/16 inch is removed from the stay, and in the loose position, 5/16 inch is added to the stay.

Dead in the water

When a sailboat suffers a heart attack

BY ED ZACKO

It's 0700 on a beautiful April morning in France. Entr'acte, *our Nor'Sea 27, is on the River Seine in 18 knots of wind with 4-foot seas dead astern. We are facing upriver into an opposing 4-knot current. The engine has suddenly stopped dead. Smoke is coming through the engine-room vents along with the definite smell of something burning. All of this is accompanied by the shriek of engine-overheat- and low-oil-pressure alarms. Added to that is a constant stream of AIS danger-proximity alarms going off as fast as we silence them. This is a scene right out of a movie: the airliner is going down fast with alarms going off all at once. The pilot's yelling, "Shut off those alarms! I can't think!" But this is no movie. It's my voice yelling, "Shut off the GPS and AIS! I can't think!"*



A mixing elbow connects to the exhaust manifold on the engine. Since it's impossible to see inside it *in situ*, the only way to inspect it for blockages is to take it off completely.

The silence was deafening. *Entr'acte* had just departed the lovely harbor of Honfleur, bound up the Seine for Rouen and onward to Paris and the French canals. We hadn't a care in the world . . . until that moment.

We had planned most carefully. To prepare the engine, we reset the valves, rebuilt the water pump, and installed a new thermostat, a new impeller, new hose clamps, and all new engine belts. The engine had been meticulously maintained and had been running perfectly. Yet there we sat. What was going on?

A finely timed trip

The Seine is a powerful river with treacherous currents and is not to be trifled with. It is a major shipping artery, and pleasure craft are allowed to operate solely in the hours between one half-hour after sunrise and one half-hour before sunset. They are not permitted to anchor at all. Even if anchoring were permitted, outside the channel is a deadly maze of underwater anti-erosion dykes, rocks, and reefs. The result of all these restrictions is that we had to make the 60-mile trip from Honfleur to Rouen in one daylight run. This is difficult but, with the proper planning, not impossible.

That particular Sunday morning promised the perfect combination of good weather, low water just after sunrise, and current change one hour later. Sunrise was at 0530, and the plan was to enter the lock at 0545 and exit it at 0600, one hour before low water, with just enough water under the keel (we hoped) to gain the main channel. The first hour, bucking the 4-knot current until the time of current change, would be slow, but that was unavoidable as we would need every minute of inflowing tide to carry us all the way to Rouen by sunset.

Our plan unfolded perfectly. Exiting the lock was a bit tense. Would we hit bottom outside the lock? We kept the engine rpm to 2,200 in case we touched. We had sent *Entr'acte*'s mast and rig on ahead to the Mediterranean and without it, her motion was dreadful, but three minutes later we turned upriver, entered the traffic pattern, and all was well.

At 0610 with wind and seas finally astern, we breathed easier and radioed Port Control for clearance to Rouen.

"Bonne journée, *Entr'acte*. Please keep to the port side of the river."

The current seemed to stop us dead as we made an agonizingly slow 2 knots over the bottom, but in an hour it would change and the 10-knot sleigh ride to Rouen would begin.

The best laid plans . . .

I increased the throttle from 2,400 to 3,100 rpm, the engine responding beautifully as always, and off we went. As the control tower very, very slowly slid astern, we shouted, "We made it! Perfect timing! Are we *good*?"

Ten minutes later Ellen said, "I smell something burning." We decided the smell was coming from the ship loading grain at the pier off to starboard.

Suddenly, I stopped smiling. The engine sounded fine, but there was an extra sound, something I could not pin down. I went down into the cabin to listen more closely, and as I turned around to tell her so . . .

WHHHRRrummff!!!!! In less than two seconds, the engine went from a solid, healthy 3,100 rpm to stone cold *dead*. Silence! That is, until all the alarms went off.

Without mast and sails, *Entr'acte* was helpless. The dinghy and outboard were no match for this current and sea. Besides, there was no time to set that up. There was a constant parade of 1,000-foot container ships moving in both directions as well as a working dredge just ahead. We were in the way big time!

In 35 years of boating, we had never felt the need to call for assistance, but this was our day. This was no time for pride, heroics, or hesitation. I radioed to Port Control that we were without engine and requested assistance.

Aside from the shipping traffic, we were safe enough. The smoke had stopped and we were not on fire. *Entr'acte* behaved beautifully. The wind against current balanced each other perfectly, allowing us to keep her head into the current and steer to the very edge of the channel and to maintain a predictable position while the current slowly set us back toward the lock. For the moment it appeared that it could be a very short tow, but once the current changed we would be unceremoniously swept upriver out of control.

King Neptune was kind. Members of the local chapter of Les Sauveteurs en Mer — a French volunteer organization dedicated to the rescue of mariners and vessels in distress — just happened to be inside the lock servicing their boat. The lock doors opened and out came Les Sauveteurs to perform the fastest, most seamanlike "snatch and grab" we have ever seen. By 0720, *Entr'acte* was once again safely tied up in Honfleur and, after coffee and croissants with the crew of the towboat, we set to work.

Searching for the cause

Entr'acte's Yanmar 2GM20 had performed flawlessly for 18 years and 3,500 hours without so much as a burp or hesitation of any kind. It had also been assiduously maintained since its installation.

Ellen was convinced that she already knew the cause of the problem, but a few simple checks were in order first.

I began by checking the prop. There was no large plastic bag to disentangle, as I had hoped. Besides, what of the smoke and smell? Next, I turned the engine over carefully by hand. It turned very easily, each cylinder coming up nicely on compression, indicating no water in the cylinders, no blown head gasket, and no broken valves.

I checked the oil for water contamination. It was the same beautiful amber color it had been two days before when I changed the oil. I hit the starter, voilà! She started right up . . . but did not sound right. No cooling water was being discharged with the exhaust.

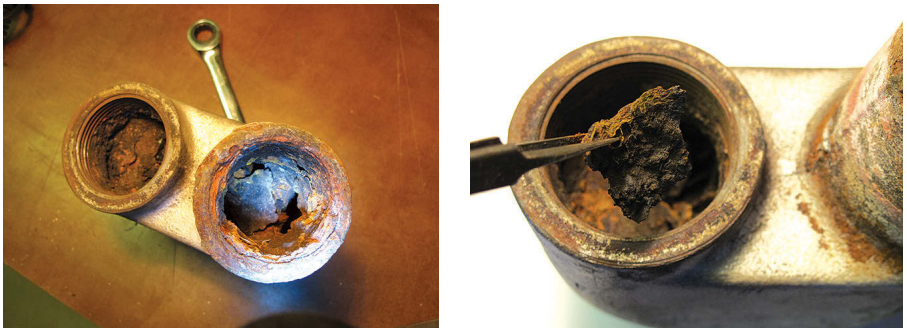
I looked at Ellen in the galley. Before I could say anything profound she bent down, rummaged around for a moment, and — from the galley, mind you — produced a shiny brand-new exhaust mixing elbow and said, "Maybe you should install this!"

A water-cooled diesel engine has a mixing elbow. Its shape and configuration varies depending on engine type, but it is there and is a critical part of the engine's exhaust system. Most boat owners are not aware that they have one, and many confuse it with the water-lift muffler that is mounted low down, usually aft of the engine.

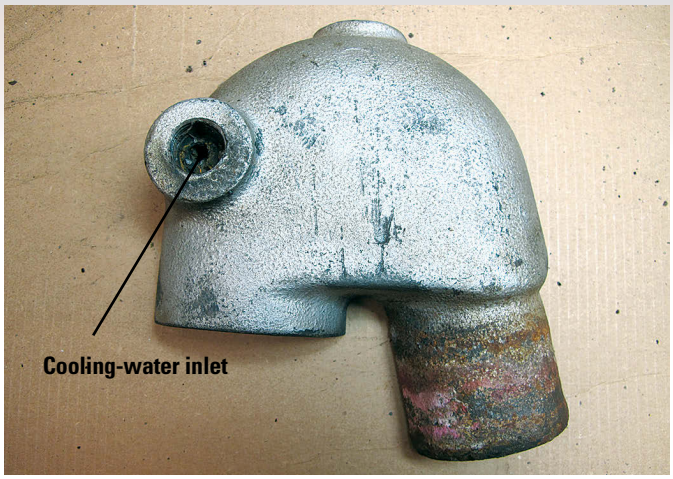
On *Entr'act*'s Yanmar, the mixing elbow is a large casting bolted to the side of the engine just below the cylinder head. The large rubber exhaust hose that leads from the engine to the muffler begins at the elbow.

Hot exhaust gases exit the engine through the exhaust manifold. For these gases to be conducted through the boat

The water passage inside the new mixing elbow is clearly visible, at left. It's the smaller hole. The exhaust inlet on the old elbow was clogged with rust and carbon deposits, at right.



When the rust clot lining the elbow broke away, it completely blocked the passages for both the water and the exhaust gases, at left. Ed removed the debris for show and tell, at right.



The water inlet on the mixing elbow was almost completely clogged, at left. Splitting the elbow revealed the extent of the blockages, at right.

to the customary exhaust discharge at the stern, they must be cooled. This is done with the raw water used to cool the engine.

The Yanmar elbow is a casting built with two internal passages, a large one for the exhaust gases and a smaller one for water. After passing through the heat exchanger, the cooling water is injected into the elbow, where it mixes with exhaust gases and cools them to an acceptable temperature. The mixture then passes through the muffler and on to the overboard discharge. It's a very simple process.

A potential trouble spot

The manual for the Yanmar 2GM20 specifies checking this elbow after every 500 hours of operation and changing it "if necessary." This is important because a clear exit route for the exhaust gases is essential for any engine to perform well. All hot-rodders know that a large clean exhaust pipe means more power and a restricted exhaust pipe means less power. They spend inordinate amounts of time, energy, and money to have the largest, *cleanest* (on the inside) exhaust systems possible.

Since one byproduct of diesel exhaust is soot (carbon), this goal is difficult to achieve on a diesel engine. Over time, deposits build up inside the elbow and gradually reduce the diameter of the exhaust, degrading performance. When the engine is running, the exhaust and water are mixed inside the arteries of the exhaust elbow and passed on. After shutdown, the residual heat from the engine dries out the moisture and leaves behind solid carbon that dries to a very hard "plaque," especially around the turn of the elbow, where it cannot be seen during a cursory inspection. Likewise, inside the water passage, the liquid water evaporates and leaves behind solid salt, minerals, and rust. As the engine hours accumulate, so do these deposits. Eventually, the engine becomes more difficult to start, and for the lucky sailor, it will refuse to start before he leaves the dock, as opposed to suddenly shutting down at a critical moment . . . say, in the middle of the River Seine.

We have changed this elbow twice over the years. This new one would be our third replacement. We purchased it in advance specifically for this canal trip. Since the engine was starting and running so well, however, while it *was* on the to-do list, it was not at the top.

It took only 10 minutes to remove the old elbow and it was immediately apparent that *Entr'acte* had suffered a massive heart attack. Don't laugh, that is exactly what it was. I looked down into the elbow and could see no opening of any kind. Nothing! Both "arteries" — the exhaust and the water passages — were completely occluded by a large clot of rust.

As I removed the clot, I could see that the insides of both passages were almost completely blocked with carbon, rust, and salt buildup. This was a perfect example of a massive "myo-exhaustical infarction." The engine had appeared to function normally at regular rpm day after day, just like the guy who appears to be in perfect health under normal conditions until the day he runs to catch the bus and dies of a heart attack.

The trigger

Even though our engine appeared to be functioning normally, we had planned to replace the elbow in Le Havre before the start of our canal trip. However, because of rainy weather we put it off until Honfleur. Then, with the prospect of perfect conditions on that Sunday, we decided to put it off until "tomorrow in Rouen" — one day too long!

While we were departing the lock at 2,200 rpm, all was well, but when we increased the rpm to 3,100 and "ran for the bus," the engine suddenly began to force much higher volumes of exhaust gas and water into the almost completely blocked passages. This created what is called back pressure. If this pressure builds and has no place to go, eventually something has to give. In our case the exhaust manifold gasket blew. The burning smell and smoke came from the exhaust gas blowing past the manifold gasket and filling the engine room with exhaust. This was the sound that caught my attention. The death blow came when a rust clot, dislodged by the sudden acceleration, completely sealed the exhaust port, triggering the shutdown. The engine suffocated on its own exhaust.

Telltale signs

There are symptoms of a blocked elbow. The aforementioned hard starting/non-starting is one, although our engine started easily and ran like a clock. There was, however, one symptom we did notice but misread: smoke. On the short trip from Le Havre to Honfleur, we commented that our exhaust was making quite a bit of white smoke . . . but we dismissed this

as condensation. After eight years in tropical climates, we had forgotten what sailing in cold weather was like and, since April on the English Channel is very cold, we wrote off the smoke to condensation. How wrong we were.

The color of exhaust smoke tells a great deal. Normal exhaust is colorless transparent gas and water vapor and is practically invisible. Black smoke results from incomplete combustion or a low operating temperature producing carbon inside the engine and exhaust. Blue smoke means the engine is burning oil. White smoke is usually unburned fuel, but water vapor condensing in the air as it exits the exhaust indicates insufficient cooling water in the exhaust. A large amount of white exhaust is a warning that should be investigated.

When discussing the presence of white smoke, had we looked closely at the exhaust discharge, we would have noticed that it was discharging nowhere near the amount of water that we normally see and we would have discovered the problem in time.

A passage resumed

With the new elbow installed, our engine started easily and ran smoothly, and the exhaust discharge contained a very healthy amount of water. We had to wait in Honfleur another 10 days for that perfect combination of conditions to reoccur, but the trip to Rouen was extremely pleasant and without incident. From Rouen to Paris, however, was another matter altogether, and that is the subject of an article that will appear in a future issue. We weren't quite done with the side effects of our engine's heart attack.

Ed Zacko is a Good Old Boat *contributing editor. He and Ellen met while playing in the orchestra of a Broadway musical. They built their Nor'Sea 27,* Entr'acte, *from a bare hull, and since 1980 have sailed across the Atlantic four times and the Pacific once. Ellen and Ed now split their time between* Entr'acte *and playing in the jazz clubs of Spain, France, and Morocco. Follow them at www.enezacko.com.*

Mixing-elbow maintenance

The best way to avoid the conditions that result in a clogged mixing elbow is to treat your engine well.

A diesel needs to be run under load, but not under excessive load. Do not run your engine in neutral for long periods, such as at anchor to charge batteries or run a watermaker. This accelerates carbon buildup inside the engine. If you must perform these functions at anchor, engage reverse gear and run the engine at medium rpm, and try not to do it too often or for too long.

Run your engine hard and in gear for at least 20 minutes every time you run it, preferably just before shutdown.

Make certain that your propeller is properly sized. A too-large prop will overload an engine, and that will lead to increased carbon buildup inside the engine and the exhaust.

Tune in to the sight and sound of your engine's exhaust. What sounds normal? How much water discharge do you normally see? Watch for smoke. Quantity and color are dead giveaways.

Examine the mixing elbow at the required intervals or, preferably, more frequently. If you see a buildup of deposits, you might be able to chip out some of it near the opening, but this will be only a short-term solution as the innermost parts of the elbow will be inaccessible, especially in the water passage. I have not found a chemical capable of satisfactorily dissolving these deposits. In most cases it will be easier to replace the elbow than to clean it.

When replacing the elbow, you may have to heat the joint to break it free. Do not get overly enthusiastic lest you crack the manifold. It may be necessary to cut off the old elbow with a grinder, but be careful not to damage the threads of the union or the manifold itself where the elbow is attached.

Materials and tools:

- New exhaust manifold gasket. These can never be reused. Carry one or two as spares.
- New mixing elbow.
- Threaded union (if your engine has one) that joins the elbow to the manifold.
- High-temperature thread sealant.
- Large securely mounted vise.
- Large pipe wrench with a 2- to 3-foot piece of pipe to use as a lever. (*Be gentle!*)
- Butane torch in case the wrench and lever are not enough.
- High-speed grinder for severe cases. Be careful not to ruin the threads on the union if you have one.

Cloth entryway solutions

I've had it with mosquitoes and also with the sun shining in my eyes when I'm trying to sleep. Maybe it's about my sense of privacy too. On a small boat, that counts for a lot.

I've seen custom-made wooden screen doors at some of the boat shows. Elegant as they are, they're pricey. Happily, I have a sewing machine. So, mostly for privacy, I made a cloth cover for the hatchway on my Paceship 26. It folds out of the way and I keep it attached all summer.

I made the cover to fit with about 2 inches overlap along the sides and I connect it to the wooden hatch frame with snaps. This makes it easy to secure at night and allows for a quick exit, if necessary, without the problem of finding a place to store a wooden screen door. The first one I made was bright yellow. It worked but, when the sun hit it, it was as bright as a big yellow flare. It could wake the dead, so the next one I made was blue and works just fine.

I secure it by rolling it to the side and tying it off with parachute-cord ties. I sewed a couple of vertical battens into it to make it easy to tuck under the closed hatch top so I can keep out the wet when sailing downwind in a squall. In an emergency, I can burst out right through the cloth, as the snaps open up readily without damage. I couldn't do that with a wooden hatchboard.

Screening out biters

The second issue is bugs, so I made a bug screen with mosquito netting. I hand-sewed 1-ounce lead fishing weights every 6 inches or so along three sides, and gravity holds it in place over the top of the hatch. It overhangs the blue lower hatchway covering. I folded over the edges and sewed them with a straight stitch, as I found the netting didn't need to be roped around the edges.

Although the fishing weights hold the edges down and prevent it from blowing out during normal winds, the netting needs to be secured port and starboard by tying it off to the handrails. I sewed a strip of acrylic cloth about 6 inches wide along the forward edge, where it rests against the sliding hatch cover, and tied short lengths of ¼-inch nylon line into grommets set in the ends. I roll it up out of the way during the day if I plan to stay a few nights in the same spot. As with the lower screen, it allows me to make a fast exit during an emergency. The screen folds into about the size of a paperback book for storage.

A canvas companionway closer is easier to stow than rigid dropboards. Cliff simply unsnaps his and ties it off to one side, above left. A couple of battens stiffen the upper half, above. Cliff's bug screen drapes over the hatch and is held down by fishing weights, below.

Soft barriers keep out bugs and sunbeams

BY CLIFF MOORE

When the bugs are not around, Cliff rolls up his screen and stows it forward of the hatch slide. Cords tied to the handrails hold it in place.

I also made an insect screen to cover the entire forehatch when it was open, but I seldom use it. I've discovered that mosquitoes are nocturnal, generally. They are drawn to the exhalations of mammals and fly upwind to the source (me, in this case). However, I'm told that, depending on the species of bug, they cannot travel upwind if the breeze is more than about 5 miles per hour. In the usual boat, with a hatch that opens facing forward, the fresh air comes in through the open forehatch and the stale, bug-attracting air goes out the main hatch, so the bugs will try to come in through the main hatch. Since I usually spend my nights at anchor, rather than in a marina, I find that I can keep the forehatch open for ventilation but I only have to screen the main hatchway. Of course, the odd mosquito could get lucky and get carried into the forehatch by the wind, but this seldom happens, as they are opportunistic hunters. In a marina, though, I have to screen both hatches.

Each project cost about $20, and the biggest expense was the acrylic cloth at $18 a yard and the lead fishing weights, which vary in price. I bought the mosquito netting at a camping supply store, but it's also available online.

Cliff Moore's first boat was a Kool Cigarettes foam dinghy with no rudder or sail. Many years and many boats later, he's sailing a 26-foot AMF Paceship 26 he acquired and rebuilt after Hurricane Bob trashed it in 1991. He is the editor of a community newspaper.

This is the second of two parts. In the first part, in the November 2014 issue, Matt described the process of removing the deck skin and soggy core of his Alberg 35, Magic. *In this issue, he describes how he installed the new core and laminated the new skin.*

Once I had finished the destructive part of my refit, it was time to begin the much more satisfying rebuilding phase. This would involve replacing the core, laminating a new top skin over it, and fairing and prepping the surface for paint.

I bought a roll of rosin paper and cut out templates that fit into the area of the cabintop where the old core used to be. Once I was happy with the fit of the templates, I taped them to 2- by 4-foot sheets of ⅜-inch flexible balsa core (Baltek CK100 Contourkore). I tried to minimize waste by fitting as many paper templates onto the core as I could. This core material is made up of 2-inch blocks of balsa glued to a scrim backing to form a sheet. The blocks are nice because they will take the shape of almost any curve you want and are easy to cut. I used nothing more than a sharp utility knife to cut out the shapes to match the templates.

I double-checked the cuts by fitting all the balsa pieces in place and removed any balsa core from areas where deck fittings would be going. For these sections, I would be laminating multiple layers of biaxial glass fabric to form a solid plug. This prevents water intrusion into the core where the fittings are mounted.

It's important to have everything cut and fitted prior to mixing any epoxy. You don't want to find out *after* you've mixed up a pot of expensive epoxy that something doesn't fit. Preparation is the key; checking and rechecking every fit saves a lot of frustration in the long run. Once I was completely satisfied with the fit, it was time to get sticky.

Mixing epoxy

I chose System Three epoxy because I was able to get a good price locally and I really like their 2:1 ratio of resin to hardener. Over the years, I've found through trial and error (mostly error) that when I venture into the unknown with a new project I tend to stress out a bit. Normally this isn't too much of a problem, but I tend to make really dumb errors when I'm stressed and it usually involves math. It is much easier for me to figure out how much hardener I need if I pour 16 ounces of resin with a 2:1 ratio than with a 5:1 ratio or something else. I simply divide by 2 and pour the hardener. Others may not agree, but when I'm in the middle of a layup and I need to mix 15 batches in short order, I don't want to have to think about ratios too much.

The cheap mixing pumps that screw onto the jugs help with the ratio problem, but I've had a number of problems with them over the years. They tend to suck air bubbles into the metering chamber if the temperatures are on the cool side. This can result in a mess of uncured chemical syrup on whatever it is you thought you were laminating. It is not fun to clean up. Geared metering pumps are available that are very reliable but expensive.

The best approach for me was to measure everything by volume in cups.

At times, Matt was a little disheartened at the amount of work he faced, but taking *Magic* sailing again, top of page, made it worthwhile.

Rebuilding a deck

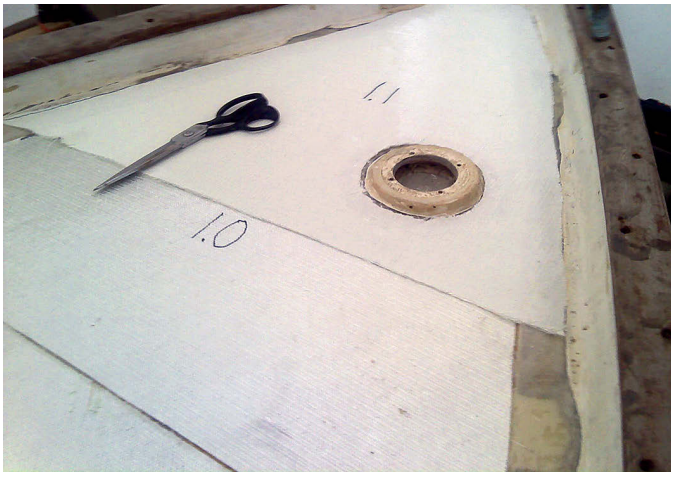
part 2

Renewal restores the psyche

BY MATT BOWSER

I priced one-quart graduated plastic mixing containers and found that, even though they were only about $1 each (they are cheaper online), the cost would certainly add up, as I would be using hundreds over the course of the project. I bought just a few of them and experimented with plastic containers I had in the recycle bin at my house. I found that one-quart yogurt containers make a perfect disposable epoxy container. I went to the recycling station at the dump the next day and brought home a stack of 200 (the dump was happy to get rid of them).

When mixing the epoxy, I first poured the desired quantity of resin into one of the graduated quart mixing containers and the proper volume of hardener into another of the graduated mixing containers. Then I poured both into a quart yogurt container to mix them. That way I was able to reuse the graduated quart containers and save a few dollars (I marked each measuring container so I wouldn't put resin or hardener in the wrong one). Eventually, these containers get messy enough they need to be replaced with clean ones, but over the course of the entire project I ended up using only eight graduated containers and more than 120 quart yogurt containers.



Matt installed new end-grain balsa core on the starboard side of the cabintop, at left (the port-side core is original). The white areas are solid glass for through-deck fittings. Matt overlapped the layers of fiberglass fabric so the butts would be staggered throughout the laminate, at right.

Once the new core was epoxied in place on the foredeck, above, it was time to begin laminating the top skin. First, though, Matt laminated the small pieces of cloth, at right, in place of the core in areas where stanchions and other fittings would be located. This will prevent water intrusion in the future.

Fitting the core

With the container issue solved, I began the process of installing the new core. I tried to limit the size of each section I was actively working on to roughly my arm span so I wouldn't be wetting out too large an area.

I put on two layers of disposable nitrile gloves (they often break) and mixed up my first batch of unthickened epoxy. Using a 2-inch chip brush, I spread it over the inner skin on the deck where the new core was going and squished it up under the flanges where I had ground the bevels. I then did the same to the bottom side of the core about to be installed to make sure all the sections being bonded had adequate coverage. I used the remainder to wet out a bunch of little squares of biaxial glass I had previously cut. The squares would fill in the areas where through-deck fittings like stanchions and handrails were to be reinstalled. The solid glass would better support the fittings and prevent water from intruding into the balsa core around the fasteners.

Next, I mixed up another batch and, once I was sure the epoxy was thoroughly mixed, added Aerosil (fumed silica) to thicken the mixture. When thickening epoxy with fumed silica (or any thixotropic agent), I stir in a little at a time until I get the desired consistency. Once I had added enough Aerosil to reach a mayonnaise-like consistency, I took a notched trowel and spread it out in ridges over the unthickened epoxy I had just applied and then laid in the new core. At the same time, I also laid several layers of wetted-out biaxial fabric at the through-deck fitting locations.

Back at the mixing bench, I made up another thickened batch, squished it under the beveled flanges, and filled in any gaps between the existing deck and the new core. I used the remainder of the batch to fill the areas I had cut out for through-deck fittings and to fill any voids in the top of the core. I finished by putting down plastic sheeting and weighting down the whole layup with 1-gallon Ziploc bags filled with sand to ensure a good bond.

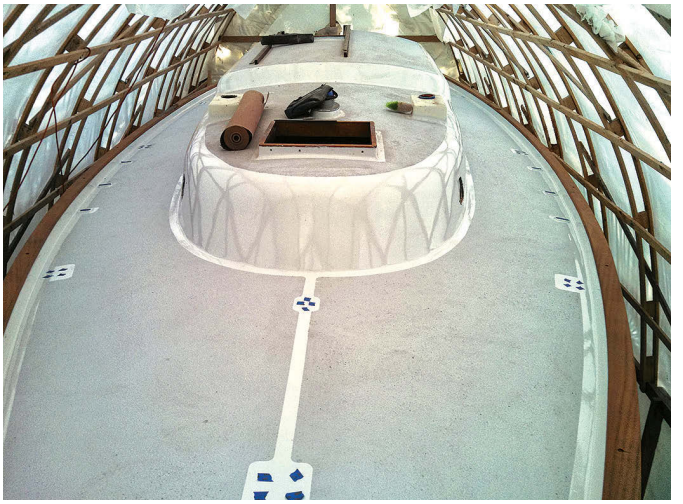
> "There isn't anything overly complicated about laminating fiberglass, but you have to work quickly."

Preparing the top laminate

After letting everything cure for a day, I sanded smooth all the drips and bumps from errant epoxy in preparation for the first two of the eventual three layers of Knytex 1708 biaxial fiberglass fabric I had chosen for the top skin. I found it was easier to eliminate the rosin-paper template step for the fabric because I could just lay down a big piece and mark it out with a Sharpie to get the desired shape. I staggered the cuts for each layer so there were no overlapping seams. The first layer was smaller, roughly the size of the balsa core, and the second layer was larger to overlap the beveled edges of the old deck.

I had decided to do both layers at once to save the step of sanding the first layer before starting on the next. It certainly made for a more stressful lamination, because I was running around to get everything done, but overall I think it saved a lot of time. There isn't anything overly complicated about laminating fiberglass, but you have to work quickly and need to pay attention to a few things before jumping in.

The biggest lesson I learned was to do the layup when the ambient temperature is falling. When the temperature is rising, you run the risk of having bubbles form in the layup, causing the lamination to have voids that will result in a weakened structure. I tried to schedule layups later in the afternoon when the temperature was going down.



When fairing the deck after completing the glasswork, at left, Matt used a homemade longboard cut from a plastic trim board of the kind available at most lumberyards. He went through many rolls of 60-grit self-adhesive sandpaper in the process. At last, after the deck had received its new core, top skin, paint, and KiwiGrip non-skid, at right, all that remained for Matt to do was to bolt all the hardware back in place.

I also kept my batch sizes as small as possible to keep the mix from heating up too much before I could spread it out. The largest batch I used for the entire project was 24 ounces. Common sense plays a big role in almost every other aspect of doing a layup; just make sure you have all the tools, wipes, and gloves ready. It's frustrating (and expensive) to mix up a batch of epoxy only to find that you left your squeegee on the workbench back at the house.

Laminating

For the layup, I first wiped all the previously sanded surfaces with acetone. I then mixed up a batch of epoxy and wet out the surface where the glass was to be laid, using a disposable 6-inch plastic trowel for the big areas and a 2-inch chip brush for the corners and hard-to-reach places. Next, I set in each piece of the first layer of glass, making sure it was lying flat on the cabintop. Once all the glass was in place, I poured out the epoxy mix and spread it evenly over the entire surface with the trowel and worked it into the corners with the chip brush. When everything was thoroughly wet out (the glass turns from white to translucent), I ran the trowel over the glass to remove any excess epoxy that was pooling on the surface, leaving just the translucent weave of the glass visible.

I did the second layer in the same fashion, only I followed the last step by going over the entire surface with a laminating roller (aka bubble roller). I finished up by covering the layup with plastic sheeting and sandbags to keep everything flat.

At this point, I moved on to the decks and used the same process. I worked clockwise around the boat until all the decks were re-cored and had two layers of glass laminated in place. One area I excepted was a 3-foot section on either side of the cockpit where I planned to remount the winches. I wasn't sure exactly where I was going to mount them, so I laminated the entire area with no core, just seven layers of biaxial fabric. This would further strengthen an area of high stress and I wouldn't have to worry about removing and isolating the balsa core when I decided where to mount the new winches.

The third layer

It was time for the third and final layer of glass, but I wanted to get the first two layers as smooth as possible so the final fairing would be minimal. First, I sanded everything over the course of several days to make sure the third layer had a good mechanical bond.

Materials and tools

Matt's first load of supplies filled his pickup. Ultimately, he would use twice the amount of epoxy seen here.

Matt purchased the bulk of his laminating tools and materials at Merton's Fiberglass Supply:
www.mertons.com

- Baltek CK100 Contourkore ⅜-inch
- System Three epoxy
- Aerosil
- Q-Cell
- Knytex 1708 biaxial fiberglass fabric
- Gloves (nitrile)
- Squeegee
- Laminating (bubble) roller

Other supplies came from home-improvement stores and other sources.

- Rosin paper (for templates)
- Graduated mixing cups (1 quart)
- Yogurt containers (1 quart)
- 2-inch chip brushes
- Plastic house trim for longboards
- Sandpaper: 60-grit to 220-grit
- Acetone
- Wipes
- 6-inch disposable plastic trowels
- Plastic sheeting
- 1-gallon Ziploc bags filled with sand

In her slip once more, *Magic* looks, well, magical, and Matt can strut her decks proudly and no longer have to step over the soft spots, as there are none.

While sanding, I found several low spots where the core and first two layers were not flush with the surrounding deck, so I did some pre-fairing. I mixed a batch of Aerosil-thickened epoxy, filled in the low spots, and let it set for a few hours so it would harden up to some degree but was still pliable (and would bond nicely with the third layer of glass).

Next, I worked around the boat again, wetting out and laying in the third layer of glass. I completed this job in 4- to 6-foot sections over the course of a week to keep it manageable. This was the first time in many years *Magic* had seen solid decks. Of course, there was a lot more to do, but the psychological milestone was huge.

Fairing the surface

After a bit of research on fairing and fairing products, I found that there were several options. Many easy-to-use epoxy-based pre-thickened mixes are on the market. Some cure fast enough for several applications in a single day. They're all great for fairing, but the downside is that they're very expensive if you have a large area to cover. Since I already had plenty of regular epoxy on hand, I decided to make my own. However, using Aerosil alone to thicken the epoxy would result in a surface that is not easily faired (read: it's like sanding granite). I tried a few different fairing powders but settled on a 2:1 ratio of Q-Cell filler (quartz microspheres) and Aerosil. This gave me a creamy mixture that spread nicely and sanded even better.

The fairing stage is like an art project; the more time spent refining your technique, the better the result. With *Magic*, I had ample opportunity to practice. Starting on the aft deck, I worked my way around the boat counterclockwise over the course of three days, skim-coating the entire surface (⅛ inch or less). When I got back to where I had started, I made a few sanding boards of varying length and slightly flexible and went at the decks with 60-grit paper. The idea behind sanding boards (longboards) is that with such a large footprint, you will get a fairer surface than with something smaller like a random orbit sander that would follow any depressions in the surface.

Many people call the process of sanding decks fair with longboards "torture boarding" but, aside from the dust and the time it took (5 to 8 hours over the course of a week), I found it to be quite satisfying. I'd stop and vacuum up the dust every 10 minutes or so, check my work, and move on if it looked good. I could really see how the technique I used for spreading the fairing mix improved as I followed my work around the boat. The first section had lots of ragged edges and peaks, while the last section barely needed any sanding at all. Once I finished up the first fairing pass, I spot-filled some of the areas that were low and repeated the longboarding process until I was satisfied that my decks were fair enough and ready for primer and, ultimately, paint.

A big job completed

There's no question that re-coring the decks of a boat is a big job, but the tasks involved are not above the skills of the average caveman carpenter with some basic tools, a lot of patience, and plenty of time. Any new skills acquired can be considered on-the-job training that can be practiced and repeated if you're not satisfied. You get to decide what is good enough.

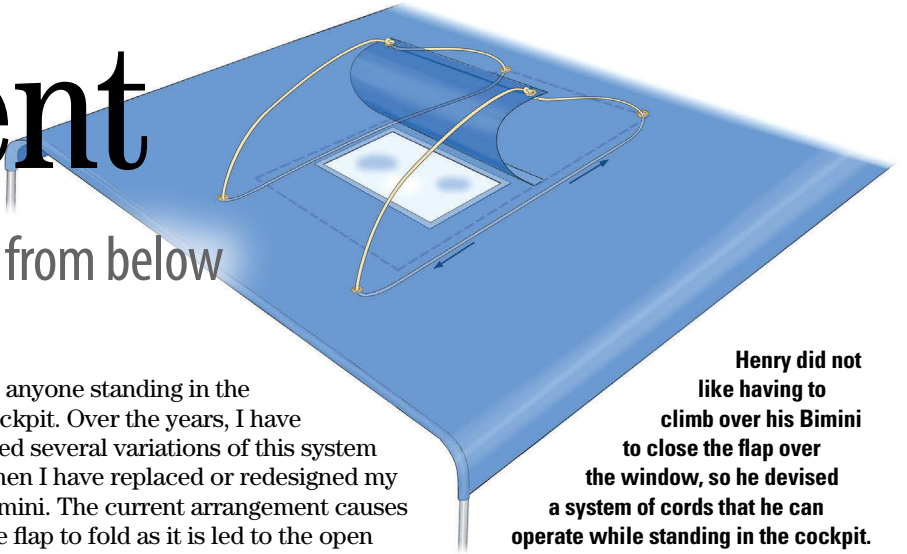
With two young kids, a paying job, and an actual life beyond sailing, it took me almost two years to complete the re-coring of *Magic*, so I had a lot of time to practice and decide what I thought was good enough. Sure, there were times when I wanted to throw in the towel, but by focusing on the task at hand while keeping the ultimate goal in mind, I was able to see it through to completion.

Matt Bowser got the sailing disease at a very young age and has been afflicted ever since. After a four-year restoration project, he and his family are finally enjoying sailing Magic *again on Lake Winnipesaukee in central New Hampshire. Follow his project blog at www.alberg35.com.*

Bimini window treatment

BY HENRY BAROUSSE

Open and close a sun flap from below



Henry did not like having to climb over his Bimini to close the flap over the window, so he devised a system of cords that he can operate while standing in the cockpit. The drawing shows the principle, but the cords (made of shock cord) are tensioned so they hold the flap securely open or closed.

ILLUSTRATION BY FRITZ SEEGERS

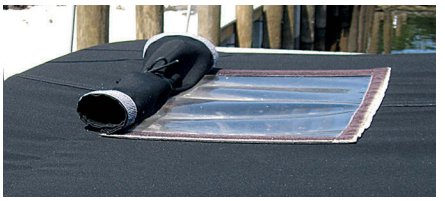
Home waters for my 1980 Hunter 30, *Summer Wind*, are Lake Pontchartrain and the central Gulf Coast, where a generously sized Bimini over the cockpit is a necessity during two thirds of the calendar year. But, while the Bimini reduces exposure to the relentless sun, it also obstructs a sailor's view of the sails and masthead. Therefore, most Biminis are fitted with a window to allow the helmsman something of a view overhead.

These overhead windows are typically accompanied by a flap that can be closed using various combinations of Velcro, snaps, and ties. To secure the flap in either the open or closed position, a crewmember must stand on the coaming or aft rail and reach around and over the Bimini frame — a maneuver that can be tricky, especially when under way.

As I most often sail alone, I devised a system that allows me to open and close the flap over my Bimini window without leaving the helm. This simple system, which has served me flawlessly for at least 20 years, uses a cord passed through four strategically placed grommets and attached to the free corners of the flap.

Two grommets are placed in the Bimini just aft of the window. As the cord is pulled through these grommets, the flap is led to the closed position. Two more grommets are located forward of the window by a distance slightly greater than the length of the flap. As the cord is pulled through these, the flap is led to an open position. (If the flap is hinged at the aft end, the reverse order applies.)

The cords are led continuously through the grommets on the underside of the canvas and can be operated by anyone standing in the cockpit. Over the years, I have used several variations of this system when I have replaced or redesigned my Bimini. The current arrangement causes the flap to fold as it is led to the open position, reducing the required distance between the forward and aft grommets by half (and keeping the whole system on one side of a transverse zipper). For cords, I use 3/16-inch shock cord.



Opening and closing a typical Bimini window requires a certain amount of gymnastics.

Henry's window can be closed . . .

. . . and opened . . .

. . . by pulling on the cords on the underside.

A slight tension in the cord secures the flap in the desired position, preventing it from being disturbed by wind.

The shock cords hold my Bimini flap in position. My Bimini remains very taut so the tension in the shock cords does not distort the surface of the canvas Bimini. Other methods can be devised to hold the flap in position. One of my earlier versions used two hooks sewn to the canvas to secure the cord (using a different routing path than I am using presently) at either extreme of its travel. Variations of the system can be developed, depending upon the design of a particular Bimini, but the basic principle — using cords fed through grommets to control the position of the flap from under the Bimini — remains the same.

Henry Barousse is a retired civil engineer and lives in Baton Rouge, Louisiana. His first sailing experience was in 1969 on a Sunfish at a USO facility in Vietnam, and he's been sailing regularly ever since. In addition to PHRF racing and daysailing his Hunter 30, Summer Wind, *Henry enjoys cruising the Central Gulf Coast, maintaining and upgrading his boat, and helping friends with maintenance and improvements to theirs.*

Simplify sail changes

When solo, planning is the key to smooth sailing

BY KAREN SULLIVAN

This is the third in Karen Sullivan's series of articles about prepping a boat and sailor for singlehanding. In the March and May 2015 issues she'll describe anchoring techniques.

"To reef a course . . . you must clew it up as for furling . . . except that the clews are not hauled chock up. Lay out on the yard and haul out the earings, and knot the points as for the first reef of a topsail, seeing them clear of the topsail sheets . . ."

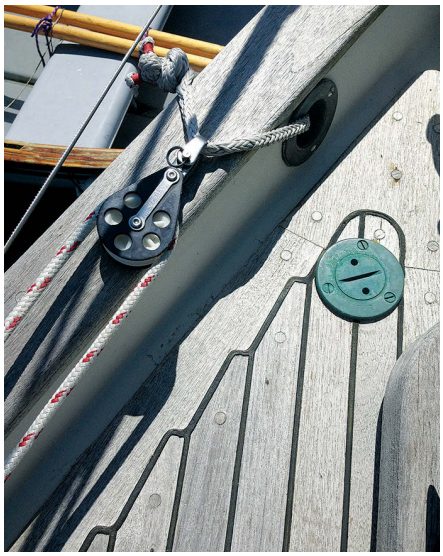
That is just the beginning of reefing instructions in *The Seaman's Friend*, Richard Henry Dana Jr.'s 1879 treatise on practical seamanship. We have to be thankful that sails and rigs have evolved since those days. This article will focus on sail changes for Marconi-rigged boats of a size that lend themselves to being sailed solo.

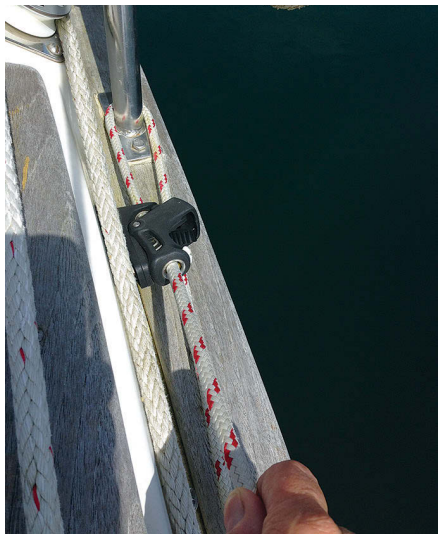
The most important piece of advice I can give a solo sailor is to visualize, step-by-step, what you plan to do *before* you begin to do it. If you can clearly see the tasks lined up ahead, you can anticipate what may happen when you do them in the conditions you face at the time. The second most important thing is to figure out how to best rig your boat for safety, and the third is to rig it so you can conserve energy when sailing it. By keeping exhaustion at bay, you lessen the risk of making poor decisions.

Extra lifelines

Lin and Larry Pardey have for years advocated chest-high lifelines, and they work. They don't have to be fancy, just strong. A stainless-steel D-ring lashed to a shroud at chest level can guide the lifeline from a solid attachment point outside the cockpit forward to the bow pulpit without interfering with sail trim. When

Chest-high lifelines increase safety, especially on small boats, top of page. A D-ring lashed to the shroud acts as a guide, and the line, when not in use, can be coiled and attached to the D-ring with its pelican hook. The block and cam cleat next to the cockpit, above left, ensures the genoa furling line (green fleck) has a fair lead with low friction and is fast and easy to pull. A mainsail that doesn't raise or lower freely due to jammed slugs or slides can be a safety issue. A sail-track system with batten cars, above right, is slick enough to allow the sail to be reefed off the wind.





Rig boom preventers, one for each side of the boat, to steady the boom and prevent accidental jibes. Lead them forward outside of all rigging, around turning blocks near the bow, and back to the cockpit. A turning block can be secured with a soft shackle to a hawsehole, top right, or a deck cleat. Lead the preventers so they can be set up from the cockpit. One way is to lead the preventer line around a stanchion base and to a cam cleat where it's easy to adjust and control, middle right. Preventers can be clipped onto the end of the boom with inexpensive carabiners, bottom right. The one that's not in use can be clipped to a lifeline and tightened.

you have to go forward, it's nice to have the extra security of a line you can easily reach and attach your safety harness to without having to bend down or trip over a jackline at your feet.

Headsail management

Of all the places to be when it's rough, a bucking wet foredeck is my least favorite. What can be done to minimize time spent up there wrestling headsails?

Strong, well-designed roller-furling systems are available today, along with specially made genoa jibs with padded luffs that allow them to self-stow and still set properly when partially rolled up. Before they came on the scene, there were hanked-on sails, and many people still prefer them. But hanks require trips to the foredeck, unless you've customized your rig.

A downhaul is a small-diameter line that's attached to the head of a hanked-on sail and leads down the stay to a block near the tack and then aft. With a long bowsprit, a downhaul is essential. To lower the headsail after releasing the halyard, just pull in the downhaul from the more secure place you've led it to, such as the sidedeck near the cockpit. The beauty of a downhaul is that it eliminates the risk of losing your balance while reaching for the sail on the foredeck. It also secures the sail's head and its halyard temporarily, so by tightening the sheet you have control over all three corners of the sail. This gets the sail out of the way for, say, anchoring or docking, by stretching the sail near the lifeline and keeping the clew from washing overboard. If you've attached some sail ties there, you can secure the sail and it'll be ready the next time you need it.

With a roller-furling genoa, it's important to be able to deploy, adjust, or furl it with ease. Fair leads and well-located fittings repay handsomely in reduced effort.

Mast-track maintenance

Whether your mainsail is fitted with slugs in a mast groove or metal slides that go on an external track, the ability to raise or lower it easily in a seaway is a safety issue. You should not have to turn the boat directly into the wind every time you need to raise, reef, or lower the main. For example, on a beam reach you should be able to ease the mainsheet to take just enough wind pressure off the sail for you to make your adjustments. This reduces flogging and pitching.

If your mainsail's slugs or slides are subject to friction or tend to jam, examine them for defects and wear, and clean and lubricate the track. Consider installing one of the new mast-track systems that make raising and lowering the main much easier.

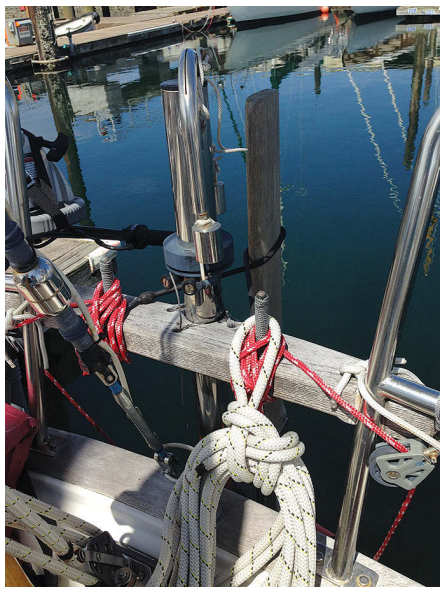
Heave-to for a breather

A good tactic for a singlehander who needs to make decisions or sail changes is to heave-to, which will stop the boat and reduce the motion while you get things sorted out. Though every boat seems to heave-to a little differently, it's done by putting the boat into a tack and leaving the headsail backwinded and the helm hard over. Once you learn how your boat heaves-to, it's amazing how much quieter things get when you do it. Heaving-to gives you time to think.

Once when I was out sailing solo in Resurrection Bay in Seward, Alaska, my engine's raw-water impeller failed just as I was getting ready to come in to harbor on a busy summer day. I hove-to and thought about what to do, then sailed downwind to the dock through crowds of fishing and tour boats. I was delighted at how precisely I could control my boat speed by rolling the genoa in and out like a window shade. I'm now a fan of roller furling, but with the caveat that the system must be high quality and the headsail specifically designed for reefing.

Main boom preventer

A preventer is essential when running downwind in a seaway, as it keeps the main boom from swinging wildly around. You need one on each side, with an attachment point on the boom



A pinrail makes sense for many reasons, and can be lashed to the shrouds, near right. An aft pinrail, far right, braces the two sides of the stern pulpit (where a stern ladder was removed) and supports a CapeHorn windvane. Two belaying pins made of bronze rod wrapped in tarred seine twine keep lines in order.

that you can reach from the cockpit when you pull it amidships.

Lead your preventers forward outside the shrouds, through a hawse or turning block at the bow, then aft along the sidedeck to where you can control them from the cockpit. Inexpensive climbing-grade carabiners work well for clipping a preventer to the main boom, but they must be kept lubricated if they're not stainless steel. In big seas, preventers will not only prevent accidental jibes but will also keep the boom under control while you trim the mainsail.

Tricks for all sailors

Assign a cleat or attachment point for each halyard and running rigging line and try to avoid having multiple lines on one cleat. A nice way to accomplish this is with a pinrail lashed between the lower shrouds and belaying pins made of relatively inexpensive bronze rod. Pinrails have other uses: they take halyards away from the mast, where they slap when it's windy, and provide a place to lean against for balance on the sidedeck. To prevent jams and lost halyard coils aloft when lowering sails, secure the bitter ends of each of your halyards to their assigned belaying pins.

When a storm trysail has its own track next to the mainsail track, it can be kept hanked on and in a special bag at the base of the mast.

Color-coded halyards and reefing lines are helpful at any time, but especially at night, and a good headlamp frees both hands in the dark.

Contrasting-colored whippings that mark correct settings on halyards and reefing lines can save a lot of guesswork.

Spare halyards, pre-rigged and ready to go, mean you can avoid a trip up the mast until you reach harbor.

If you go offshore, it's wise to have a separate track on the mast for your storm trysail. You can then store the trysail on its own track, bagged and ready to use at the base of the mast. If you have to remove the mainsail from its track to rig the trysail, there's a chance you might not use it.

Visualizing every step you'll take in advance of a sail change is the best insurance against surprises. Once your boat is set up for efficient sailing, mental preparation and an attitude of safety first are the most important aspects of making solo sail changes.

Karen Sullivan sailed with her partner, Jim Heumann, from Port Townsend, Washington, to New Zealand in their Dana 24 from 2011 to 2013. Before that she cruised alone in Alaska's Prince William Sound and soloed down the Inside Passage in her previous Dana. A long time ago she sailed between Maine and the Caribbean in various boats. She is at work on a book about their Pacific crossing. Read more at: http://karenandjimsexcellentadventure.blogspot.com.

Resources

***The Rigger's Apprentice* by Brion Toss** is a good source for ideas on how to rig preventers and downhauls or run halyard and sheet leads, and contains a wealth of other information.

***Good Old Boat* has published a number of articles on singlehanding:**

"Drifting into Old Age," May 2003
Don Launer writes of converting his boat for singlehanded (and easier) sailing.

"Improbable Conversion," September 2003
Steve Bunnell tells how Len Schwab converted a racer to a singlehanded cruiser.

"Solo Voyaging" by Louk Wijsen, January 2006

"Going Solo on Short Voyages" by Richard Smith, March 2010

"Strength Savers," May 2014
Annie Hill adapts her boat to the needs of a small woman.

"All About Yves," May 2003
Karen Larson writes about Yves Gelinas and how he came to design and manufacture the Cape Horn windvane: www.capehorn.com/sections/Pages/all_about_yves.htm.

Yves Gelinas
On his website, Yves Gelinas writes about how he modified his Alberg 30, *Jean du Sud*, for his solo voyages:
www.capehorn.com/sections/Pages/30ansAng.htm.

Bottom-up head rebuild

A big makeover for the smallest room

BY RIC MAXFIELD

Ric transformed a dirty, cramped head into a clean and airy space.

It's said that creative people can look at a pile of garbage and see opportunities. If this is true, I must possess some pretty creative genes. In April of 2010, when I purchased my 1975 27-foot Albin Vega, it took a lot of imagination to see how to move it from its abandoned condition into something I would be proud to sail. I started at the bow and slowly moved my way aft.

One of the scariest rebuilds was the head compartment and system. While the whole boat was overrun with neglect, I wasn't sure what kinds of creatures might be hiding within the hoses and bladder of the head. Fortunately, it looked much worse than it was. As I started tearing things out, I found it wasn't nearly as repulsive as I had feared.

My biggest challenge was trying to figure out what would work in the same space. At 21 inches wide, 24 inches deep at the toilet seat level, and 30 inches deep just above the tank, it didn't offer a lot of room to work with. The original configuration had a bladder for a holding tank that hung behind the toilet and a slide-out sink in front of the bladder just above the toilet. My advantage over the original design was that the new layout wouldn't have a sink.

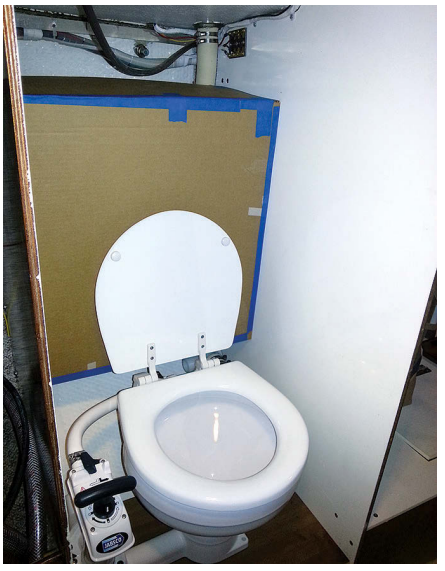
By doing away with the sink, I didn't need a foot pump or a freshwater hose running to the head. This is in line with my two guiding principles for the boat rebuild: keep it as simple as possible and make it stronger than the original.

Along the lines of keeping it simple, I had seriously considered installing a composting toilet so it would be self-contained and not need any through-hulls that could fail. Unfortunately, the hull slopes steeply inward, and the bottom of the compartment where the previous toilet was mounted is only 15 inches deep. The base of the composting head would have to be mounted 10 to 12 inches above the compartment floor to have enough room. On the composting heads that would fit in that small space, the toilet seats are 20 to 22 inches above their bases. With this elevation, most people's feet couldn't touch the floor. At 6 feet 2 inches, I'm fairly tall. If I solved that problem by adding a step as a footrest, the seat would still be too high for me. I'd have to contort myself into a really strange position to fit into what little space would be left above the head.

Design decisions

Once resigned to using a standard manual-pump head, I set about designing the system so the hoses, tank, and head were confined to the one compartment and not spread out across the boat. In addition, I decided to build my own holding tank because nothing I found fit well in the space while still providing some volume. I decided to go with a Jabsco Twist 'n' Lock head because it had good reviews and parts are easily accessible from anywhere. Other heads in the same size range would have worked just as easily.

The Twist 'n' Lock I purchased had the pump on the right side (when facing the head). Because of where my discharge through-hull was located, I reconfigured the pump to the left side. It was a surprisingly easy task that was well documented in the instructions that came with the head and took about 20 minutes. Even though I used larger Marelon through-hull valves, I still had plenty of room to fit the head alongside. (The holes for the intake and discharge through-hulls were already in those locations from the old head. I just tore out the old gate valves, resized the holes, and installed the Marelon replacements.)



After gutting the head compartment, Ric fitted new bulkheads and a Marelon through-hull valve, at left. He made the cardboard mock-up for the tank after fitting the new head, at right.

With the head sitting as it would be mounted, I could figure out what size holding tank would fit. I used cardboard to build a mock-up that matched the bulkhead and hull contours. While my mock-up had a curved back to match the hull, the spare plywood pieces I had were too thick to bend to that contour. It was also much simpler to build the tank with a straight back, and it worked out for the better anyway as it allowed me to run the hoses behind the tank for a much cleaner appearance.

Making the holding tank

I taped the cut wooden panels together and double-checked the fit. To build the tank, I used epoxy to glue the sides and bottom together, and fitted rounded corner molding in each of the corners to present a more rounded surface on the inside. Once the epoxy hardened, I mixed up a batch of epoxy thickened to the consistency of peanut butter and used it to further round and strengthen the corners. The final step was to cover the inside with a layer of fiberglass cloth wetted out with epoxy.

It was easier to build the tank with just the front, sides, and bottom in place to start with. That way I could make sure the thickened epoxy and the fiberglass cloth covered the surfaces appropriately. After I glued the back in place, I had to reach inside to apply the thickened epoxy and fiberglass cloth. This was much more challenging.

I designed the top panel of the tank to be surrounded on all four sides by a 1-inch lip. I attached the top with stainless-steel wood screws so it could be removed for access. I used butyl adhesive, in tape form, to ensure a good seal that could be opened if needed. Butyl is a great sealant that doesn't harden. Most vehicle windshields are installed using it and it's also excellent for sealing deck fixtures.

I wanted to be able to tell how full the tank was without having to buy a tank monitor that would be a considerable expense and add complexity to the system. By cutting 1½-inch-diameter monitoring ports spaced every 3 inches up the left side of the face of the tank, I would be able to monitor the level of the contents. I ran an extra layer of 4-inch-wide fiberglass cloth tape over these holes for added strength. Using leftover pieces of furniture-grade marine plywood gave me the added advantage of being able to put a nice varnished finish on the front of the tank.

Plumbing parts

One of my biggest challenges was finding through-hulls with 90-degree bends in them. I finally found them at Boat Tec (www.boat-tec.com). I used a 1½-inch through-hull on the bottom for the discharge, a 1½-inch through-hull in the top for the intake from the head, and a ⅝-inch through-hull in the top for the vent. I sealed each of these to the tank using 3M 5200 Fast Cure.

I was dealing with a very cramped space, so I decided to go with Raritan's extremely flexible Saniflex 1½-inch waste hose so I could easily make whatever tight turns I needed. As it turned out, I didn't need to make any tight turns, but the hose was easy to work with and worth the extra cost over other less-flexible hose.

I take lots of pictures of my projects and share them with friends on the

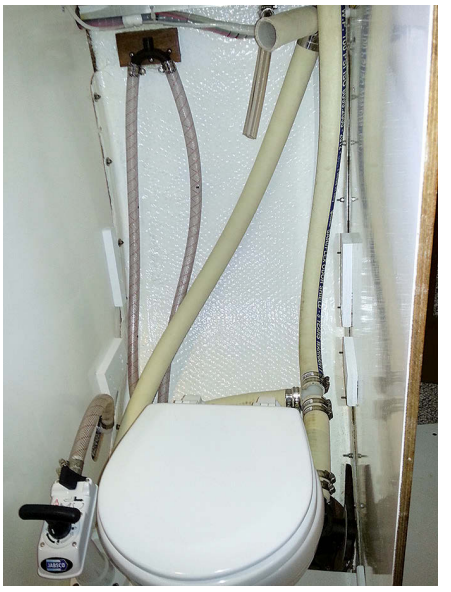
Before gluing the tank together, Ric taped together the plywood front, sides, top, and bottom, at left, to double-check the size and fit. He began the assembly by epoxying the front, bottom, sides, and corner moldings together, then covered the seams with thickened epoxy, center. He applied a layer of fiberglass cloth over the front, bottom, and sides, at right, and laid an extra layer of fiberglass tape over the monitoring ports.

Albin Vega User Group at Yahoo.com. One of these friends looked at my pictures and noticed that I had the water-intake vented loop installed prior to the head's hand pump instead of between the hand pump and the bowl. He sent me details from Jabsco showing how it should be plumbed. Fortunately, this was before the tank was in place and was easy to fix.

Because I configured the tank to be above the waterline and higher than the head, it can be emptied by gravity. I added a tee fitting in the discharge line so a deck pumpout can also be used.

With most of the hoses running behind the tank, I knew I would have to get to them eventually. I designed the tank to sit on supports and braces on both bulkheads. The braces on either side of the face of the tank are easy to remove so the tank can be tipped forward or removed entirely with very little effort. The majority of the hose connections have two hose clamps at each junction. However, a couple of seawater-intake connections didn't provide enough space for two clamps. At least they can be inspected easily to guard against failure.

While the head, holding tank, and most of the hoses are contained within the head compartment, one hose does go through the forward bulkhead. This is because the seawater-intake through-hull is located forward of the head under the V-berth. Fortunately, it's a short run and positions the through-hull valve where it can be easily opened and closed. Access to the discharge through-hull valve is a tighter fit, but it stays closed all the time unless I'm discharging waste when the boat is more than 3 miles from shore in the open ocean.



With the back in place, the tank was almost complete, at left. Ric installed all the hoses prior to mounting the tank, at right. The tee fitting in the discharge permits use of a deck pumpout.

Dry land test

Because my boat isn't back in the water yet, testing the system required that I disconnect the seawater-intake hose from the through-hull and place it in a small tub of water. The system test included pumping enough water into the holding tank to fill it, then letting it stand overnight. I was pleased to find the exterior of the hoses, the tank, the outside of the head, and the hull surface completely dry the next morning.

By making it myself, I was able to fit an 18-gallon holding tank and provide a nice finished look for the head compartment as a whole. The space, while small, is very functional and designed so it can be easily maintained. I just need to complete the rest of the boat rebuild so I can start enjoying the fruits of my labor.

Ric Maxfield started sailing in 1970 when he was in the Marine Corps stationed at Kaneohe Bay, Hawaii. He now lives in Southern California, and got into larger boats in the late 1990s while sailing at Orange Coast College School for Sailing and Seamanship and Club Nautique. He has delivered boats up and down the west coasts of California and Mexico, from the British Virgin Islands to Florida, and across the South Pacific. The Vega is the first sailboat he has owned outright and he expects to make some long-distance cruises in her.

The tank discharges from the bottom, at left, and the "windows" show the level of the contents. After fitting the fill and vent, Ric screwed the lid in place, above.

How to coax your

Give it the best antenna cable you can

BY DAVID LYNN

A couple of years ago we unstepped and repainted our mast. While it was horizontal and easy to work with, I inspected the wiring. Some of it — like the wiring for the radar and wind-speed sensor — was fairly new, but the wiring for the lights and the coaxial cable for the VHF antenna were original equipment and at least 25 years old. It was definitely time to replace them. Finding replacement cable for the lights was easy. There are several types of coaxial cable, however, and deciding which one to use for the VHF required me to do a little more research.

Coaxial cable, or coax (pronounced ko-ax), is a cable in which a center conductor is enclosed in a conductive shield and protected by an outer plastic jacket. The conductor and shield are kept apart by a thick layer of insulation. This type of cable is called coaxial because the conductor and shield share a single common axis. It is used for carrying high-frequency radio waves and comes in many varieties depending on the application.

When the VHF radio is transmitting, a radio frequency wave travels along the wire that connects the radio to the antenna, and this high-frequency signal tries to radiate away from the conductor. If a wire without a shield were used, the entire length of the wire from the back of the VHF to the top of the mast would become an antenna, and a very inefficient one, as most of the output signal would be lost inside the boat and mast before it ever reached the antenna proper. Coax cable, with its concentric shield, prevents most of this loss from occurring by reflecting the signal back toward the center conductor, rather than letting it radiate outward.

When the VHF is in receive mode, a weak radio signal is picked up at the antenna and conducted along the coax to the radio. The coaxial shielding prevents RF noise from other sources like motors, generators, HF radios, and pumps from interfering with the received signal.

Coax considerations

There are dozens of types of coax cable, but for a marine VHF application, the choices narrow significantly. Most fixed-mount marine VHF radios have a maximum output power of 25 watts, an output impedance of 50 ohms, and operate in the frequency range of 156 to 164Mhz. The three most commonly used coax types available in marine stores that meet these specifications are RG-58U, RG-8X, and RG-213 (which replaced the older RG-8U). When choosing one, you'll find there's a trade-off between the amount of signal loss in the cable, the cost, and the wire size.

The table on page 51 illustrates some of the differences and trade-offs between types of coax.

- ***Nominal outside diameter***
  In general, a larger-diameter wire will have lower losses than a smaller diameter. Sometimes the deciding factor in selecting a type of coax cable is the size of the wire. If a better-grade wire just will not fit inside the space where you have to run it, the only choice may be to use a lesser-grade cable of a smaller diameter.

In general, the greater the cable's diameter, the better the results (see the table on page 51). However, not all coax cable is made the same, and practical considerations may require the use of a smaller-diameter cable than would be ideal. The RG-8U (at the far right) has been replaced by RG-213.

VHF

- ***Signal loss***
The values in the "Loss" column represent how much signal will be lost per 100 feet of cable at 150Mhz, and is expressed in decibels (dB). Every 3dB equates to a 50 percent loss in signal power. This is the specification most manufacturers provide to quantify the signal loss for their coax cable at various frequencies. It is important to have the value for 150Mhz, which is the radio frequency for a marine VHF. Often, the loss in decibels will be provided for 100Mhz instead of 150Mhz. In this case, a reasonable approximation can be calculated by multiplying the loss at 100Mhz by 1.25.

- ***Power out***
These columns show how much of the 25 watts of power transmitted by the VHF radio actually makes it to the antenna after the losses due to the coax cable. For example, if there is 75 feet of RG-58U cable between the radio and the top of the mast, after the losses in the cable only 8.5 watts would be transmitted. Two-thirds of the signal is lost due to the cable! It is easy to see from these values that if the cable run is short, RG-58U coax is marginal and RG-8X may be acceptable, but for a long cable run, even the RG-213 cable will have a 40 percent signal loss.

Coax cable differences and trade-offs

Coax type	Nominal O.D.	Loss – dB/100 ft at 150Mhz	Power out 25-ft cable	Power out 75-ft cable	Cost/ft
RG-58U	.187	-6.5dB	17W	8.5W	$0.79
RG-8X	.25	-4.7dB	19W	11W	$1.20
RG-213	.405	-2.8dB	21W	15W	$2.14
LMR-400	.405	-1.5dB	23W	20W	$1.27

- ***Price***
The prices listed are what I found on the Internet for good-quality marine-grade wire made by Ancor. It is quite common to find the same types of coax cable for considerably lower prices, but beware — not all wire is created the same.

RG-8X coax, for example, can be found in anything from marine grade with tinned wires and a tightly woven mesh shield to a very inexpensive version with a loosely woven aluminum mesh. The cost for the latter will be lower, but the signal losses will be considerably higher, and the un-tinned center conductor will be more susceptible to corrosion. I found I needed to examine the specifications carefully. For example, with one particular brand of coax described by the manufacturer as marine grade, the conductor and shield were not tinned, and in fact, the only difference I could see between it and their standard grade was the color of the outer jacket (and the price).

Another choice

I found that if I was willing to accept a slight compromise, there was another alternative. Amateur-radio suppliers carry a type of coax, LMR-400, that is the same size as RG-213 coax but incorporates a double shield, resulting in a cable with much less loss. It can be found with a tinned copper outer shield and an aluminum inner shield with an expected UV resistance of 20 years. It is used in offshore oil rigs that see many of the same conditions a boat does. Its specifications compare favorably with those of RG-213. The biggest drawback is that the inner conductor is not tinned, making it more susceptible to corrosion.

I felt the improved performance of the LMR 400 was worth the compromise, and this is the type of coax I chose to use in my mast. I rationalized that if the connections were properly waterproofed and the inner conductor was tinned back to the insulation, I could protect the inner conductor from corrosion. The same caveat applies to this type of coax as for the other types.

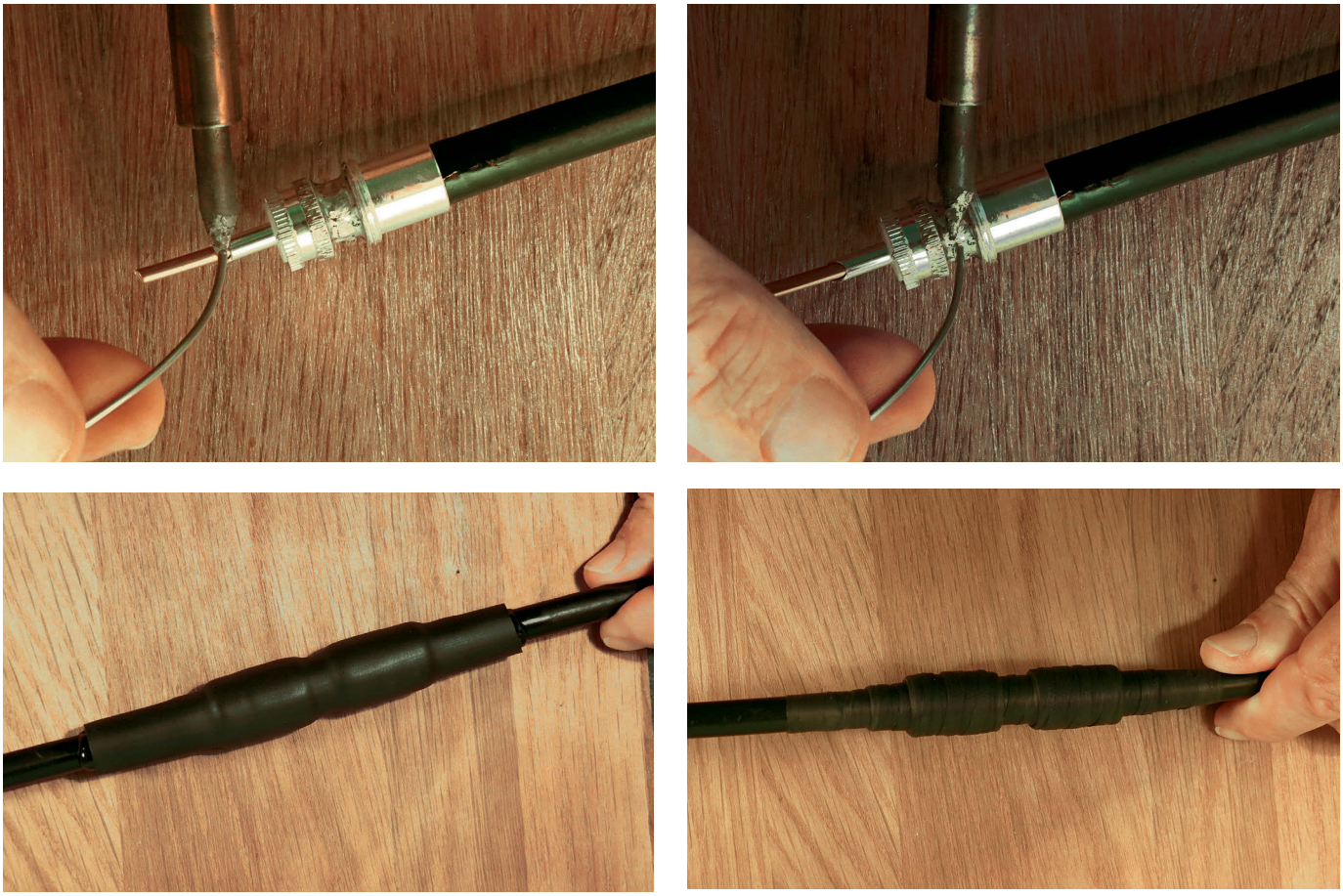
Resources

For more on coax, see:
"Coaxial Cable 101" by Don Launer, *Good Old Boat*, January 2014.

Sources for low-loss coax:
Belkin Part 9913: Newark Electronics
www.newark.com

Times Microwave Corp Part LMR-400: Amateur Radio Supplies
www.amateurradiosupplies.com

Times Microwave Corp Part LMR-400
www.amazon.com



Coax cable needs special terminals where connections are to be made. Here, after fitting the male connector onto the cable, David is soldering the core to the terminal, top left, and the shield to the terminal, top right. This connection will be at the base of the mast and must be sealed against moisture. That can be accomplished by enclosing the connector in heat-shrink tubing, above left, or self-amalgamating tape, above right.

There is good-quality and bad-quality wire, so it's important to review the manufacturer's specifications before you make your purchase.

Connections

At the very least, there will be a connection between the coax and the antenna and a connection between the coax and the VHF radio. I also wanted a connector near the base of the mast to make it easier to un-step and step the mast in the future.

It's possible to buy cables made to length with the connectors already in place, but it isn't difficult to install a connector on the end of the wire. I purchased the wire by the foot and bought the necessary connectors. I made one cable that extended from the antenna base at the top of the mast, down through the mast, and about 2 feet beyond the bottom. I made another cable that could be routed from the mast to the radio located at the nav station.

On the end of each cable section, I installed a PL-259 connector. Solderless, crimp-type versions of these connectors are available, but I prefer the type that's soldered in place.

The PL-259 connectors are available for all three varieties of coax cable. Follow the manufacturer's instructions for installing the connectors. I used a PL-258 double-female socket to connect the two cables at the base of the mast.

The last step is to seal the connectors to keep out moisture. I first coated the connector bodies and threads with Lanocote (silicone grease will also work well), then slid an adhesive-lined length of heat-shrink tubing over the connection and used a heat gun to shrink the tubing and melt the adhesive. To make a watertight seal around these connectors, the heat-shrink tubing must have at least a 4:1 shrink ratio and should be 0.75 inches inside diameter (ID) before shrinking.

Another way to seal the connectors is with self-amalgamating tape. This tape is like a stretchy, thick electrical tape, except that it has no adhesive. The tape is stretched as it is wrapped and it forms a tough, long-lasting, watertight seal. It is sometimes referred to as cold-shrink tape.

David Lynn, a Good Old Boat *contributing editor, was an electronics technician in the U.S. Navy for six years before getting his BS and MS in electrical engineering. He and his wife, Marcie, have lived aboard* Nine of Cups, *their 1986 Liberty 458 cutter, since purchasing her in Kemah, Texas, in 2000. They recently crossed the Indian Ocean to South Africa in their ever-so-slow world circumnavigation. Follow them on their daily blog at http://justalittlefurther.com.*

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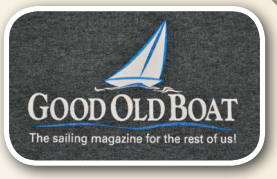

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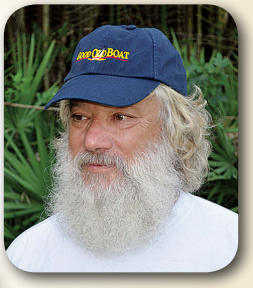

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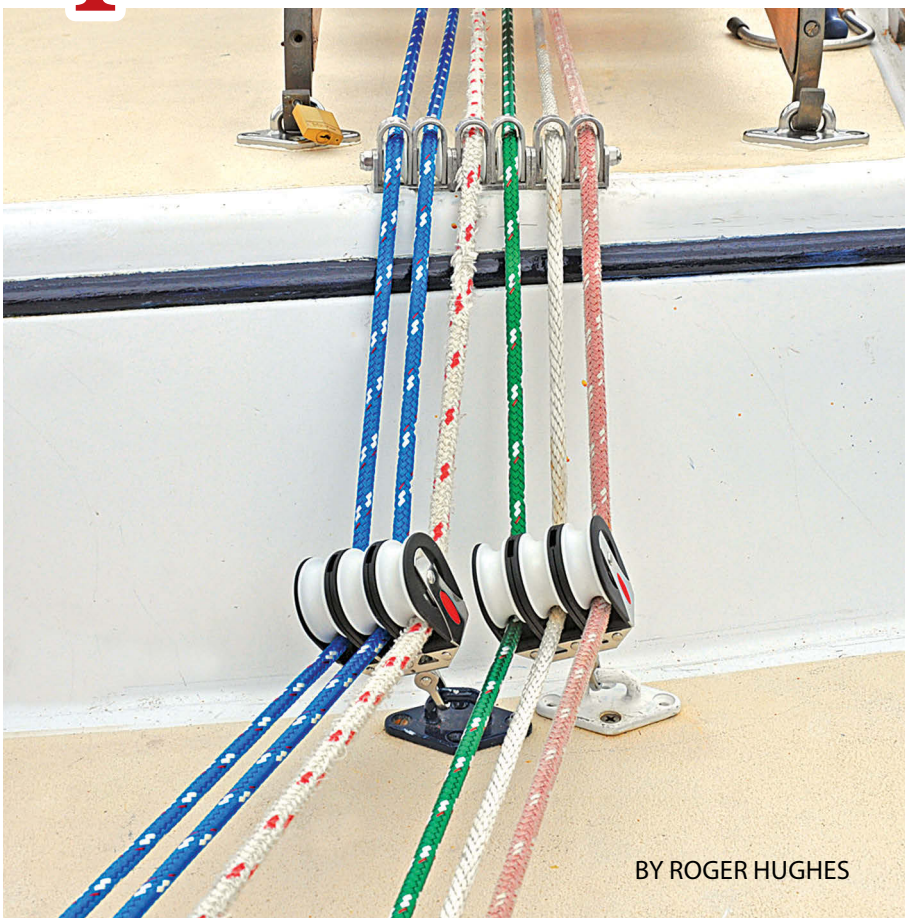


BY ROGER HUGHES

Even in our younger days, my wife and I tried to make living and working aboard our cruising boats as easy as possible. This is even more important as we grow older. To make sail handling easier on our Down East 45 brigantine schooner, *Britannia*, I changed all five sails to roller furling. I also wanted to route all the control lines — furling lines, sheets, and outhauls — to our center cockpit so we wouldn't have to go forward to furl or reef in inclement weather or rough seas. This resulted in 12 lines passing along the deck into the cockpit, in two rows of six, not counting the five sheets that route to cockpit winches in the normal way.

By any standard, that's a lot of lines, but I knew how I would handle them once the lines arrived in the cockpit.

Six lines lead through fairleads to rope clutches and a winch on the starboard-side rope deck, where a pinrail keeps them tidy.

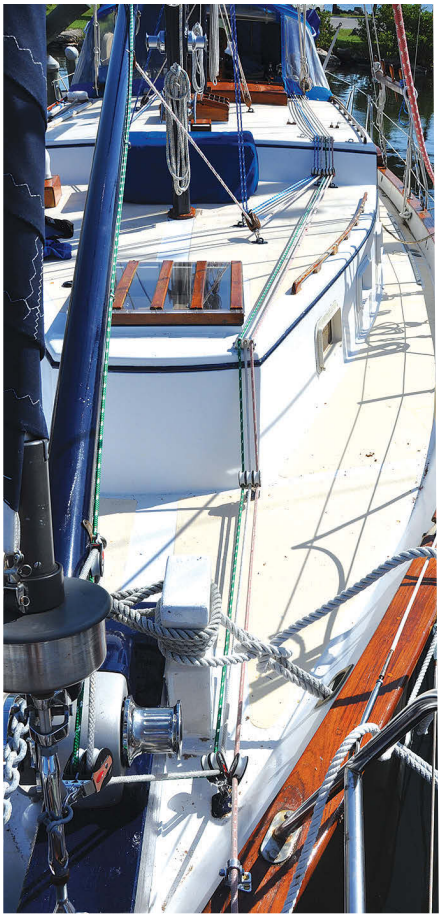
I made wooden fairleads to guide them through the dodger to two banks of rope clutches with six rope clutches in each. I bought clutches with color-coded levers from Garhauer Marine and taped the names of the lines on the individual clutch levers. The lines pass into the cockpit on either side of the companionway where it's easy to reach and operate the clutches. Then they feed to two Lewmar 30 self-tailing winches and are coiled around a row of belaying pins to prevent tangles. This is now called "the rope deck."

None of this was difficult to plan, and the fairleads, clutches, winches, and pinrails were not difficult to make and install, but one significant problem remained. The Down East 45 has three deck levels: the foredeck, the forward coachroof deck, and the saloon coachroof deck. To reach the cockpit, lines had to be brought up from one level to the next. The jib and forestaysail furling lines and the staysail outhaul were the longest. These had to lead down to the foredeck then over both coachroof levels to the cockpit.

Up and over

Bringing lines down from aloft and along a deck is easily done using blocks anchored to the deck along with line organizers. But routing lines up and over the edge of a coachroof requires what is commonly called an "over-the-top block."

Over-the-top blocks are available from a few suppliers, including Garhauer and West Marine, for about $55 for a single sheave and $85 for a double. Nobody seems to make more



The deck on the Down East 45 has three levels: the foredeck, forward coachroof, and saloon coachroof, at left, presenting an obstacle course for running rigging that needs to be led aft to the cockpit. On the port side, three lines lead up from the foredeck onto the forward coachroof, where they meet three more lines and go up and over the saloon coachroof, on facing page. Despite the many direction changes, the lines run smoothly through Roger's over-the-top blocks.

than a double-sheave combination and if you have 12 lines, that works out to be an expensive exercise.

In any case, all the over-the-top blocks I could find used sheaves with diameters of 2 inches or larger. This results in the lines running about 3 inches clear of the deck and the very serious possibility of someone (me!) tripping over them. I wanted my lines as close to the deck as possible. I tried using bulls-eye fairleads with stainless-steel inserts. These are about $6 each but are only intended to deflect lines through small angles. They're often used to route roller-furling lines from one lifeline stanchion to the next. Still, I decided to give them a try and screwed six to my deck, but the nearly 90-degree up-and-over angle resulted in a lot of friction with a good chance of rapid chafe, especially for those lines that must rise up two deck levels.

Then I discovered that Ronstan made an acetal sheave only 1 3/32 inch in diameter, yet wide enough to handle up to a ½-inch line, for $3.95 (part number RF128). As three of my lines are ½ inch and the rest are ⅜ inch, this small sheave would work with all my lines.

I decided to make my own over-the-top blocks. They are very simple in design. The sheaves are held in a short length of channel and arches over the sheaves prevent slack lines from jumping off.

Tools and material

I made my over-the-top blocks by hand, using hand tools that most do-it-yourself boaters probably have. It's not rocket science, but some of the operations do require careful measurement and accurate drilling. It was not difficult to do this, and it's gratifying to see the finished product working so well on my boat, especially considering the cost savings over commercial over-the-top blocks.

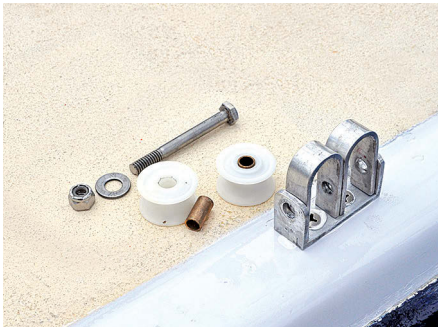
The tools I used were a caliper gauge for accurate measuring, a sharp scribe for marking, a strong vise with aluminum soft jaws, three Vise-Grips, and a ⅝-inch-diameter mandrel that I bent the strips around to form the arches. (In my box of ½-inch sockets, I found a socket that was exactly ⅝ inch diameter, but any ⅝-inch round stock would work.)

Using a drill press beats trying to drill holes accurately by hand. The more precise the marking and drilling, the better chance the sheaves will turn smoothly. It's therefore worth investing in a new sharp ¼-inch drill bit, preferably the type with a pilot point. These drills are easier to center by eye and they leave an almost burr-free exit hole. A countersink bit is another important tool for this work, and a deburring tool and a file are essential for cleaning up raw edges after drilling and sawing.

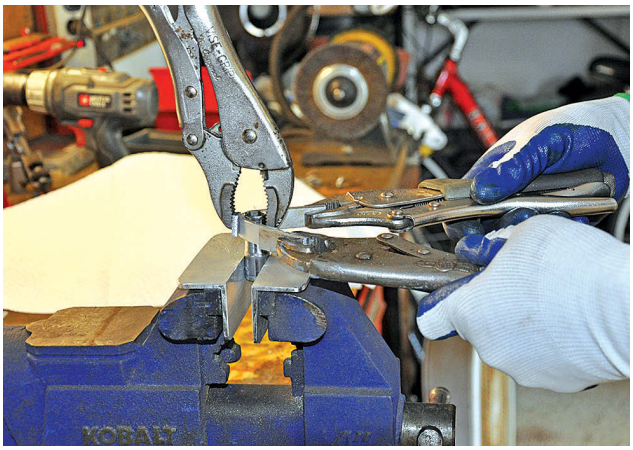
I would have preferred to have made the blocks of stainless steel, but cutting and accurately bending and drilling even ⅛-inch stainless steel was beyond my capability with the equipment I have. Instead, I used aluminum, and it proved quite satisfactory.

I made the bottom channels from a 12-inch length of ⅛-inch aluminum channel that's 2 inches wide and has 1-inch-high sides. I made the line-retaining arches from a 48-inch length of ½-inch x ⅛-inch aluminum strip I obtained from my local aluminum supply shop for $15. I needed one row of six sheaves, a row of three, one of two, and a single, but most sailboats won't need that many and would therefore require less material.

Aluminum can be hand-sawn easily with a hacksaw blade with 24 teeth per inch, but I also used a miter saw with a 10-inch-diameter 60-tooth carbide-tipped blade that cuts through aluminum like butter and leaves a very straight clean cut.



A two-sheave block illustrates the components Roger used for his over-the-top blocks, at left. He bolted the channel to the turn of the coachroof, then assembled the parts, at right.



To make the arches, Roger clamped the aluminum strip to a 5/8-inch mandrel and bent it with Vise-Grips.

Making the bottom channels

The channel was wide enough to hold two sheaves and their arches. I needed five of these two-sheave blocks, so I cut five 1-inch-wide pieces of channel to form their bases.

Accuracy when drilling the holes in the uprights, or legs, of the channel for the axle was critical. It might be possible to use a hand-held electric drill, but it was much easier and more accurate with a drill press. I marked both legs of the channel ¾ inch from the bottom outside of the leg and centered. I drilled a ¼-inch hole at these marks from both sides of the legs. This hole position allows the sheaves to rotate clear of the bottom of the channel by 1/16 inch, so the lines exit the tops of the sheaves at the very lowest point, about 1 inch off the deck.

Next, I drilled and countersunk two ¼-inch holes in the bottom of the channel on the centerline and ⅝ inch in from each side. These were for the attachment screws beneath the sheaves. As a final finish to the channels, I rounded the square sharp corners of the legs with a flat file.

Line-retaining arches

To form the arches, I cut the ½-inch aluminum strip into 5-inch lengths. This is longer than needed, but the extra length gave me leverage when bending them around the mandrel. I clamped the mandrel hard in the vise, marked the center of a strip, centered it on the socket, and clamped it to the socket with a Vise-Grip. This was to ensure that the aluminum strip would bend evenly around the mandrel in a perfect half circle — unclamped it would bow upward and not form correctly. I also cut some lengths of strip to clamp between the Vise-Grips and the material to prevent them from cutting into the aluminum and to keep the legs of the arches straight.

I then carefully pulled both legs around the mandrel. It was quite easy with Vise-Grips clamped to the legs to extend the leverage. I could only bend them so far before the Vise-Grips came together, after which point I squeezed the two sides further with just one Vise-Grip until they were parallel and formed a perfect arch. Then I sawed the legs of the arch off square, 1⅝ inch from the top of the arch. Using a round file and sandpaper, I rounded the top inside edges of the arches a little to prevent chafe on the line. A Dremel tool with a round sanding drum would also be good for this purpose.

Each arch was now ⅞ inch wide, so two were a perfect snug fit in the 1¾-inch inside width of the channel.

With both arches centered in the channel, I clamped the assembly in the vice and, with an electric drill, *carefully and dead level*, drilled either side of the arches through the hole in the channel leg. I then reversed the arches and, making sure they were centered in exactly the same position, re-clamped them in the vise and drilled through the other side. At this point, it was possible to push a 2½-inch-long ¼-inch bolt straight through the channel and both arches, pinning them together.

Here, I have a couple of tips for anyone making these blocks. First, don't be tempted to try to drill straight through both arches — it is very unlikely you will be level using a hand drill. If your measuring or drilling has not been accurate enough to make it possible to push a bolt through, ream the holes level by carefully running a ¼-inch drill through. I discovered some unevenness when assembling my row of three channels to make the six-sheave block, but I ran a ¼-inch drill through the whole lot and they worked perfectly when bolted together.

Sheaves and bushings

The Ronstan sheave has a 5/16-inch center hole and no ball or roller bearings. I therefore bought some small 5/16-inch bronze bushings from Ace Hardware for $3 each. Lowes and Home Depot also sell them. These fit perfectly inside the sheaves and reduce the hole diameter to ¼ inch. Unfortunately, they're only available in lengths of ¾ inch, so I had to carefully saw and file ⅛ inch off one end to make them ⅝ inch long to fit snugly inside the arches. The sheaves rotate on the bushings and the bushings rotate on the bolt, giving an almost friction-free roller-bearing surface for the sheaves. If a sheave didn't rotate completely freely, it meant the bushing had become distorted while being shortened or needed to be deburred.

Assembly and attachment

To fix the channels to my fiberglass deck, I used ¾-inch-long #12 flathead self-tapping screws that finished flush with the bottom of the channel in the countersunk hole. I screwed these directly into the deck and bedded them with 3M 4000 adhesive sealant. It did not seem necessary to bolt these blocks through the deck as you would for a deck eye, because when the lines are

Material costs

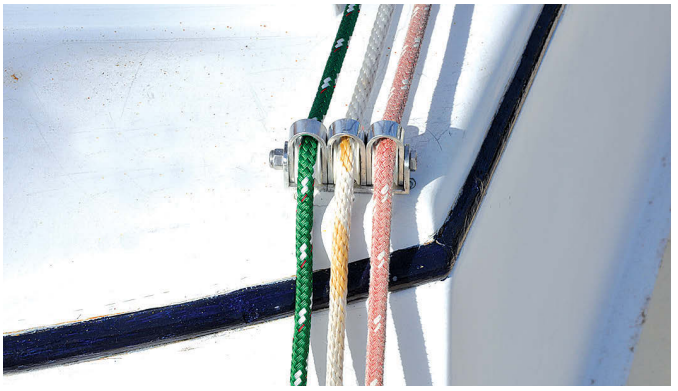
Aluminum:	$15
12 sheaves:	$48
12 bushings:	$36
4 bolts and nuts:	$12
12 deck fasteners:	$4
Total:	$115

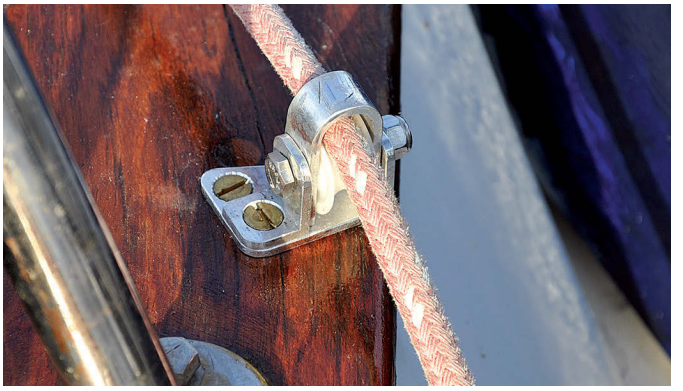
Resources

Rope clutches: http://garhauermarine.com

Sheaves: www.ronstan.com/marine

Roger's basic unit fits two sheaves into one piece of aluminum channel, at left. Where he needed to run six lines over the top of the saloon coachroof, at right, he connected three two-sheave blocks with a single through-bolt as a common axle.





A three-sheave block carries the jib furling line, the staysail furling line, and the staysail outhaul over the top of the forward coachroof, at left. A single-sheave block, at right, routes the jib furling line to the deck. This is a one-off made in a slightly different way from the other blocks.

under load they press the assembly down to the deck, rather than pulling it upward. It was, of course, necessary to fix the channel to the deck before assembling the sheaves, then assemble the rest *in situ*.

Just before this final assembly, I put a dab of winch grease on the bolt and bushings, but not on the bushing-to-sheave surface. I positioned the sheaves and bushings inside their arches, pushed the arches into the channel, then passed the bolt through the whole lot and secured it with a thin washer and Nyloc nut. I found it best not to tighten the bolt too much but allow some play in the bearing surfaces so everything rolls freely.

Combinations

Joining three two-block assemblies to make a neat row of six was just a matter of passing a 6-inch bolt through all three assemblies. To make a multi-sheave combination, I found it was best to bolt them all together without the sheaves or arches, position them where I wanted them on the deck, mark the centers of the attachment holes, and then drill the holes for the fasteners.

I also needed a three-sheave block and a single-sheave block. To make the three-sheave block, I cut one leg off a channel, then made a corresponding half channel to butt against it. A 3½-inch bolt goes straight through all three sheaves, locking them together, then a fastener beneath each secures them to the deck.

The single sheave leads the jib furling line down to the foredeck so it can be routed up and over the forward coachroof and the saloon coachroof. This block was also made using half a channel, but it has a different shape so I could screw it to the toerail. I secured a small half channel with one of the screws to fix it to the toerail. A 1¼-inch bolt fastens the assembly together.

These combinations demonstrate the versatility of this method of making over-the-top blocks. There's no reason why the blocks could not be assembled in larger combinations as needed. To give them a really professional-looking finish, the individual pieces can be polished on a bench grinder with a large polishing wheel and a graphite applicator. The aluminum will shine up like chrome.

Practical and inexpensive

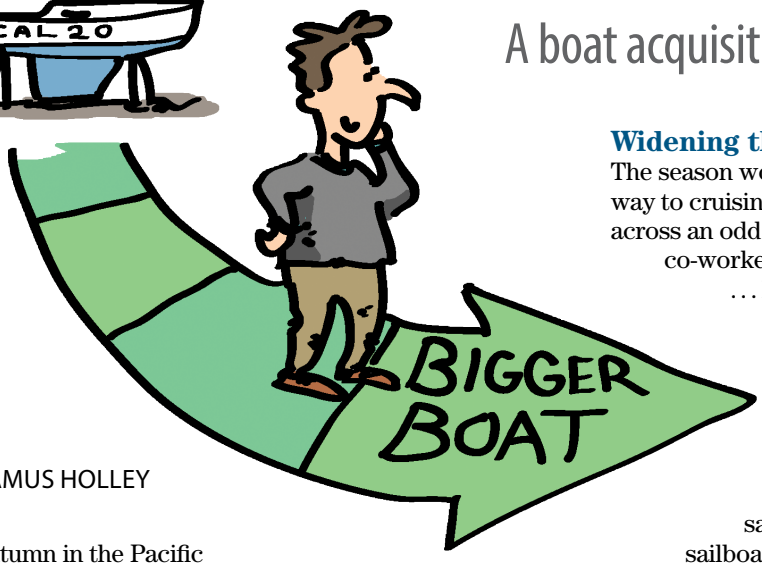
My over-the-top blocks work marvelously and with considerably less friction than the bullseye fairleads I tried in my first experiment. The lines look very neat running close to the deck, and there is much less risk of tripping over them.

The total cost in materials was under $120 for 12 blocks, or about $10 for each control line. This is quite a savings compared to buying commercial units for about $500. This does not count my labor, of course, but on boats that's supposed to be a pleasure . . .

Roger Hughes has been sailing for nearly half a century as a professional skipper, charterer, restorer, and frequent imbiber aboard lots of boats, including square-riggers. His latest project is refurbishing a rundown Down East 45 and re-rigging it as a brigantine schooner with a beautiful unique roller-furling square sail on the foremast and a few other "inventions," like his over-the-top blocks and a hot tub in the owner's head. See more of the projects Roger has been doing at www.schooner-britannia.com.

Finding Heidi

A boat acquisition unfolds like a board game



BY SEAMUS HOLLEY

Autumn in the Pacific Northwest brings fickle sailing weather, and given that our Cal 20 needed a keel-off refit anyway, we pulled her out to do the deed. This meant we had no boat in the water. As the season began to settle in and the Cal slowly came back together, I started dreaming of a bigger boat.

My wife was warm to the idea. I was burning hot. In my "spare" time, I cruised the want ads, walked the docks, and racked my brain for ways to find more time and money to make this puzzle work out. We looked at a few boats: a Contessa 26 for $6,000, a Tartan 10 for $10,000, a Contest 30 for $7,000. We knew roughly what we wanted and thought we could afford. The money was never an issue in my mind, if I could just find the right boat.

The Contessa had nice teak decks and a pretty sheer, but no motor and a totally dilapidated interior. The Tartan was interesting: flush deck, full racing setup, good motor and sails, but very little headroom and no head. The Contest was the closest. It had a small center cockpit, a well-kept interior, and a head, bunk, and galley. I was working in a boatyard and this one came in to be cleaned up for sale.

I dragged my boss, Steve, down to the boat to have a look. He gave me two pieces of advice. "Number one, you want to be able to stand in the galley. Number two, you want everyone to have somewhere to sit." The cockpit had almost nowhere for a party to sit. Back to daydreaming.

Widening the search

The season wore on and rain settled in. Dockwalking gave way to cruising the Internet. One Sunday morning I came across an odd listing. The year before, my buddy and co-worker Rick had bought a Cascade 29 with a trailer . . . his dream boat. I was envious and inspired to give some priority to searches for Cascades in our price range. Mostly, I found half-finished boats with no interior, no motor, or in such disrepair that the only real fix was a chainsaw and a dumpster.

But this time my search for "Cascade sailboat" brought up a listing for a "lot sale" that grouped three motorhomes and one sailboat. The RVs and the sailboat were being sold as a unit: $21,000 for the lot of four.

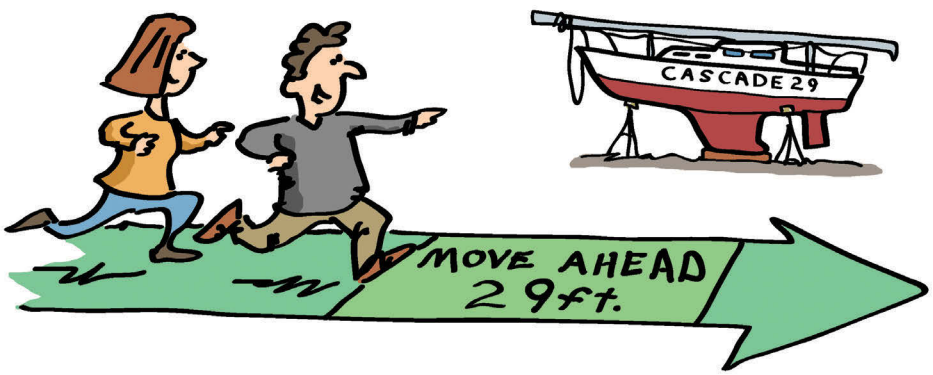
I immediately fired off an email asking, "How much for just the boat?" Within 10 minutes I had a reply: "Just the boat, $3,500."

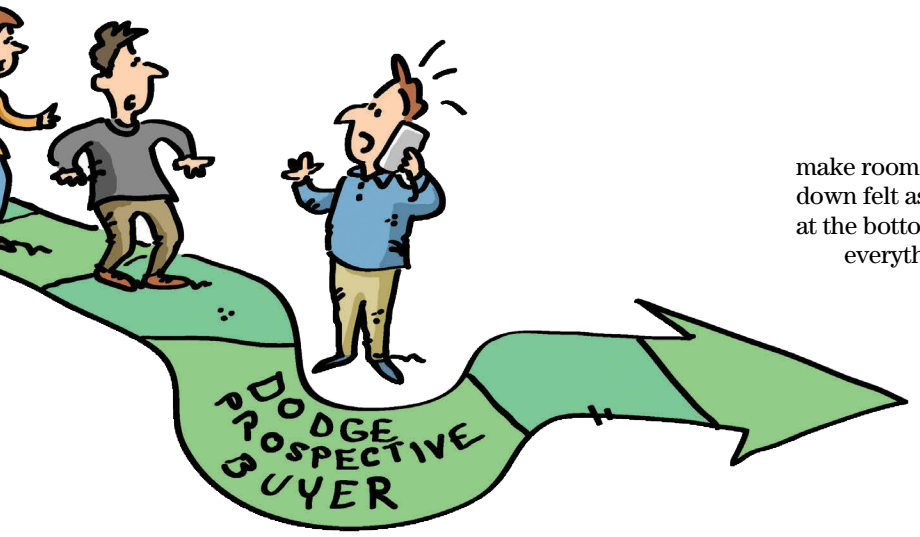
"Where can I see it?" Another 10 minutes passed by: "Boatyard on 42nd and Columbia. Give me a call before you go." He left his number. I figured it was time to get my "first and last mate" involved.

"Barbara, will you look at something with me?" I punched up the ad and the email chatter and asked, "Can we afford to do this right now?" (As in, *at once!*)

Her response was something like, "I don't think we can afford *not* to look at that."

I called immediately. His name was Don. He said the boat was in the "old Cascade yard" and some people were already on their way to look at it. He said the boom and some other parts were in his garage and that he really wanted to sell everything at once. But for the agreed price, he would peel off the boat as a separate sale.





ILLUSTRATIONS BY TOM PAYNE

Entering a time warp

From then on, and I guess even until now, time became completely elastic. The time that it took Barbara to get dressed to go see the boat was an eternity. The time to drive to the boatyard was as if teleportation were real.

At midmorning on that late October Sunday, Barbara and I found ourselves in a place where history was made: the Yacht Constructors yard where Cascade yachts had been built. When I returned to this site in March 2014, the yard was empty. History, sadly, had moved on. (*Note: See "Yacht Constructors: Pioneers in Glass," by Ed Lawrence, and the companion piece about the founders by Marili Green Reilly, "There Have Always Been Boats," January 2004. –Eds.*)

But this was 2008 and a Cascade 29 named *Heidi* was precariously parked stern-in against a metal building. She sat on four stands with no chains and a single keel block, surrounded by a tent city of variously staged boats. When we arrived, a few prospective owners were stomping around. One guy was giving descriptions to someone on a phone.

I stood back to give her a good long look. Her mast was tangled and rigging draped through the cockpit with a PFD as a cushion to prevent it from driving through the cabintop. A plastic dinghy was on the foredeck together with several severely decayed cardboard boxes that leaked various items. Her fin had a rust bloom that made it look as though the bulb might fall off. And she was filthy.

Once everyone else had gotten their fill, I scrambled up the ladder, did a little yoga to get around the shrouds, and stepped on deck. I held the ladder while Barbara climbed aboard, and helped her navigate the spaghetti. A thrill ran up my spine. Stopping at the companionway, I poked my nose into the cabin ahead of me and gave a whiff. It smelled musty, but not rotten. Stuff was strewn about everywhere inside. The cushions were on edge, filling the passageway. Sails were crumpled up in the V-berth. A fair bit of the trim was off and scattered about. Newer-looking electrical wires dangled from every corner and overhead.

Competition

Meanwhile, the guy on the phone decided to take another look. As he stepped aboard, we stepped below to make room for him. Everywhere my hands fell as I climbed down felt as if they were meant to be there. The turned post at the bottom of three steps, the overhead handholds . . . everything felt right as I stood tall in the galley. Barbara plopped down behind me on the forward settee and watched as I removed the companionway steps, mostly to expose the motor but also, subconsciously perhaps, to keep phone-call-guy at bay while I did my own private inspection.

The engine was a huge rusting green hulk of a diesel twin with oil everywhere and parts literally falling off. I muttered aloud, "Boy, you sure have to wonder about that!" Phone-call-guy, now off the phone, looked down and asked, "What?"

"Well, I'm no expert," I replied, "but I bet this motor is a big part of why the boat is still here." You only had to look to know it would never run without a massive overhaul.

He introduced himself as Matt, explaining that he and his father were buying the RVs and he was there to look at the boat, given Don's all-or-nothing pitch. He looked less interested by the second, and I couldn't help but encourage his doubts by pointing out the array of boat bits cluttering every surface and punctuating my observations a few more times with a "Sure makes you wonder" about this and that. Barbara choked hard and muffled a fake sneeze, trying not to laugh her face off at my shameless display.

Dismay

We reluctantly crawled back down the ladder and walked far enough away that we could not be heard. I called Don and, with a nod from Barbara, said, "I'll give you $3,500 cash right now for that boat."

There was a pause on the line, then, "I think I just sold it. There's a guy looking to buy the whole lot. Sorry." Damn it, Matt and his dad had aced me!

"Well, OK. A deal is a deal. If that changes, give me a call." Driving away from *our* boat, I was glum. I should have offered him more! We were both silent, stunned perhaps. But less than a mile later my phone rang.

"It's *him*! Barbara, answer quick!" I pulled over immediately.

"Do you still want to buy the boat?" he asked.

"Yes."

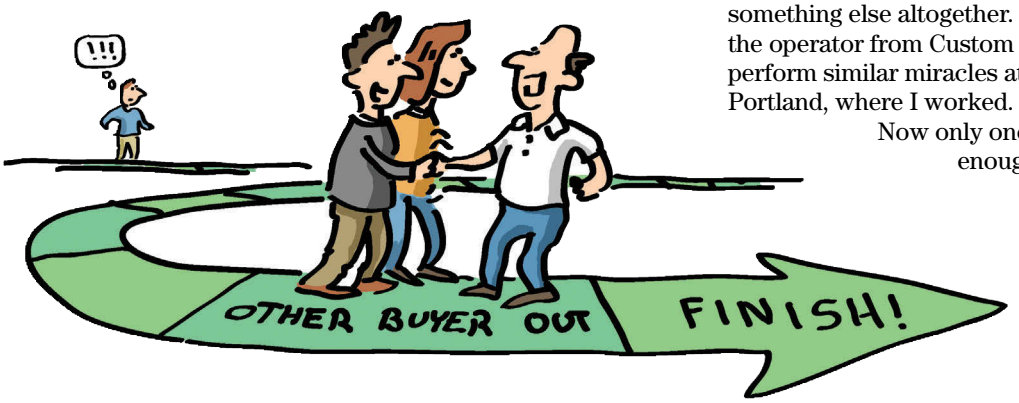
"At the same price?"

"Yes."

"You've got a deal."

We made arrangements to meet the next day.

Don had bought this boat as a father-and-son project with his son Joel. Evidently she had been purchased from another party by one of the Cascade founders, Hans Geerling, who was at that time the owner of the "old" Cascade yard.



He resold her to Don and Joel. Don paid all the bills. Joel was a master electrician who did much of the work. Don added his talents as a high-level hobbyist woodworker and semiretired engineer. They seemed the perfect team to tackle rewiring, replumbing, repowering, refitting, and rigging a medium-sized sailboat, but Joel fell in love with a girl from "back East" and, when he moved there, *Heidi*'s story was reset.

Elation

The next week of our lives was a warp-speed vortex. We were the proud new owners of a 1973 Cascade 29 sloop, a dinghy, and an ungodly amount of brand-new electrical widgets, yacht fittings, and sundry accoutrements.

The full package included enough parts and equipment to completely refit four similarly sized boats. All I had to do was figure out how to get her out of that yard and back to the water. I called Rick as soon as the deed was done.

"Rick! I bought a boat! A Cascade 29!"

Rick sounded miserable. "Well at least one of us has a boat," he said. Rick is a good sailor, but even the best of us have awful days and his had been truly rotten. He'd gone out for a solo that Sunday. Coming back under motor, he had lost a sheet to the prop and, with no time to get the sails reset, found himself sideways in the current. Anyone who has ever sailed the Columbia River knows it's deadly swift at times. Worse yet, he was drifting fast toward an unfinished dock that jutted out in his hopeless path. Not even concrete yet, it was a mass of pilings and sharp unfinished steel beams. He hit broadside, pulverizing the starboard sheer clamp at the chainplate. He managed to jump off and tie up after first bashing down the inside between the rocky shore and the positively lethal obstacle course that made up the unfinished dock. It was probably not the best time to ask him about borrowing his trailer.

The next day after work, I spotted for him while he dove to cut away the fouled sheet and limped back to port. Somewhere in the mix, we agreed to share the cost of a new set of tires for his trailer, since we both needed it. Now we had a way to move *Heidi* overland, but the problem of airspace still loomed. To move a 10,000-pound object with wheels underneath is one thing. To move it up, over, and around the surrounding obstacles and back down is something else altogether. Luckily, I had gotten to know the operator from Custom Crane Works after watching him perform similar miracles at Schooner Creek Boat Works in Portland, where I worked. For $300 he would do it.

Now only one thing was missing: a truck big enough to move our boat. Enter Daryl Dinwiddie, boatyard mechanic and truck fanatic who owned one monstrous Ford diesel dragster and loved to show off whenever possible. For the cost of breakfast and some fuel, he agreed to haul her to our yard. I arranged to take a long lunch the following Tuesday and a half day off on Wednesday to get her out. Time was of the essence; I believed that if she stayed in that yard one minute longer she would be doomed to rot there.

The extraction

Rick and I met at the tire store at high noon to get new tires on the trailer, then we were off to the yard. The crane was there when we pulled up, and after not much deliberation the trailer and crane were set. Up, up, and away! At that moment the yard owner strode over, claiming he had a lien on the boat. Uh-oh.

I got Don on the phone immediately. Don said that he was completely square with the yard, I faced the guy down and asked what the charges were. When he mumbled something about a $50 stand rental, I handed him the cash, turned back to the crane, and gave the lift signal. There was no way *Heidi* was not leaving with us. Period.

We had her up, over part of the building, over another boat, and resting securely on her trailer in less than half an hour. I felt like the ringmaster in a circus. The yard was abuzz. A boat was leaving! "Where are you taking it?" someone asked.

"Back to the water, where she belongs!"

The reality of that statement was unclear in the moment, but crystal clear in my dreamlike fantasy. The next day, we met to feed Daryl breakfast and his monster truck fuel in preparation for the short trek to bring *Heidi* home to "our" yard. We hooked up and got out with no fuss. As we turned onto the main road, however, Daryl nearly stopped my heart when he barked the tires and peeled off, whipping into the lane and swerving the trailer a few times in short strokes, and then put on the steam for real. Following, I had to punch it

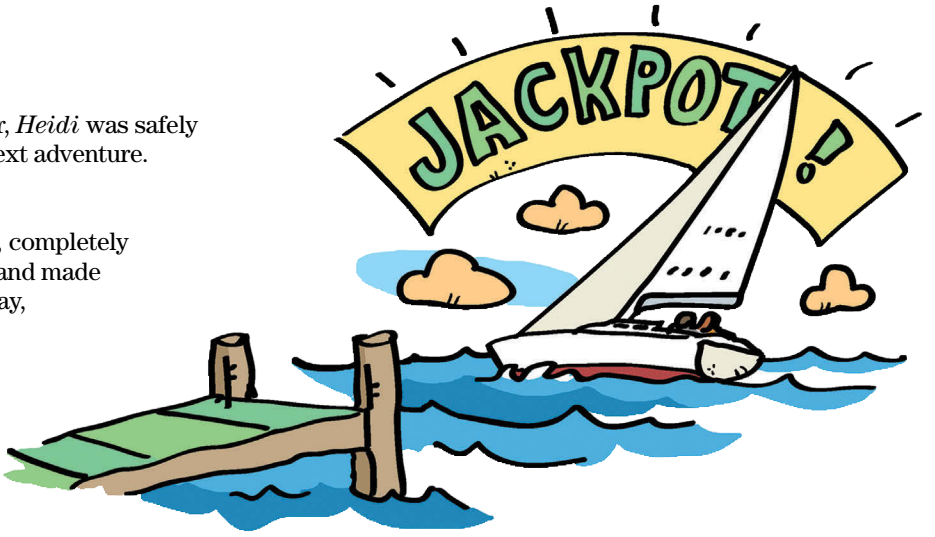
hard just to keep up. Within the hour, *Heidi* was safely locked in a side yard awaiting our next adventure.

The adventures begin

We found and installed a new motor, completely rewired and replumbed everything, and made *Heidi* whole again. The following May, she was launched. Barbara and I have enjoyed her every week since then and are logging many hours of adventure as we voyage ever farther.

We've all heard the snarky explanations for the acronym B.O.A.T. Well, I say it stands for Best Of All Things! The best we can hope is to be good stewards, so that *Heidi*'s tale may never end.

None of this would have been possible without the support and encouragement of quite a few others, most notably my wife, Barbara, and of course Mom and Dad, the entire '07/'09 crew at Schooner Creek Boat Works, and the original designers and builders at Yacht Constructors who built *Heidi*.



Seamus Holley's earliest memory to do with sailing is of his mother, who went sailing with friends (without him — he was 5) in San Francisco Bay and the boat almost sank. Years later, as a cook at a Boy Scout camp, he had access to Lasers and Hobie cats . . . and forgot it all until 2005, when he bought a "Kool" Snark for $25. He later got a job in a boatyard and bought his first "real" boat, a Cal 20.

Instrument sun cover

A homemade replacement is the answer

BY JOHN CHURCHILL

My good old boat was a former racer and came with a KVH Sailcomp electronic compass and sailing instrument. As it was quite old, the LCD display had become barely readable. I could tell it was working, just not usefully visible. I priced a new display at over $600 and quickly decided I could do without. Therefore, when the sun cover blew off in a thunderstorm, I was not too concerned. Later, though, while browsing on eBay, I came across a used display. It was for sale as "Sailboat Parts" with nothing to make it searchable. I snagged it for $19 including shipping and was delighted to find it worked well.

Now I needed a sun cover. The manufacturer wanted $59 for a small plastic cover. That made for another easy decision. Some instruments are fairly common, and the sun covers — as they tend to outlive the electronics (unless they go overboard) — can be found occasionally at swap meets or consignment stores. The Sailcomp, however, was not a popular instrument, and I had no luck with a quick search for a cheap alternative. I considered a Sunbrella cover with an elastic rim but wanted a better match with my other rigid plastic covers. I decided to fabricate my own from fiberglass. It took two tries to get one I was happy with, but now I have a spare.

After protecting the screen and wrapping the unit with packaging tape, John applied the first light layer of fiberglass, at left. He faired it inside and out with filler before painting it, center. The completed cover, at right, fits the instrument snugly, and looks smart when in use, top of page.

Learning by doing

I put blue painter's tape on the recessed display face to protect it. On my first attempt, I wrapped a layer of wax paper around the instrument before applying the fiberglass and resin. This released easily after the resin cured but did not leave a smooth surface.

For my second attempt, I used a taut layer of plastic packaging tape instead of the wax paper. I wanted it to be thin for a snug fit.

The hard part was getting the corners done well. The trick that worked on the second try was to use very light (1 ounce per yard) cloth that's sometimes called angel hair. I made two full layers as well as strips for the edges. I also cut some triangles for the corners but could not get them to smooth out. I set it in the sun to harden a bit, until it reached the green stage, then trimmed the overhanging edges. With a little pulling on the mounting screws on the back of the unit, it popped off the display.

Once it was off, it was not thick enough. I should have used four layers of cloth. Instead, I added one layer of mat, which made it stiff enough. I then sanded the rough spots, added some Bondo body filler, and sanded it smooth. A couple of coats of paint from a spray can made it pretty. (I had to scrape the paint off the inside of the rim to make it fit!)

The first cover was a little loose. I fixed that with some layers of electrical tape on the inside edge of the cover. Now I'm ready to protect my new display from the sun.

John Churchill grew up in Indiana as a boat-crazy kid. He built a raft at age 6, sailed Snipes as a teenager, and worked his way toward salt water and bigger boats as an adult. He has sailed a Cape Dory 26 singlehanded to Bermuda and back and a Bristol Channel Cutter trans-atlantic with his father. Now in Florida, John races and daysails Nurdle, *a former repo Bristol 35.5, while rehabbing her for extended cruising after he retires.*

Luff foil protection

Give your jib's roller furler some needed support

BY ART HALL

Headsail roller-furling systems have become ubiquitous. Walk the docks or scan the mooring field and you'll quickly confirm that they've become the norm for boats large and small, racers, cruisers, and daysailers. It's for good reason: furlers have evolved into dependable, rugged gear we can't imagine living without. Heck, a whole new generation of sailors wouldn't recognize a sail hank if they saw one.

As tough as furling systems are, they're at their best while set up and in service. Many systems reveal an Achilles' heel when the rig is unstepped for winter storage or for transport. If it's not handled carefully, the furler is vulnerable to significant damage that's difficult and time-consuming to repair. Worse yet, the parts required for a repair may no longer be available.

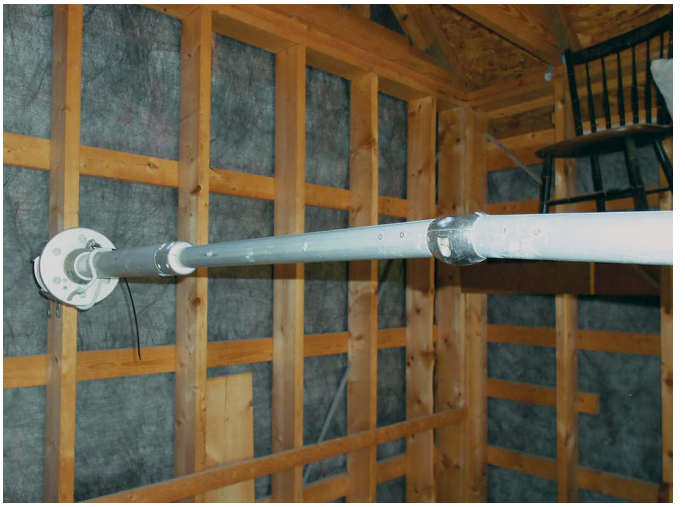
The weak element is the sail-luff boltrope feeder that joins the aluminum extrusions. The significant weight of the drum can put a lot of stress on this component, causing bending fatigue and eventual failure. When the boatyard handles the spar between sailing seasons, plenty of opportunities arise for rough handling that can cause damage. The components are particularly at risk when stored horizontally and while being transported over the road. A deck-stepped spar makes the problem more acute, because it is not long enough for the whole length of the headstay and furler to be lashed to it for support.

One solution is to provide the needed rigidity with a strongback. Your boatyard workers will breathe a sigh of relief when they see what you've done to help them safely handle your furler. Perhaps most important, your sailing season will start on time without delays for repairs.

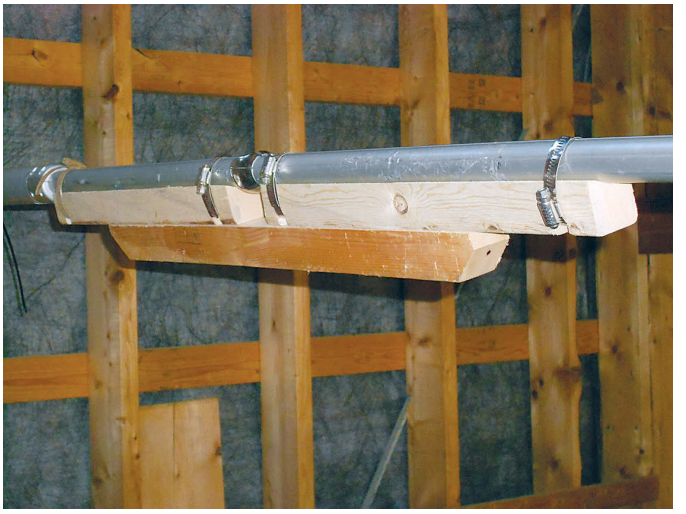
From problem to problem solved, making my strongback took me less than 20 minutes, some scrap material, a few screws, glue, and four too-good-to-discard hose clamps. This system goes in place after I strip the sails off prior to storage and stays in place until I reverse the process in the spring.

Our good old boats give us enough maintenance headaches to keep us busy. This is one potential problem that's easy to prevent.

Art Hall, his wife, Sandy, and their not-so-inclined-to-sail Pekingese, Kitri, can be found sailing Secret Water, *their Allied Seabreeze 35, on Penobscot Bay, Maine. Occasionally they'll push way Down East for some solitude. A significant enjoyment while cruising is exploring "eel ruts" in their Peapod dinghy, which is set up with two rowing stations.*



The bottom section of this headsail furler connects to the main foil at the luff feeder, creating a weak point when the system is uninstalled.



With the strongback clamped to it, the furler is protected from damage.

Quick and Easy

Ablution solution

An indoor shower for a boat that lacks one

BY CLIFF MOORE

A few years ago, a friend told me a story about taking a hot shower as the boat he was helping deliver passed through Hell Gate in New York's East River. A hot shower, I thought. How can I make that happen on my 26-foot Paceship?

I'm familiar with the practice of bathing in the cockpit. For just that purpose I adapted a 2-gallon pump-up garden sprayer with a kitchen spray nozzle. That works pretty well, but bathing au naturel has the potential for revealing too much information. And it's chilly. I prefer privacy.

Whenever I was aboard other boats, I paid special attention to their shower arrangements. Some are elegant. One boat had a shower stall lined with tile. The Pardeys built a wooden tub into their boat, which is nice, but it's in the place where an engine would normally live. Most boats seem to have dedicated fiberglass pans from which gray water drains to a tank or is pumped overboard. One guy I met plumbed his gray water into the head as flushing water. Brilliant! But there was no way that would work on my boat.

Meanwhile, my outdoor grill was due for replacement. The new grill was physically larger, so the reasonably new cover for the old grill was too small to fit. As I turned the water-resistant cover in my hands, I held it upside down and suddenly remembered the scene in the movie *MASH*, when they rig the disappearing shower enclosure to reveal Hot Lips Houlihan in all her glory. In the scene, one of the characters is taking a bath in a military-issue portable canvas tub. Aha!

Finding two 4-foot-long pieces of leftover 1-inch PVC pipe in the garage, I sewed them into the long sides of the cover as stiffeners. Next, I put grommets into each corner. I tied a length of parachute cord into each grommet and hung the resulting tub and shower-water catchment basin from the overhead handrails in the main cabin. Depending upon how it's hung, the stiffeners aren't absolutely necessary, but they keep the sides from collapsing in. The object is to catch the water and protect the berth cushions from spray. Now I can rig the tub, heat my shower water, and have at it. It takes longer to boil the water than to set up the tub.

Cliff's Paceship PY 26 had no shower, so he rigged an outdoor grill cover to fit between the saloon settees and uses a garden sprayer.

If you buy a new grill cover, size it to fit the space allotted. Mine's a little too large, but the price was right. A 2-gallon garden sprayer is generally good for three users. Although it's possible on my boat to tip the tub into the sink after a shower, it may be easier to empty it with a dinghy bailer. Place a cushion under your bum for more comfort. Finally, if you care about privacy, as I do, or don't want to bathe in a cold draft, close the hatches *before* you get into the tub.

Ciff Moore's bio can be found on page 37.

Art Weis photographed Tim Britton's Hinckley 42, *Trillium*, at the Basin Harbor Club in Vergennes, Vermont. The early morning sunlight made for a dramatic shot against the foggy Adirondack Mountains of New York. Send your high-resolution 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.

continued from page 9

Leaky windows

Bill Sandifer's article, "Surface-Mounted Deadlights" (November 2014), caught my attention because I had replaced the leaky windows on our 1984 Islander 30 with surface-mounted Lexan many, many years ago after reading a similar article in *Good Old Boat*. I spent hours calculating the expansion and contraction due to temperature changes so I would know how big to drill the holes for the fasteners so the Lexan wouldn't crack. As much as I tortured the data, it always came out that the holes had to be bigger than the largest metal-bonded sealing washers I could find at the time.

Hoping against hope that my math was wrong, I drilled the holes in the Lexan as large as I dared so the washers would still cover them. Unfortunately, my math was right. A hot summer followed by a cold winter — Tennessee is not a southern state when it comes to climate — conspired to crack the Lexan around the fasteners. One of the windows split from top to bottom.

If I were to redo the deadlights, I would follow the advice of Jerry Powlas and glue them on with LifeSeal rather than use mechanical fasteners. For the jigging (which I didn't know was a word) to hold the windows in place while the sealant dries, I would consider using suction cups like those used for carrying glass. I would place them on the inside of the Lexan and apply tension to ropes tied to the handles. A suction cup in each extreme corner would ensure it doesn't slip out of position while you are tightening it up.

–Gary Pardun, St. Helena Island, S.C.

I read with interest Bill Sandifer's recent article regarding surface mounting of portlights. The exposed cabin edge is sometimes irregular, which makes it difficult to get a fine finished appearance. Painting the edge of the glazing — a trick I learned from the auto industry — can improve the look of the job. Mask the back surface of the plastic about a half-inch in from where it lands on the cabin side, scuff it with sandpaper to get good adhesion, and spray-paint it, typically black. It will show up glossy from the outside despite the sanding. It also hides the sealant or the spacer discs if using the method Jerry Powlas described in his sidebar.

–John Churchill, Sanibel, Fla.

Singlehanded docking

I have a couple of additional tips to add to those Karen Sullivan gave in her article ("Departures and Arrivals," November 2014) that I find useful in docking my 24-foot Cornish Crabber. My bow and stern lines are long enough that I can lay them out along the sheerline until their ends meet amidships. Then, as I lie alongside the dock, I can pick up both lines and step off the boat. I have a permanent line attached the entire length of the dock. It's easy to grab that line either with my hand, if I'm close enough, or with the boathook.

–William C. Winslow, New York, N.Y.

Annapolis encounter

The elderly gentleman on the left is John C. Murphy, who sails his 1971 C&C Corvette, *Catspaw*, out of Middle River, Maryland. I believe you know the other two gentlemen (Jerry Powlas, technical editor, and Tom Wells, troubadour). Mark me down as a very satisfied subscriber.

–John C. Murphy, Baltimore, Md.

Finally *Off Duty*

Your readers might like to see some photos of our finished boat project. I retired from the police department four years ago after 30 years' service, and this project has been a dream of mine for years. It is a 26-foot Stadel-designed gaff cutter with an 8-foot 6-inch beam and almost 4 feet of draft. *Off Duty* was constructed in my 25- x 50-foot boatshop/woodshop with a garage door on each end. It was a tight fit and we had to remove the garage door, the header, and 2 feet above that to get her out. The wood was harvested at my home and milled with a small portable mill that we purchased for the project. The frames and house are of white oak and the planking is red cedar. The frames were steam bent and the planking is two ⅞- x 1¼-inch staggered layers of strip planking. My sons and I poured the 1,800-pound lead keel. The deck is traditional canvas. The engine is an inboard 16-horsepower Beta Marine diesel.

I was close to launching this fall, but a few details held me back. Rather than stressing about it, I took my sons' advice to "enjoy" the build. We plan to sail her on the Chesapeake by April 2015.

I enjoy *Good Old Boat*, and although it is primarily for fiberglass boats, the stories of your readers taking on restoration projects continued to inspire me when the going was tough. I relied heavily on your magazine's articles for wiring, rigging, engine installation, the bowsprit platform, and protecting engine gauges.

–Peter Paradis, Fredericksburg, Va.

Supplier links

Thank you for the excellent supplier directory on your website: www.goodoldboat.com/resources_for_sailors/suppliers_directory. I lost a bronze/brass dorade funnel and box overboard to a demonically possessed jibsheet. My fault: I should have reversed the funnels on a breezy day. Not even time to swear, let alone release the line. To keep true to the character of my Alberg 29 — bronze hardware and teak — I decided to bite the bullet and replace both, reserving the remaining weathered one for a future engine-intake project. Problem: where to find a pair of 2-inch-ID brass/bronze dorade funnels? Most I found were 3-inch-ID for bigger boats. After spending hours checking sites from the USA to Europe to Australia, I checked *Good Old Boat*'s links to suppliers. R&W Traditional Rigging and Outfitting had an exact match and I ordered the deck caps too. They arrived by USPS today.

–Dave Toogood, Erieau, Ontario

Matilda 20 rudder

During the test sail of my Matilda 20 for his feature article in the November 2014 issue, Rob Hoffman said we were tacking within about 120 degrees. He told me that a Rudder Craft foil-type rudder would improve the Matilda's windward performance quite a bit, so I bought one and, indeed, it helps a lot. With the Rudder Craft foil, the boat tacks within about 110 degrees, is very easy on the helm, and leaves hardly any rudder wake. I have not yet experienced a downwind run such as Rob and I experienced on his trials, but I am sure the boat will track more easily.

My boat does have a bilge pump, but it's only been used for testing. I hope to keep it that way!

–Brooks Northern, Hixon, Tenn.

Check the check

When I read Ben Thorsson's article, "Caveat Vendor," in the November 2014 issue, I felt like he had been sitting at my shoulder many months ago. I experienced a very similar tale, but was able to bring it to a halt when I took the fine-looking credit union check to my bank and had them call the credit union to confirm the check's validity. The "issuing" credit union had neither a record of the check number, nor me: the check was bogus. Since it typically takes a number of days for checks to clear through a bank and the depositor is responsible for the transaction, I asked my bank how to prevent this from reoccurring. Their advice was to require the purchaser to provide, along with the check, the name and telephone number of a contact person at the financial institution. The check recipient then needs to require his bank to call the institution that issued the check using the bank's independent directory, to validate the check. This step gives the check recipient comfort in knowing that the check is good and that funds have been set aside to cover the amount.

–Perry Walcott, Lake Bluff, Ill.

Customer service at Rule

I have a two-year-old Rule AquaCharge 500 battery-powered pump for my dinghy. It developed on/off problems rather suddenly, and quickly quit altogether. I contacted Rule and received immediate assistance. I was never left hanging — all their email responses were prompt and courteous. I provided the symptoms and the representative immediately diagnosed the problem. I also gave the purchase source and date and noted it was no longer in warranty. The rep told me the necessary part was not in stock, but one would be sent as soon as it was available.

I wondered if Rule would forget me. It did not. A week or two later, I was notified the part was in, had been tested, and was in the mail. Sure enough, it popped up at my front door in just a few days. There was no billing statement. I installed the new part and the pump worked. As a 67-year-old former auditor, I am not easily impressed, but this was truly above and beyond and deserves recognition.

Over the years, I have always chosen Rule bilge pumps, without exception. I am sure there are many fine manufacturers out there, but how can I now ever use any other as long as Rule makes the item I need?

–Jerry H. Adams, Houston, Texas

My ideal tender

Following your article, "The Cruising-Capable Dinghy," in the September 2014 issue, I'm tempted to share with your readers how I arrived at the perfect tender.

In the 41 years I've owned my Alberg 30, *Jean-du-Sud*, I've been through a few dinghies. The last one was built three years ago by a friend of mine, marine artist René Delahaye, who used the stitch-and-glue technique. Based on a 50-year-old design called the Canadian Sabot, it was not meant to be a nesting dinghy, but we simply moved the centerboard trunk 2 inches forward and added a second transverse bulkhead immediately behind the one supporting the aft end of the trunk. Then we cut the dinghy in half in order to stow it on the foredeck of *Jean-du-Sud* with the aft part on top of the bow.

This dinghy rows easily, is easily sculled, and can be sailed with an Optimist rig or powered by a small 3.3-horsepower outboard. I placed a wheel inside the centerboard trunk. It sticks out 3 inches below it and allows me to roll the dinghy overland like a wheelbarrow, using the oars as handles. I describe this in an article on the CapeHorn.com website about the self-steering gear I designed and tested in my circumnavigation through the Southern Ocean and around Cape Horn. My dinghy is described in an article that shows how I modified and improved the rig of my Alberg 30, how I step its mast singlehanded without a crane, how I haul it on a trailer to reach the body of water I want to cruise on, and how I came up with the ideal tender. At www.capehorn.com, in the menu at left, click on the tab "The Alberg 30 Jean-du-Sud," then on "Forty Years Later, I would still choose an Alberg 30."

–Yves Gélinas, Oka, Quebec

Turnbuckle covers

In response to the idea for protecting the turnbuckles on the lifelines ("A Turnbuckle Cover That Breathes," September 2014), here is my solution. I made my tubes with Sunbrella fabric and Velcro closures to hold them in place. They are flexible, weather-resistant, waterproof, and very easy to install or to remove as needed.

–Richard Huint, Montreal, Quebec

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

Boats for Sale

Kittiwake 24
1974 sloop, *Blue Moon*. Completely restored and comes w/custom-fitted trailer, 4 sails, 6-hp Johnson OB, solar panels, new running rigging, tiller tamer, 2 anchors w/rodes, marine stereo, all new cushions, and much more. She's a real head turner and a blast to sail but has to go. I have a new project boat. Princeton, KS. $8,000.

Greg Mohr
785-214-9887
mohr_greg@yahoo.com
LadyAMohr.Webs.Com

Pearson 27
1987. Popular family cruiser (see Sept. 2014 *Good Old Boat* for a review). July survey shows exc cond. Tiller version. All new canvas, VHF, port screens, battery charger, water heater, bilge pump July '14. Interior very clean. No soft spots or blisters. Recent short pull. Basic electronics. Can forward data, photos, and survey. 12-hp Universal diesel. Recent sails! On Chesapeake Bay, Baltimore, MD. $14,900.

Brad Bock
717-805-3175
bbtvr@yahoo.com

Alberg 37
1979 Mk ll hull #207. Second owner with over $30,000 spent in the last 3 years on improvements and upgrading including new Yanmar diesel w/255 hrs, full cockpit enclosure, navigator compass, wheel cover, Icom AIS, starting and house batts, Raymarine C95 multi-function display, Nova Kool 12-volt refrigeration system, and new RF genoa UV cover. Fully equipped for cruising and in sailaway cond. Full inventory list available. Sunshine Coast, BC, Canada. $59,000 CND.

Sieg Lehmann
604-885-9364
slehmann@dccnet.com

Bill Boyd Catboat 23
1979. 23' x 10' x 27" draft (5' CB down), 6,000 lb. Wm. Garden design. Pretty, roomy, heavily built, stable, environmentally friendly with lots of character. Will go about anywhere. Folding mast, new sailcover, good sail. New cushions, Porta Potty, new canvas cockpit cover. Triple-axle King trailer. Electric Yacht IB. She's a joy to sail! Williamson, IA. $15,000.

Ford Brockman
641-203-0319
fsbrockman@hotmail.com

O'Day 37
1979 center cockpit. Featured in the Jan/Feb 2013 issue of *Good Old Boat*. Great sailing boat, formerly owned by Annapolis Sailing School. Currently on the hard at Herrington Harbour North in Deale, MD, just S of Annapolis. For sale through Midcoast Yachts, Tom Aga. $27,500.

Philipp Theune
303-832-1150
philipp.theune@gmail.com
www.yachtworld.com/midcoast/index.html

Herreshoff H-28
1963 classic sailing ketch. 30-hp Atomic 4 engine. Excellent cond. GPS, Autohelm. 5 sails including cruising spinnaker. Wooden hull. East Lake, OH. $9,900.

Warren Burrows
440-488-6294

Ranger 28
1977 (GOB feature boat Sept '06). A delight to sail. Fully restored. Carefully maintained. New bottom paint. Many upgrades. Enhanced Atomic 4. Dinghy and davits. All sails in exc cond. On the hard. Atlanta, GA. $10,500.

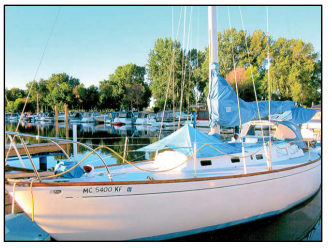
Walt Hodge
770-498-1678

Tayana 37 MKII
1983. Your winter home or your idyllic sailing life. Circumnavigate the world or the Caribbean. Daysail to the fabled San Blas Islands of Panama or just relax on your mooring and enjoy the warm water and sun. Motivated seller. Reduced price. $74,000.

William Trindle
svcheval@yahoo.com
www.sailboatlistings.com/view/23215

Cape Dory 28
1980. Safe and ready to sail! Self-tending jib for singlehanding plus several headsails. 6' headroom throughout. Sleeps 4. Well maintained. Wood/coal stove. Includes Sailomat windvane. Bottom painted Oct '13. Galvanized trailer negotiable. Norfolk, VA. $18,400.

David Latta
757-708-5012
lattadj@gmail.com



Cal 40
1964 Bill Lapworth design built by Jensen Marine. The original ultra-light racer/cruiser and a delightful liveaboard. Fully rigged and outfitted for cruising. Beautiful cond. Cabin and deck white and light gray with a varnished mahogany/white interior. Port Huron, MI area. $25,000 OBO.

Phillip Ireton
734-455-4626

Most of our classified ads appear on the
GOOD OLD BOAT
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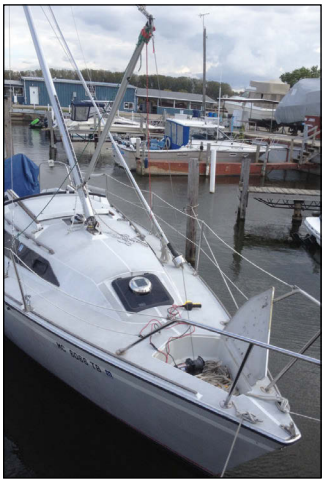
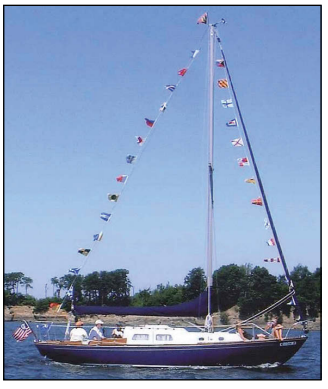
Boats for Sale, cont



O'Day 27
1987 LE sloop. Trailerable cruiser w/shallow-draft (2'11") wing keel. New standing rigging and sails '13. Westerbeke 10-hp diesel w/456 hrs. Custom Triad trailer with 20' extendable neck. AP, 150 RF. Cockpit-led sail controls and inboard engine make single- or doublehanded sailing reasonable. Electric winch mast raising and lowering system allows you to launch and rig the boat single-handed in remote locations. Michigan. $16,500.

Joe Lindbloom
joelindbloom@yahoo.com



Alberg 30
1966. Harken RF on jib, Harken mainsheet traveler, Anderson #2 self-tailing cockpit winches, new toilet, new thru-hull fittings, all new deep blue cabin cushions, electric fuel pump and upgraded fuel filter on reliable Atomic 4. Main beam rebuilt. Full survey '12. All necessary docklines included. Danforth anchor w/chain and 200' of rode, winch handles, and more sailing gear. Sailaway cond. Annapolis, MD. $16,500.

N. Scott Gardiner
410-544-8477
410-647-7777
scott@gardinerappelgroup.com

Crealock 34
1992. Extremely comfortable boat. All interior upholstery redone and all instruments replaced '10. Easy to handle with Forespar furling main. Main replaced in '07; Yankee jib replaced in '12. Unfinished teak complemented by bronze ports. 8' dinghy. An eye-catcher that always draws positive comments. Northport, MI. $89,500.

C. Richard Solon
231-386-9215
manitouarts@hotmail.com

Stone Horse 24
1974, hull #53 by Edey and Duff, Ltd. Second owner. Cutter rigged w/twin R[illegible] 12B2 inboar[illegible]sel w/380[illegible] and bui[illegible] yrs on Lak[illegible]nd. Load[illegible]es. Locate[illegible]eat Lakes[illegible] Station.

SOLD

Pw[illegible]cott
847-295-7565
Pwalcott@sbcglobal.net

Bristol 29
1969 sloop. Herreshoff design, coastal cruiser. Well maintained. LOA 29'2", beam 8'11", draft 4'6", 8,400 lb. Tiller steering. Dacron main and genoa. Standard cabin layout. Universal Atomic 4 gas engine, Monel 15-gal fuel tank. Manual head with 15-gal holding tank. Alcohol stove and icebox, 32-gal FW tank. Oxford, MD. $19,500.

Cutts and Case, Inc.
410-226-5416
cuttsandcase@verizon.net
www.cuttsandcase.com

Sabre 28
1975. A well cared for and upgraded example of the breed. Ready to PHRF race or cruise. Tiller steering. Huge cockpit plus lots of interior space. Universal diesel. Custom tabernacle and A-frame for raising and lowering the mast. Never in salt water. Open to reasonable offers. $15,000.

Paul Faulkner
905-836-2212
p.faulkner@rogers.com

Alajuela 38 Mk II
1978. Great offshore cruiser. Strong, fast, seakindly, and beautiful. Best cruising boat. Exc cond. Extensive upgrades. King bed w/new mattress, beautifully varnished teak interior, solid teak-and-holly sole, great storage. Solar panels, wind generator, Aries, AIS, radar, engine, 12V fridge, AP, life raft, SSB, Pactor, water heater, windlass, Force 10 stove, much more. New Dickinson propane heater, painted hull, dinghy w/ motor, mast w/standing rigging, batteries, dodger, exterior varnish. Cape Canaveral, FL. $79,000.

John Sokol
845-891-5127
svhaven@hotmail.com
http://svhaven.wix.com/alajuela38

39' world cruiser
1997. Double-ended, double-chine steel (no rust). A serious world cruiser. Complete except for instruments. 39' overall, 33' on deck, 10'2" beam, 4'2" draft, 18,400 lb. Yanmar diesel. Head, galley, reefer. Gaff sloop w/keel-stepped aluminum mast. On cradle in boat-yard building in greater Houston, TX, near Gulf of Mexico. $18,900.

Bob & Jimmie Marsh
713-818-7701
TXJimmie1@aol.com

Rhodes Bounty II
Beautiful 1957 41' Phil Rhodes sloop strongly built at the dawn of the fiberglass era. Completely restored inside and out by Deltaville Boatyard over the past several years at a cost far exceeding the current asking price. In the water in Deltaville, VA, in sailaway cond. $52,500.

Skip Madden
804-436-7131
skipmadden@gmail.com

Seafarer 26
1972 stretched Meridian. Electric start OB, RF (not yet installed), auto tiller, working jib, 150 genoa w/luff tape for furling. Needs some TLC. Palm City, FL. $3,000.

Edward Beckett
772-971-7775
Stoli1264@aol.com

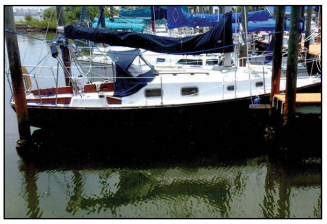
Cape Dory 30
Well loved 1982 freshwater cutter. North sails, spinnaker, Corian countertops, bronze thru-hulls, screens, AP. Includes tri-axle galvanized trailer. A great pointing and sailing boat. Full equipment list and photos available by email. Bemidji, MN. $36,500.

Michael Kelsey
Mkelsey47@gmail.com
http://ablboats.com/93415

Seafarer 38 ketch
1979 Phil Rhodes design, two-headsail rig. Westerbeke 44

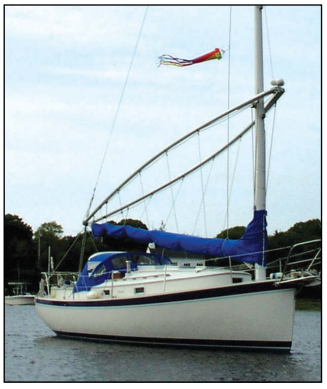
w/low hrs. Modest wear and tear. With a little TLC she can be put in tip-top shape. Water heater, stove, cabin heater, shower, holding tank, etc. Very seaworthy boat. My plan was to cruise the Eastern Seaboard and Caribbean but life intervened. Sails in good cond. Electronics in good cond. Needs batteries and hull cleaned/painted. Topsides in good cond. Located in NC. $20,000.

George Dixon
407-766-1086



Bristol 30
1972 sloop, Halsey Herreshoff design. Originally sold for $80,000. Unexcelled performance to windward. Outstanding heavy-weather performance. Extremely fast in either light or heavy weather. Repowered in '02 with Yanmar 3GM30F 3-cyl. with low hrs. Transmission, drive shaft, and new fuel tank all installed by ABYC-certified mechanics. ST 4000 wheel Autohelm. Custom-cut cockpit cushions. Beautiful mahogany interior. $14,500.

Ken Delhagen
804-938-6869
kdelhagen1@tampabay.rr.com



Nonsuch 26 Ultra
1987. Well maintained, comfortable. Engine and electronics upgrades: Westerbeke 21A w/545 hours, new S/S shaft, coupling, PSS shaft seal, engine mounts. Speedseal water-pump cover. Raymarine AP, '13. Garmin chart GPS, ICOM VHF w/DSC, B&G W/D w/many functions. CQR, Danforth anchors with rodes. Doyle main, cover. Dodger, Dinghy-Tow, shore-storage cover. Annapolis, MD. $36,000.

Phil Wagner
410-693-8132, 410-849-8421
philmw3@verizon.net

Columbia 29
1963, hull #24. Wisconsin fresh-water boat. Ongoing restoration. Interior needs a little work. A delight to sail. Edson wheel steering, Universal M3 20B diesel w/230 hrs, 3-blade feathering prop. Teak decking, bottom epoxy '00. Sail Care reconditioned jib, main '08. New Sunbrella covers. Strong Track for main. Complete list of equipment and upgrades available. $9,999.

Larry Blattner
262-707-3054
Larryblattner@icloud.com

Wanted

Island adventurers
A northern Lake Michigan lighthouse preservation group is seeking volunteer camper/keepers for the summer of 2015. Qualified boat operators also needed to co-captain one of our offshore water taxis. Visit website for general information.

Phil Von Voigtlander
philfvon@chartermi.net
www.southfox.org

Trailer for C&C 30
The editors of *Good Old Boat* (Karen and Jerry) are looking for a used over-the-road trailer for their C&C 30, *Mystic*. The trailer should be made of steel (so we can weld to it) and capable of carrying its own weight plus 10,000 lb.

Jerry Powlas
763-494-0314
jerry@goodoldboat.com

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Stars in the water

A clear, calm night at sea evokes awe

BY JERRY RICHTER

For as long as I can remember I have been obsessed by the sea. As I look back, I can see where my experiences on the sea and the lessons I learned there have played a central role in my life. One particular memory was triggered when I read an article in the *New Yorker* by Patricia Marx, in which she described her voyage from Philadelphia to Europe on a container ship, noting, "The seven seas are, I discovered, as interesting to look at as an unplugged lava lamp." I took exception to her observation because that has never been my experience; I have always found the visual contemplation of the sea to be both fascinating and fulfilling.

Those who go to sea in good old boats see a world that is invisible to passengers on cruise ships and large container vessels. The closest you can get to the water on a container or cruise ship is probably 100 feet or more. You're surrounded by the sounds of engines, ventilation fans, and other shipboard machinery that block out the sound of the sea. The ship's concessions to "comfort" (roll-and-pitch-dampening technology) further insulate you from the natural environment. From 100-plus feet above sea level, the sea itself can appear as an indistinguishable gray or blue mass without even distinct wave patterns. On our much smaller vessels we are closer to the water, perhaps as close as 2 or 3 feet, and the seven seas become much more interesting to observe and experience.

Because I've been close enough, I've seen greenish-white bioluminescence bright enough to read by, dolphins leaping around the bow wave, flying fish launching themselves and flying from wave to wave, and constantly, the water in motion. I find that photos I've taken of the sea are disappointingly static, because the sea's essence and beauty are, to me, in its movement and rhythm. But the most awesome thing I have seen, in the literal sense of awesome — as inspiring awe and wonder rather than the current vernacular sense of being merely pleasing or "cool" — occurred one night several years ago when I was one of a crew of three on a Tartan 37 returning to Cape Cod from Bermuda.

We were becalmed but content to drift. We weren't in a hurry and didn't want to run our engine and use up our fuel. The skies were absolutely clear, with no clouds whatsoever. Stars stretched from horizon to horizon. Ashore, we think of the stars as being overhead, when we can see them between

the glare of lights. But in the dark unpopulated places with wide horizons, such as deserts and seas, stars are all around.

The sea was calmer than I had ever seen it during my time at sea. No waves, no swells, a surface as still and smooth as a black mirror, disturbed by nothing, not even our own motion. When I came on deck for my watch at midnight, I saw a sky much like some I had seen before on clear nights at sea. What took my breath away was seeing the stars, including the Milky Way, perfectly reflected in the still, dark water. We were literally surrounded by a globe of stars above and below.

In a few hours the wind returned, our sails filled, and we began to move. The surface of the sea rippled, wave motion built up, and the illusion was gone. But for a while, there was a vision of the sea that was considerably more interesting, beautiful, and wondrous than even a plugged-in lava lamp.

Jerry Richter has been messing about in boats since about the age of 5 and started solo sailing at 12. He has owned and crewed on coastal and offshore sailboats for the past 20 years. He served as a celestial navigator on an LST for two trans-Pacific crossings during seven-and-a-half years of Navy sea duty. Jerry is now reliving some of his maritime experiences in writing.

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