GOOD OLD BOAT

THE SAILING MAGAZINE FOR THE *REST* OF US!

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Issue 68 September/October 2009

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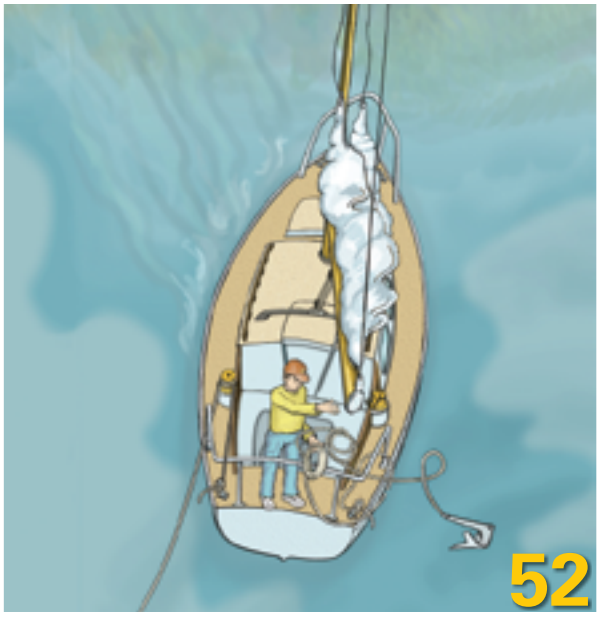
Speaking seriously



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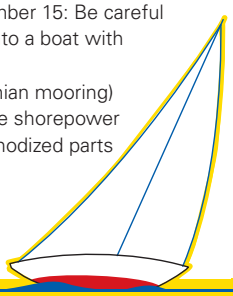

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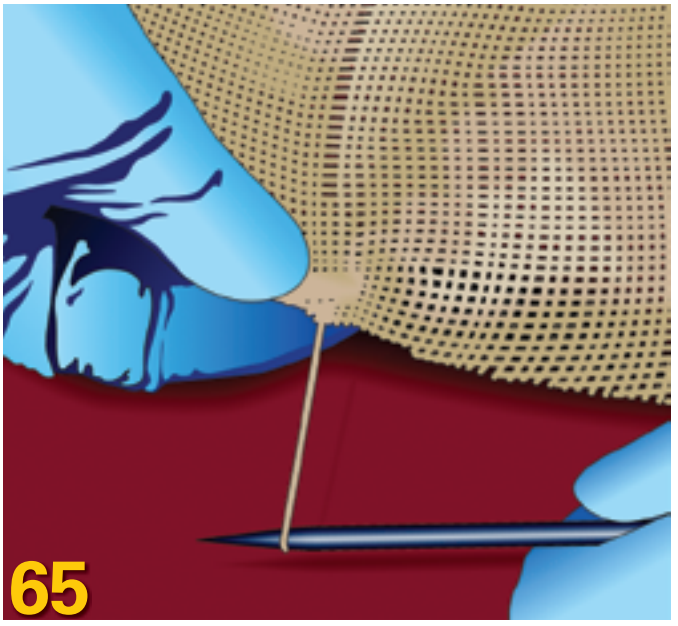
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Just for fun

What's more

About the cover . . .
Ariel is a 1979 Cape Dory 36 lovingly owned, upgraded, and shared by the families of a father-son duo, both of whom are named David VanDenburgh. The younger David shot this photo last summer near Holland, Michigan, as the family started a month-long summer cruise of their favorite Lake Michigan ports and anchorages.

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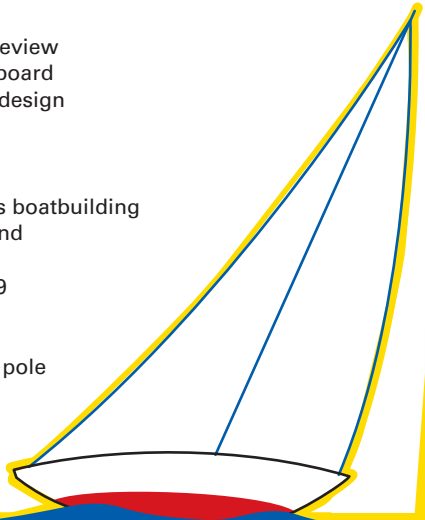

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According to Perry

A much admired designer steps aboard

by Karen Larson

Please join me in welcoming Robert Perry as a regular contributor to our pages. Bob is no stranger to *Good Old Boat*. He's been a regular reader, occasionally writing letters to the editor, and he was the author of a profile of Bill Garden published in September 2003. In his new role, he will continue a series of articles on sailboat design and construction begun a decade ago by Ted Brewer. Ted figures he's had his say on just about every aspect of sailboat design, although he'll continue to write his boat comparison pieces, such as the one on page 32.

Bob will bring his own perspective to the complicated subject of the design compromises that have affected and continue to affect this mesmerizing pastime we call sailing. His own passion for boats and the career that ensued began with a month-long voyage from Australia to North America with his family. He was 12 when his parents chose to relocate to Seattle. The next turning point was when he developed a talent and a passion for mechanical drawing. Then there was the chance to join the Corinthian Junior Yacht Club, the opportunity to crew on other sailors' boats, and the good fortune to get to know and race with Bill Garden.


JEFF HACK

There followed many wonderful opportunities to work with others who influenced his thinking, or at least kept him from starving: Jay Benford, Nathan Rothman, Dick Carter, Ted Brewer, Yves-Marie Tanton, Mark Lindsay, and Chuck Paine. Before long, Bob was influencing their thinking as well when he developed what is now known as the "performance cruising" movement that introduced the concept that offshore cruising yachts could benefit from being able to sail fast. There is much more about Bob Perry's life and times, past thinking, and current projects on his website <http://www.perryboat.com> and in his newest book, *Yacht Design According to Perry: My Boats and What Shaped Them*.

To his credit are many of the sailboats in these series: CT, Tayana, Valiant, Esprit, Nordic, Norseman, Lafitte, Cheoy Lee, Islander, Freeport, Baba, Tashiba, Passport, Tatoosh, Saga, and Mirage. He was among the first group of 15 leaders in our field recognized by the *Cruising World* Cruising Hall of Fame in 1989 and he has been garnering other awards throughout his career. The real trophies, however, are those out there sailing, whether voyaging offshore or coastal cruising . . . the good old boats of his design that are passionately adored by their owners.

Bob told an interviewer with the Sailing Anarchy website, "Sailing is not my hobby. It's not my passion. Yacht design is my life. I have other hobbies to keep me sane." <http://www.sailinganarchy.com/innerview/2002/robert_perry.htm>. I hear he's a fabulous musician and something of a wine snob. He sails a 26-footer when he can. I imagine he'll draw upon his other special interests as he strives to make yacht design understandable for "the rest of us."

Since he first put pen to paper under his own name to design the Hans Christian 54 in 1974, Bob Perry has been a real force in the world of good new boats. Now that so many of them have achieved oldness, we are delighted to welcome him aboard.

Washing ropes, deck traction,

New life for old rope

Very good article in the July 2009 issue. I'm an engineer (chemical) and long-time rock climber, so ropes and energy absorption have always fascinated me. For climbers, a rope's ability to absorb the energy of a fall is far more important than its failure strength.

1) It would have been good to test a commercial rope-treatment product in place of, or in addition to, fabric softener. These materials are created for washing climbing ropes and are considered part of normal maintenance for ice-climbing ropes: <http://www.mtntools.com/cat/techwear/Waterproofing/nikwaxropeproof.htm>.

However, climbing ropes are not double-braid; they have a tighter sheath and contain multiple, parallel, internal ropes. Yes, daisy chaining is standard practice — we mountaineers use 165-foot ropes and know the pain of a good tangle!

2) Most lines are sized for "hand" rather than strength.

3) Three-stranded ropes would be different. Lots of sailors wash anchor lines, though I doubt they use fabric softener. However, they do use bleach and weak acids (phosphoric and oxalic) to remove iron stains. In my basement testing, I have seen even weak acids cause significant weakening. Could be a good follow-up.

– Drew Frye, Deale, Md.

Washing rope and coastal cruising

I read Tim Nye's article on washing rope with interest since I've been washing our running rigging annually for many years. However, I've been using plain soap, not detergent, and lukewarm water, as recommended by Samson. In its literature, it specifically warns against using detergent, which contains quite harsh chemicals, and advises using only a mild soap. I've used Murphy Oil Soap with good results.

Soap gets the damaging grit and salt particles out from between the fibers better than a simple wash in plain water. Left in, these particles can gradually sever fibers as the rope is worked, weakening it. Soap also leaves a slight lubricating film on the fibers that helps preserve the strength of the rope by allowing the fibers to slip past each other and share the load more equally (as Tim described in his article). If Tim ever wants to do a follow-up, I'd be interested in seeing the results of washing with a pure soap. I suspect that's more benign and beneficial than washing with a detergent.

The purpose of washing rope (for me, at least) is primarily to keep it supple and lengthen its useful life. I believe the age limit on exposed rope is probably set by UV damage, if other aging factors are eliminated, but I'd be interested to hear what the rope makers say.

I also particularly liked Beth Leonard's article on minimum needs for coastal cruising. Right on for those like me who follow the KISS mantra and will probably never be heading offshore. Including the section on what one would need, as well as what to leave out, got it a 10 rating from me.

– Jim Eshelman, Newton, Mass.

Wash rope in mesh for no mess

As a mechanical engineer, I really appreciated Tim Nye's thorough exploration of this subject and miss the days of destructive testing in the lab. I have had good luck with restoring dirty line in the washing machine by putting the line in a mesh bag. This keeps the line in a coherent bundle and doesn't let it get wrapped around the agitator, greatly reducing instances of herniated core. I wash with regular detergent and fabric softener. As Tim mentions in his article, internal friction and UV damage are much more insidious than any damage done by washing. Keep in mind that you still won't be able to splice old double-braid.

– Chris Larsen, San Francisco, Calif.

Fresh traction on an old deck

I read with great interest your article on Tuff Coat (July 2009) since I will be doing this soon to my own boat during its restoration period. This product sounds very similar to Durabak, another product with suspended rubber particles from your September 2004 issue (yes, I have been a subscriber for that long). Among others, there is also Interdeck by Interlux that uses a polymer bead. Polyurethane paint and sand is also a common non-skid approach. I would appreciate some feedback on the pros and cons of these methods before I undertake this task. Can Chuck shed a little more light on his research before he chose Tuff Coat? Thanks for the best boating magazine ever.

– Scott Simpson, Richmond Hill, Ga.

Recommended by others

Over the years we have used several products as non-skid. We've used several paints with sand and other non-skid products, but when it came right down to it, when wet and the deck is pitching, there was very little non-skid. Our experience with the Tuff Coat has been just the opposite; no matter how wet or what footwear we had on, the decks were truly non-skid. When it came down to the final decision, we were convinced by feedback from others who had used the product for an extended period of time under cruising conditions. Tuff Coat was recommended by others who used it in the same way we planned to use it and they all reported good results. That, plus the ease of application, sold us. We found it to be much, much better than the Durabak we had used previously in that it cleaned easily, was very durable, and had no issues with discoloration.

– Chuck Baier, Sarasota, Fla.

Shocking!

"Shorepower Adapters 101" is a great article (March 2009); however, readers should also be aware that, unless a boat has onboard overcurrent protection, its wiring is not protected when the boat's electrical system is connected to a higher-current shorepower supply. This is most likely to occur when plugging a 15-amp adaptor into a 30-amp shorepower connection. As the marina's circuit breaker will not trip until it sees 30 amps or above, the boat's 15-amp wiring

and safe shorepower . . .

may become overloaded without the dock's circuit breaker tripping. The solution is to have an onboard 15-amp trip. This can be accomplished with a portable power strip with its own trip or an onboard 15-amp circuit breaker.

– Walt Elliott, Kingston, Wash.

Ensign inversion

Bill Bayley suggested (July 2009 Mail Buoy) that an "inverted national flag or ensign" is a generally accepted call for help. This, I fear is, a generally accepted myth. A great number of national flags are symmetrical; they have no "top" or "bottom." Any flag that is composed of vertical stripes will appear the same when inverted. Further, there are a number of asymmetrical flags that would not be seen as inverted by any but its own citizens.

An example of a symmetrical flag is the Japanese *Hi no maru* (Sun Circle) a red circle on a plain white background. Most United States citizens are unaware that the British Union Jack is not symmetrical and I have seen it "upside down" in many a college residence hall room. The South Korean flag is also asymmetrical but, without knowledge of I Ching hexagrams, few Americans would see it as being inverted. Granted, were I to see the U.S. ensign inverted I would put pedantry aside and offer assistance, but heaven help sailors from any of the following countries who think this might work.

Symmetrical national flags: Argentina, Austria, Bahamas, Belgium, Botswana, Costa Rica, Cuba, Denmark, Ireland, France, Finland, Guyana, Iceland, Italy, Jamaica, Japan (as already noted), Latvia, Malta, Micronesia, Nigeria, Palau, Qatar, Sweden, and several others.

– John R. Pavia, Trumansburg, N.Y.

Compass boxing

I have a great compass-boxing story (after reading your article in the July 2009 issue). I have been a Scout leader for years. Early on, I was invited to join the Scoutmaster Fundamental training team for my district. This team would conduct a course for Scoutmasters and assistants in the basics of the Boy Scout program. It included a day and a half of classroom work and an overnight encampment.

One of the topics covered was boards of review, in which the troop committee would interview youth as they advance, checking to make sure they are following the advancement guidelines and general Scout activities and progress. It was a very important point that these meetings with three to five adults should not appear to be threatening nor should they retest the Scout on his knowledge.

To teach by example, we did it both ways: bad then good. In my first training session, I was the Scout. After a couple of questions I was given a compass and told to box it. I didn't have a clue what they meant . . . for real! They obviously picked up on it and got on my case. Now, I knew compass work well, I just had never heard the term. Once I learned what it meant, I could easily rattle off N, NNE, NE, ENE, E . . .

We always had lots of fun with this one since most trainees did not know the term. The best response was invented by a resourceful leader who saw a small box and put the compass in it and laid it on the table. We all just cracked up.

– Jerry Artman, Newberry, Mich.

Emergency tiller

The caption on page 10 for the picture on page 11 of the July 2009 issue raises the question of how to rig an emergency tiller on a boat such as the Alberg 35. I have crewed five Hook Races in a boat with a similar configuration. Many boats, designed for inboard tiller steering and later refitted with a wheel, share this problem.

I propose to use a vertical post, perhaps a 2-inch x 2-inch metal tube. With luck, it might socket right down over the rudder head. If not, a local welder can easily make up a bottom fitting to mate with it. The post should be about 36 inches high with a hole drilled athwartships through the top to take a pipe or stout dowel crossbar for steering leverage.

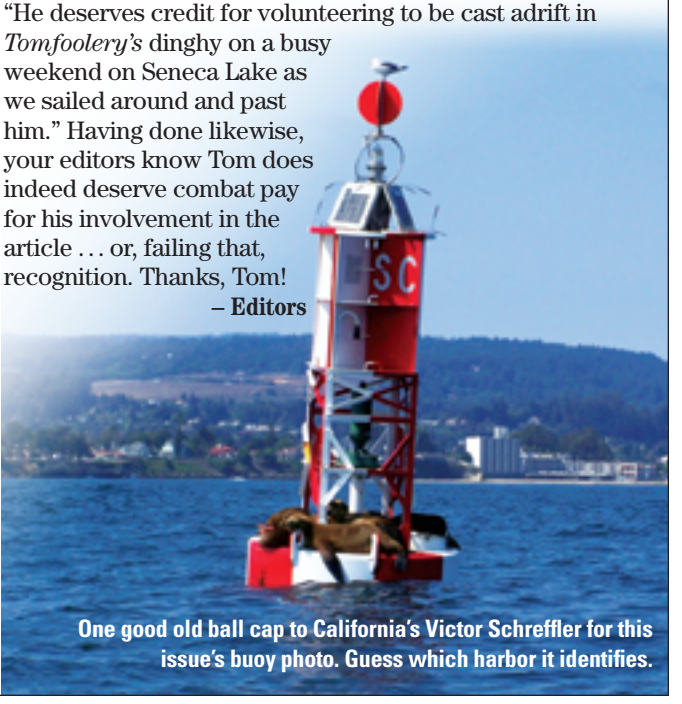
Heck, with a little more development we could put a universal or other flexible joint at the bottom end, replace the simple crossbar with some motorcycle handlebars, connect the cycle's cables to the boat's throttle and transmission, and put the Edson unit up on eBay.

– Tom Lattomus, Janesville, Wis.

Award for bravery

Tom Alley, owner of the Alberg 35 reviewed in our July 2009 issue, wrote to tell us that the photos of his boat were shot by Tom Curren, of Elkland, Pennsylvania: "He deserves credit for volunteering to be cast adrift in *Tomfoolery's* dinghy on a busy weekend on Seneca Lake as we sailed around and past him." Having done likewise, your editors know Tom does indeed deserve combat pay for his involvement in the article . . . or, failing that, recognition. Thanks, Tom!

– Editors



One good old ball cap to California's Victor Schreffler for this issue's buoy photo. Guess which harbor it identifies.

***Rubaiyat* is Larry Arvidson's Stone Horse knockabout, built by Edey & Duff and this issue's Mail Buoy pick of the litter from our online gallery. Send your sailboat photos to jstearns@goodoldboat.com and we'll post them on our website. If we publish yours here, we'll send you a good old T-shirt or ball cap.**

More tomfoolery

Another fabulous issue to start the summer off right (July 2009). I started by reading the Ericson 32-III article about *Raconteur*. Very nice. Then found my way to the article on the Alberg 35 named *Tomfoolery* and noticed that Gregg Nestor's boat is also named *Raconteur*. Then flipped to page 6 and, lo-and-behold, another *Tomfoolery*. How weird is all that? No I'm not senile yet, just wanted you to know that I really read everything and enjoy every minute of it.

– **Chris Ackerman,** Anacortes, Wash.

Fired up?

I was just reminded of a wake-up event we experienced on *Gilded Lily* that might be useful to others. As we sailed back toward the marina, I went below to prepare a hot drink, leaving Walt at the helm. I put the teakettle on the Origo alcohol stove (not pressurized) that sits just to the side of the companionway, which was open.

After a while, I discovered the kettle was not hot, but the stove was very, very hot. Because we were under sail, the wind was coming through the companionway and swirling the flame under the stovetop, superheating the metal top and the surrounding wooden counter edging. A very tense few minutes ensued as I tried to determine what of the boat, if anything, was burning and what to do with a hot stovetop while the search took place!

No lasting harm was done, but the lesson is: if the alcohol stove is near the companionway and the boat is under sail, closing the companionway opening is imperative.

The hot drinks were a bit delayed that day while the cook lowered her blood pressure a few notches.

– **Janet Perkins,** Stone Mountain, Ga.

Frightening, isn't it?

We have had our Origo non-pressurized alcohol stove go critical as well. Oddly enough, it always happens to us when

the fuel canister is very nearly empty. We suspect that when there is enough fuel in the canister it "cools" itself by evaporating more alcohol, which is burned up high in the burner. When the fuel is almost out, the flame can get down into the canister, which heats the metal. This evaporates more fuel as before, but the fire is now down in the can where it mainly heats the can (beneath the surface of the stovetop). This is just our wild guess, but we seem to be able to avoid this problem by keeping the canisters fairly full of fuel.

– Editors

Read slowly, please

I just finished the newest issue (July 2009). I went slowly — two days — in order not to appear to be a glutton. I will admit that when I opened the issue I was disappointed that it was so thin. But I was far from disappointed in the contents. You have done a really fine job that represents what I want to see. Beth's (I have enough of her books and articles that I am on a first-name basis with her) article on essentials was the highlight for me. Any woman who can live with one of us in such a confined space for so long must know something.

I recently washed all of my ropes — my wife got a new Maytag afterward. Fresh Traction: I am about to do a new non-skid for an old surface . . . timely. Ditch bag: last weekend, I tore mine apart (you wouldn't believe what was in there!). Precision drilling: I only wish I'd had it a few years back when I went from my original Lewmars to Andersen ST winches.

I'll be ordering the *Good Old Boat Galley Book* (on CD), but I still favor hard books! I've already gone to West Marine to check out the cost of the Six10 (by West System advertised on page 8) as I need some. And somehow I got into Coppercoat as a bottom paint while visiting so many of the sites you include, such as Sailrite.

– Jerry Adams, Houston, Texas

No apology necessary

Some months back, I asked to receive your sample issue. After looking through it, I saw nothing that I thought I was interested in. I wrote to you at that time and told you that the publication wasn't what I had thought it was going to be and there was no need to send further issues. Then a couple weeks later, a second sample showed up. I want to apologize, as I must have read each of your publications a couple times and find myself picking them up again and again. With that said, I placed a subscription today so I won't miss anything more.

Great magazine and keep up the good work. Gee, maybe I'll find my boat in there someday.

– Jim Ashworth, Dunellen. N.J.

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

Hinckley Bermuda 40

The pretty pricey princess of production fiberglass sailboats

by Paul Ring

Charisma, owned by John and Charlene Alexander, shows why the Bermuda 40 is considered by so many to be so beautiful. The proportions of the low-freeboard hull are close to perfect.

Say "B 40" in any yacht club bar and everyone, with perhaps the exception of an unrepentent powerboater, will know you're referring to the William Tripp-designed Hinckley Bermuda 40, which may be the best-known production sailboat ever made. It certainly has the distinction of having the longest production run for an auxiliary sailboat in U.S. boatbuilding history. Over more than three decades, from 1959 until 1992, the Hinckley Company built 203 Bermuda 40s.

In his book, *The World's Best Sailboats*, Ferenc Máté flatly states that the Bermuda 40 is "... without question the greatest fiberglass sailboat of all time." My own experience sailing Hinckleys — both the Bermuda 40 and the Sou'wester 42 — leads me to agree. A tour of the Henry R Hinckley & Company boatyard in Southwest Harbor, Maine, some years ago dispelled any lingering questions I might have had about Hinckley quality. Hinckley does its best, and its best is top-notch.

The review boat

John and Charlene Alexander own *Charisma*, Bermuda 40 hull #17, built in 1961. Although elderly, she's as beautiful now as she was when new. When they bought her in September 1993, however, *Charisma*'s faded blue hull wore the accumulated scrapes and scratches of 32 years, her interior was a little threadbare, and some of her systems were tired.

For 12 years, John daysailed and cruised along the northern Gulf Coast while gradually repairing and replacing the items in most urgent need. His ultimate goal was to restore *Charisma* cosmetically and mechanically to her original glory. After a false start with a local freelance worker, John looked into the restoration services provided by the Hinckley Company and sent *Charisma* home in 2005 for a complete exterior refinishing. She also received a new engine, electrical and electronic systems, and a water heater. More than a year later, *Charisma* was returned to her owners in pristine condition.

With advice and help from his friend and fellow B 40 owner, Will Blackburn, John continued where the Hinckley people left off. Items such as floorboards and ceiling strips that could be removed he took home to his garage for refinishing. The remainder of the interior he refinished in place,

completely and beautifully, then had all the cushions re-covered in a beautiful deep red fabric. The outcome is that John and Charlene now own a brand-new 1961 Hinckley Bermuda 40.

> **"Over the years, Hinckley offered three sequential versions of the B 40, although the hull shape never changed."**

Design

The Bermuda 40 is nearly a clone of Bill Tripp's earlier Block Island 40, built by American Marine in Rhode Island during the 1950s and '60s. One subtle difference is that the BI 40 has a stepped coachroof, whereas the B 40's is flat. Another is in the transoms: the BI 40's transom slopes forward toward the waterline in the style of the era while the B 40's is quite close to vertical.

The B 40's shoal draft (4 feet 1 inch with the board up) contributes greatly to its appeal in many areas of the country. However, shoal draft means the designer must give up the ultimate stability obtained from hanging lead on the end of a deep keel. Instead, he must gain righting moment from form stability, which derives from the shape and dimensions of the hull, an essential part of which is greater beam. Although the B 40's 11-foot 9-inch beam is not great by today's standards, it is substantial and keeps her on her feet. The design is influenced by the Cruising Club of America (CCA) Rule that favored relatively short waterlines and long overhangs. A sweeping sheerline connects the bow to Bill Tripp's trademark counter transom, which is radiused and nearly vertical.

The full keel, with its slightly cutaway forefoot, houses the centerboard entirely and keeps it out of the accommodation space belowdecks. The rudder is attached to the end of the keel and is protected by it.

With its short waterline, broad bilges, shallow draft, and centerboard, the B 40 does not go to weather with more modern designs, nor will it tack as nimbly. Crack off the wind a bit, however, and performance greatly improves. The full keel and centerboard make it easy to balance on reaches — a boon for the helmsman or autopilot.

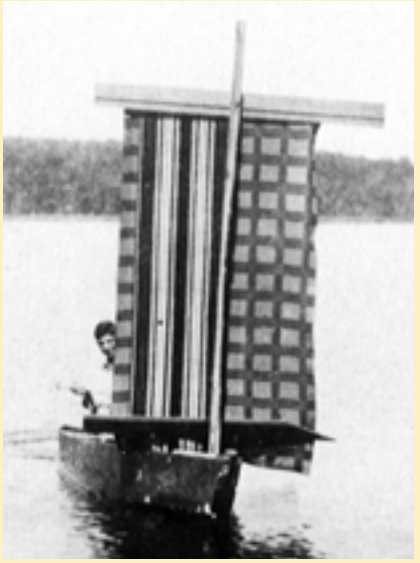
Over the years, Hinckley offered three sequential versions of the B 40, although the hull shape never changed.

The foredeck on the Bermuda 40 benefits from being full forward. This allows plenty of room for anchoring and docking essentials, notably the classic Hinckley cast stemhead fitting, top left. Bill Tripp's characteristic, near-vertical transom compliments the hull's delicate lines, bottom left. Note also the abundant brightwork, another mark of a Hinckley, for which the preferred finish is varnish, not oil. The wide sidedecks and low coachroof don't just look good, they are also practical, right.

The galley is aft, and not particularly large for a 40-footer. Shortcomings include lack of counter space for food preparation and the icebox lid, which must do double duty as the chart table, at left. Pilot berths port and starboard make good sea berths or kids' berths. If there's just a couple aboard, they provide good stowage, at right.

A Hinckley history

In the summer of 1927, having just graduated from Cornell with a degree in aeronautical engineering, Henry R. Hinckley was given the task of clearing away an old family-owned boatyard located next to the family's summer place on Mount Desert Island, Maine. Instead of tearing it down, however, he built it up and began building boats. It was to become one of the most successful boatbuilding companies in the country.



Henry Hinckley built his first boat as a teenager while summering in Maine with his parents.

The first boat out of the yard, a 26-foot lobsterboat-type yacht, was launched in 1934. Nevertheless, sailboats were to become the company's main focus and soon therafter Henry designed and built the Sou'wester 34 and the 30-foot Sou'wester Jr. In World War II, the company focused on war production and built more than 600 wooden mine yawls, coastal pickets, tugs, and various assault boats for the U.S. Navy. This helped the yard grow large enough, both in terms of the size and skill of its workforce and in equipment and machinery, that it became largely self-sufficient, making its own castings, Monel tanks, and other fittings on site.

At war's end, the yard returned to building sailing yachts, including the pre-war Sou'westers as well as designs by Sparkman & Stephens, John Alden, and Aage Nielson. During this time, Henry Hinckley also began experimenting with fiberglass, but it was 10 years before he finally tested the medium to his satisfaction and built his first fiberglass auxiliary.

In 1958, the company built a third Sou'wester, the 38-foot wooden Sou'wester Sr. yawl. Henry's plan was to sail her over the summer to test the design and, if it proved satisfactory, use the hull to make a mold for a fiberglass version. However, before

Henry Hinckley took his good ol' sweet time making the transition from wood to fiberglass but finally made the plunge with the Hinckley Bermuda 40, introduced in 1959.

he could accomplish this plan, an eight-man syndicate petitioned him to build for each of them a 40-foot auxiliary sailboat to a design by Bill Tripp. This new design was a slight modification of Bill Tripp's Block Island 40. Although it was difficult for Henry to abandon the long-planned Sou'wester Sr., a guaranteed sale of eight boats made the tooling investment a much more sensible idea, and so the Bermuda 40 was born.

The original is called the Bermuda 40 Custom. It was followed by the Mark II and Mark III versions. The Custom and Mark II versions were built with a yawl rig only; a sloop rig was added as an option with the Mark III.

The principal differences among the three versions were in the rig. In the late 1960s, the height of the mainmast was increased a bit over 2 feet, adding 16 square feet to the sail area. Under the water, the bronze centerboard was given a more sophisticated airfoil shape. Boats with these changes were designated as the Mark II.

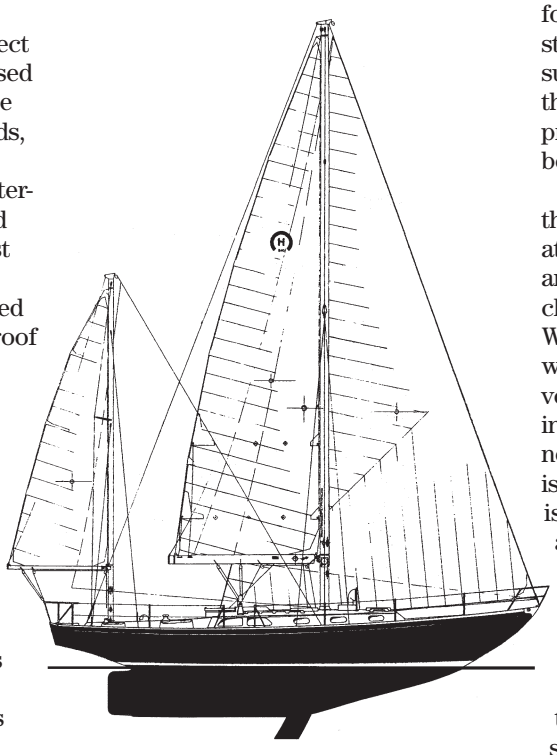
In 1972, Hinckley introduced the Mark III, in which the mainmast was moved aft by 2 feet and its height was increased by another 4 feet 3 inches. The mainsail was given a higher aspect ratio and the overall sail area increased by 35 square feet. To balance this, the ballast was increased by 1,000 pounds, immersing the hull an additional 2 inches and adding 1 foot to the waterline. These changes had the intended result of making the Mark III the best performer of the three versions.

Wide sidedecks, a large uncluttered foredeck, and a long and low coachroof make movement on deck easy and visibility from the helm excellent. The cockpit seats are long and wide enough for sleeping under the stars; however, the rather straight-backed coamings can become uncomfortable. Openings in the coaming boards provide stowage for winch handles and other small items and two good-sized cockpit lockers accommodate bulkier items, such as fenders and docklines.

To invoke Ferenc Máté again, this time from Volume II of *The World's Best Sailboats*, he describes the Bill Tripp-designed Bermuda 40 as "... arguably one of the most aesthetically balanced sailboats ever drawn ..." Yacht surveyor Jack Horner, writing for *BoatU.S. Magazine*, says of the Bermuda 40, "I don't recall a time when my sense of style, balance, and proper proportion of sailing yachts has not been influenced by the work of the late Bill Tripp. The Bermuda 40 is the quintessential example of Tripp's masterful eye for near-perfect balance."

Construction

Sailing with a friend on a return from the Abacos to Pensacola, and later during a two-week delivery, I had the opportunity to examine Hinckley quality carefully. I have concluded that one might have chosen to do one thing or another somewhat differently but it would be difficult to do anything better. Construction of the B 40 in fact did evolve over the years as the company found different and better ways to do things, such as switching from building the decks of solid fiberglass to coring them, first with balsa and finally with PVC foam in the last few boats. But certain things never changed, such as the solid fiberglass hull and the well-engineered hull-to-deck joint with its 6-inch overlap.



Hinckley makes an unusually large percentage of parts in its own shops, including such custom metal castings as the stemhead fitting. Ballast is lead, fitted externally, and the centerboard is bronze, operated by a worm gear because a wire pendant would be more prone to breaking. The attention paid to detail during the construction process is the reason Hinckley sailboats (and their value) have held up so well.

Accommodations

Stepping through the companionway into the interior of this solidly built yacht feels like stepping back in time, for the Bermuda 40's Herreshoff-style finish in painted wood panels surrounded by varnished trim retains the look and feel of her wooden predecessors. There is no fiberglass to be seen.

Upon entering the saloon, you find the galley and nav station laid out athwartships, with the propane stove and oven to port. To starboard, the chart table covers a very large icebox. When he showed me the boat, John was in the process of reducing the volume of *Charisma*'s icebox by adding insulation inside it and installing a new box and refrigeration. The galley is adequate, although counter space is limited. Employing the icebox top as a chart table is an inconvenient compromise, as there is the potential for conflict between the needs of the cook and the navigator.

Immediately forward of the galley and directly opposite each other are two settees that slide out to convert sitting space into comfortable berths. Stepped above the settees are pilot berths. Not often seen in yachts these days, pilot berths make excellent sea berths. They also make good bunks for a couple of children, leaving the settees uncluttered for lounging and sitting at the table for meals.

The drop-leaf dining table is fixed to a pedestal between the settees. When the starboard leaf is in use, it restricts access fore and aft. When both its leaves are open, the table fully occupies the space between the settees.

continued on page 75

Hinckley Bermuda 40

	Custom	Mark II	Mark III
LOA:	40' 9"	40' 9"	40' 9"
LWL:	27' 10"	27' 10"	28' 10"
Beam:	11' 9"	11' 9"	11' 9"
Draft (board up):	4' 1"	4' 1"	4' 3"
Draft (board down):	8' 7"	8' 7"	8' 9"
Sail area:	725 sq ft	741 sq ft	776 sq ft
Displacement:	19,000 lb	19,500 lb	20,000 lb
Ballast:	5,000 lb	5,500 lb	6,500 lb
Disp./LWL ratio:	393.4	403.7	372.5
SA/disp. ratio:	16.29	16.36	16.85
Water:	110 gal	110 gal	110 gal
Fuel:	48 gal	48 gal	48 gal
Mast above DWL:	47' 0"	49' 3"	53' 6"

Warming up to winter cruising

A wood-burning cabin heater beats the chill

by Phillip Reid

We sure do love a warm fire in the cabin when it gets chilly in the evening and early morning, so when we take our good old Pearson 28 on late fall, winter, and early spring overnights, our wood-burning heater adds a lot to the experience. After a few years with it, I can certainly say it meets our needs. Whether it will meet yours depends on what you need from a cabin heater and the space you have for a heater, flue, and fuel.

When you look into shorepower-independent, permanently-installed cabin heaters, the wood-burning cabin heater can be toward the cheaper end of the price spectrum and, unlike liquid-fuel heaters, it doesn't require plumbing to a fuel supply. But, on a small boat, it has some drawbacks and limitations that should be taken into account by anyone thinking of adding cabin heat.

The flue is bigger than those for liquid- or gas-fueled heaters, which means you might have to get creative when routing it and, as with any combustion heater, installation locations are strictly limited by ventilation needs, clearances from flammable surfaces, and non-interference with normal vessel operation.

The fuel is bulky, and you can get a lot more calories for the bulk from propane, diesel, or kerosene. BTU heat-output ratings for wood-burners are about half those of similarly sized liquid-fuel heaters. An efficient wood-burning heater burns wood fairly quickly. If you were going to be doing lots of cruising in Alaska on a small boat, the stowage requirements of wood fuel might well be a deal-breaker.

We sail in coastal North Carolina, which means we sail all year long. Our winters are mild and, for much of the year, it's quite comfortable during the day but chilly at night when the sun goes down. Our need for a cabin heater, therefore, falls under the manufacturer's definition of "casual use." Typically, we'll fire it up after we drop the hook and leave it on until bedtime. (I would never go to sleep or sail with it lit.) While it's not easy to stow much wood on a small boat, it doesn't take much to heat it up; our heater gets the cabin toasty in just a few minutes. If the outside temperature is in the low 40s, it'll be in the high 60s below. We never sail when the temperature falls much lower than that. I can't speak to the efficacy of the wood-burner in cold locales.

As well as providing welcome warmth, a cabin heater makes a charming addition to a sailboat's saloon, facing page. It gets air from the deck vent and its smoke and fumes exit through the Charlie Noble, here under its canvas cover, above. Connecting the flue from the stove to the chimney produced some interesting angles, below right.

Wood-burning cabin heaters are analogous to wood-burning fireplaces in houses; there are much more efficient and easy ways of heating. We have fireplaces because we just enjoy them.

Rite of combustion

I've got "boat fires" down to a system and, following the manufacturer's directions exactly and using the right combination of fuel, I'm able to make a one-start fire every time.

Safety first – I go on deck to make sure there's nothing touching the Charlie Noble — the chimney — and that I remembered to take its cover off. Then I check below to make sure nothing's touching the flue and that the baffle on the deck vent near the heater is open. Then I open the damper, build the fire, open the firebox grate door, and sit back. (Once things have heated up, I need a mitt to open the door to add fuel or adjust the fire-door opening or damper.)

Fuel – The firebox is small, so I can't just cram it full of big wood. I've found that 3- to 4-inch seasoned oak, cut with a chain saw into chunks 4 to 6 inches long, works great. I keep a crate of it in my shed. For tinder, I use scrap paper, twigs, and dry pine cones. For kindling, I add small scraps of untreated wood from the shop. The tinder goes in first, the kindling on top of that, and then just one or two chunks of oak. I don't want to pack it in, I want to keep it loose. Once the fire's going, I add another chunk or two. In one evening, I may go through six or seven chunks of oak. For a weekend, I bring aboard a plastic container about 24 x 24 inches full of heater fuel and stow it on the cabin sole in the forepeak, under the V-berth insert.

Fuel safety – I do not use chemically treated wood, wood covered with paint or glues (this includes plywood), or glossy paper. By using hardwood as my main fuel, I avoid excess resin buildup in the heater and flue. Well-dried wood makes for easier starts, with less popping and much less smoke.

A safe installation

It should go without saying that you must adhere strictly to the manufacturer's instructions for installing something that involves making fire on your boat. Whoever installed the heater on my boat, however, apparently felt differently, and left me with some head-scratching and work to do.

If you're considering a wood-burning heater, or a boat that already has one, the first thing to do is to get your hands on a copy of the owner's manual. Make sure that the heater and its flue have been, or can be, installed according to the directions. The heater must be placed on a bulkhead a certain distance from anything flammable on the sides and low enough that, when combined with the height of the Charlie

Note on charcoal

By preference, I don't burn charcoal in my heater. Charcoal has more calories than wood, but commercial charcoal also has large-print warnings on the bag about not burning it indoors, and my cabin is definitely indoors. Almost all readily available commercial charcoals contain petrochemicals that I want to avoid burning. You can get all-natural charcoal and perhaps in some places you can get coal; either of these might be an attractive alternative fuel if you can get it.

In the head, a heat shield around the flue saves scalps.

Noble, there will be adequate draft in the flue (determined by the length of the flue and how vertical it is). If the flue is too short, the heater will never work properly.

There must be a heat shield behind the flue where it passes close to the bulkhead and anywhere it's exposed. These things get HOT — I tried wrapping a section of mine in Tetraglas exhaust-elbow wrap, which is rated at 1,000°, and the stuff started turning brown, smoking, and giving off acrid fumes.

The flue cannot have more than a 45-degree bend in it or it won't draw properly. This is where the previous owner had gone wrong — the flue had a 90-degree bend in it when I bought the boat.

There must be a source of fresh air within a specified distance of the heater and it needs to admit a certain amount of air. This could be a portlight, mushroom or Dorade vent, forced-air duct, or anything else that meets the air-volume delivery requirement. In my case, it was a Nicro passive vent in the coachroof, which also serves to put some light on the dining table if the sun's up.

Bulkhead surgery

I can see why the previous owner installed the flue with a 90-degree bend in it; it was easy. Fixing it required some thinking, drawing, and careful measuring. I then had to perform surgery on the bulkhead. Why didn't I just run it straight up the bulkhead and through the coachroof? There was deck hardware in the way. So it goes when adding big gear to small boats.

The round, stainless-steel louvered vent outboard of the flue in my setup shows where the flue ran through the bulkhead when I bought the boat. In order to get it to run at no more than a 45-degree angle, I had to run it through at a much lower point and cut an oblong hole to get enough clearance around the flue pipe. These pipes have universal elbow joints in them. That allowed me to offset the run of the flue from the heater somewhat. This was important in getting the flue where it needed to be without moving the heater, which could only go exactly where it was.

The heat shield directly over the stove was simple and cheap to make. It's a tile backer board covered in aluminum flashing — inexpensive items that are available at the home-improvement or hardware store. Copper flashing might look really cool on a classic boat. I used pieces of plastic tubing to space the back of the shield off the bulkhead and provide the air space stipulated by the owner's manual (these don't get hot, but for looks you could use scraps of copper tubing with the edges dulled).

Be careful when working with flashing; the edges are as sharp as blades. When you're done cutting it, fold up some medium-grit sandpaper into a thick piece and run it over the edges until they're dull. I folded the edges of the flashing over the backer board and put a crease along the edge by lightly hammering it.

A scorcher in the head

The flue ran into the head compartment and looked well positioned to sear the scalp of anyone standing before the throne, so I made a heat shield for it out of a scrap of stainless-steel sheet metal that once was part of a refrigerator. It cleaned up nicely with polishing rouge. I cut it with tin snips and was able to bend it around a log. (If you use a power tool on metal, be sure to wear eye protection.) To attach it to the flue, I cut some strips and used a hammer and vise to bend them into brackets. I attached the brackets to the flue with stainless-steel hose clamps and fastened the shield to the brackets with sheet-metal screws. The system holds the shield off the flue with enough air space that, even with the heater going full blast, we can touch the shield without burning ourselves. It looks pretty decent too.

Where the flue passed through the deck, I originally had a plastic trim ring around the hole. Later I had a stinky-goo trim ring around the hole. You'll want a metal one. I made one in two parts out of aluminum flashing. The first part is just a ring, made of a strip, that covers the (epoxied) deck core with just spring tension. I cut the flat trim piece against the overhead so its inside cutout is slightly smaller than the hole, preventing the upper trim ring from falling out. These trim rings would also look nice in copper.

The Charlie Noble should have a line guard over it to keep it from snagging sheets.

Metal trim rings shield the deck from the hot flue.

Sharing the heat

As a bonus, the flue in the head compartment makes that area very toasty. We open the head door to share that heat with the rest of the boat.

If you install a bulkhead fan near the heater, you can point it upward to circulate the hot air that otherwise collects at the overhead. (The effect is dramatic; someone standing in the galley will have a hot face while someone sitting on the settee won't feel it.) Caframo makes clever fans, called Ecofans, that are activated solely by heat and can be mounted on a heater to circulate air.

Give the heater air

We always use an upper dropboard with ventilation slits or full-length screen doors in the companionway. Fires use lots of air and, if they don't have enough to burn and draw the exhaust out, you'll wind up with smoke and carbon monoxide in the cabin. We do not get smoke from our heater in the cabin. It burns so efficiently there's very little smoke from the Charlie Noble. You cannot have a wood fire in winds above about 20 knots without getting downdrafts, however. You'll find that in any owner's manual.

To turn the fire off, we close the fire-grate door and damper. With no air, the fire dies quickly. The ash drawer underneath is convenient; the heater contains its ashes when under way so they don't spill onto the upholstery.

You can get a nicely made wood-burning cabin heater for less than $300 new, and the stainless-steel flue piping and Charlie Noble won't break the bank either. You should be able to fashion the rest from humble materials. It might be worth the thought, work, and money. On a chilly evening, it sure is nice to sit in your cozy cabin by a real wood fire with a tot of good Scotch at your elbow.

Phillip Reid and his wife, Andie, sailed their 1977 Pearson 28, Miss Bohicket, *out of Wilmington, North Carolina, for several years before donating her to the Chapman School of Seamanship last February. When not sailing, writing, or boat-grubbing, Phillip teaches a college history course.*

"On a chilly evening, it sure is nice to sit in your cozy cabin by a real wood fire."

The firebox isn't very large but it puts out a lot of heat, top. Ashes collect in a convenient drawer, above.

Resources

Dickinson Marine
Heater, flues, accessories; widely-available, reasonable cost
<http://www.dickinsonmarine.com>

Navigator Stove Works
Traditional cast-iron boat stoves
<http://www.marinestove.com>

Paul E. Luke
Elegant (and expensive) soapstone and tile fireplaces
<http://www.peluke.com>

SIG Marine
Heaters and accessories
<http://www.sigmarine.com>

Caframo
Ecofans, heat-powered cabin fans
<http://www.caframo.com/hearth>

Buffing and polishing

Making good old hardware gleam like new

by Derk Akerson

Bringing the luster back to old metal boat parts is a lot like doing brightwork. It can be very tedious and time-consuming. The end result, though, can be very satisfying.

Many older styles of boat hardware are no longer available, which leaves you with a choice: buy all new hardware or recondition the old. As long as the old hardware is serviceable, you can make your boat look as good as or better than new (and original). It's all in the details, and nothing looks better than polished metal fittings.

To start, you'll have to remove the hardware, at which time I think you'll learn a lot about its true condition and that of the fasteners. If the piece was not attached or bedded properly, you may have some additional work to do to the structure it was attached to.

If you're dealing with aluminum fittings, they were likely attached with stainless-steel bolts or screws. Stainless steel and aluminum do not like each other. This will become evident as you remove the fittings. In the case of cleats, which should be through-bolted, you may not even require help on one side or the other. On most boats of any age, the stainless-steel bolts are probably held tight in the fittings by corrosion. Removing the fittings can then be a one-person job.

Separate with heat

Once you have removed the piece and it's at the workbench, you can take out the bolts. The easiest way to do this is with heat. I use a propane torch with a trigger switch and attach it to one of the fat bottles normally used for stoves and barbecues, which makes it stable enough to stand upright when not in use.

> "Stainless steel and aluminum do not like each other. This will become evident as you remove the fittings."

Aluminum and stainless steel, being very different materials, conduct heat at different rates. Aluminum will heat up much faster than the stainless steel. While you do not want to apply any more heat than necessary, the piece will be way too hot to touch with your bare hands and, to handle it safely, you'll need some heavy-duty gloves.

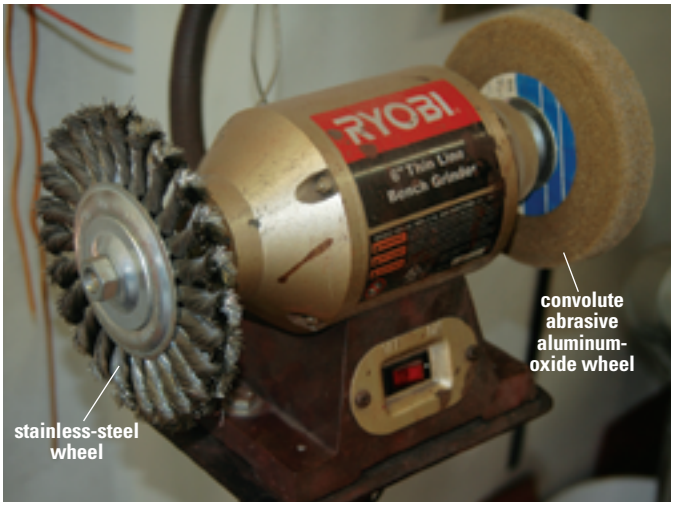
Apply heat slowly to the area where the bolt passes through. As it heats up, the aluminum will expand, freeing the bolt. You will have to work up to the proper amount of heat gradually. Take your time, and be careful. When you are done, set the piece aside and let it cool down slowly. Do not quench it or cool it rapidly.

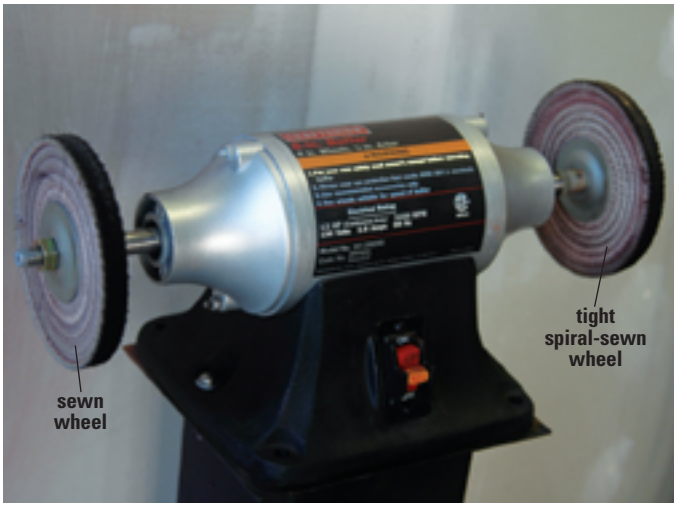
You can also use heat to free up frozen turnbuckles, but you must always be very aware of the direction of your flame. Even when the materials are the same, heat applied to the outer part will expand it faster than the piece inside.

Clean before polishing

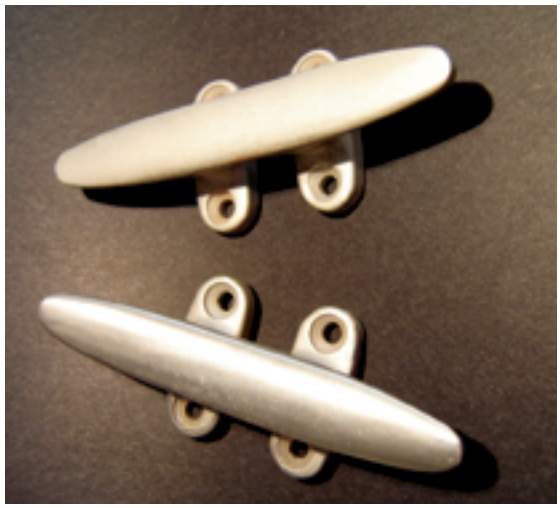
Now it's time to clean your piece. The initial cleaning can be done different ways depending on the amount of corrosion present. This also is the time to remove any paint or bedding compound. If you have access to a bead-blasting cabinet, that is the easiest way to start. If not, take care in the process. Patience will pay off here!

Before cleaning aluminum, read the back of your sandpaper, wet-or-dry





A bench grinder serves for wire brushing and buffing, left. A buffing motor's longer shafts allow better access for manipulating parts, right.



Aluminum deck cleats clean up nicely with a little judicious sanding, brushing and buffing, left and right. Stainless-steel gudgeons, below, also respond to TLC and will enhance the boat's appearance when re-installed.

paper, or emery cloth or rolls, to make sure you use only aluminum-oxide abrasives. Anything else will introduce contamination, which will cause corrosion. Any wire brushes you use should be stainless steel. That may sound contradictory to previous information, but stainless steel will not introduce contamination in the way a steel brush would. Do not use a brush that has had any chemicals on it.

I have small-diameter brushes of different sizes for cleaning the holes in the hardware and I also find abrasive rolls handy for this part. A small die-grinder, such as a Dremel tool, is useful here and also when polishing the piece. Many useful attachments are available to fit these tools. These will be helpful in various stages in the process.

Smooth and polish

Once the part is cleaned, it's time to smooth it and polish it. Eastwood Supply makes very good videos on the subject available online, in both VHS and DVD format. While they are directed at the automotive enthusiast, the information and techniques they provide apply to any metal. You can also request a printed catalog.

The one exception I take to the methods shown is the use of gloves. In my mind, gloves and rotating machinery do not go together. I have been a sheet-metal worker for many years and have seen a fair number of accidents involving gloves. At this time, I still have a full set of fingers. If the piece gets hot, you are probably working it too hard. Either way, you can cool

it with patience or a cooling bucket. Buffing doesn't produce anything like the heat generated by the torch, and removing it by quenching will not alter the molecular structure of the metal. If you are doing multiple pieces or parts, you can set the warm one down and work another piece for awhile. If you do quench a piece, dry it off thoroughly before applying it to the wheel again.

You can do your buffing and polishing with a minimum of equipment. Ideally, the more you invest, the easier the job will be. However, I am going to assume you do not want to spend a lot. If you have a 6-inch bench grinder, you are already started. You'll just need to get wheels and buffing compound.

The best setup is a buffing motor. The only real difference between that and a standard bench grinder is that the shafts are longer on the buffing motor, allowing better access and more room for your piece. Both machines and the wheels and compounds can be found at any number of hardware and tool stores, even the big chain stores.

Resources

Most metal-restoration supplies and tools can be obtained from hardware stores big and small. Here are some specialist suppliers on the Internet.

Eastwood Supply
Tools, supplies, machines, and videos
<http://www.eastwoodco.com>

Harbor Freight Tools
Tools, supplies, and machines
<http://www.harborfreight.com>

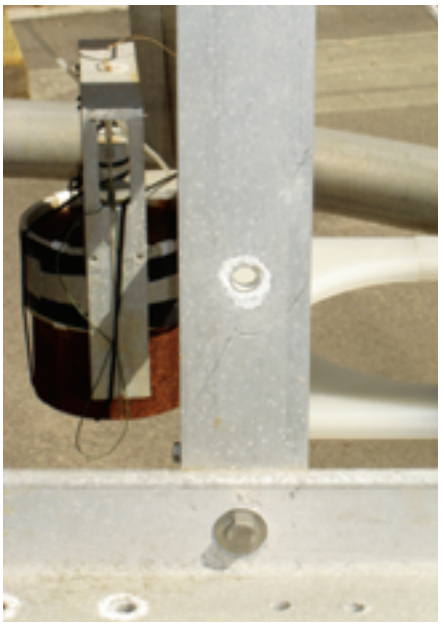
McMaster-Carr
A wealth of materials, tools, and supplies
<http://www.mcmaster.com>

Tef-Gel
<http://www.tefgel.com>

Safety around buffers

Buffing wheels are not guarded because guards on these wheels would create their own hazards and restrictions. With this in mind, you must be careful when working with them. Sometimes the wheel will grab the piece right out of your hand and throw it. Make sure you know what's behind the wheels. While more powerful buffing motors are available, I recommend a 6-inch motor. It's not too powerful to handle and the smaller motor and wheels will still do the job.

Buffing compounds are available for different metals and purposes. In fact, they are also available for plastics. See the sidebar (Buffing compounds, page 20) for some of the different compounds. In any case, the labels



Aluminum corrodes when it's in direct contact with stainless-steel fasteners.

> **"Working the piece smoother and smoother with successively finer grades of sandpaper will save time in the polishing process."**

will usually tell you what to use for a specific project. I keep several different compounds on hand as I am likely to be working on different metals at any given time. I also have different wheels for each type of metal, which is the best way to avoid cross-contamination.

Prior to beginning the actual buffing and polishing, remove any rough spots or scratches and gouges. Working the piece smoother and smoother with successively finer grades of sandpaper will save time in the polishing process. If you need to use a file on your piece, be sure it's clean before using it. A file can drive contamination deeper into the part, which will make it harder to remove. Always have a file card handy.

Final polish

Once you have done the handwork, it's time to start the actual buffing and polishing. Depending on your piece, you may be able to do all the work on the wheels, or you may have to use a small die-grinder for the smaller areas.

This part of the process is somewhat dirty. You will inevitably get a certain amount of the compound on your hands and clothes. Wear a clear face shield to protect your eyes. It will keep your face cleaner at the same time.

You'll need at least two different buffing wheels, a spiral-sewn wheel and a loose-sewn cotton wheel. The spiral-sewn wheel will do most of the initial work, and the loose-sewn wheel will do the finishing of the piece. In addition to these two wheels, you might want a sisal wheel. It's more aggressive, has a better cutting action, and can be used before polishing to remove quite severe marks and gouges from a piece that has excessive damage.

Re-installing the parts

When fitting the hardware back on your boat, take precautions. First, you should provide new backing plates if there were none before. A simple bolt, washer, and nut will not suffice. At the very least, use fender washers to help spread the load and provide a more secure fitting. Backing plates will provide even more security. They are not all that hard to fabricate and certainly look better than a mess of washers on the overhead.

Another thing to consider is corrosion, especially if you have aluminum hardware that will be attached with stainless-steel fasteners. You need to keep the stainless steel and aluminum from causing each other problems. Tef-Gel is a superior product that, when applied to the fasteners, prevents corrosion, galling, and seizing. Using it will also make it a lot easier to disassemble the parts in the future. Stainless-steel threads tend to gall, and preventing that in itself is worth the cost of the Tef-Gel. Even if you have bronze or other fittings, applying this product to your fasteners is a wise precaution.

While I likened bringing the shine back to hardware to doing brightwork, it's not as daunting as it may seem at first. At least fittings can be restored individually. By reconditioning your deck hardware, you can keep your good old boat original and rest with the peace of mind brought by knowing a job's well done.

Derk Akerson was raised on and about boats. He and his wife, Terri, sail a Coronado 23 off the coast of California, but they're on the lookout for something bigger for retirement voyages.

Buffing compounds

Tripoli – a medium abrasive. Use as initial compound for copper, brass, bronze, aluminum, and zinc; for basic cleanup with a medium spiral-sewn wheel or a tight spiral-sewn wheel.

Dark gray or black – aggressive heavy cutting compound for initial work. Use with a sisal wheel before Tripoli.

Gray (medium) – for stainless steels. Use with a spiral-sewn wheel, follow with a loose-sewn wheel.

Dark brown – another aggressive cutting compound.

White chrome rouge – for stainless steels. Use after Tripoli with a ⅜-inch spiral-sewn wheel.

Jeweler's rouge – final step on different metals, provides a high gloss/mirror finish. Also good for soft and precious metals. On stainless steels, use after chrome rouge with a loose buff.

Note: *A great deal of information is available on the Internet at websites dedicated to the specific topic of buffing and polishing metals.*

small dinghy big project

Renovating a tender tests a range of skills

by Darren Bos

Picture a boat with cracked and crazed gelcoat, delamination, blisters, composite failures, peeling paint, and holes. If you had no experience with boat repairs, any one of these would be enough to keep you lying awake in bed at night. And although most books on maintenance and repair assure us that fixing such problems is not rocket science, it requires a certain boldness to take a grinder to your boat and hope it will all turn out in the end. Reviving an old dinghy is a less intimidating way to get your feet wet, and it can present the full range of problems you're likely to find on the mother ship but on a more approachable scale.

Like so many others, this story starts on a dark and rainy night. Carrying my 6-month-old son tucked in his Snugli, I investigated a used 7-foot dinghy at a modest price.

It was dark out and the flashlight was rather dim. It was only in the light of the next morning that I realized my new acquisition might require slightly more attention than I had originally anticipated. Most notable was the considerable heft it took to remove it from the roof rack (the seller had helped me load it up the night before). I briefly propped up my spirits with the hope that some of that 82-pound load was just water in the buoyancy compartments, but the lack of sloshing as I moved the dinghy around did not bode well.

Assessing the damage

The dinghy had sat unused outdoors for a long time. Power washing removed years of grime and gave me the first chance to thoroughly survey what I was up against: chips in the gelcoat, cracks in the gelcoat, separation of the fiberglass shell and subsequent exposure of underlying plywood in the bow and stern, heavy wear and deep chips along the keel/skeg, lots of peeling paint, rusty fasteners and cracked holes where oarlocks had once been, and missing outboard mounting plates. It was not a trivial list, but it was manageable. However, two questions warranted further investigation: the condition of the plywood formers for the bow and stern and the still puzzling extra weight. The answers to both were disappointing.

The amount of damage that had resulted from the separated fiberglass seams on the bow and stern gave me pause. Poking a screwdriver into the gap revealed that the wood near the fracture was not solid. This was not a good sign.

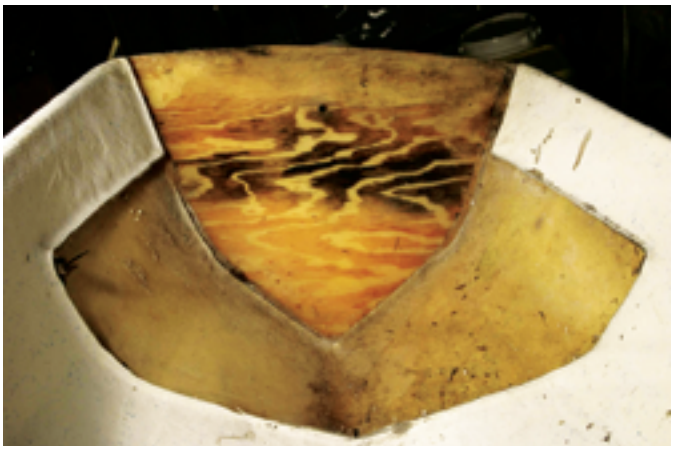
Further exploration was going to require some pretty significant destruction, so I decided to table that problem and investigate my theory of water in the buoyancy compartments under the seats. This also was going to require some destruction (the seats were completely sealed). However, I figured adding an inspection port to each of the seats would create some handy watertight storage under the seat and provide a hole big enough to see how much water was in the seat.

Saturation and delamination

Cutting the holes revealed that the seats were definitely not watertight. The failure of the fiberglass joints and other cracks had allowed water to enter the buoyancy compartments in the bow and stern seats, completely delaminating the plywood inside and saturating the loose foam. At this point, I was certain I wanted a better look at the bow and stern plywood formers.

I removed the seats with a thin cut-off wheel in a grinder. Both pieces of plywood were completely saturated and significant portions of each had turned to mush. Water had gained

A thorough coating of algae and grime attests to the sedentary life this dinghy had led.



With the seat removed, it was apparent that the entire plywood bow former was saturated with water. The darker colored wood was in various stages of rot, at left. After the plywood former was removed from the bow, the pattern of the plywood remained on the fiberglass, at right.

access through multiple failure points. The worst breach was where the seams at the top of the formers had separated, but the towing eye in the bow had not been sealed and water ingress had made the plywood into which it was fastened soft and spongy. In the stern, lifting handles and a wooden outboard mounting plate had been added. The screw holes had let water in and a hard pull on the handles would have separated them from the mushy wood that surrounded each screw. Replacing the plywood formers seemed like the only option. For such a tiny boat, the list of repair projects had grown quite long.

Fortunately, that was the end of the upwind leg of the project. From that point on, I could take on the far more rewarding jobs of repairing and improving.

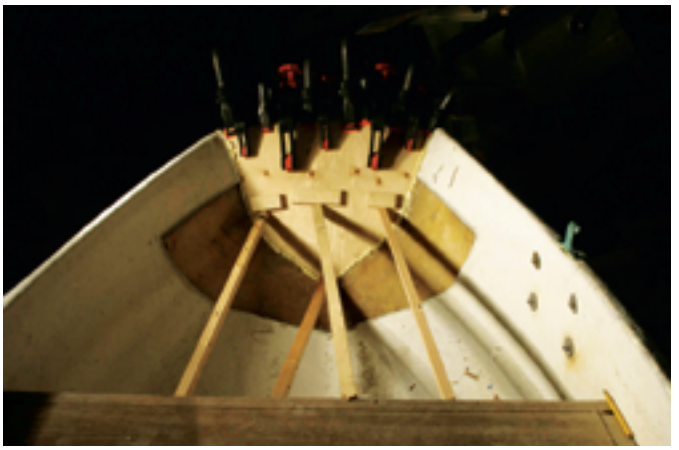
Restoration commences

After removing the old plywood formers from the bow and stern with a putty knife, I used them as templates and fitted new ones. I cut the shapes out of outdoor-grade plywood with a sabre saw with the blade set at an angle to match the sides of the dinghy. I glued the formers into place with Elmer's Probond polyurethane glue.

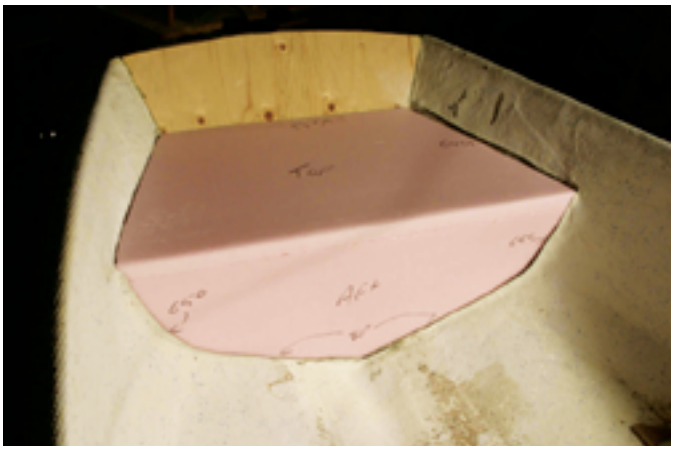
> **"For such a tiny boat, the list of repair projects had grown quite long."**

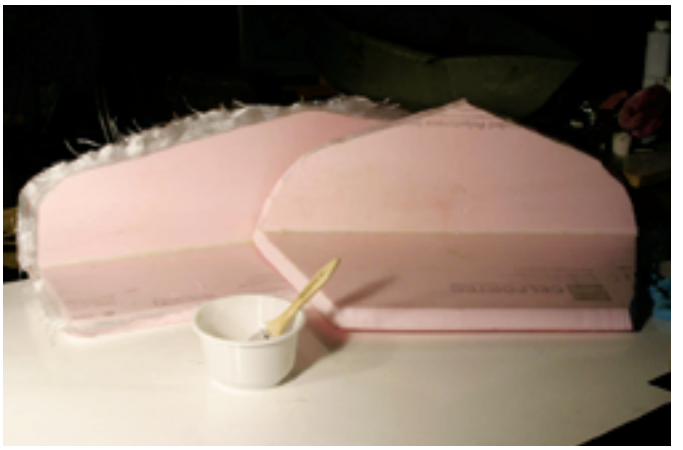
An interesting property of this one-part waterproof glue is that it foams while curing, with the degree of foaming dependent on the amount of moisture present. For the face of the board, where I wanted very little foaming, I wiped the plywood with a barely damp cloth. However, the original plywood formers (and thus the corresponding fiberglass shell) were cut rough and left many irregular voids around their edges. Wiping the edge of the new plywood and the corresponding fiberglass with a dripping wet cloth was sufficient to cause more aggressive foaming that filled the gaps nicely. It was easy to trim the foam back after it had cured.

To seal the plywood formers, I epoxied a layer of 6-ounce fiberglass cloth onto them with generous tabs to attach them to the hull. When working with epoxy resin, I like to use the slow hardener, as it reduces the stress of rushing to get everything in place before it sets. On the rare occasion when I want epoxy to set faster than over night, I use an electric heater to speed the curing.



The new plywood former clamped and wedged in place during gluing, at left. The sprung wooden sticks are braced against blocks temporarily tacked in place. The foamed polyurethane glue is visible around the edge of the plywood former. The template for the seats consists of a large piece of cardboard roughly cut to shape with many little pieces attached to it to follow the interior contour, at right.





Testing the fit of the bow seat before applying fiberglass, at left. Prior to installing the foam seats, Darren applied a fillet of thickened epoxy to their inside corners and covered their inside surfaces with a layer of fiberglass cloth.

Foam foundations

Replacing the seats was next on the list. The original seats were relatively undamaged and I could have fit them back into place with a bit of fiberglass patching and filler. However, the entire supporting wood framework had rotted away and fitting new wood inside the seat to match the seat and the hull of the boat would not have been an easy task. Instead, I decided to make new seats out of foam laminated with fiberglass. These seats would not suffer from rot as the originals had and they would provide permanent flotation as well.

I made cardboard templates for the seat parts. For an irregular shape like the hull, it's easiest to cut the template small and, using a hot-glue gun or tape, fasten to it little pieces of cardboard arranged to follow the profile of the hull.

I transferred the templates to extruded polystyrene foam and cut around them. I glued the two pieces of foam for each seat with polyurethane glue. After the glue had cured, I checked the fit of the seats in the boat. Finally, before the undersides of the seats became inaccessible, I applied a fillet of epoxy thickened with colloidal silica to the joint and a single layer of fiberglass cloth to the surface.

Before gluing the seats in place, I added a few details. I wanted inspection ports, so I cut backing rings out of scrap waterproof shower board and drilled holes in them to match the inspection port bolt pattern. These rings could have been cut in half and fed through the holes in the seats, but it was easy to put them in place before glassing in the seats.

A wheel in the skeg

I also liked the idea of having a small wheel built into the skeg of the boat. Our sailboat spends the summer on a mooring, and the walk from the car to the launch site when carrying gear is a lot more pleasant if you don't also have to carry the dinghy.

To make a well for the wheel, I cut a foam disk slightly larger than the wheel I intended to use. I then cut an opening in the bottom of the skeg, using a thin cut-off disk in a grinder and a rotary tool. I covered the foam wheel blank with a layer of packing tape and slipped it tightly into the opening in the bottom of the skeg. Inside the boat, I faired the sides of the skeg into the foam wheel blank with thickened epoxy, then added three layers of fiberglass cloth atop the wheel blank to make a watertight enclosure. After the epoxy had cured, I plucked the foam wheel out of the opening on the outside of the boat and drilled a hole for the bolt that would be the wheel's axle.

At this point, I realized the stern seat wasn't going to give me enough legroom to row from the center seat. Fortunately, it was still possible to cut back the face of the seat. I added two more pieces of foam to the stern seat so it would still have a small storage space/buoyancy compartment. I attached the seats to the hull with polyurethane glue.

Once again, the foaming glue helped bridge small voids where the fit of the parts wasn't perfect. After I'd glued the seats in place, I applied a thickened-epoxy fillet to all the joints where the seats met the hull and tabbed the seats into the hull with fiberglass tape. Finally, I covered the seats themselves with fiberglass. The outer corners of the seats received three layers of cloth for additional impact resistance, while I covered the flat surfaces with two layers of cloth.

Patching perforations

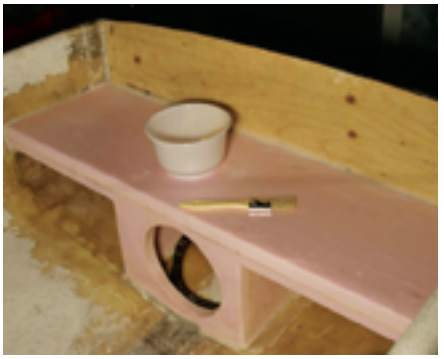
I repaired various holes in the boat, including those where the hardware

The foam blank used as a form to construct the wheel well was slightly larger in all dimensions than the wheel to be fitted.

Because epoxy doesn't stick to it, the packing tape covering the foam blank left a nice finish on the inside of the wheel well.

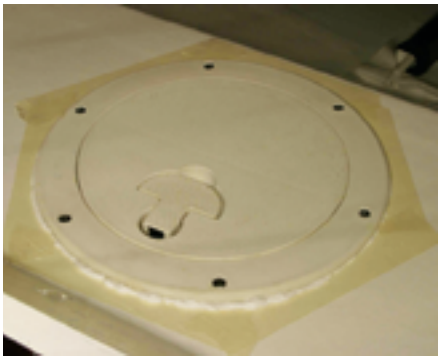
had been mounted, by grinding the surrounding surface back to solid glass. All the openings were small, so I applied packing tape behind them and laid in pieces of glass and thickened epoxy to fill the holes and build them up to the profile of the surrounding hull.

While repairing the damage from the oarlocks, I noticed a few areas where the gunwales were cracked. To reinforce this area, I brushed thin epoxy into the cracks then ran a fillet of thickened epoxy along the inner edge of the gunwale. To finish off, I covered the entire underside of the gunwale with an additional layer of fiberglass cloth.



The stern seat has been glued into place and fillets of thickened epoxy applied wherever the seat meets the hull. The gelcoat on the inside of the hull has been ground back to the underlying laminate to provide a secure bond for the seat tabbing.

Oversized washers bedded in thickened epoxy under the oarlock sockets distribute the stresses. The sockets themselves are also bedded in epoxy to prevent play.



Bomar hatches sealed with silicone completed the watertight spaces under the bow and stern seats. Excess sealant was trimmed back with a single-edge razor after it had cured.

> **"The original mounting for the oarlock sockets was also problematic in that wooden blocks under the gunwales had failed."**

My next task was to prepare the dinghy for the hardware. The original installation of the towing eye, handles, and the motor's mounting plate had all created spots for water to enter the plywood formers. To correct this, I drilled oversized holes for each piece of hardware, filled the holes with epoxy, then re-drilled them to the smaller size required by bolt-through fasteners. The original mounting of the oarlock sockets was also problematic in that wooden blocks under the gunwales had failed and the sockets had torn loose from the fiberglass. To correct this, I bedded the new cast-bronze oarlock sockets in thickened epoxy. Below the gunwale, I bedded oversized washers in thickened epoxy to provide a bearing surface so I could use through-bolts rather than screws.

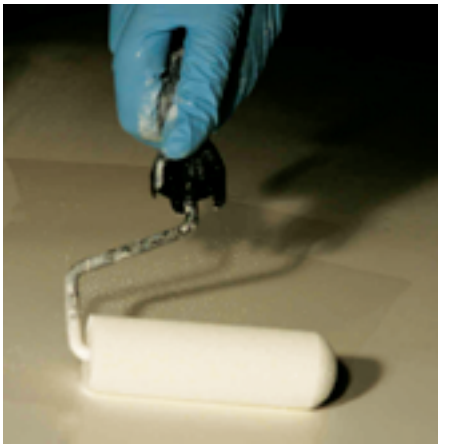
A little brightwork

The woodwork for the boat was very straightforward. The wooden rowing seat received a heavy sanding and several coats of Daly's SeaFin Teak Oil. I learned about Daly's from Rebecca Wittman's excellent book, *Brightwork: The Art of Finishing Wood*. Both the book and the oil are now at the top of my wood-finishing arsenal. I made the disposable outboard-motor mounts out of some scrap fir cut to trapezoids that looked about the right shape. They also received a coat of oil.

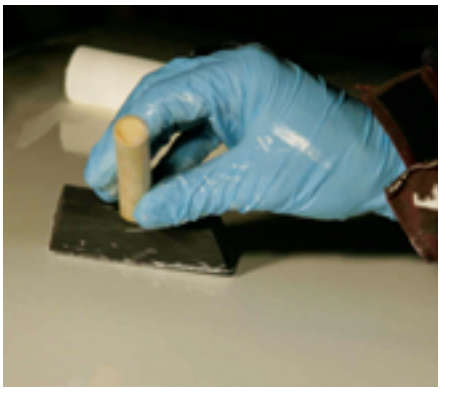
With the structural issues resolved, it was time to move on to the cosmetic problems. I opened the cracks and chips in the hull using a rotary tool with a small round cutting head. Next, I wiped down all the openings with acetone and a rag to provide a clean bonding surface, using lots of rags to avoid contamination. Finally, I filled all the holes and troughs with epoxy thickened half-and-half with fumed silica and microballoons. The only justification I have for this mixture is that I find fumed silica by itself a pain to sand and microballoons by themselves less impact-resistant. This compromise makes sanding and fairing less painful (at least I tell myself it does, which is all it takes to keep me sanding).

Ready for painting

After I'd sanded the entire hull with 280-grit sandpaper, using a semi-rigid rubber backing block, I was finally ready for painting. I could have continued to sand with finer grits, but that would have made the first landing on a barnacle-laden beach too painful. I vacuumed the boat and the area around it and then left things alone in the garage for 24 hours to let the dust settle. Before painting, I wiped down



Applying the paint with a foam roller.



Tipping the paint by lightly dragging a paintbrush to break bubbles and smooth the pattern left by the roller.

the boat with a rag wetted with solvent (use whatever solvent is recommended to thin your paint).

The paint I chose had been recommended by several plywood boatbuilders who'd had favorable results from urethane-fortified alkyd paint. Several manufacturers sell these under the label of deck and porch paint; the one I used was made by CIL. At about $30 a gallon, I figured it was worth a try and, if it worked on the dinghy, I'd also use it on the dry bilges of the mother ship. An added benefit was that I could thin the paint and clean it up with regular mineral spirits rather than a proprietary solvent.

I applied the paint using the roll-and-tip method. I rolled the paint on with a foam roller and followed by drawing a foam brush very lightly over the area to break air bubbles and remove the orange-peel effect the roller can leave behind. Overall, I was pleased with the ease of this painting method and the good results I obtained. The only hiccup was that the first coat of paint revealed that I hadn't thinned the paint enough and had left brushstrokes behind.

Subsequently, I used a piece of glass to test how the paint was flowing. This made it much easier to judge how the paint was going to act and saved me from sanding out brush marks. I gave the outside of the hull three coats of paint. I also gave the interior of the boat three coats. However, since it had a textured surface, I rolled the paint on and didn't brush it out. For the final touch, I bedded Bomar inspection ports in silicone in the fore and aft seats to complete the watertight storage compartments.

A positive outcome

So was it worth it? Well, I suppose that's a matter of perspective. Without question, refitting new formers and seats made up the lion's share of work on the project. I could have saved myself a great deal of work if I'd carefully examined the fiberglass that encases the plywood bow and stern formers before buying a long project list along with the boat. A quick examination of the dinghy rack at the local marina revealed that many dinghies are built this way and this sort of damage is very common.

The total cost, including the purchase of the dinghy and materials I had to buy (I already had epoxy and fiberglass cloth left over from another project) was under a third of what even the least expensive plastic dinghy would cost new. I've ended up with a really nice dinghy that's well-suited to my needs. I also have a boat with a sturdier towing eye, a skeg wheel, a second set of oarlock sockets to provide multiple rowing positions, 32 pounds of foam flotation built into the seats, storage areas in the seats with sealed air compartments for extra flotation, and sufficient legroom in a 7-foot dinghy for my 6-foot 3-inch frame.

In fact, I recommend a project like this. For a very modest investment, I think a dinghy restoration presents a great opportunity to brush up your skills and express a little design creativity.

Darren Bos, an aquatic ecologist, lives on the west coast of Canada and explores the Strait of Georgia with his two sons, wife, and dog aboard their Hurley 20, Second Wind. *With two young boys in the mix, Darren can manage just one major refit project a year on* Second Wind.

The finished result — a cleaner, more robust dinghy tailored to its restorer's long legs.

Lazy-Jacks 101

An extra hand for short-handed cruising sailors

by Don Launer

Lazy-jacks provide a simple way to control a sail when you lower it. By holding the sail above the boom and preventing it from falling on the deck, they also make it easier to furl the sail. They can be used on Marconi rigs, gaff rigs, and even on club-footed jibs. There is no one definitive way to rig lazy-jacks; almost as many variations exist as there are installations.

Lazy-jack installation

A basic component of any lazy-jack system is a pair of upper support lines, one on the port side of the mast and one on the starboard side. These hold up a lower set of lines that actually contain the sail, which is raised and lowered between them.

The upper support lines are usually attached to eye straps about half to two-thirds the way up the mast. With this type of installation, the tension in the lazy-jacks can be controlled by adjusting the lower lazy-jack lines at the forward end of the boom. Alternatively, instead of being fixed to eye straps, the upper support lines can lead over small blocks and down to the base of the mast, where they can be adjusted to tension or loosen the lazy-jacks.

Regardless of which system you use, the lower ends of the upper support lines terminate in an eye-splice around a thimble. When making this eye-splice, be careful to ensure no sharp ends of melted strands protrude from the eye-splice as they will chafe the sail.

Two-leg lazy-jacks

In a two-leg lazy-jack, the lower lazy-jack line is one continuous line. One end is fastened to an eye strap on one side of the forward end of the boom. It leads up to and through the thimble eye of the upper support line on the same side of the boom, down around the boom through an eye strap, back up to the other upper support-line thimble eye, then down to a cleat at the forward end of the boom, where its tension can be adjusted.

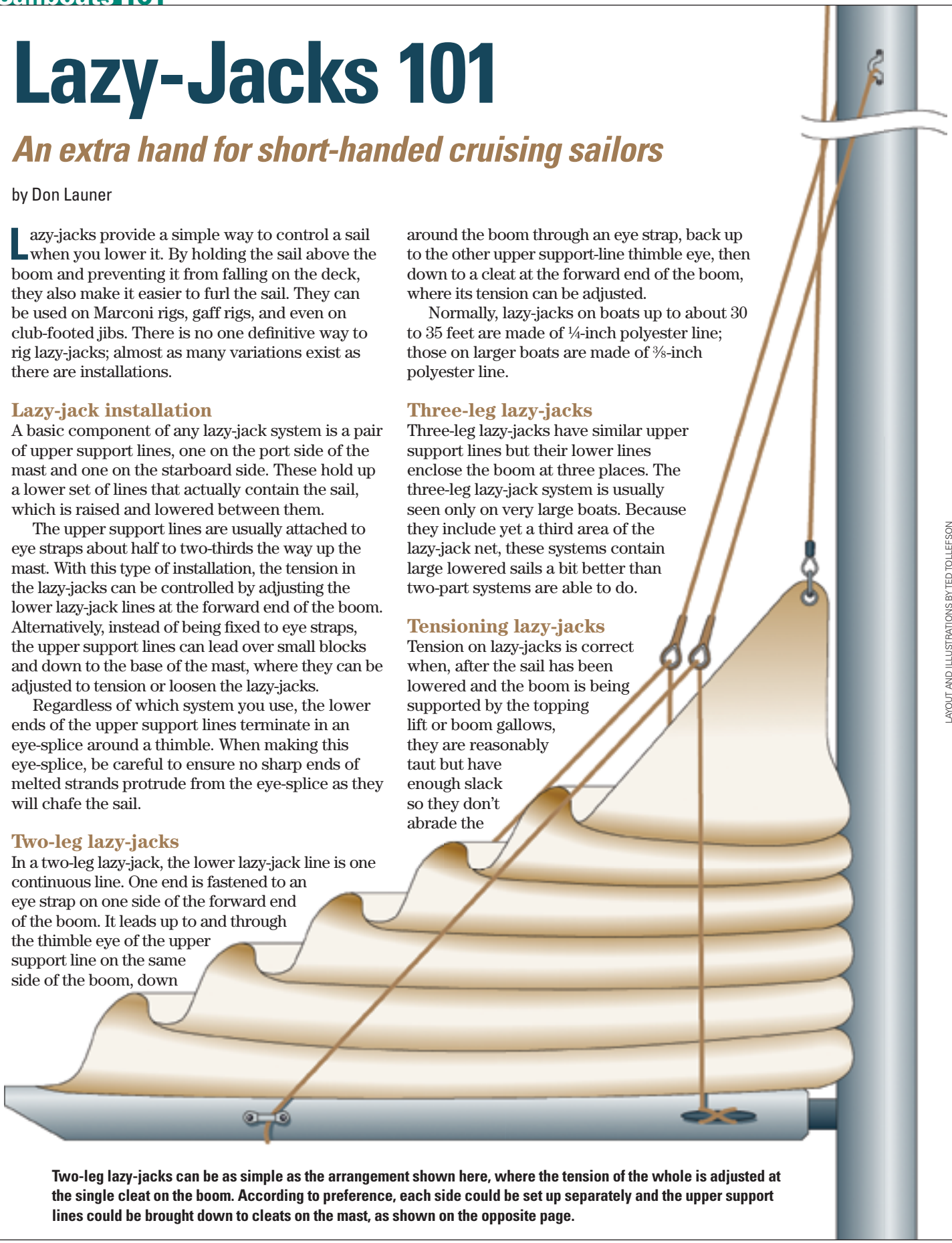
Normally, lazy-jacks on boats up to about 30 to 35 feet are made of ¼-inch polyester line; those on larger boats are made of ⅜-inch polyester line.

Three-leg lazy-jacks

Three-leg lazy-jacks have similar upper support lines but their lower lines enclose the boom at three places. The three-leg lazy-jack system is usually seen only on very large boats. Because they include yet a third area of the lazy-jack net, these systems contain large lowered sails a bit better than two-part systems are able to do.

Tensioning lazy-jacks

Tension on lazy-jacks is correct when, after the sail has been lowered and the boom is being supported by the topping lift or boom gallows, they are reasonably taut but have enough slack so they don't abrade the



LAYOUT AND ILLUSTRATIONS BY TED TOLLEFSON

Two-leg lazy-jacks can be as simple as the arrangement shown here, where the tension of the whole is adjusted at the single cleat on the boom. According to preference, each side could be set up separately and the upper support lines could be brought down to cleats on the mast, as shown on the opposite page.

Depending on the amount of control desired, the upper legs of the lazy-jack can terminate on the mast aloft (opposite page) or, as shown here, lead through blocks and down to cleats or other adjustment devices at deck level.

sail. They should be slack enough so you have room to install the sail covers easily. As a matter of fact, it's somewhat easier to install a sail cover when the lazy-jacks are properly tensioned, because the sail cover can be laid out along the boom and will stay in place.

Batten fouling

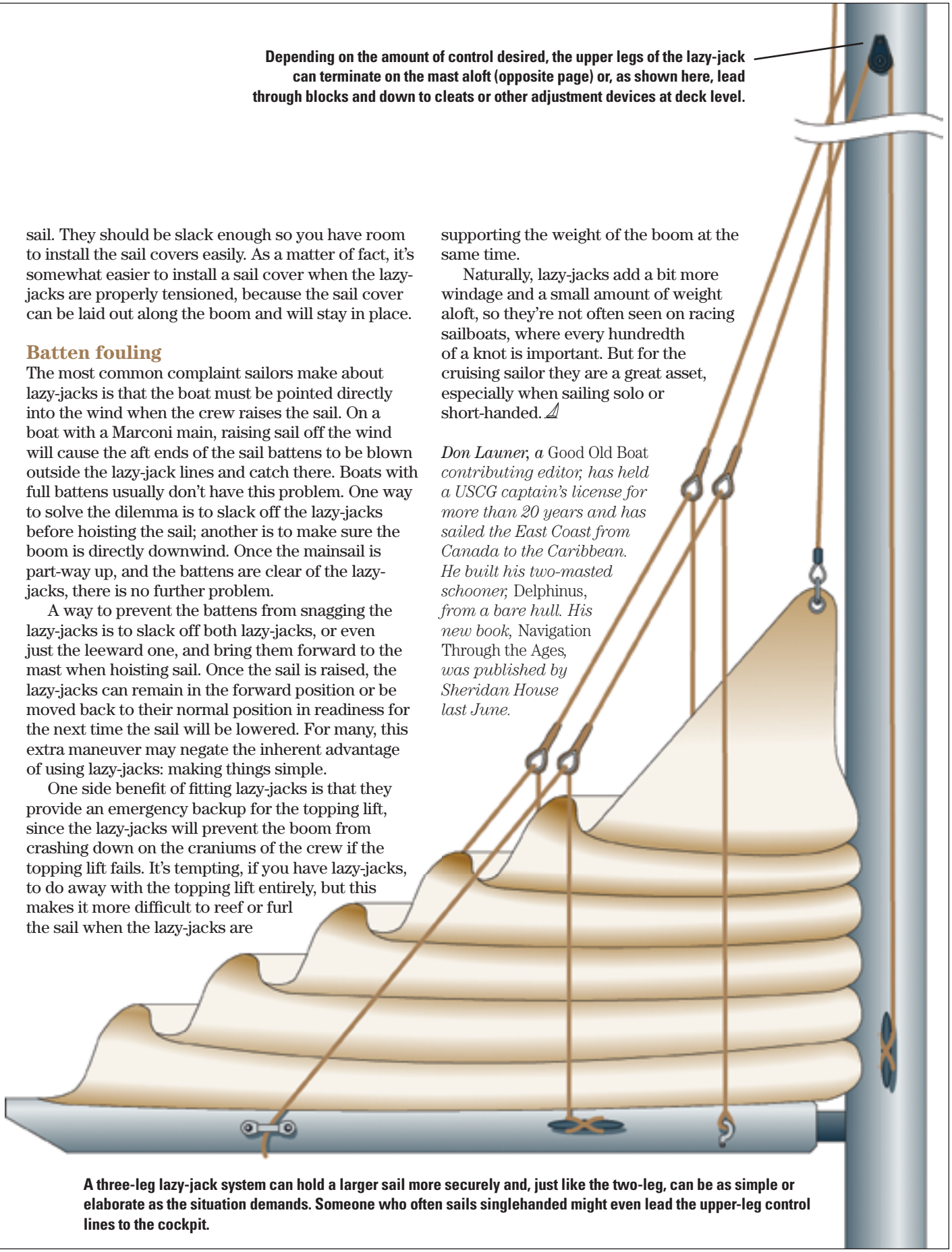
The most common complaint sailors make about lazy-jacks is that the boat must be pointed directly into the wind when the crew raises the sail. On a boat with a Marconi main, raising sail off the wind will cause the aft ends of the sail battens to be blown outside the lazy-jack lines and catch there. Boats with full battens usually don't have this problem. One way to solve the dilemma is to slack off the lazy-jacks before hoisting the sail; another is to make sure the boom is directly downwind. Once the mainsail is part-way up, and the battens are clear of the lazy-jacks, there is no further problem.

A way to prevent the battens from snagging the lazy-jacks is to slack off both lazy-jacks, or even just the leeward one, and bring them forward to the mast when hoisting sail. Once the sail is raised, the lazy-jacks can remain in the forward position or be moved back to their normal position in readiness for the next time the sail will be lowered. For many, this extra maneuver may negate the inherent advantage of using lazy-jacks: making things simple.

One side benefit of fitting lazy-jacks is that they provide an emergency backup for the topping lift, since the lazy-jacks will prevent the boom from crashing down on the craniums of the crew if the topping lift fails. It's tempting, if you have lazy-jacks, to do away with the topping lift entirely, but this makes it more difficult to reef or furl the sail when the lazy-jacks are supporting the weight of the boom at the same time.

Naturally, lazy-jacks add a bit more windage and a small amount of weight aloft, so they're not often seen on racing sailboats, where every hundredth of a knot is important. But for the cruising sailor they are a great asset, especially when sailing solo or short-handed.

Don Launer, a Good Old Boat *contributing editor, has held a USCG captain's license for more than 20 years and has sailed the East Coast from Canada to the Caribbean. He built his two-masted schooner,* Delphinus, *from a bare hull. His new book,* Navigation Through the Ages, *was published by Sheridan House last June.*



A three-leg lazy-jack system can hold a larger sail more securely and, just like the two-leg, can be as simple or elaborate as the situation demands. Someone who often sails singlehanded might even lead the upper-leg control lines to the cockpit.

Cruising in prime time

Singlehanded to Grenada in a Tartan 33

by Michael Kilday

PHOTOGRAPHY BY D. J. KILDAY

"Two ladies in the prime of their lives." That's how Mina L'Ecuyer (pronounced MY-na Lek-WEE-a) describes herself and her 1982 Tartan 33, *Cassiopeia I*. Mina, a retired laboratory worker from Ontario, Canada, was halfway through her singlehanded transit of the Caribbean, having sailed from Florida to Grenada, West Indies.

After retiring, and with her two sons grown, Mina said she needed something to challenge her. "I was bored and didn't want to look back later in life and realize I had developed a case of the 'shouldas' — I should have done this or I should have done that."

From the time she was a young woman, Mina had dreamed of sailing her own boat to tropical isles. She even bought a sextant and kept it in her hope chest.

"My father had been in the Navy. When we went out in our boat together, he could always tell where we were — even in the fog — and he always knew what time it was just by looking at the sun. I thought that was magical. I wanted to be a sailor so I could do those things."

She still has the sextant — though she admits that celestial navigation is the one boating challenge that has so far eluded her — but the hope chest is long gone. "No room for it on board," she muses, "Anyway, my hopes came true."

A need for challenges has been a constant in Mina's life. Before ocean sailing came along, she was an accomplished diver and private pilot, and she sailed extensively on Lake Erie. When it came time to go to sea, Mina decided she wanted a Tartan 33. "I have good friends who own a Tartan 33 about the same age as *Cassiopeia I*. They spoke so highly of it I figured I should get one."

A very suitable boat

Cassiopeia I is hull #157 of the popular Tartan 33 line introduced in 1979. *Cassi*, as Mina calls her, is the cruising version with the Scheel keel and fractional rig. Mina feels that, with her easily handled rig and shallow draft, *Cassi* is well suited to singlehanded sailing in the Caribbean. Designed by Sparkman & Stephens, the Tartan 33 has proven itself as a weekend racer and as a sturdy coastal cruiser. And its designers have expressed confidence that, when properly equipped and sailed, it has offshore capability.

Although Mina would sail alone, the Tartan 33 was designed with a couple in mind. It has an adequate V-berth, an athwartships head with shower pan (some have suggested that the doors closing off the head from the saloon and V-berth could be more substantial) and an airy saloon with port and starboard settees and a fold-down bulkhead table. The port-side settee is truncated to allow room for the icebox while the starboard settee is long enough to be a berth. The galley is small, but it's tucked out of the way of companionway traffic and sits opposite a 24 x 30-inch chart table and seat. The galley was originally equipped with an alcohol stove — Mina still swears by hers — but there is adequate space for upgrading to a kerosene or propane stove with an oven. Just aft of the navigation station is the quarter berth, which can be used as a sea berth or a favorite place to put those things that don't fit anywhere else.

The Tartan 33's cockpit is roomy without being too spacious for

offshore work. It is in a T-configuration with the helmsman's seat and sole canted for comfort when the boat is heeled. A 32-inch destroyer-type wheel with a 5-inch compass and engine controls mounted on the pedestal was standard for this design. Because the mainsheet traveler spans the cockpit just in front of the steering pedestal, moving around the aft end of the cockpit can be tricky, but it does keep all the essentials close at hand.

Moving about on deck is made easy by comfortably wide sidedecks and handholds on the cabintop. Those looking at this boat for serious offshore sailing should consider adding beefier handholds than the teak ones originally fitted. The single-spreader mast is keel-stepped and carries a sloop rig. While the Tartan 33 is not a large boat, the foredeck has good enough room for sail handling and working with the ground tackle, or for a hammock between the forestay and mast, a favorite spot of Mina's for relaxing.

Hurried preparations

Mina found her Tartan 33 in St. Petersburg, Florida, and based upon the overall good condition of the boat and how it was equipped, she believes it had seen little more than occasional weekend duty.

"Friends told me I should take a year to learn the boat and upgrade all her systems. I thought, 'Heck no, I want to go sailing,' " Mina recalls with a smile. "It's my nature to trust that things will work out. Now, after having cruised for 14 months, I haven't really changed . . . but I am not recommending my approach to everyone."

"Being a woman singlehander also raises some interesting problems and prompts inventive solutions."

Mina says some of the problems she faced during this voyage could have been avoided had she had more time with the boat and its equipment before heading offshore. However, she believes it was better to be sailing the boat than working on it. Driven by the need to leave the United States in time to comply with Florida's sales tax regulations, Mina addressed what she felt were the boat's most pressing issues and decided to attend to others while under way.

Purple highlights

One job Mina did not want to delay raised a few eyebrows at the local canvas shop. She wanted *Cassi* to look like a "proper lady." She painted the sheer stripe bright purple and ordered a new mainsail cover in the same color. After agreeing reluctantly, the shop's staff seemed to get into the spirit of "feminizing" *Cassiopeia I*. Not only did they make her a purple sailcover, they lined it in flaming pink.

"It looks like something out of a Victoria's Secret catalog," Mina says with a laugh.

Like most fractional-rigged boats, the Tartan 33 has a large main that must be reefed early to ensure a comfortable ride. "I always start out passages with a reef in the main. It often stays there." Mina says. "Up front, I only use the furling genoa. I have two spinnakers, but they haven't left their bags."

Before leaving St. Petersburg for Key West, from where she went on to Cuba and the Caribbean, Mina had no experience either in offshore sailing or maintaining a cruising boat. But she did prepare. She took classes in sailing, navigation, engine repair, seamanship, and marine electronics from the London Power & Sail Squadron in Canada.

Look for the book

"My mantra is, 'Where's the book?' " Mina exclaims. "Anytime there's a problem, I go looking for one of my handy dandy fix-it books. Then I spend a day or so in my bunk reading everything I can about the problem. Then I go fix it . . . or try." She can recall only one or two times when she had to call in professionals to fix something on her boat.

For a woman sailing a small boat alone, the most common question is, "Are you scared?"

"No," Mina answers, adding, " I've always been independent. I was a single mom, so I'm used to doing things myself. And I trust my boat."

Being a woman singlehander also raises some interesting problems and prompts inventive solutions. When Mina went shopping for new boat batteries, for example, she didn't study their amp-hour ratings. Instead, she went into various marine stores and tried picking up each battery. Since she would have to carry it back to the boat and install it herself, her buying criterion was simple: "Which one can I lift and carry?"

When she had finished all the work she could in the time available, Mina sailed from St. Petersburg to Key West, Florida. Reaching Key West was relatively easy, but getting to her next stop, Cuba, which entailed crossing the Gulf Stream, was a much bigger challenge. She had made one small oversight in her preparations: she

At anchor in Grenada, after a long and sometimes arduous cruise south, *Cassiopeia I* shows off her classic lines and her purple sailcover, opposite page. Mina, her singlehanded skipper, surveys the scene from the helm, at right.

had no charts for Cuba. But Mina was not deterred. With only the coordinates of Havana Harbor plugged into her chart plotter, she set off.

There was a further glitch in her plan, however. Mina had assumed that Marina Hemingway would be in Havana. It isn't. It's about 10 miles away and, while Cuba has become more open to visitors, its officials still frown on anyone sailing into Havana Harbor without permission.

Unwelcome in Havana

With fenders out and lines made ready, she sailed triumphantly into Havana Harbor. Mina was thrilled to have successfully made her first ocean passage. She had seen her first wild porpoises and *Cassi* had behaved like a true lady.

"'We did it!' I thought. If I could have got my arms around her I would have hugged my boat," Mina says.

The Cuban officials were kind enough to take her lines before informing her that she must leave immediately. She must go to Marina Hemingway. "Isn't this Marina Hemingway?" Mina asked sheepishly.

"No," they told her, "the place you are looking for is up the coast." While the officials were clear about her having to leave, they were frustratingly foggy about where Marina Hemingway actually was. Pointing up the coast, they gave Mina their best guess.

By this time, Mina had gone two days without sleep. Groggy, and still not sure where she was heading, she took in her lines and sailed out of Havana Harbor.

Soon she could see masts, and thought that she had at last found the elusive Marina Hemingway. After tying up and being visited by Cuban customs, immigration, health, and even a drug-sniffing dog, she was again informed that she must leave immediately and move to Marina Hemingway.

Just let me sleep

"I couldn't believe I'd have to go back out again," Mina remembers, " I begged them to just let me sleep. Then I would move. They wouldn't budge but then I sensed something was up. They were all smiling." Pleased with their joke, they told Mina she only had to move a few hundred yards to be in the marina proper.

Mina cruised the coast of Cuba for three months before continuing on to Jamaica, the Dominican Republic, a quick stop in Haiti, and then to Puerto Rico, the U.S. Virgin Islands, the British Virgin Islands, and down through the Leeward and Windward islands to arrive in Grenada — her most southern position — in July 2008.

While Mina is pleased that *Cassiopeia I* suffered no real problems on the way to Grenada, she herself had a few "moments." As she passed through the British Virgin Islands late one afternoon, Mina spotted a large rock off her bow. Nothing on her charts indicated any rocks or shoaling in the area.

"I thought, 'If there is one rock, there must be more.' I swung the boat hard over with my heart in my throat. As I passed, the 'rock' lazily made a half roll and disappeared. It was a sea turtle," Mina remembers, adding: "You can't possibly print what I said to that turtle!"

Mina also learned a lot about anchoring during her southbound trip. Unfortunately, she says, she learned it the hard way.

"I lost two anchors because of inexperience," she says. "I was down to my last anchor when I arrived in Grenada. But I'm getting the hang of it now."

Steering by hand

Because of autopilot failure (both the primary and backup failed between St. Petersburg and Jamaica), Mina was

Tucked close by the companionway, the galley on *Cassiopeia I* is compact, with everything close at hand, at left. In the saloon, a pilot berth provides temporary stowage, below. The gray upholstery is unusual, and matches the Tartan's dark woodwork admirably.

forced to hand steer most of the way to Grenada except for those times when the wind direction allowed her to tie off *Cassi*'s wheel for short periods. She also lost the use of her chart plotter for a time after it was soaked by a sea splashing into the cockpit. Mina was able to get the chart plotter working again, but her fix-it books couldn't save the autopilots. After they failed, even short passages became drudgery.

"I'd got really tired. And I couldn't leave the helm long enough to make a decent meal. I ate a lot of peanut butter and crackers . . . not a healthy diet," Mina says. "By the time I arrived in Grenada, I just wanted to be away from the boat. I didn't want to be responsible for everything anymore. I bought a Stephen King novel and lay in my bunk and read for four days."

Another problem Mina faced was entering the Caribbean as summer approached.

"I was really running late, with the hurricane season on top of me. It's one of my regrets that I didn't have more time to spend in the islands I visited and had to miss several islands I wanted to visit." Mina says. "When I return north this winter, I plan to take my time and enjoy more of the islands."

She faced her only serious sailing crisis shortly after leaving Grenada during an overnight sail to the island of Carriacou.

"*Cassi* felt funny about halfway to Carriacou. I couldn't pin down what the problem was, but the boat just felt different," Mina remembers.

A close call with the rig

After a night spent pounding into strengthening trade winds, Mina and her Tartan 33 arrived in Carriacou and anchored in Tyrell Bay. As Mina dropped the mainsail, the lazy-jacks dropped too. The lazy-jacks were not supposed to come down.

"Maybe the Lord wanted me to look up, because when I did, I immediately spotted a problem with the spreaders. They were coming loose from the mast." Mina recalls.

A closer inspection showed that both spreaders had come loose at the U-shaped bracket that holds them to the mast. One of the two bolts that secures each of the opposing spreader brackets to the mast had broken and the stress that resulted had bent the remaining bolt and the brackets themselves. Mina has no doubt that, had the second bolt also broken during *Cassi*'s beat to windward during the night, the rig could have come down.

> **"The stainless-steel strap that held the shroud to the outboard end of the starboard spreader had failed from corrosion."**

To make matters worse, the stainless-steel strap that held the shroud to the outboard end of the starboard spreader had failed from corrosion. With help, Mina removed both spreaders and had them rebuilt with new hardware. While she was at it, she replaced the boat's lower shrouds, which were beginning to show wear.

Mina blames the failure on the rig's age and her own failure to do a more thorough rig survey before leaving Florida. Owners of Tartans of a similar age should carefully inspect all rigging, hardware, and connections before venturing offshore.

"I could have lost everything out there. *Cassi* and I were very, very lucky," Mina says.

While no one should discount luck in any voyage, Mina now recommends augmenting it with careful preparations. As a famous athlete once said, "The more I practice, the luckier I get."

A dream fulfilled

Was it all worth it? The planning, the boat work, sailing alone far from home? For Mina, the answer is yes.

"I haven't lost the thrill of waking up in different places: new people, new foods, new everything. It has definitely lived up to my dream."

Mina's cruising plans will take her back through the Windward and Leeward Islands and then to Florida to store *Cassiopeia I* until the end of the 2009 hurricane season. Then what?

"Back to the Caribbean!" she exclaims.

Mina would be the first to say that there may have been things she should have done differently in preparing for and carrying out her Caribbean voyage. But, as far as she is concerned, she took care of the most important "shoulda."

She went.

Michael Kilday and his wife, Donna, are circumnavigating the Caribbean piecemeal during time off from their jobs. Michael has been sailing for 30 years, in the Pacific, Caribbean, and Atlantic.

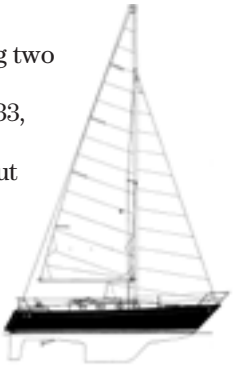
While she says that she perhaps could have done some things differently, Mina made good on her dream.

The Tartan 33 and its peers

A look at three long-waterline cruiser/racers

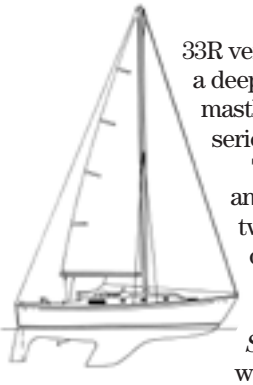
by Ted Brewer

I had some difficulty finding two designs to compare to the very-long-waterline Tartan 33, actually a 34 by almost any standards — and more about that later! The Pearson 10-Meter was the only sailboat that seemed to fit into this category of long-waterline and 30-year-old boats until I realized that my Aloha 34 design was fairly close with only a couple of inches difference in her length overall (LOA) and length on the waterline (LWL). Still, while these three designs have a number of similarities, the Tartan stands alone with her Scheel keel and fractional rig, and that makes much of this review rather like comparing apples to oranges.



Tartan 33

Pearson 10M



Aloha 34

The Scheel keel is a patented bulbed fin, designed to provide shoal draft and easy access to the many small gunkholes cruising sailors love, but it does not provide the 33 with quite the performance of some cruiser/racers of its era. Indeed, while I was designing the Morgan 38, Morgan Yachts wanted to see if a Scheel fin would offer even shallower draft than the fairly thick 5-foot 0-inch draft NACA foil I had drawn. Stevens Institute tested a model of the 38 hull with the chubby NACA fin and then with a Scheel fin of only 2 inches less draft. The tank results greatly favored the NACA fin. Since it was also simpler to manufacture, Morgan selected it as the standard and offered an option with even deeper draft.

I feel that the Tartan 33's fractional rig could benefit from the addition of running backstays, as the slight angle of the swept-back spreaders may not keep the forestay as taut as desired, especially for offshore work in heavy weather.

Fractional advantage

One advantage of the 33's fractional rig, though, is that the large mainsail enables the boat to sail under main alone while retaining a reasonably balanced helm. This has advantages for the short-handed cruising sailor, particularly when entering a strange harbor and looking for a spot to drop the hook. However, the fractional rig is at a disadvantage in light air compared to a yacht with a large masthead spinnaker. As a result, Tartan later offered the 33R version with a 6.3-foot draft, a deep fin, and a double-spreader masthead rig to satisfy the more serious racing skipper.

The Tartan 33 seems to have an advantage over the other two designs with her lighter displacement giving a high sail area/displacement ratio. However, *Practical Sailor* reported that the 33 was never as light as specified. Indeed, in 1984, Tartan stretched the 33's transom about 7 inches, resulting in a 34-foot 5-inch LOA, changed the rig to masthead and, all other things being the same, called the result the Tartan 34 with an advertised 11,000-pound displacement. That extra thousand pounds would lower the sail area ratio to 17.2, the capsize figure to 1.97, and raise the comfort ratio to 23. The only other difference in the 34 is an improved layout, but it's hard to believe that would have added the extra 1,000 pounds to the displacement.

Performance prediction

For medium air, I'd like to believe the Aloha could have a slight performance edge over the 33 due to her deeper fin. In heavier air, the Pearson should show her mettle due to her even deeper draft, a high ballast ratio, and the added stability due to her displacement. The 10-Meter would be standing up and powering through when the other two might be feeling a bit pressed. Switch boats to the deep-draft fin and masthead rig of the Tartan 33R and 34, and it would be a whole new ball game, with the Tartans right in the front of the pack. Still, none of these yachts is truly competitive today except in club and old-timers' races. Given good condition and equipment, any of the three, and Tartan's variations on the 33, will make reasonably competent bluewater cruisers. However, their real forte will be as well-performing coastal cruisers and occasional club racers.

	Tartan 33	Aloha 34	Pearson 10M
LOA	33' 8"	33' 10"	33' 1"
LWL	28' 10"	28' 8"	28' 4"
Beam	10' 11"	11' 2"	11' 0"
Draft	4' 5"	5' 6"	5' 11"
Displ.	10,000 lb	11,700 lb	12,440 lb
Ballast	4,400 lb	4,500 lb	5,445 lb
LOA/LWL	1.17	1.18	1.17
Beam/LWL	0.38	0.39	0.39
Displ./LWL	186	222	244
Bal./Displ.	0.44	0.39	0.44
Sail area	531 sq ft	531 sq ft	524 sq ft
SA/Displ.	18.3	16.5	15.6
Capsize no.	2.03	1.97	1.90
Comfort ratio	20.9	23.9	26.3
Year introduced	1979	1973	1975
Designer	S&S	Ted Brewer	Bill Shaw

Ted Brewer is a contributing editor with Good Old Boat *and one of North America's best-known yacht designers. His long career has embraced ocean racers, America's Cup yachts, Olympic classes, and production cruising boats, many of which are still sailing after all these years.*

Silent but deadly

Electronic vapor detectors safeguard you from invisible threats on board

by Gregg Nestor

We have all heard these or similar stories about sailors who've had lucky escapes when gases or vapors invaded their boats.

Wanting to get a jump on spring commissioning, a sailor fired up his gasoline generator and began laboring away at maintenance projects below-decks. He didn't realize that carbon monoxide from the generator was drifting into the main saloon where he was working. A fellow sailor seeking to borrow a tool found the owner "asleep." He immediately turned off the generator, opened all the portlights, and called the rescue squad. This serendipitous happenstance saved a sailor's life.

After refueling, the owner of an older sailboat equipped with a gasoline engine properly ventilated the cabin and ran his bilge blower for a full five minutes. Assuming all was safe, he turned the ignition key. An explosion erupted from below. The owner was thrown clear and sustained only minor cuts and abrasions. The boat didn't fare as well. What the owner didn't know was that a leak in the fuel system was creating new gasoline fumes as fast as the blower cleared them.

On a cold October night, a boatowner left an electric space heater on while he slept aboard. In the cramped quarters, the heater was too close to woodwork and a fire broke out. The owner was awakened by a smoke detector he had installed. He and the boat were saved.

If you don't wish to become another statistic, there are a few steps you can take to protect your boat and your life. In addition to employing safe practices, using common sense, and performing routine inspections and maintenance on potentially hazardous systems, installing one or more functioning fume detectors can be a lifesaver.

Fume detectors, also called vapor detectors, continuously monitor the concentration of a dangerous gas or gases in the air. When such a device detects a potentially dangerous level, it sounds an alarm. It is then up to you to ventilate the boat, investigate the source, and correct the problem.

Fuel-vapor detectors

Most fuel-vapor detectors employ a porous, catalytic, "hot-bead," combustible-vapor sensor that is continuously heated by a small electrical current. In operation, the hot-bead sensor safely "burns" the vapor's hydrocarbon molecules as they are absorbed by the sensor's porous surface. In the presence of an increasing level of combustible vapor, the temperature of the sensor rises, resulting in a corresponding increase in electrical resistance. At a preset level of resistance, the detector sounds an alarm.

Most detectors are set to sound off when the concentration of fumes reaches approximately 20 percent of that needed for an explosion to occur. This level is referred to as the Lower Explosive Limit or LEL. Some detectors have selectable sensitivities down to 10 percent LEL. Fuel-vapor detectors will react with a wide array of combustible vapors, including gasoline, propane, butane, compressed natural gas (CNG), and many solvents, even those in some cleaning compounds and paints.

The fumes from gasoline, propane, and many solvents are heavier than air. They accumulate in the lowest part of the boat, where a spark can ignite them. CNG and the vapors of some solvents are lighter than air. For peace of mind, you want to detect both kinds of vapors. You can do this by installing one fume detector low in the boat, and linking it electrically to a bilge blower, and a second detector high up, within 9 inches of the overhead. Some units can monitor more than one area by supporting several remote sensors that can be placed in different locations where combustible vapors might accumulate. Most marine vapor detectors cost under $200 and are easy to install.

Sensors can be affected by humidity, aerosols from paints, and silicone vapors. Gases such as hydrogen sulfide (a common contaminant in propane) can also degrade a sensor's sensitivity. Immersion in water will cause irreparable damage. To ensure that the detector is functioning properly, periodically perform the built-in self-test. When in doubt, the best way to test the unit is with a calibrated concentration of gas. To have someone perform this check costs about $75, so it may be more economical to replace the sensor element.

Carbon monoxide

Carbon monoxide (CO) is commonly produced when fossil fuel burns and is present in the exhaust of any internal-combustion engine. Gasoline-fired engines are the greatest contributors of CO. Due to their intrinsic efficiency, diesel engines produce far less CO in their exhaust and consequently lessen the chances of CO poisoning.

Because CO is lighter than gasoline fumes, it may miss detection by a low-mounted sensor. It is also odorless and tasteless, so we can't detect its presence until symptoms of exposure set in, and then only if we recognize them.

The two factors that determine what effect CO has on our bodies are the concentration of the gas in the air and the duration of exposure to it.

CO is readily absorbed into the bloodstream and combines with hemoglobin 200 times faster than oxygen does. Once there, it asphyxiates the blood cells and the victim dies of "suffocation." Some symptoms of CO poisoning, such as dizziness and nausea, are quite often mistaken for seasickness. While seasickness can be temporarily debilitating at its worst, CO poisoning can be fatal. Mild symptoms of CO poisoning include minor eye irritation, nausea, dizziness, headache, fatigue, and the inability to think coherently. More extreme symptoms include vomiting, seizures, and collapse. Prolonged exposure can result in death.

There is no "safe" level of CO exposure for humans. However, the U.S. Coast Guard has indicated that an "occupational day exposure average" of 50 parts per million (ppm) is acceptable for sea-level conditions.

Effects of CO exposure

- At an exposure level of 50 ppm for a day, a person's carbon-monoxide/hemoglobin (COHb) level might reach 10 percent. At this level of exposure, a victim may experience headache, dizziness, and diminished coordination.
- Levels between 10- and 15-percent COHb cause nausea.
- Levels as high as 40-percent COHb are associated with collapse.
- Levels greater than 60-percent COHb are usually fatal.

Acute exposure to CO is a medical emergency. If you suspect someone is suffering from CO poisoning, take no chances. Remove the victim from the exposure zone and into a fresh air location and get medical assistance.

CO sensor types

Depending upon the manufacturer, carbon-monoxide detectors utilize one of three sensor technologies.

- Metal-oxide semiconductor (MOS) carbon-monoxide detectors use a heated tin-oxide sensor. When CO is present, the tin oxide reacts with CO and an alarm sounds.
- Biomimetic carbon-monoxide detectors use a gel-coated disc. When CO is present, the gel coating darkens, causing an alarm to sound.
- Electrochemical carbon-monoxide detectors chemically react with CO, creating an electric current that triggers an alarm.

Although all of the above technologies are approved for CO detection, select a CO detector that is rated for marine use. Also select one that has the ability to compute the time-weighted average of the CO concentration. This will eliminate false alarms. Most CO detectors will sound an alarm when they encounter 70 ppm. If you want a detector that monitors low levels of CO, look for one with a memory. CO detectors should be installed at or near eye level. Keep them dry; water can destroy their sensing capability. Prices for CO detectors range from $75 to $175. They should be easy to install.

Test your CO detector weekly by pushing the device's self-test button. Consider replacing your detector every five to seven years, unless the manufacturer recommends otherwise.

Smoke detectors

Although not technically fume detectors, smoke detectors save thousands of lives each year and are among those amazing inventions that, because of mass production, cost practically nothing. If you spend time sleeping aboard your boat, install one in each cabin.

The two most common types of smoke detector used today are

photoelectric units and ionization detectors.

Inside a photoelectric smoke detector, a light and a sensor are positioned at a 90-degree angle to one another in a chamber. During "normal" mode, the light source misses the sensor. When smoke enters the chamber, however, the smoke particles scatter the light, some of which then strikes the sensor. When this occurs, the sensor sets off an alarm. Photoelectric detectors are best at sensing smoky fires, such as a smoldering mattress.

An ionization smoke detector uses an ionization chamber and a source of ionizing radiation. This is the most common type of smoke detector because it's inexpensive and better at detecting the smaller amounts of smoke produced by flaming fires.

Inside the ionizing smoke detector is a very simple ionization chamber that consists of two plates with a voltage across them, along with a small amount (perhaps $\frac{1}{5{,}000}$ of a gram) of americium-241. In operation, the americium ionizes the air in the chamber and creates very tiny electrical charges. The circuitry of the detector senses the small amount of electrical current being generated and considers the situation normal. When smoke enters the ionization chamber, it disrupts this current. The circuitry detects the resulting drop in current and sets off the alarm.

Because smoke rises, install smoke detectors overhead. Test them periodically by depressing the self-test button. They range in price from $5 to $15 and installation is simple. Unless physically damaged or exposed to salt water, a smoke detector will last for years.

While your nose is a very effective fume detector, there is much to be said in favor of using electronic fume detectors on your boat.

Gregg Nestor is a contributing editor with Good Old Boat. *When he's not writing about sailing, Gregg and his wife, Joyce, cruise Lake Erie aboard* Raconteur, *their Pearson 28-2. They also trailersail an O'Day 222.*

Design language

Lines and words that define the cruising sailboat's hull

by Robert Perry, with additional 3-D illustrations by Rick Beddoe

About 10 years ago, I wrote an extensive article for another yachting magazine on how to understand hull lines. I worked very hard on it. The editor received several letters saying what a good article it was. I didn't keep copies of those letters, but one letter remains vivid in my mind. It went something like this: "Great article on hull design by Bob Perry. I didn't understand a word of it."

So, with that in mind, if we are going to discuss hull shapes and how to read hull lines, I think now, having had 10 years to reflect on the problem with the last article, that we should start with a thorough explanation of important terms. In some cases we could argue about the terminology, but please set that aside and trust me to describe the terms as I have come to understand them in my 42 years as a professional in this business. If I were to sit down in a room filled with other yacht designers, I am very confident that we could all talk about hull shapes and features without any confusion.

A framework for calculations

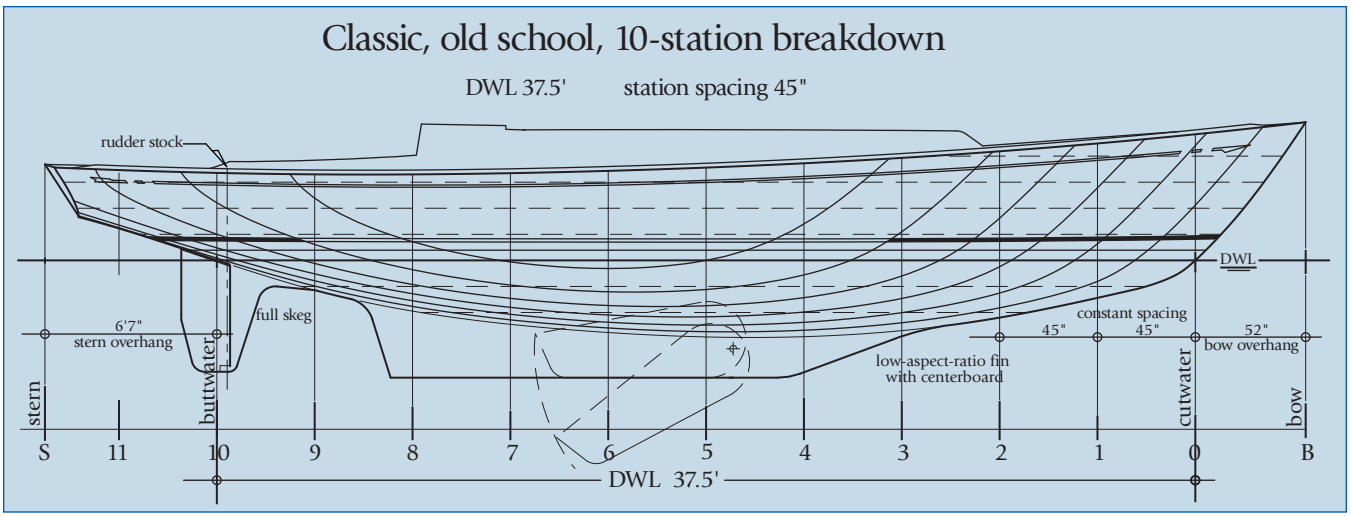
Let's start here with the most elemental features of hull design. Basic to any discussion of hull shapes is a common way of identifying locations on the hull. In the old days, when we did calculations by hand, we used a system of calculus called Simpson's Multipliers or Simpson's Rule to find displacement, center of buoyancy, center of flotation, and various other volumetric relationships. This method requires that the hull be broken down longitudinally into an even series of transverse, equally spaced segments called stations or sections. Most designers use 10 stations.

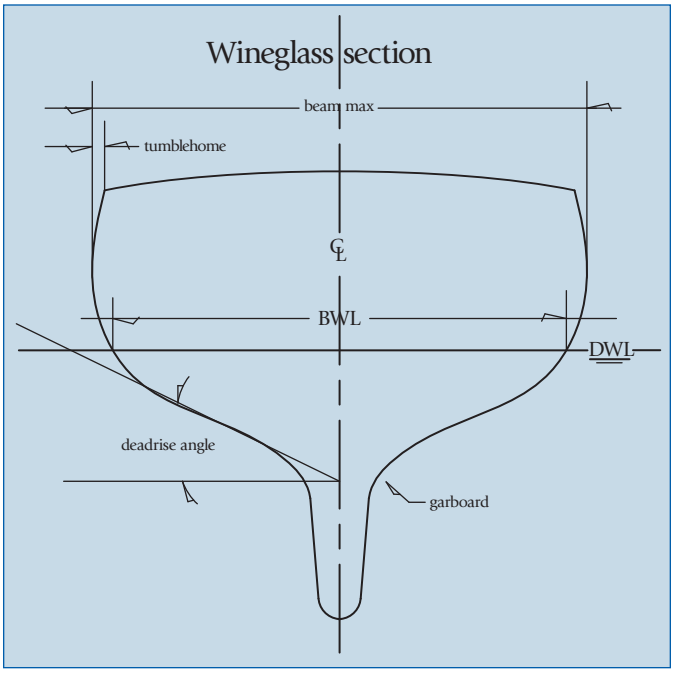
The cutwater at the bow (where the bow profile "cuts" the waterplane) would be designated station 0. Station 10 is where the stern profile or canoe body cuts the waterplane aft. (I call this the "buttwater" with tongue in cheek.) With our hull cut into 10 equal stations, we can add half or even quarter stations in the bow or stern where we think we might need more information to convey complex shape changes. I always use half stations through station 2 or 3 in the bow, just to ensure that the builder builds the exact shape I have drawn. A complex, double-ended, canoe-stern hull will require supplemental stations aft to describe the shape accurately.

Now we have a common way to identify longitudinal locations on the hull. For instance, where does the leading edge of the keel start? It starts at 3.5 or 4.2. In other words, station 3.5 or station 4.2. This means the leading edge of the keel's intersection with the hull's canoe body starts 35 percent or 42 percent of the waterline length aft of the cutwater. If we say, "The mast is at station 3.8," it is 38 percent of the waterline length aft of the cutwater. Sections are also the basis for building a hull, whether fiberglass, wood, or steel. The builder starts by erecting the stations. Today, with computers actually doing the gruntwork of hull design, the stations can be at any interval, so I generally choose a station spacing that will correspond to the builder's preference for setting up the plug framework. This will vary from 24 to 30 inches in most cases, and having stations at the cutwater and buttwater is no longer critical.

Slicing the hull longitudinally

The other two primary terms for discussing hull form are "buttocks" and "waterlines." Buttocks are longitudinal cuts through the hull parallel to the centerline. Waterlines are longitudinal cuts through the hull parallel to the DWL (design waterline). Waterlines and buttocks can be placed anywhere on the hull lines plan where the designer thinks they will do the most good for defining the shape. Waterlines and





Dividing the DWL into 10 equal "stations" is convenient both for performing calculations and for comparing characteristics of different designs, on opposite page. A section drawn through a typical good old wineglass hull at its maximum beam, at right.

buttocks do not have to be equally spaced but generally are. I like additional buttocks as I get close to the centerline and I like additional waterlines when I get below the DWL.

Measuring length

Let's first establish that LOA (length overall) is the entire length of the hull without bowsprits and boomkins. You can include the length added by a toerail or bulwark if you like, but for most fiberglass boats think of LOA as the length of the hull as it comes out of the mold, from the tip of the bow to the tip of the transom with a reverse transom. If you have a traditionally raked transom, use the tip of bow to the aftmost end of the deck. While the marina may include davits and bowsprits and any appendages hanging off the ends of the boat into your LOA for moorage charges, I do not. If you do have significant structures extending beyond the hull either forward or aft, then LOD (length on deck) can be relevant and more descriptive. But if you have a reverse transom, LOD does not account for the hull that extends beyond the top of the transom aft. An owner of a traditional boat with bowsprit and boomkin might use LOD to describe the length of the hull and LOA to describe the full length of the entire boat.

Defining the sheer

Another term we should identify quickly is "sheer." We will need it. The sheer is the intersection of the deck edge with the side of the hull. If you have a tall toerail or bulwark, your eye may see the top of the toerail or bulwark as the visual sheer but, technically speaking, we should use sheer as the intersection of the deck edge and the hull.

Design waterline

Given that the station spacing is usually a function of the waterline length, we should establish the definition of waterline or DWL. You can call it DWL (design waterline) or you can call it LWL (for length at the waterline or load waterline). I use DWL to describe the length of the boat's flotation waterplane or "footprint" in the water. Of course, the DWL can vary for boats out of the same hull mold depending on their loading and trim condition. With the fore-and-aft overhangs making acute angles, in most cases, with the waterplane, having the bow up or stern up can change the DWL. Adding weight to a boat and sinking it in the water always adds to the DWL. But I use brochure specs for most of my calculations and I just assume there will be exceptions. For specific examples, the designer can input corrections for trim and loading differences to get the most reliable and accurate numbers. DWL is important because it is often the base of further comparative calculations.

If the rudder blade breaks the waterplane aft — for instance, a boat with an outboard rudder — I would not include it in the DWL. Also, if there is a fairing above the rudder blade that breaks the waterplane, I would not include that fairing in the DWL. Because DWL will be used to estimate hull speed, it's prudent to use a DWL figure that accurately represents the hull configuration.

Beam and tumblehome

Beam is easy: it's how wide your boat is. Maximum beam is usually around station 6 for modern boats. Again, for fiberglass boats I measure beam by measuring the hull at its widest point as it comes out of the mold. If it's a wooden boat with a broad cap rail, I would not include the added width of the cap rail in the beam. I would not include the added width provided by a stout rubrail either. It's a judgment call, but I use "beam" as a measurement of the hull itself.

While we are discussing beam, we should talk about tumblehome. That's a fun term. A boat has tumblehome when the maximum beam is below the sheer, so that the topsides roll back inboard, "tumbling home" as the freeboard increases. Freeboard is the distance between the waterplane and the sheer. In the 1960s and '70s, when the International Offshore Rule (IOR) was the dominant measurement rule for handicap racing, many boats showed marked tumblehome, since the all-important Beam Max measurement was taken well below the sheer. You can also see great examples of tumblehome if you look at the old frigates and ships of the line like Nelson's HMS *Victory*. My own Valiant 40/42 design has quite a bit of tumblehome. Tumblehome can be pretty if done with sensitivity. Many

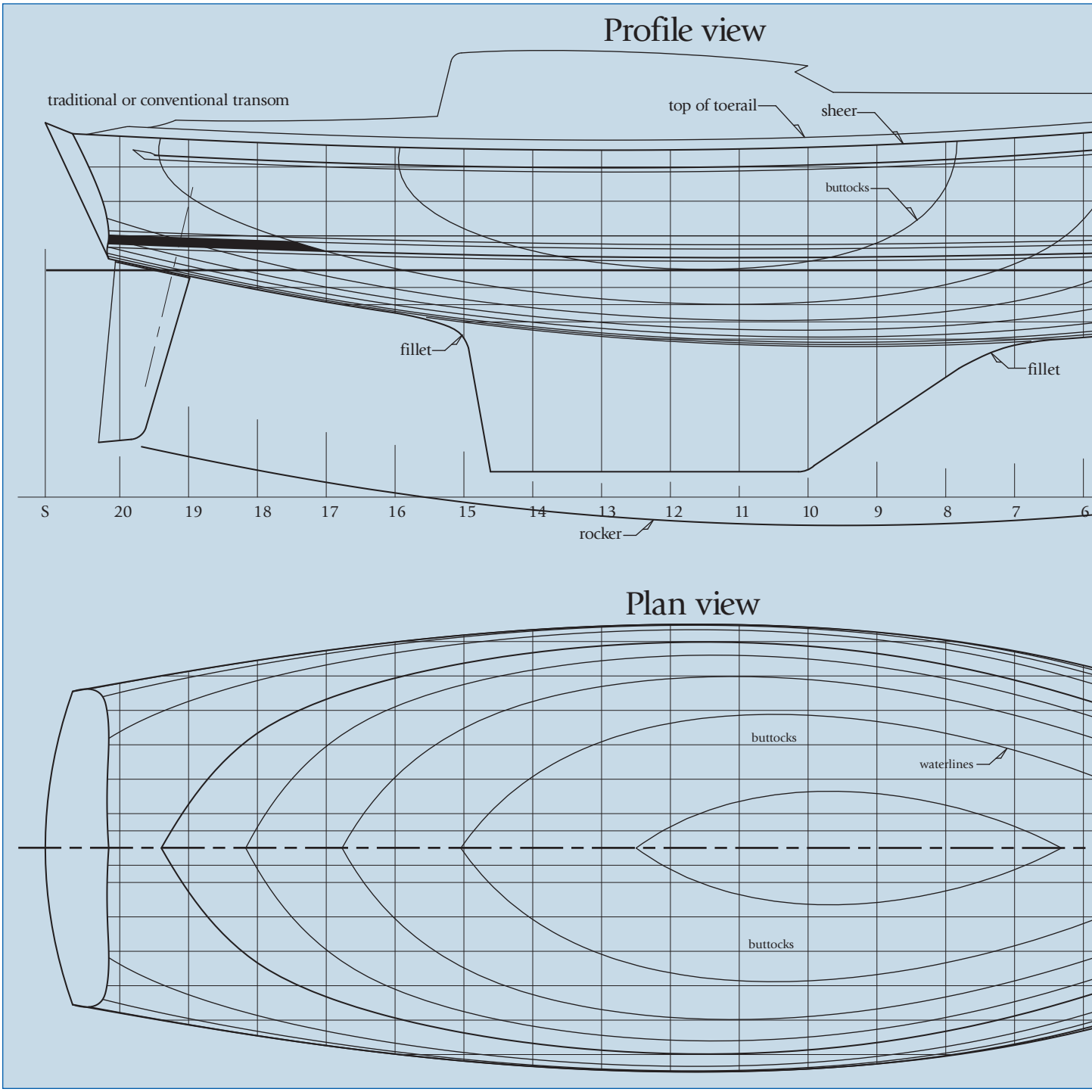
of the yachts of the 1940s and '50s used increasing tumblehome as the hull went aft, resulting in a very handsome and rounded transom shape.

Comparing relative beam

Beam Water Line (BWL) is a useful number but it's not always included in promotional material. By comparing the ratio of BWL to LWL, you will get a number you can use along with LOA/Beam Max to help you get a handle on the relative beam of the boat. Due to varying lengths of overhangs, LWL/BWL might be a more accurate way to look at a boat's slenderness or beaminess. I use both.

Draft

We all understand what draft is: how much water does your boat draw? This is a measurement that goes from the waterplane to the deepest part of the keel. For a full-keel boat, the deepest part of the keel may be at the rudder gudgeon all the way aft, depending upon the angle of the bottom of the keel from horizontal. I call that angle the "drag" of the keel.

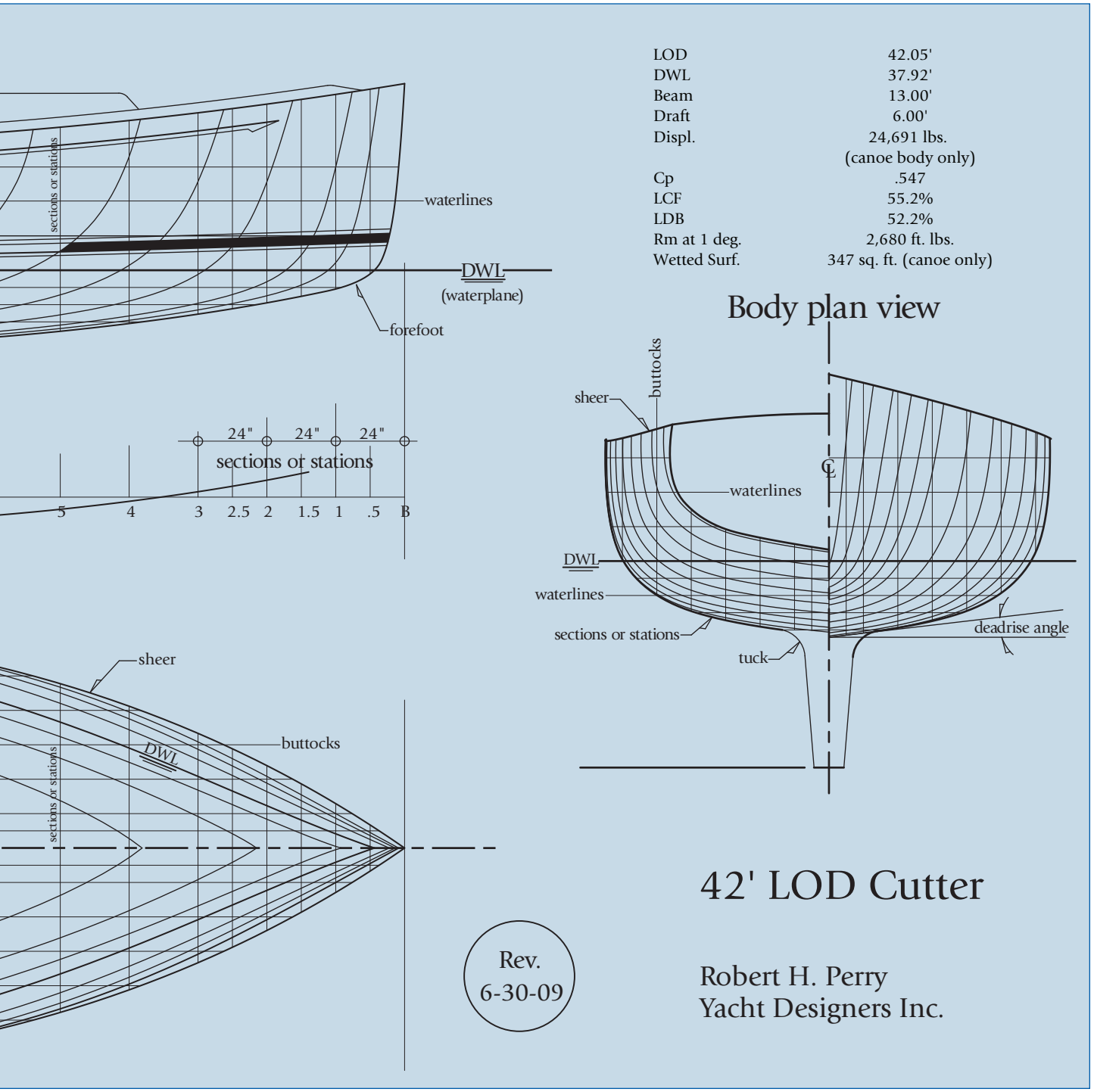


If you have a centerboard or daggerboard boat, you will have a "board-up" draft and a "board-down" draft. Keep in mind that if a particular boat is heavier than advertised it will have more draft than advertised.

Displacement

Displacement can be confusing. We could just call it "weight" and avoid confusion. I can't tell you how many times I have been asked, "I know what the displacement is but what does the boat weigh?" We call it displacement because a boat "displaces" its own weight in water. Think of displacement as the overall weight of the boat. Like DWL, displacement will vary with loading. For my general comparative calculations, I use the brochure-published displacement, all the

Robert Perry has labeled this lines plan (which he drew on a computer) to illustrate terms used in the design process. In the body plan, half sections describe the shape of the hull at each station, giving views from the bow and from the stern. The numbers in the table (Cp, LCF, etc.) will be explained in forthcoming articles.

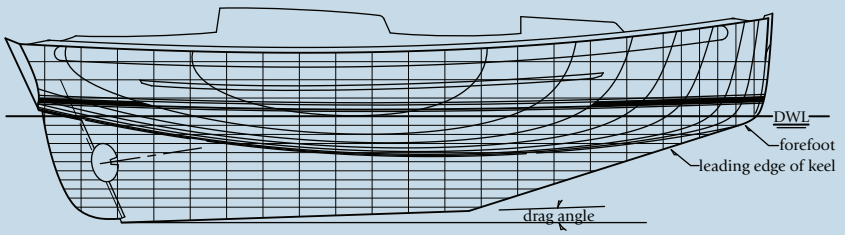


while assuming the production model will probably be a bit heavier than promoted.

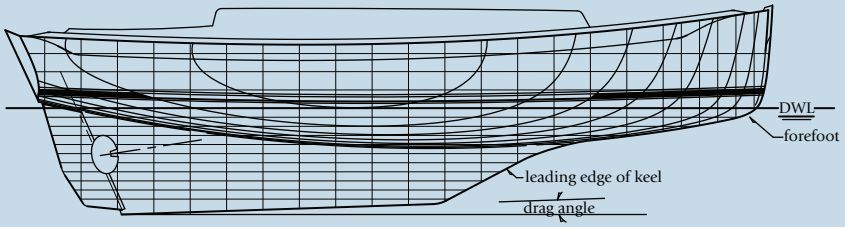
In my own work I use three displacements for a given design. "Light-ship" displacement is the boat's weight right out of the builder's box with empty tanks and no optional gear, personal gear, cruising accessories, or crew. You can use this displacement for weight studies in terms of materials used but it has little to do with the actual boat as we use it. I use a "half-load" displacement to describe the weight of the boat as you would generally find it sitting at the dock ready for a day's sail. In this case, the tanks are half full, there is crew on board, the sail inventory is full, and there is an allowance for some cruising gear. I design to this "half-load" displacement. I also use a "full-load" displacement to represent a boat just before it takes off on an extensive cruise. This displacement includes full tanks, extensive ground tackle, dinghy, outboard, a large allowance for personal gear, food stores, and beverages.

Full keels and their variants

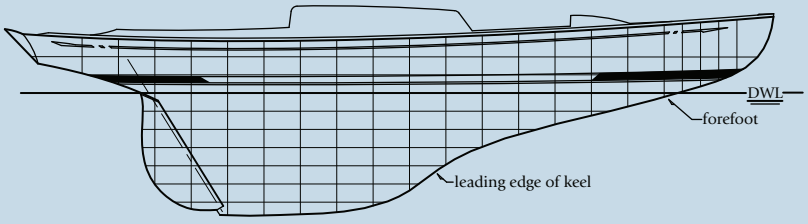
Keel configurations are always fodder for debate, but I'll go through the terms to describe keels as I use them. A "full keel" is a keel that begins at the forefoot right below the waterplane and extends aft to include a full-depth rudder attached to the trailing edge of the keel. In the classic full-keel design, there is no point forward where the leading edge of the keel is differentiated from the forefoot. The keel essentially just grows out of the forefoot. A Westsail 32 is a perfect example of what I call a full-keel design.



Typical full-keel profile with leading edge of keel starting right at the forefoot



Typical modified full-keel profile with leading edge of keel starting well aft of the forefoot



Typical modified full-keel profile of many performance boats prior to 1960

I don't like the term "modified full keel" because it's too nebulous but, as you hear the term all the time, I might as well take a stab at defining it. If you can see where the forefoot ends and the leading edge of the keel begins — for example, the leading edge of the keel is pulled aft from the forefoot — I call that a modified full keel. It's just a shortened full keel.

Certainly you can see the difference between the full keel of the Westsail or my Tayana 37 and the "modified" full keel of an old 12-Meter racing yacht, despite the fact that both boats have their rudders attached to the trailing edge of the keel. The modified full keel has far less area or "planform" to it than the true full-keel design. Ted Brewer started putting a divot in the keel profile just ahead of the rudder in his modified full-keel designs. I came up with a name for this years ago: the "Brewer Bite." It's an attempt to reduce wetted surface, but to me these designs are still modified full-keel designs.

Separate appendages

If you separate the rudder from the keel by pulling the rudder aft and pushing the trailing edge of the keel forward — such that the rudder or rudder and skeg are separate entities from the keel — I would call this design a "split appendage" design. The skeg is directly forward of the rudder and includes, in most cases, a heel fitting or gudgeon to support the rudder stock. You can have a half skeg that goes only halfway down the span of the rudder. This allows some "balance area" to the rudder where there is rudder area forward of the centerline of the rudder stock. If you have a full-length skeg, you cannot have any balance area to the rudder. This can be a problem on larger boats. Let's save that for another article. If there is no skeg preceding the rudder, you have a "spade rudder." Spade rudders almost always have some balance area forward of the centerline of the rudder stock.

Measurement ratios for fins

Most modern boats have "fin keels." Fins are all about aspect ratio. For efficiency, you need a deep-draft, knifelike, high-aspect-ratio keel. For convenience and shoal draft, you need a shallow, long, low-aspect-ratio keel.

Technically, aspect ratio is calculated by squaring the span of the keel and dividing that by the keel area. But for our use, the simplest way to determine the aspect ratio of the keel of any cruising boat is to divide the span by the mid chord. Span is the height of the keel from the bottom to where it joins the hull's canoe body. Chord is the horizontal, longitudinal length of the keel. Most cruising boats have tapered keels where the "root chord" (where the keel meets the hull) is far longer than the "tip chord" at the bottom of the keel. To account for this taper, it is best to use the "mid chord" to determine aspect ratio. The mid

chord is the horizontal keel length halfway down the span. A high-aspect-ratio fin, like you would see on a modern fin-and-bulb sportboat, might have an aspect ratio around 3.8. A moderate-aspect-ratio cruising-boat keel, like you would see on my Passport 40 design, has an aspect ratio of 0.3. A low-aspect-ratio fin, like you might see on a combination centerboard stub-keel design, might have an aspect ratio of 0.136. But they're all fins. They are just fins of different aspect ratios.

"Thickness ratio" is the term used to describe how thick the keel fin is relative to its length. Most cruising boats with internal ballast will have relatively thick keels with a thickness ratio between 12 and 14 percent of the chord length. In cruising-boat design, this thickness is often a function of making room inside the molded fiberglass fin to hold the required ballast amount along with accommodating the skin thickness of the fiberglass keel shell and some reasonable working tolerance. High-performance, high-aspect-ratio keels may have thickness ratios as low as 10 percent, but as the keel gets higher in aspect ratio, there is often a need to increase the thickness ratio to accommodate the structure required to hold on a heavy keel bulb. Some of the America's Cup boats had keels with thickness ratios in excess of 15 percent. The same terms used to describe fins — span, chord, thickness ratio — can be used to describe rudder geometry. Again, I refer to the overall profile shape of the fin as the "planform."

Where the keel joins the hull

The "tuck" is the area in section where the keel fin joins the canoe body. Depending upon the design, the radius at the tuck is generally fairly tight. A generous tuck radius may be structurally desirable, but the bigger the radius the more it will interfere with the foil of the fin. This area is called the "garboards" on an older wooden boat or early fiberglass boat, like an Alberg 35 or a Rhodes Bounty, with a more wineglass section or more "deadrise" (angle of the bottom, in section, off horizontal).

If, like many modern boats, the boat is essentially flat-bottomed, I say it goes "tangent at centerline," meaning there is no deadrise. At both the leading and trailing edges of the keel fin, the radii (or near-radii) where the fin profile is faired into the canoe-body profile are called leading and trailing edge "fillets." These fillets make a "fair" or smooth transition into the sectional tuck.

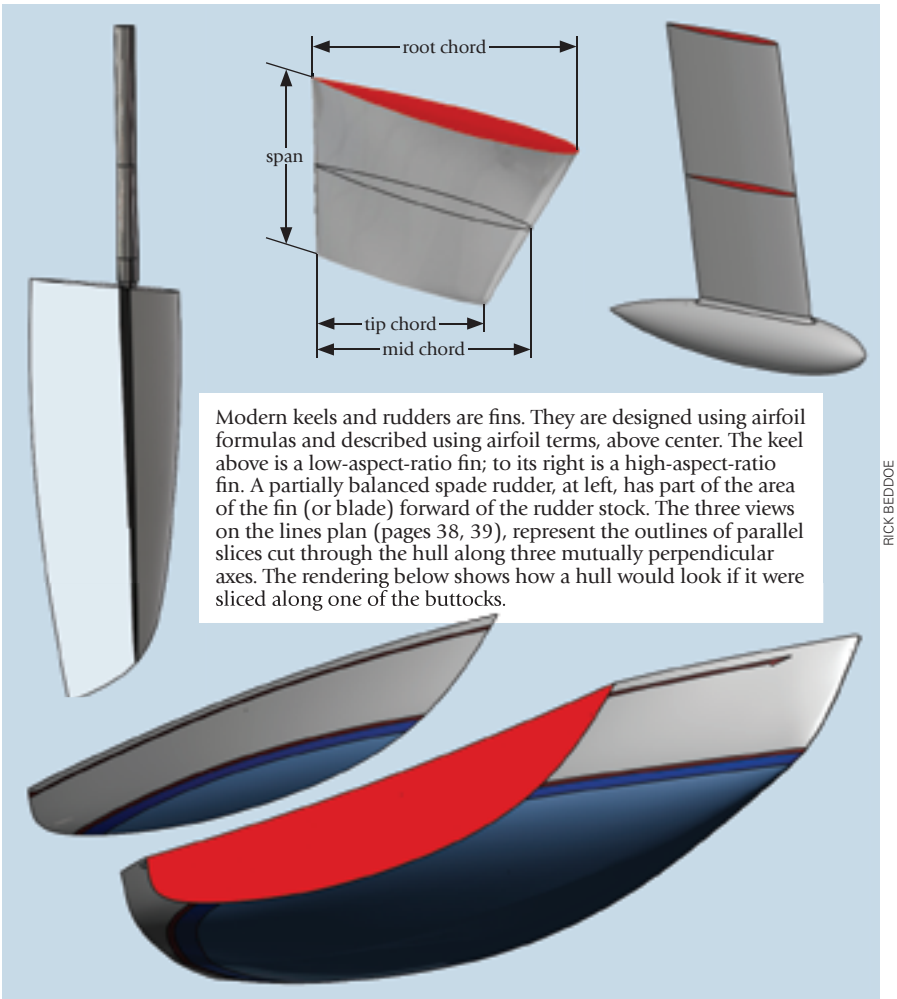
I use the term "rocker" to describe the fore-and-aft curvature of the canoe body. A heavy boat has lots of rocker. An ultra-light-displacement boat (ULDB), like a Santa Cruz 70 or a modern Trans Pac 52, has very little rocker. It's safe to say that rocker is a function of displacement.

Chine language

We see a lot of modern boats with "chines." Chines are just corners on the hull. You can have a single chine or multiple chines. Many plywood boats have multiple chines. You hear the term "hard chine," but I'm not sure why. A corner is a corner. You also hear "soft chine" and I have no idea what a "soft chine" is; either there's a corner there or not. For me, the term "soft chine" is an oxymoron. If you're studying a steel or aluminum boat built from flat plates with a single chine or maybe double chines, say, two per side, you might see that the designer has rounded off the chine by using a plate of a constant large radius to take the corner off. I call this a "radiused chine."

Still with me? In the next article, using this terminology, we'll look at various hull features and shapes. We'll see how the shapes work to produce some ratios and non-linear comparison figures that will allow you to compare various designs quickly and accurately.

Robert Perry has been designing yachts, mostly of the sailing variety, for nigh on four decades. Because a great many of the countless boats built to his designs now also fall into the category of "old," he has a very active consultation business with owners of good old boats. Perry fans can see his work at <http://www.perryboat.com>.



Modern keels and rudders are fins. They are designed using airfoil formulas and described using airfoil terms, above center. The keel above is a low-aspect-ratio fin; to its right is a high-aspect-ratio fin. A partially balanced spade rudder, at left, has part of the area of the fin (or blade) forward of the rudder stock. The three views on the lines plan (pages 38, 39), represent the outlines of parallel slices cut through the hull along three mutually perpendicular axes. The rendering below shows how a hull would look if it were sliced along one of the buttocks.

RICK BEDDOE

The cool diesel

Eliminate overheating in 12 easy steps

by Vern Hobbs

Ask any owner of an auxiliary diesel sailboat what his or her most common engine-related problem is and chances are the answer will be, "Overheating!" It's a common malady, one that's likely to become a frustrating and recurring nightmare unless you understand how your engine is cooled and learn some simple steps to keep it running cool.

Even the greenest nimrod on the dock knows that sea or lake water is used to cool a marine diesel, but exactly how that happens is often misunderstood. Long ago, marine engines were typically cooled by pumping seawater around the cylinders and discharging it overboard. This method, while simple and effective, introduced a number of elements that greatly reduced engine life. Modern auxiliaries employ dual-circuit cooling systems that provide efficient cooling without the harmful side effects. These modern cooling systems have two halves, or circuits, that are completely separated from one another, although they do share a common component.

Dual-circuit cooling

The freshwater circuit, sometimes called the closed circuit or the coolant circuit, actually cools the engine. It's very much like the cooling system of most automobiles: an engine-driven pump continuously circulates a coolant solution, typically glycol, around the internal parts of the engine to carry away heat. The second half of the system, the raw-water circuit, cools the freshwater circuit. This circuit uses a second engine-driven pump to draw water from outside the boat — raw water — and pass it through a device called a heat exchanger, a component that both circuits share.

The heat exchanger serves the same purpose as the radiator of a car — it reduces the temperature of the coolant solution before it's re-circulated through the engine. The car radiator does this by directing airflow over small tubes through which the coolant solution is flowing. The heat exchanger accomplishes the same task by pumping the coolant solution around small tubes through which the raw water is flowing.

Unlike the coolant solution, the raw water is not re-circulated. It's discharged overboard, usually after being pumped into the engine's exhaust, where it further serves to rapidly cool the exhaust gases and the exhaust pipes inside the boat.

> "Faults in the freshwater (or coolant) circuit are comparatively rare."

This basic explanation of how a diesel is cooled sounds simple; so why are so many sailors plagued with overheating woes? To work reliably, the dual-circuit cooling system, like everything else aboard, requires periodic maintenance. Unfortunately, many skippers neglect this important system until it literally screams for attention by setting off that pesky over-temp alarm. By conducting the following 12-point check, once every six months in the colder climates and every three months in tropical waters, you will help keep things cool.

Freshwater circuit

Faults in the freshwater (or coolant) circuit are comparatively rare, but four items should be checked.

1. Coolant solution

This is elementary, but essential: ensure the coolant holding tank is adequately filled. The solution should be uniform in color, usually green or blue. Muddy, rusty, or oily colorations are signs of trouble.

2. Coolant-tank filler cap

Trivial? Not at all. An incorrect or faulty filler cap may contribute to overheating. (See "Losing Engine Coolant," March 2008.) The freshwater circuit is sealed and designed to operate at a specific pressure that is maintained by a relief valve in the filler cap. Consult your engine's operator's manual to determine if the correct cap is installed. Ensure that the cap is corrosion-free, the gasket is pliable and not torn, and the spring-loaded valve moves freely.

3. Coolant pump and belt

Check the belt for tension by placing downward pressure at a point midway between the pump and the drive pulley. It should flex no more than about ½ inch. Next, examine the pump itself. Any evidence of coolant leakage indicates a faulty pump.

4. Thermostat

Rapid overheating after startup or unusually long run times before reaching the recommended operating temperature are indications of a faulty thermostat. A healthy thermostat allows the engine to reach operating temperature quickly and stabilize there. To be properly tested, the thermostat must be removed from the engine. This may or may not be a simple job. The good news: most (but not all) thermostats are cheap. Many mechanics recommend simply replacing them each time the coolant is changed — annually — as good preventive maintenance.

> **“Most overheating problems arise from shortcomings of the raw-water circuit.”**

Raw-water circuit

Most overheating problems arise from shortcomings of the raw-water circuit. There are seven likely trouble spots.

5. Raw-water intake valve (seacock)

Ensure that the intake seacock operates freely and is fully open while the engine is running. Inspect the intake screen outside the hull and clear away any obstructions or marine growth. This may require a swim.

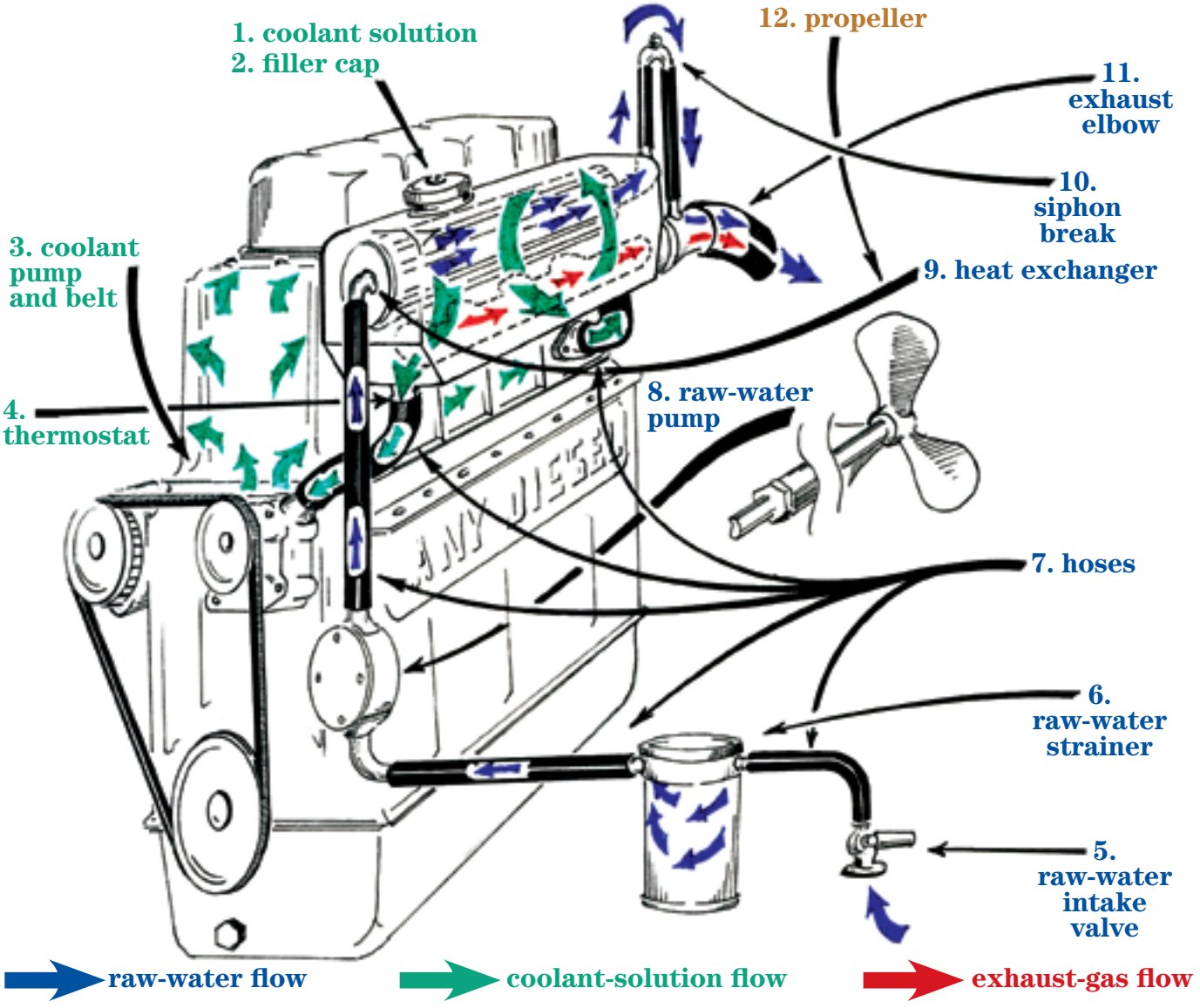
6. Raw-water strainer

Close the raw-water seacock and open the strainer. Remove any debris or marine growth, then flush the strainer basket with fresh water and reassemble the strainer.

7. Hoses

The raw-water circuit will typically have four or five sections of hose that allow the water to flow successively to each component in the system. Close the raw-water seacock, then visually trace these hoses

This generic engine's header tank, heat exchanger, and exhaust manifold are contained within a common housing. On some older engines these components may be separate, but the principle of operation is the same.



VERN HOBBS

"The heat exchanger is the heart of both cooling circuits. These devices are delicate and expensive . . ."

through the entire system. Check for and eliminate any kinks or pinches. If, because of a weak or irregular water discharge through the exhaust, you suspect inadequate raw-water flow, disconnect each hose section and check it for clogs.

Ensure all hoses are of the proper size. Any hose that appears to sharply reduce or expand in diameter at a connection point may be incorrectly sized. Replace any hoses that are cracked, bulged, abraded, or of the wrong size. Re-open the seacock, start the engine, and observe all hoses in the raw-water circuit while operating the engine at full rpm. If any hose appears to collapse, even partially, replace it with a wire-reinforced hose. Check for leaks. Shut down the engine, close the seacock, and repair any noted deficiencies after the engine has adequately cooled.

8. Raw-water pump

Close the raw-water seacock. Place a bucket directly beneath the pump, remove the faceplate, and inspect the impeller for broken, nicked, or gouged lobes and any other obvious damage. If the impeller is damaged, or if it is more than two years old, replace it. If this process seems too mechanically challenging, consider following the instructions presented in *Troubleshooting Marine Diesels*, by Peter Compton, or hire a pro.

9. Heat exchanger

The heat exchanger is the heart of both cooling circuits. These devices are delicate and expensive so consult a professional before proceeding with anything more in-depth than the two basic procedures described here.

First, if the end caps are removable and accessible, take them off, remove any visible debris, and visually check for blockages or mineral buildup. Some sources recommend using a small-diameter wooden dowel to swab out the tubes, but be careful. Don't force the dowel and don't be tempted to use harder or stiffer cleaning devices. Check the heat exchanger visually once more and reinstall the end caps.

A less-invasive way to remove mineral buildup is with a vinegar bath. Isolate the heat exchanger by disconnecting the hose coming from the raw-water pump and the hose leading away from the heat exchanger toward the exhaust elbow. Elevate the open ends of both hoses above the level of the heat exchanger and pour white distilled vinegar into one of the open hoses until it runs from the open end of the other hose, filling the heat exchanger. This mild acid will remove minor mineral deposits. Even a thin film of such contaminants will significantly degrade the heat exchanger's efficiency. Let the vinegar stand for 30 minutes then drain it into a bucket and reattach the hoses. Flush the system with raw water by running the engine. If more vigorous cleaning is required, remove the heat exchanger and take it to the professionals at a radiator shop.

10. Siphon break

The hose section connecting the heat exchanger and the exhaust elbow should incorporate an elevated loop. The top of this loop may incorporate a U-shaped fitting with a small nipple. This is an anti-siphon valve; it's important because it prevents water from backing into the engine's cylinders. You can check the valve for restrictions by removing the nipple and blowing through it in both directions. If it's clogged, clean or replace it.

11. Exhaust elbow

This component may not be considered part of the cooling system, but a partially restricted exhaust elbow is a sure formula for overheating. Carefully remove the exhaust hose at the outlet of the elbow and check inside for excessive carbon (soot) buildup. If the elbow appears to be partly clogged, have someone experienced in performing this sort of job clean or replace it.

Beyond the engine

When both of the cooling circuits are in good order but overheating persists, there is one more place to look.

12. A surprise

The 12th common culprit of overheating may come as a surprise. It's the propeller. A prop that is even slightly fouled with marine growth will markedly reduce the engine's efficiency, resulting in higher-than-normal fuel flows to achieve any given rpm setting and, in turn, excessive heat buildup. A good scrubbing at least once a season is imperative. Tropical sailors may find it necessary to scrub their props every month or two.

Making these 12 checks part of your regular maintenance routine might just prevent that temperature needle from creeping up the scale, offer your engine a longer life, and cause you fewer of those troublesome recurring nightmares.

Vern Hobbs and his wife, Sally, sail a 1974 35-foot Bristol cutter along Florida's Atlantic coast and the Intracoastal Waterway. Their day jobs pay the rent, but money for boat projects comes from Vern's work as an artist — he specializes in maritime subjects.

Resources

Troubleshooting Marine Diesels, by Peter Compton; International Marine, Camden, Maine.

First-time skipper

Docking in a storm brings near-calamity

by Vern Hobbs

The deal was done. I handed the check to the yacht broker, and she was mine: a classic New England sloop, designed by a famous marine architect, only 65 of her kind ever built. Her lines were the reason sailors write poetry, her rigging an intricate maze of total functionality. Fast on any point of sail, steady in any state of sea. She was beautiful, if not perfect, lying in the haulout slip where the yard crew had deposited her after the survey. The frenzy of formalities required to close the deal was concluded and I, at last, had a moment alone to stand on the dock and admire my new sailboat.

"Scuze me, Cap'n. Really need her outta there. Got a 50-foot trawler comin' in for a haul first thing tammara mornin'," the harbormaster yelled as he and the yard hands left for the day.

I swung a leg proudly over the starboard lifeline and stepped aboard what was now my sailboat. At that instant, it hit me. I had never handled such a large vessel single-handed. Not even close. I had crewed aboard similar-sized boats but always under the guidance of an experienced skipper. This boat was 35 feet long. Beneath her was a full keel and 6,000 pounds of lead ballast. Was I ready to do this? Could I do this . . . by myself?

I took a deep breath in an effort to expel trepidation. "Relax," I thought, "you only have to move her to a transient slip on the other side of the marina. That's all." I began to visualize my plan, knowing that once I had decided on a course of action, everything would begin to make sense.

ILLUSTRATIONS BY VERN HOBBS

Approaching storm

BOOM! A loud clap of thunder shattered my concentration. I looked to the south to see a sky the color of a black eye. The afternoon sun was disappearing behind a wall of billowing cumulus. No more time for visualization or relaxation techniques. It was time for action.

Remembering the steps the surveyor had used, I prepared to start the diesel: raw-water seacock open, key-switch on, ignore the loud buzzing noise, press the starter switch. Nothing! Retrace the steps. Yes, everything is . . . wait! Battery switch! Battery switch to what? OK, number one should work. I pressed the starter switch again and the old Perkins rumbled to life. The previous owner had bragged about how reliable it was. I looked over the stern and saw seawater surging from the exhaust outlet. The deep drumming of the engine was reassuring. My confidence was building.

BOOM! More thunder, closer, and more resonant. No time to waste. I hopped onto the dock, released the stern lines, and tossed them aboard. My plan was to cast off the spring line last, then quickly return to the cockpit. BA-BANG! Another clap of thunder, this one shook the concrete pier where I stood.

Suppressing a tremble of terror sparked by the close proximity of the storm, I retrieved the spring line and clumsily made my way to the cockpit, stumbling over deck fittings still foreign to me. I took another deep breath and shifted into reverse. Nothing. The old boat remained motionless. I looked around hoping the reason would be obvious. Then, she began to evince the very slightest degree of sternway.

Remembering prop walk

As we crept backward I tried to remember what I had read about prop walk: left-turning prop . . . hmm . . . will push the stern . . . let's see . . . My mental review of Chapman's was broken by the solid thump of the hull against the tractor tires serving as fenders along the seawall. I abandoned the helm, which seemed totally ineffective anyway, and began vigorously fending off.

Finally, we cleared the slip under another deafening clap of thunder and the first breath of a rising breeze. I shifted ahead and steered hard to port, hoping the rudder would be more effective going forward than it had been going astern. My heart raced. Adrenaline surged through my body. We began to crawl down the fairway flanked by beautiful yachts, the dollar value of which suddenly seemed more pertinent than ever before. The smell of the approaching rain reached my nostrils, but I resisted the urge to rush, knowing it would only invite disaster.

My confidence grew with every yard we put behind us. Soon, I spotted the transient slip where my beautiful ship

> **“The storm was fully upon us now. The rain was blinding; the wind screamed from every direction.”**

would remain until my friend John, a seasoned skipper and my teacher and mentor of all things nautical, would arrive to help deliver her to her new home port. Remembering my Sunday-school upbringing, I muttered a prayer that the storm would remain at bay until we were docked. As if to remind me of my long absence from the family pew, the first drops of rain splashed on deck just as I signed off with the Almighty.

Blown off course

Wincing from the stinging raindrops, I forced myself to wait until just the right instant, then gave the helm a quarter turn to starboard. Perfect. The geometry aligned with computer-like precision as the bow rounded up toward the slip. Then, it came — that powerful gust of cold wind that rolls from beneath a mature thunderstorm. In that instant I was reminded that a sailboat need not be flying sail to obey the wind. I rolled in another quarter turn, then hard to starboard, but to no avail. The turn would be too wide. I would miss the slip and ram the sailboat at the neighboring dock, a vessel obviously worth three years of my current salary.

I shifted into astern and commanded full power, hoping I could back away from disaster. It worked. I was spared. We came slowly to a stop but then pivoted as gracefully as a figure skater. I shifted into neutral and centered the wheel, totally devoid of ideas. The rain came down in buckets. The old boat finished her pirouette, pointing in the direction from which we had just come.

More certain of my ability to steer going forward, I shifted into ahead. After gathering some steerageway, I rolled the helm hard to port and held my breath as we swung in a graceful arc and once more headed for the transient slip. The storm was fully upon us now. The rain was blinding; the wind screamed from every direction. Yet my new old boat was teaching me the first of many lessons. So long as I kept her moving, that huge keel was little bothered by those shifting gusts.

Entered smartly

This time, as we approached the slip, I spun the wheel to its starboard limit. Obediently, she rounded up. I spun the wheel back to port, then amidships as we smartly entered the slip. The rain intensified, but by now I couldn’t get any wetter and the rush of adrenaline allowed me to ignore my discomfort. I shifted into astern momentarily to halt our forward motion, then hopped onto the finger pier, retrieved the port bow line, and gave it a half wrap around a dock cleat.

Sweet relief flooded over me with such warmth that I was totally oblivious to the downpour that engulfed me. I muttered a silent prayer of thanks, but then felt the line tightening in my grip. I tugged against it to check what I thought to be the force of the wind, but the tension only increased.

Then it struck me: she was still in reverse. I stared in disbelief as the boat began to creep rearward, the line slowly paying out of my rain-soaked hands. An image of my 40-year-old sloop piled into one of the yachts moored across the marina flashed before me.

I had one fleeting chance. I let the line go slack, then snapped a figure-eight hitch over the cleat with the art of a master mariner. A second later the line snapped tight with a force that wrung a stream of rainwater from the braided nylon. I climbed over the bow pulpit, now lying even with the end of the pier, walked back to the cockpit, and shifted into neutral. Just to be sure, I pulled the handle labeled “Engine stop,” knowing I surely had used up all my luck for this day.

The rain continued to pound down, as my adrenaline ebbed. Suddenly I was aware of how exhausted, drenched, and cold I was. I found a jacket left as a goodwill gesture by the previous owner and put it on, wishing I had remembered it an hour before. I began to warm, mentally cataloging the many disasters I had escaped by inches and sheer luck.

Was it luck or magic

It took months for the events of that first day to move from the embarrassing calamity category into cautionary tale and finally to lighthearted sea story. Most say it was just beginner’s luck that saved me, but one old-timer swore the old sloop, grateful to have a new owner, used her own magic to keep us both out of trouble.

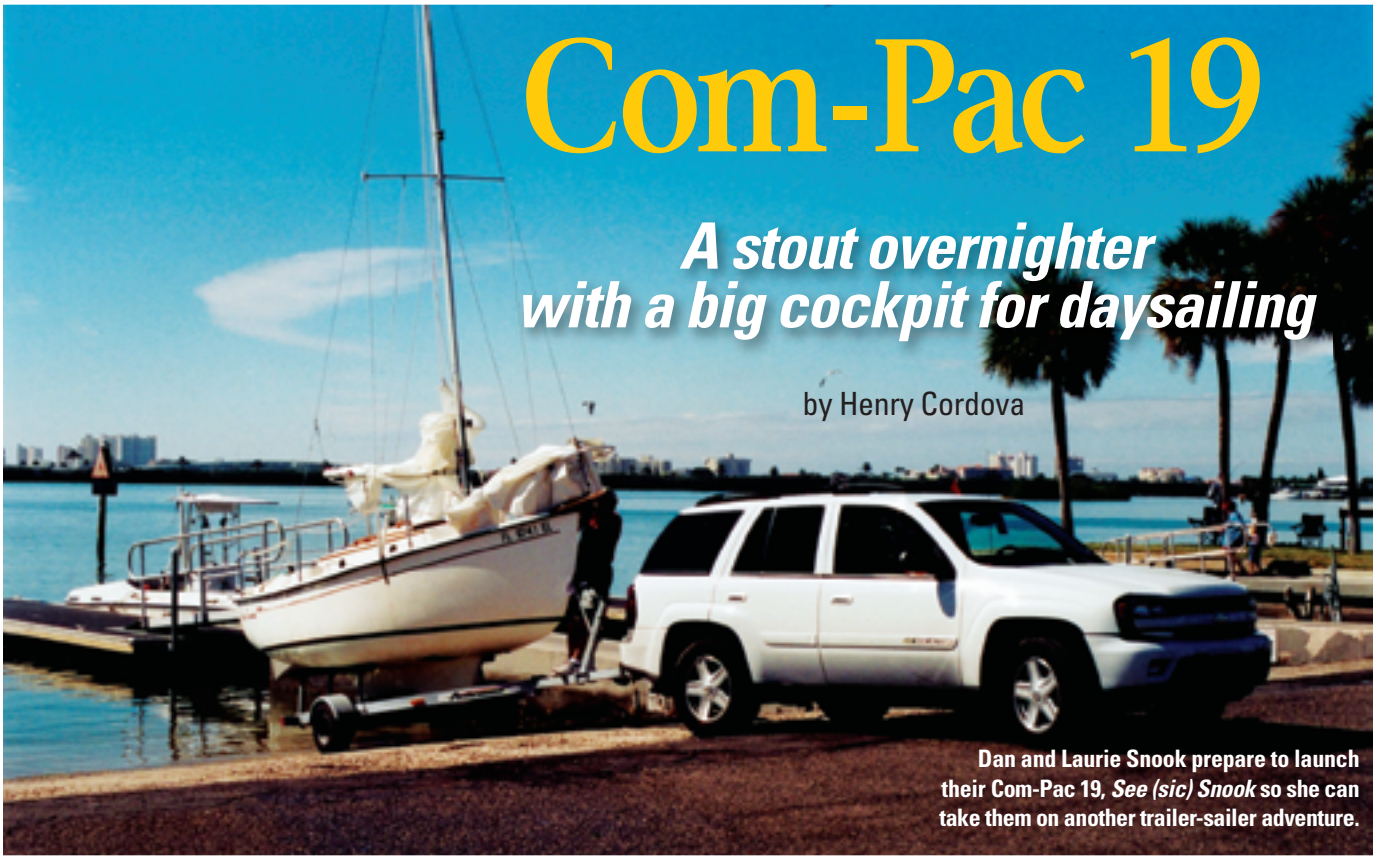
As for me, I’m not sure, but if this old boat did save her skipper that afternoon, I doubt it was the first time, nor will it be the last.

Vern Hobbs’ bio appears on page 44.

Com-Pac 19

A stout overnighter with a big cockpit for daysailing

by Henry Cordova



Dan and Laurie Snook prepare to launch their Com-Pac 19, *See (sic) Snook* so she can take them on another trailer-sailer adventure.

In 1974, the Hutchins Company found a market niche relatively unpopulated by competitors and filled it with a trailerable, well-designed, solidly built, and nicely finished mini-yacht. The Com-Pac 16 might be the minimum small boat for camping and gunkholing, but it still has enough capacity to actually travel to interesting places and stay out of trouble. It's a boat for the weekend explorer, the adventurous couple, and the small family ready to try more than just a day on the lake. This basic concept became the guiding philosophy of subsequent Hutchins boats, including the Com-Pac 23 (designed by Clark Mills of Optimist pram fame), which was introduced in 1979.

History

The obvious market gap between the 16 and 23 was filled, in 1982, by the Com-Pac 19. This Com-Pac also was successful, with a production run of 624 units over the next 20 years, until damage to the tooling finally put an end to the model run. Its designer, Robert Johnson, the founder of Island Packet Yachts, went on to design the Com-Pac 27 in 1985. This boat marked Hutchins' entry into the coastal cruiser market.

The Com-Pac 19's superficial resemblance to the 16 and 23 is obvious to the casual observer, but Bob Johnson brought many of his own ideas to the Hutchins concept. Despite those differences, it is safe to consider the 19 as an affirmation of the mission of its predecessors. The boat is a pocket cruiser capable of getting into shallow water but still able to handle some coastal cruising. It is not a bluewater boat, nor can it be called a high-performance boat, but it is stout, dependable, and comfortable. New, it was reasonably priced: base price in 1984 was $8,495. Base price for a 2001 19 XL was $16,395. The price of a used boat today depends on its age, model, equipment, condition, and the vagaries of the market. A quick survey of classifieds on the Internet revealed asking prices between $3,750 and $7,000.

Design

Bob Johnson gave the 19 a sharper bow and a finer entry than the Clark Mills designs. This yields better windward performance. The 19 also has a flatter bottom and harder bilges, which make for a roomier interior than one might expect, as well as higher initial stability. This type of hull form sails better on an even keel than it does with the lee rail in the water, and it does not roll as quickly in a stiff breeze or when crew shift sides on deck. This resistance to rocking means it is friendlier and feels more stable to new sailors and is more comfortable lying at anchor.

Just as in the earlier Com-Pac designs, the 19's keel is integral to the hull and ballasted with concrete. Four custom orders were produced by Hutchins with keel/centerboards, but the vast majority of the boats came off the line fitted with shoal keels.

Two boats were fitted with inboard diesel auxiliaries at customer request, but most of the 19s are powered by outboard motors.

All 19s have an external cast-aluminum rudder with tiller steering. Although the rudder does not extend below the keel, it can be kicked up to prevent damage in the event of grounding. Where the Hutchins and Johnson philosophies really coincide is

Production History

Com-Pac 19	1982–1985	hull #001-265
Com-Pac 19/2	1985–1988	hull #266-442
Com-Pac 19/3	1988–1992	hull #443-550
Com-Pac 19 XL	1992–2002	hull #551-624

> “. . she is all curves and grace, with a traditional look and a well-balanced shape.”

in the overall shape and character of the boat: she is all curves and grace, with a traditional look and a well-balanced shape. The boat has a wide beam, high freeboard, modest overhangs, and a jaunty sheer. She looks terrific and bigger than her size, both inside and out.

Construction

Construction methods on all Com-Pac yachts are fairly standardized. There is no fancy high-tech engineering here, just straightforward industry-accepted boatbuilding techniques and materials. The hull is built using the hand-layup method, where woven fiberglass cloth is manually placed in a mold already sprayed with NPG (neo-pentyl glycol) gelcoat, and then wetted out with polyester resin using rollers and squeegees. The deck is not cored with balsa or plywood, but with a blend of silicon-dioxide microballoons in polyester resin that is impervious to rot. It will last as long as the fiberglass skins do.

The hull-deck attachment is by means of an outside flange system. The hull and deck edges flare outward from the hull and parallel to the water's surface. These flanges are coated with a marine sealant, pressed together, and fastened with rivets. The outside of this assembly is protected by a synthetic rubrail running along the entire length of the hull-to-deck seam. Inside, a wooden batten covers the seam, secured by screws. All deck hardware is through-bolted to reinforced pads embedded in the deck.

In 1985, the 19/2 was introduced, equipped with a bowsprit, slightly more sail area, and stainless-steel rails in place of the original aluminum. An overhead liner was added to the interior and the mahogany interior trim was replaced with teak. In 1988, the 19/3 was introduced. The major change with this model was a fabric covering for the hull interior; this replaced the original paint. The final iteration, the 19 XL in 1992, featured a full interior fiberglass hull liner and a teak-and-holly sole. Occasionally one may hear about the Com-Pac 20, which was not a separate model but the name given to the 19 XL in Europe, where it was quite popular.

The Com-Pac 19 is ballasted with 800 pounds of concrete placed inside the keel cavity. As noted above, the keel is an integral part of the hull, not bolted on. The top of the keel cavity, above the glassed-over ballast, serves as a sump to collect any stray water that gets into the boat. The bilge and pump-intake hose may be inspected by lifting a sole panel just forward of the companionway ladder. This hose leads to a pump on the port-side lazarette bulkhead; discharge is a transom through-hull well above the waterline. Other through-hulls in the transom include accommodation for the outboard motor wiring harness and fuel line and two cockpit drains.

Rigging

Whereas the Com-Pac 16 has a fractional rig, the 19 has a masthead rig with upper shrouds, a single set of lower shrouds, a forestay, and backstay. The mast is stepped on deck; below is a compression post to absorb rigging loads. The boat is easily maneuvered on and off a trailer. It may be an awkward operation to singlehandedly raise and lower the mast, but it is a snap for two.

The initial design carried 188 square feet of sail area almost equally divided between the mainsail and headsail. Later variants — the Com-Pac 19/2, 19/3, and 19 XL — were fitted with a bowsprit which increased the area of the 110-percent jib to 98 square feet, the same area as the mainsail.

Another difference between older and newer models involves the reefing systems. Older boats have roller reefing; later models are equipped with slab reefing. Some owners have reported that reefing under way is difficult due to poor design of the reefing hook. Some owners have improvised a work-around. For example, one owner uses a stainless-steel ring in the mainsail grommet to fasten the reefing hook, and another suggests fitting the hook with a locking pin.

An optional 155-percent genoa with tracks and cars was offered. Other factory options included sheet winches and a halyard winch mounted on the mast. Standing rigging is 5/32-inch stainless-steel wire. The boat tested was equipped with a topping lift.

Deck hardware for the 19 is adequate for sail and line handling. At the bow, just aft of the bowsprit, is a single bronze cleat and two bronze fairleads to guide the anchor line. A chrome fitting on the foredeck allows the rode to deploy from the chain locker in the forepeak. Two other cleats and fairleads amidships handle the jibsheets, and two more at the quarters aid in docking. The boat tested also was equipped with a traveler just aft of the companionway hatch. A stern pulpit, stanchions, lifelines, and a swim ladder that were also available as factory options were present on the test boat.

Accommodations

A fore-to-aft look below reveals a bare-bones cabin that is nonetheless roomy and efficient, beginning with a chain locker in the forepeak. A hatch above the V-berth provides foredeck access and ventilation. The berth, although compact, is comfortable for

KEVIN CROWDER

Kevin Crowder's CP 19 XL, *Aurora*, built in 2002, sailing on Eagle Lake, California.

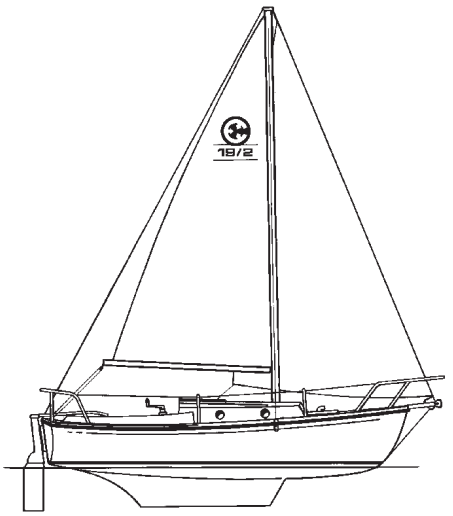
The Com-Pac 19 tows well behind most cars and is easily launched at a typical ramp, where the kick-up rudder, at left, lessens the risk of grounding. The V-berth, at right, is adequate for two adults although the compression post will come between them.

two children or one adult. In practice, however, it will probably be used primarily for stowage on anything longer than an overnighter. A notch in the V-berth, where the mast compression post is located, can hold an optional galley with a small sink and folding table.

Two small storage lockers are located under the cushions at the aft end of the V-berth, port and starboard. One of the shortcomings of this boat is a lack of storage; there simply is no room to spare. In spite of this, it is adequate for two adults willing to rough it on a week's cruise, or for three or even four for a weekend. But the supplies needed for any sort of extended trip will have to be stored in containers scattered about the cabin, or in netting strung along the cabin sides.

Illumination below is provided by four sturdy brass portlights and by a light fixture on the overhead.

The optional chemical toilet stows beneath the companionway ladder, which can be folded out and up so the head can be deployed for action with some privacy. (The ladder covers the companionway entrance.) The electrical control panel is located directly above the void where the toilet is secured when not in use. Two quarter berths along the port and starboard sides double as settees; they do not have any storage underneath. From the aft end of each berth it's possible to reach into the cockpit lazarettes, which also are accessible from the cockpit. The lazarettes are quite roomy and provide more than enough space for the usual deck gear, such as life vests, boathook, spare line, tool kit, battery, bilge pump, and spare parts. The small (2-gallon) fuel tank for the outboard fits in a space under a shelf between the two cockpit benches aft, flush with the transom. The port lazarette is roomy enough to accommodate a larger tank, and there is a through-hull from the lazarette through the transom that could pass a fuel line to a port-mounted outboard motor.



Com-Pac 19

Designer: Robert K. Johnson
LOA: 20 feet 0 inches
LWL: 16 feet 4 inches
Beam: 7 feet 0 inches
Draft: 2 feet 0 inches
Displacement: 2,000 pounds
Ballast: 800 pounds
Sail area: 196 square feet
Disp./LWL ratio: 206
SA/disp. ratio: 19.8
PHRF: 279

In a 19-foot boat, much time is spent in the cockpit, and this boat has a roomy one for its size with comfortable seating for four. With an improvised awning or boom tent, it would make an extended stay at anchor or dockside quite civilized.

Performance

The Com-Pac 19 was designed as a trailerable sailboat, and performance under tow and during launching and recovery is a fundamental consideration. Prospective buyers should ensure that their tow vehicle is up to the task and that the trailer is adequate. Although the factory towing gear is perfectly suited for the job, a used boat may not be mated to the same trailer it was sold with, and maintenance on the trailer over the years may not have been conscientious.

Under power at low speeds, the Com-Pac 19 can be a bit awkward due its relatively long keel, so it may be necessary to employ both rudder and engine when backing down in tight quarters. A 4- to 6-horsepower motor is recommended.

My test sail, aboard Dan and Laurie Snook's Com-Pac 19, *See (sic) Snook*, was conducted in Clearwater, Florida, in light winds, and it was necessary to set the genoa to get the boat moving adequately. At low speeds, the boat maintained steerageway even when barely moving. Tacking and jibing at low speeds was acceptable, although a bit slow and deliberate. Light-air performance was adequate with the wind on the beam or quarter, but making headway was difficult close-hauled. This is not a high-performance boat. Its

> **"The Com-Pac 19 is a sturdy, well-designed and constructed boat."**

PHRF is 279; compare to a Rhodes 19 at 258 and a Precision 18 at 282.

Under brisker conditions, the boat comes alive. Reports from skippers are very positive, and the boat thrives on all points of sail. The weakest appears to be downwind; the 19 does not track well under these conditions and requires constant attention to the tiller (although rig upgrades such as whisker poles and boom vangs reportedly help, and an aftermarket foil rudder is popular with some owners). The boat feels safe and stable. It rides level and resists heeling. At wind speeds over 12 knots, or when overpowered, the boat tends to develop weather helm. The tendency to round up can be partially compensated for by using the outhaul to flatten the mainsail as much as possible and by replacing old worn-out sails.

The 19 is a very good rough-water boat, it heaves to easily, sails well when reefed, is resistant to broaching, and jibes well. The 19's hull form provides high initial stability, but it might have some difficulty recovering from a capsize. But as noted above, this isn't an offshore boat.

Conclusion

The Com-Pac 19 is a sturdy, well-designed and constructed boat, and it carries out its design function as an overnighter/weekender well. Its virtues make it particularly amenable to Florida sailors. A word of warning, however: as it is a small shoal-draft boat, its stability and solidity may tempt the inexperienced or overly bold skipper to push it too far.

Owners trade notes on towing, maintenance, and performance on a couple of websites, and the builder has an excellent record of providing advice and spare parts to owners of used boats. R.F. Burgess' book, *Handbook of Trailer Sailing*, is also an invaluable source of information on the Com-Pac 19 and other comparable boats. Burgess discusses the Com-Pac 16 and 19 at length in his book — he has owned both!

Henry Cordova is a geographer/cartographer who has been a sailor of the military persuasion (U.S. Navy Reserve on the USS Dewey*) and of the recreational variety (a San Francisco Pelican and a MacGregor 22).*

Resources

Hutchins Company website
<http://www.Com-PacYachts.com>

Com-Pac Yacht Owners Association
<http://www.com-pacowners.com>

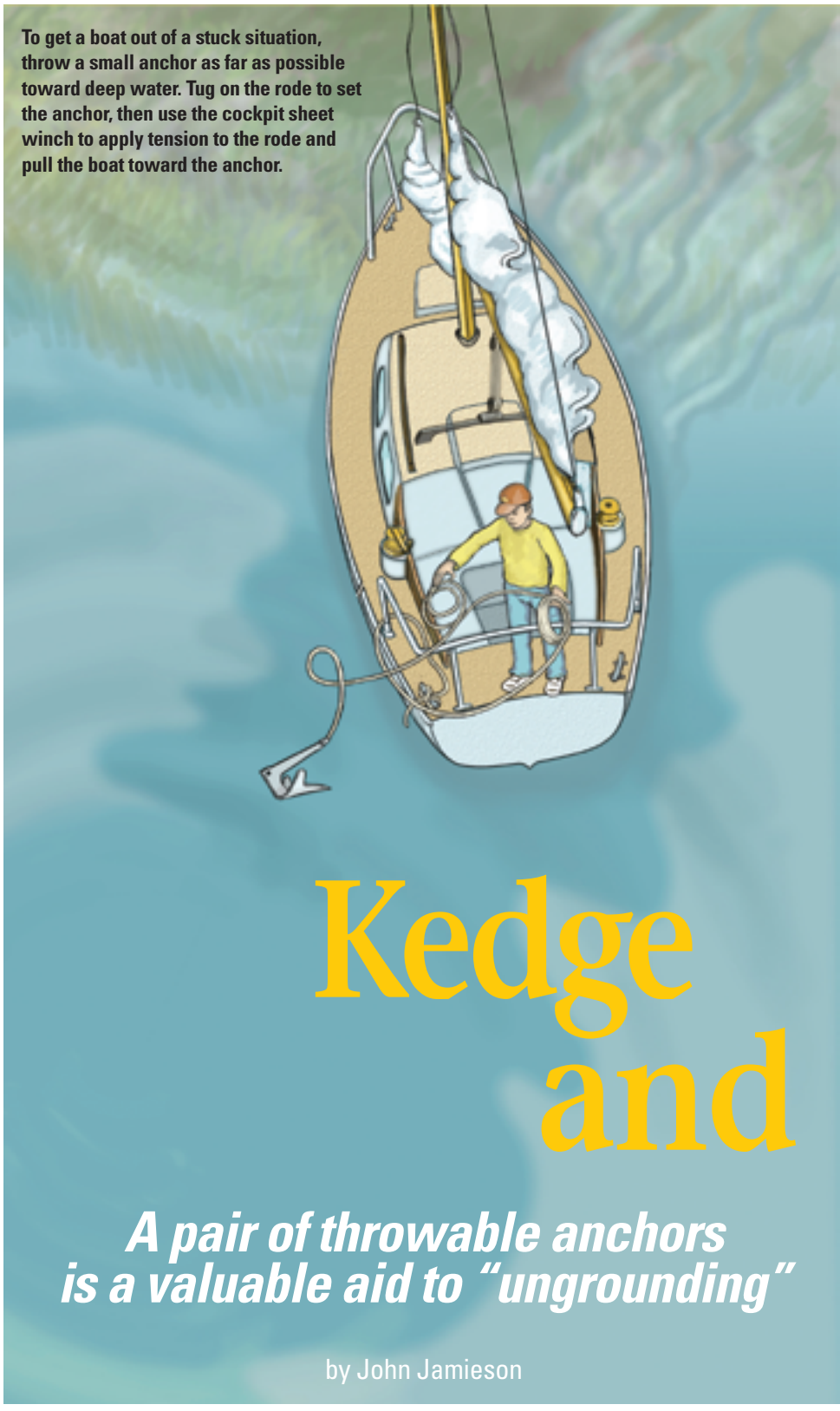
Yahoo Com-Pac Group
<http://groups.yahoo.com/group/com-pac>

Handbook of Trailer Sailing by Robert F. Burgess; Dodd, Mead & Co. New York, New York; ISBN 0-396-08303-X

Kedge and

A pair of throwable anchors is a valuable aid to "ungrounding"

by John Jamieson



To get a boat out of a stuck situation, throw a small anchor as far as possible toward deep water. Tug on the rode to set the anchor, then use the cockpit sheet winch to apply tension to the rode and pull the boat toward the anchor.

FRITZ SEEGERS

TGIF! Friday had finally arrived. Soon we'd be off, just my little beauty and I, sailing out into the serenity and splendor of the Chesapeake. Casting off, I pointed the bow toward one of my favorite secret hideaways, a perfect little anchorage tucked just off the Poquoson River.

The anchor set deeply into the hard muddy bottom early that evening. As I sipped a cup of joe in the cockpit, the sun seemed to wink "goodnight" just before slipping below the horizon.

Sunrise greeted us with a brisk southwester, promising a fine sailing day. After a lazy breakfast, I hoisted the main, weighed anchor, and reached out of the perfect cove. Just outside the entrance, I lashed the tiller and went forward to raise the working jib. The little sail went up without a hitch and I made my way back to the cockpit. And that's when I heard the thunder.

The whole foot of the jib was shaking violently, pouring over the leeward rail. I had forgotten to set the tack into the stemhead shackle. Glancing at the chart, I guessed that I could continue another few hundred yards before I needed to tack to clear the shoal ahead. I charged up to the mast, slacked off a couple of feet of jib halyard, and started moving toward the forestay. A moment later, my boat slammed into the mud, stopping with a jolt that almost knocked me off my feet.

Little anchors to the rescue

Down came the jib and main to keep the boat from driving any farther onto the mud. Out of the lazarette came two little 2½-pound Bruce anchors. I quickly tied the bitter end of the line from one of these tiny anchors to a stern cleat, coiled the line, and climbed on top of the lazarette hatch cover. I heaved the anchor out toward deep water and pulled until the flukes dug in. Then I led the line to a sheet winch, took a couple of wraps, and started cranking. The boat started creeping foot by foot toward the anchor. As she closed in on the little Bruce, I stopped cranking and readied the second mini-hook.

I cast the second anchor, pulled until it took a hefty bite on the bottom, and led it to the other sheet winch. I then pulled up the first anchor, hoisted it aboard, and began to heave in on the second anchor. I repeated this sequence several more times, until the boat finally slid off the muddy shelf into deeper water. Free at last.

Upon inspecting the bilges, I found that the boat was dry as a bone, so no harm had been done. The little casting kedges had come through like champs to save the day.

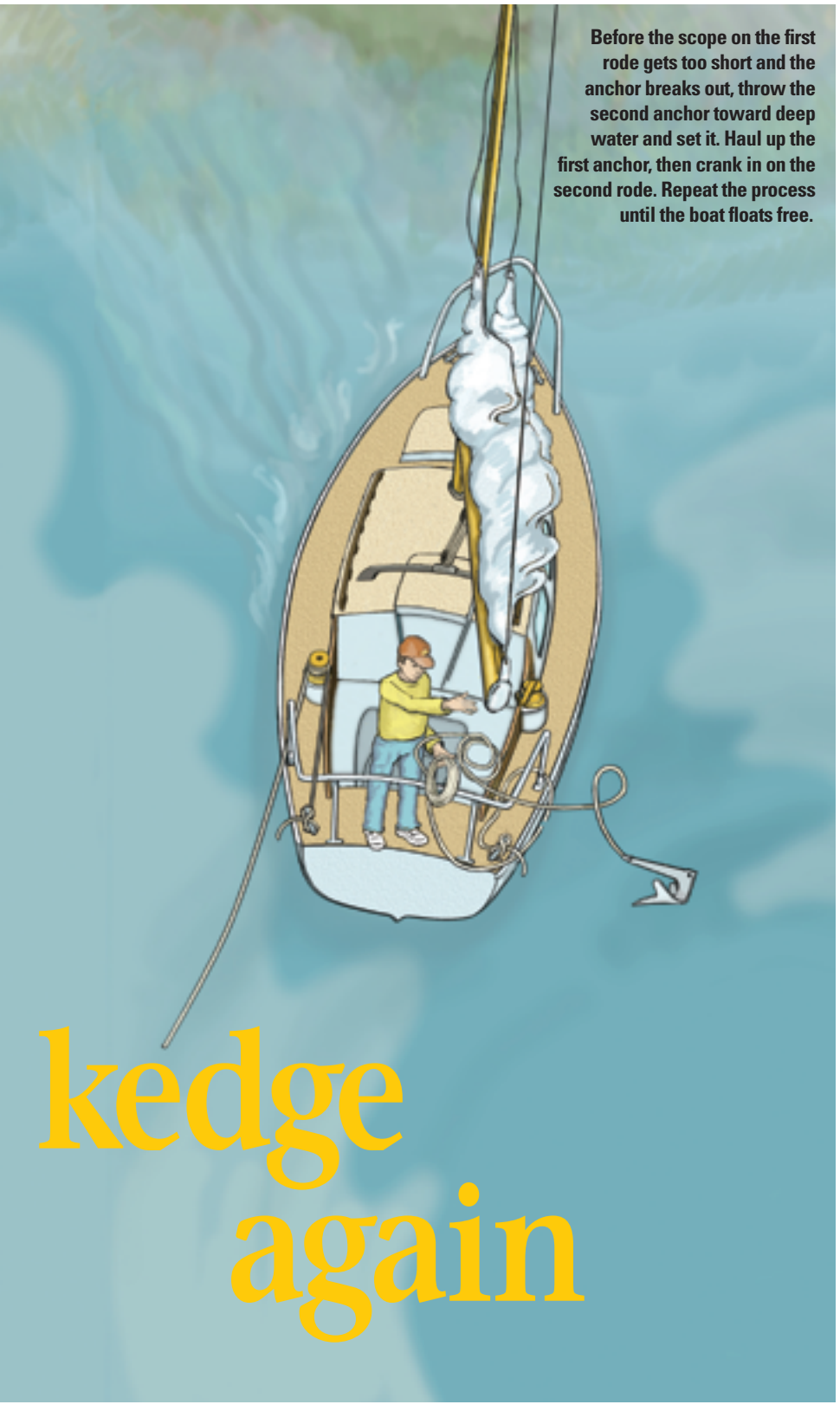
The indispensable kedge

All of us run aground now and then. Most groundings, when they happen on soft sand or mud, are more irritating than serious, and kedge anchors have a great history of helping free grounded ships.

kedge again

The traditional kedge looks like one of those anchors in a sailor's tattoo, with U-shaped flukes and a long shank. Smaller vessels often need something light that can be thrown, and a pair of small, light anchors can be doubly useful. The 2½-pound Bruce anchor is ideal. It has no moving parts and sets quickly. You might also try a strong folding or fixed grapnel anchor.

Each anchor needs its own line. Use two 100-foot lengths of 5/16-inch or 3/8-inch nylon line. Bend the lines to the rings at the end of each anchor's shank and coil the lines. Store both anchors with their rodes attached in a cockpit locker.



Before the scope on the first rode gets too short and the anchor breaks out, throw the second anchor toward deep water and set it. Haul up the first anchor, then crank in on the second rode. Repeat the process until the boat floats free.

Casting a kedge

Pass the bitter end of the anchor line over and back under the stern rail and secure it to a quarter cleat. Coil the remainder of the line, working from the cleated end toward the end with the anchor. Brace yourself at the stern rail. Break the coil in half, with your non-dominant hand holding that part of the coil closest to the cleat. Taking care not to snag the backstay, throw the anchor as far as you can toward deeper water. If the first throw falls short of where you intended, haul in the anchor, re-coil the rode, and try again. When the anchor touches bottom, tug on the line a few times until you feel the flukes dig in.

Remove the bitter end from the quarter cleat and move it to a sheet winch. Take at least three wraps on the drum, then cleat the line (standard winch) or pass it over the stripper arm and into the self-tailer jaws (if you have a self-tailing winch).

Move your crew to the bow and to the same side of the boat as your line and winch. This decreases draft by heeling the boat and lifting the stern.

Grind until you have a lot of strain on the line. When the rode is taut, stop grinding. If you see no apparent movement, have the crew shift their weight from side to side while staying in the forward half of the boat. When the boat begins to move astern, continue grinding slowly, maintaining a constant strain on the kedge. Stop grinding when you're within a few yards of the anchor, because further grinding risks breaking out the anchor.

Using the same process, cast out the other kedge as far past the first as possible. Take the second kedge line to the other sheet winch and make it taut. Retrieve the first kedge and haul in on the second one. Repeat the procedure until the boat is free.

John Jamieson recently directed the seamanship and chart-navigation departments at the Charles F. Chapman School of Seamanship in Stuart, Florida, where he taught on-the-water techniques on a fleet of 14 sailing and power vessels. He is the author of the new book, Seamanship Secrets, *from International Marine/McGraw-Hill.*

When good old boats

A good old author recalls the fun of the good old days

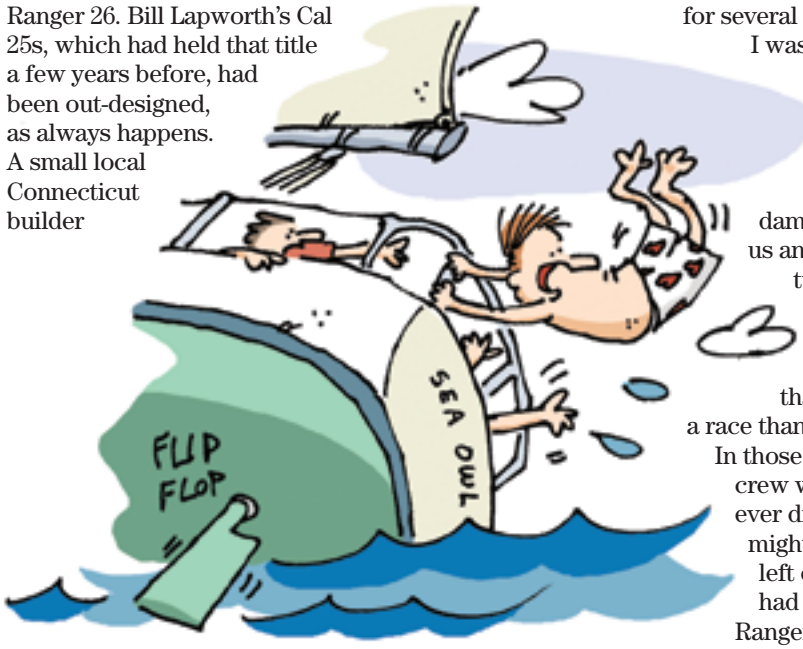
by Jule Miller

Everything about sailing was very different then. The America's Cup was challenged for and defended by syndicates of privately funded amateurs sailing beautiful boats like *Intrepid* and *Gretel* that were built to Lloyd's scantling rules. Those boats did not break in half. Now it's sailed by groups of stateless itinerant professionals in boats built to the modern scantling rule: what's the least we can do and get away with it? Those boats do break in half. The boats in the 1960 Bermuda race were caught by a 90-knotter. A few withdrew but none sank, and no one was lost or seriously hurt. Compare that to the succession of disasters that began with the 1979 Fastnet Race and continues to this day whenever an offshore fleet is caught and given a good shaking by Poseidon who feels, as I do, that he is not being shown the proper respect.

Yup, everything was different then . . . even at the Long Island Sound club-racing level. In 1971, for about $6,000 you could buy a brand-new Ranger 26, Yankee Dolphin, Cal 25, or one of Bill Tripp's Columbia 26s, and if you weren't competitive it certainly wasn't the boat's fault. For less than $18,000 you could have a 30-foot Tartan, Pearson, or Cal 2-30. A Cal 40 listed for $33,851. To be competitive today, you have to be able to spend that kind of money on sails alone.

Those new mass-produced fiberglass boats brought cruising and racing to young families with mortgages and kids who could never have afforded the cost and maintenance of the one-off proper wooden yachts of previous generations. Without those vessels — that were once hot new boats and are now our good old boats — if those families had been able to sail at all, it would have been in small, open daysailers.

In 1973 the hot boat was the Gary Mull-designed Ranger 26. Bill Lapworth's Cal 25s, which had held that title a few years before, had been out-designed, as always happens. A small local Connecticut builder was producing the Kramer 25. It was also very competitive, but it was barred from overnight races because, as hard as this is to believe in today's safety-obsessed culture, Kramer refused to put lifelines on his boats. As it turned out, keeping the Kramers out of the 1973 Falkner Island Race was one of the most fortunate decisions ever made by a race committee. More about this later.



ILLUSTRATIONS BY TOM PAYNE

The A-Dock social club

A few years before, I had built a sailing dory that I kept alongside A-Dock at the Milford Boat Works. On the other side of the dock were the slips where a half-dozen Ranger 26s lived when they weren't racing or off on family cruises. That's another thing that was different then: the small hot racer was also a reasonably comfortable cruiser for a young family of four . . . something today's hot racers definitely are not. As it happens when people keep their boats on the same docks, they meet and become friends. I was invited to race on one of the 26s called *Sea Owl*. The friendships my wife, Heide, and I made on A-Dock and with the others who crewed on *Sea Owl* are still close, warm, and important 35 years later.

By the beginning of the 1973 season, we had raced the *Owl* for a couple of years with results rather like my golf game: middling with frequent debacles and very occasional brilliance. But it was always fun, a great deal more fun than my golf game is. The company I worked for was next door to a sail loft, and when I didn't show up with a sail needing repairs for several Monday mornings, the loft boss called me to ask if I was all right.

Specialty recovery

The under-the-boat spinnaker recovery was one of our specialties. Once, when we were all lined up on the lee side of the cockpit hauling the damned thing aboard as the other boats were passing us and rounding the mark, Paul, the owner and skipper, turned to me and said, "Aye Disko, we catch lots of halibut this trip, no?" This is not to say we were not serious about racing. We were deadly serious, but not so serious that we ever forgot that we raced as a team and it was far better to lose a race than to endanger a friendship.

In those pre-Gatorade days, sailboats ran on beer, and the crew would bring some along for every race. No one ever drank anywhere near what they had estimated we might need; just in case, what was left over was then left on board. One day, after a race in which the *Owl* had seemed particularly logy compared to the other Ranger 26s that lived in the slips on either side of her,

were young

I noticed that she was sitting lower in the water than they were. If memory serves, we had accumulated 11 cases of beer in the bilges and under the bunks. Their removal significantly helped her performance.

Club-to-club deliveries

We raced in the Eastern Long Island Yacht Racing Association. Each weekend, one or the other of the clubs along the Connecticut and Rhode Island coast that belonged to the association would sponsor a day race and some of them would also sponsor a longer overnight race.

At the end of the season, performance in all of these races would be tallied by a complicated point system and prizes were awarded by classes based on size. We usually did fairly well because we sailed a lot of races.

After a race, or during the following week, a couple of guys would move the boat to the next club, usually accompanied by one or more of our kids, who were all preteens then. The wives would drive up together for the cocktail party after the next race and we'd all go out to dinner together. The cocktail parties were always splendid, both for the comradery and for the hors d'oeuvres. To this day I cannot eat a deviled egg without thinking of the Ram Island Yacht Club.

The wives and some of the crew would then go home to the New Haven area, leaving the guys and the kids who were going to sail the next delivery leg. The only problem was how to get a car to the next stop so the delivery crew could get home. The carpool arrangements could become wildly complicated at times. The standard joke was that everything was set for the next delivery, race, and cocktail party except that we'd have to sell a car in Branford and buy one in Noank.

It was a grand way to live and a wonderful way to raise children, who, as they grew older, graduated from delivery to racing crews. All the kids turned out pretty well.

Falkner Island Race of 1973

The Falkner Island Race was sponsored annually by the Windjammer's Sailing Club and the Milford Yacht Club. In 1973, the start of the first class was scheduled for 1700 on Saturday, June 16. Sunset would be at 2026 and the moon would rise at 2113. Sunrise on the 17th would be at 0515, but that hardly concerned us because the predicted weather conditions would make this one of the quickest Falkner Island races in history. The forecast was for haze and light west-to-southwest winds, changing to easterly at 10 to 20 knots with occasional showers sometime during the evening. I got this forecast on Saturday morning from the meteorologist at the Sikorsky Airport in Stratford. He said a cold front was expected, but not until sometime late on Sunday.

The rhumb-line distance was only 50 miles, so we'd be finished long before the front arrived. We always hoped for conditions in this race that would make it possible to finish and get a drink in the yacht club bar before it closed at 2 a.m.

This year we might make it. We were supposed to have a light-air beat into a smoky sou'wester to the first turning mark, Middle Ground Light. This was called Stratford Shoals Light on charts but was always Middle Ground to us. Once we had rounded it, we'd have a spinnaker run followed by a close reach or beat to Falkner as the wind backed into the east. That is, if the weather behaved as the forecaster had said it would. Then, if everything went as predicted, this would be followed with a rollicking spinnaker run home. In those conditions, we were sure to cover a mere 50 miles in less than the nine hours between the first gun and the closing of the yacht club bar. No problem.

A strong crew

The crew for this race was, as Adlard Coles would say, a strong one. Paul Scholder, the owner and master, was a lawyer, as was Jack McGrail, one of the deck apes. The other two apes were Tim Foley, a saloon keeper, and Bill Kelly, a welder who worked at the same company where I was an engineer. I was the navigator, which is why I still have the logbook. We were all fairly experienced sailors, having grown up on the sound and raced in our youth.

The start was off Milford with the usual 50 or 60 boats going off in classes based on size and rating under the old Off Soundings Rule. We started at 1705 under the 150 percent jib and full main, *Owl*'s maximum upwind rig. The wind was light and from the southwest as predicted, and we were making a bit better than 5 knots through the water. The last two hours of the ebb was against us, so at 1723 we tacked when clear of Charles Island to stay inshore out of the worst of it. We tacked a couple of times more and by 2000 were around Middle Ground Light. The southwester had not only held but picked up enough so that on a broad reach *Owl*'s spinnaker dragged her along at close to 6 knots. This kite was rather spectacular; bright

yellow with a black owl's face on it. Yacht club bar, here we come.

As always happens on a beat against a foul tide, the boats had spread out on the way to Middle Ground as the various skippers made different tactical decisions on how best to play the wind and the tidal current. Downwind, the boats tend to come back together because there is generally only one way to go. After the kite was up and Paul had brought us up-to-date on all the latest courthouse jokes, we settled down for a long, easy 21-mile broad reach to Falkner, the next turning mark.

Weird visibility

The haze did not lift. If anything, it became thicker down on the surface and, with the moonlight penetrating and being reflected by it, visibility became weird. We became aware of this when we came silently up behind a Pearson 26 and heard a woman scream. It seemed that the owner's wife, coming up from below, had seen that huge owl's face hovering in the haze right behind them and been frightened half out of her wits. In the confusion this caused aboard the Pearson, we got by them without the expected luffing contest as everyone on both boats, including the woman we'd frightened, laughed about it.

As we came up on Falkner Island, it looked as if the southwester was going to hold. Instead of the expected spinnaker run, it would be a close fetch on the port tack along the Connecticut coast for the 20 miles back to Milford. At worst, we would need to make one or two short starboard-tack hitches to move away from the shore. We could see no one in our class in front of us; we knew just about all of them were behind us. It looked like we were winning at least our class and perhaps the whole race on corrected time.

After a short mutual pep talk about just this once let's jibe and get the hell machine aboard without any catastrophes, we prepared to round the island. Jack, who had been napping below, came up barefoot and in his underwear to join Paul on the foredeck. Kelly was at the mast to handle the halyards, Tim was steering, and I was below writing up the log. They hoisted the Number One and were about to jibe as Kelly started the spinnaker halyard. They had decided to gather and repack the kite on the foredeck and had just pulled the foot aboard when the weather changed dramatically.

Now what?

One second I was standing on the cabin sole writing up the log. The next I was standing on the face of the galley furniture wondering what the hell the deck apes had done now. That cold front that hadn't been expected until the next afternoon had come blasting through, clearing the air, dropping the temperature 20 degrees, and replacing that light southwester with a roaring northerly blowing at 25-plus knots. This filled that big jib that was already sheeted. When Kelly let the spinnaker halyard run, it fouled, so the sail Jack had been gathering in his arms also filled. All that sail and all that wind laid the *Owl* on her side and effortlessly tossed Jack overboard. He grabbed the aft stanchion as it flashed by. If he hadn't, we would probably never have seen him again. With both the kite and the jib pulling like locomotives, the boat was going as fast sideways as she had ever gone frontward in her whole life. Tim and I wrestled Jack aboard. It was easy because waves were breaking over the cockpit coaming. Then Tim asked me, "Which way should I go if the rudder ever goes back in the water?"

We freed the sheets so the boat came back on her feet, then ran off with the kite streaming out in front like a huge yellow quarantine flag. Eventually we got the spinnaker and the Number One down and stowed the pole after running off a couple of miles in exactly the wrong direction. We were the only boat caught by the weather change with both headsails up in mid-jibe, so none of the others had quite the number of disasters piled one on the other that we had had. As we turned to chase the rest of the fleet, we reefed the main and got the heavy Number Three jib up to discover that the spinnaker pole had been stowed by hooking it to a stanchion on top of the leeward jibsheet. This was discovered just as the quarter-inch bolts with small washers that held the stanchion were being winched up through the deck.

It could have been worse. A whole lot worse. Somewhere there is a Ranger 26 with an aft lifeline stanchion that carries five deep dents from the thumb and fingers of Jack McGrail's right hand. The next day, the stanchion we had winched out of the deck, along with all the others, was refastened with large washers and backing boards of half-inch mahogany plywood. We had all acquired a lifelong paranoia about lifeline stanchions.

Regaining lost ground

The wind stayed strong and, like all nor'westers blowing off the Connecticut shore, it was gusty and shifted back and forth as much as 30 degrees. We were now bombing along on a sparkling clear, cold, moonlit night chasing the rest of the fleet. Careful teamwork by the helmsman, the guy playing the mainsheet traveler, and the jibsheet trimmer allowed us to pass a few boats. The tail-end Charlies are always the easiest

to catch, but we carefully ignored this fact as we worked our way back into an almost respectable position toward the middle of the fleet.

But *Sea Owl*'s travails were not yet over. About a mile or so from the finish line, the knotmeter registered zero. Someone said we must have picked up some eel grass in the impeller again. The boat was trimmed perfectly and the sails were drawing nicely. Then someone else looked over the side and said, "Eel grass, hell. We aren't moving." Paul decided to settle the argument. He went below to do the quick shift between the knotmeter impeller and the plug that sealed the hole. When he pulled the impeller, ready to stop the gusher with the plug he held in his other hand, nothing happened. No eel grass, but no water either from a 2-inch hole through the bottom of the boat.

"He stuck his fingers into the hole and pulled up a piece of sheet plastic. He kept pulling, and it kept coming until the cabin was half filled . . ."

Snared in plastic

He stuck his fingers into the hole and pulled up a piece of sheet plastic. He kept pulling, and it kept coming until the cabin was half filled by about 50 square feet of a 1-mil dropcloth. Meanwhile, the rest of the crew was trying to hook it with the boathook and untangle it from the fin and rudder.

We finished far back in the fleet at 0454:13, exactly 2 hours, 54 minutes, and 13 seconds after the yacht club bar had closed. Time does fly when you're having fun. And it was fun sailing on a good boat with a group of guys who took racing seriously but never too seriously. In all the races I sailed in *Sea Owl*, I cannot recall a single harsh word being uttered no matter what disasters we and the fates, working together, brought down upon us.

Jule Miller grew up in Milford, Connecticut, was educated and worked as an engineer, and sailed for many years on Long Island Sound. In 1991, he moved to Nevis where he lives with his wife, Heide, writes, and sails on the Caribbean Sea. He is the author of a number of books, both fiction and non-fiction, including the Good Old Boat *audiobook,* A Voyage Toward Vengeance. *His most recent is* Slippery Places: How the Delusions of Modern Management Destroyed an American Manufacturing Firm.

Seeing forward

A hatch trick restores the view ahead

by Henry Depew

On some boats, the field of view from the helm is quite poor. We faced this problem on our Sisu 26. It was built in 1985 and some of the plastic material in the windshields had crazed. Replacing the deteriorated plastic was a fairly easy job, but that solved only part of the problem.

The companionway hatch cover is hinged along its forward end. When the hatch cover was down, we could see forward quite nicely through the replacement pane, but when it was propped open, the wooden hatch completely blocked the helmsman's view.

We considered replacing the wooden hatch with a transparent cover that we could see through when it was open. Instead, I decided to modify the original hatch design so it could be out of the way when open.

Choosing this path, I faced the question of whether to fit replacement hinges that would allow the cover to be removed entirely when opened. However, it seemed to me that removing and storing the hatch in a confined area would be a lot of work. The alternative was to leave the hinges alone and physically modify the hatch. After careful consideration, I elected to modify the hatch.

I removed it from its mounting and cut it into two parts, an aft section that could be removed while we were under way and a shorter forward section that would remain in place. The trick was to achieve this without a lot of latches. My solution was to fasten two wooden strips (I chose purpleheart) to the underside of the aft section of the hatch and extending beyond its forward edge. To join the two pieces of the hatch, these strips insert into cross-pieces on the forward part of the hatch, which remains attached to the boat by its hinge.

Replacing crazed glazing material in the pilothouse windows restored Henry's view forward, but only when the companionway hatch was closed, above left. With the hatch open to allow air and access belowdecks, the view from the helm station was less than ideal.

To allow him to see forward and also have the hatch open, Henry performed surgery on the hatch cover. He cut it about one third of the way back from the hinge and attached wooden strips to the underside of the after piece. These strips engage in bridge-shaped pieces on the forward part, above right, which remains attached to the boat by its hinge, above left. Now, Henry can have the hatch fully open and still see where he's going, below.

We now have a better arrangement all around. We can remove the aft section of the hatch while we are under way, to permit a clear view through the windshield while leaving the hatch open for free access below, and we can re-attach it without fuss when it's time to secure the boat.

*As a youngster, **Henry Depew** learned to sail on an Optimist Pram. Flying Juniors followed during the college years. Later he bought and rebuilt a blizzard of sailboats (nine in six years). He is active in the United States Power Squadron and sailboat racing activities with the Apalachee Bay Yacht Club.*

After removing the toerails from the boat, Gregg took off all traces of the old finish with a vibrating palm sander, far left. Wiping the smooth, uniform surface with acetone ensured that the parts were free of sanding dust, at left.

Beautiful brightwork

Urethane finish generates the Wow! factor

by Gregg Nestor

From my perspective, nothing is more pleasing to the eye than the gleaming finish of a sailboat's brightwork. It makes no difference whether the wood has been freshly oiled or painstakingly varnished, the beauty of carefully maintained brightwork not only enhances the sailboat's aesthetics but also demonstrates pride in ownership.

Our Pearson 28-2 has about the right amount of teak brightwork to enhance its sand-colored deck without presenting a heavy maintenance burden. Over the years, the teak has been treated with oil, varnish, Cetol, and, most recently, with Armada. Initially, all these products produced acceptable results; however, the longest that any one finish had lasted was maybe a couple of years. Even at that, the toerails usually required annual attention.

Last year, while waiting for the travel lift to haul our boat, I found myself standing in awe, bedazzled by the brightwork of a nearby Cheoy Lee. Not only did it look as if it had been freshly done, it appeared to have been encased in glass. I spotted the owners lounging in the cockpit and complimented them on the condition of the brightwork. I learned that brightwork was the wife's responsibility. In the past, she'd spend many days each year laboring at this task. The result was a flawless finish to the brightwork and a beautiful tan for her. About four years ago, she switched from varnish to a urethane-based finish. That is what I was admiring: brightwork that had been finished four years ago and not touched since. After recovering from this revelation, I obtained the name of the product: Bristol Finish.

Since that fateful encounter with the Cheoy Lee and its owners, I've talked with more than a dozen other sailors who use the same finish. They were unanimous in their praise of the product and, after seeing their boats, I knew I had to try it.

Two-part urethane

Since it's a two-part product, the base and catalyst must be mixed together prior to application. The mixing ratio is 8:1 by volume and should not be varied for any reason. The application instructions state that four coats provide minimal UV resistance while six coats provide optimal durability. Up to eight coats are suggested for severe tropical exposure and, if a "wet look" is required, more coats may be applied.

The application of the catalyzed acrylic urethane requires the same basic preparation steps as for any conventional product. However, there are three application methods to choose from: the dry method, the wet-on-wet method, and the practical method.

Dry method

The dry method is familiar to most of us. After the wood is properly prepared, you apply an initial coat and allow it to dry completely. Once the surface has dried, you sand and recoat it. If you are sanding between coats, more often than not you must apply two coats to end up with one final coat. While this is the longest of the three methods, it may yield the best results and is probably the method of choice

Using a polyethylene container and measuring spoons, Gregg mixed just enough material at the prescribed 8:1 ratio for one coat of the finish at a time.

for refinishing bulkheads and other wooden interior features.

Wet-on-wet method

The wet-on-wet method is the fastest of the three. You allow each coat to dry to a firm tack (approximately 1 to 2 hours). Then you apply the next coat without sanding. You continue this process until you have applied all the coats. While it's faster than the dry method, your woodwork is more likely to develop runs, drips, and brush marks. Also, unwanted specks of dust may be incorporated in the finish. This is a particular concern when you apply the finish outdoors.

Gregg applied each of the six coats with a high-quality foam brush.

Practical method

The practical method is a twist on the wet-on-wet method. You apply all but the last coat using the wet-on-wet method and allow the second-to-last coat to cure for 12 to 36 hours. You can then sand the finish with 220-grit paper to remove any runs, drips, or incorporated dust. Once you have achieved a smooth and uniformly dull surface, you remove the sanding dust with acetone and, prior to applying the final coat, wipe it lightly with a tack cloth. This method offers both a fast build-up and the chance to remove any defects with a minimum of labor.

Proper preparation

I know from experience that proper preparation and application account for 90 percent of the final appearance and performance. And even though this urethane-based finish may be applied over existing finishes that are in good condition, I elected to remove my current finish completely and start with bare wood. To obtain the best results in the shortest amount of time, I also decided to use the practical application method.

The two items of brightwork on our boat that see the most UV exposure and that most needed refinishing were the handrails and toerails. I refinished the handrails while they were attached to the boat and in the somewhat controlled environment beneath the winter cover. However, I elected to remove the toerails and refinish them at home.

Beginning with 120-grit and ending with 220-grit sandpaper, I used a vibrating palm sander to remove all traces of the old finish. I did this outdoors. Once I had a smooth and uniform surface, I vacuumed the toerails and brought them indoors. There, I removed all traces of sanding dust with acetone. At the prescribed 8:1 ratio — using a polyethylene container and measuring spoons — I mixed what I calculated to be just enough material for one coat. Immediately prior to applying the first coat, I lightly wiped each piece with a tack rag. Then, using a high quality foam brush, I laid down the first coat, all the while being mindful to apply the finish as evenly as possible to avoid runs and drips.

One day, five coats

After approximately 90 minutes, the first coat had dried to a firm tack and was ready for the second coat. Over the course of one Saturday, I applied five coats. With each coat, I used light pressure to avoid brush marks and lifting of the underlying coat while at the same time applying just enough pressure to spread the fresh coating. Drying time between coats ranged from 90 to120 minutes. The next day, approximately 16 hours after application of coat number five, the finish was hard to the touch. I checked for imperfections and found none. I had taken great care when applying each coat and, as a result, the surface was quite smooth. Since the material can be recoated without sanding at any time up to 24 hours after the last coat was applied, I elected not to sand and applied the final coat.

The end result is just as I remember the brightwork on that Cheoy Lee . . . WOW!

I forgot to mention earlier that the first mate on the Cheoy Lee informed me that Bristol Finish is a bit pricey, but the results in quality and finish longevity are well worth it. She also said that, unfortunately, since she switched from varnish to catalyzed acrylic urethane, her tan isn't what it used to be.

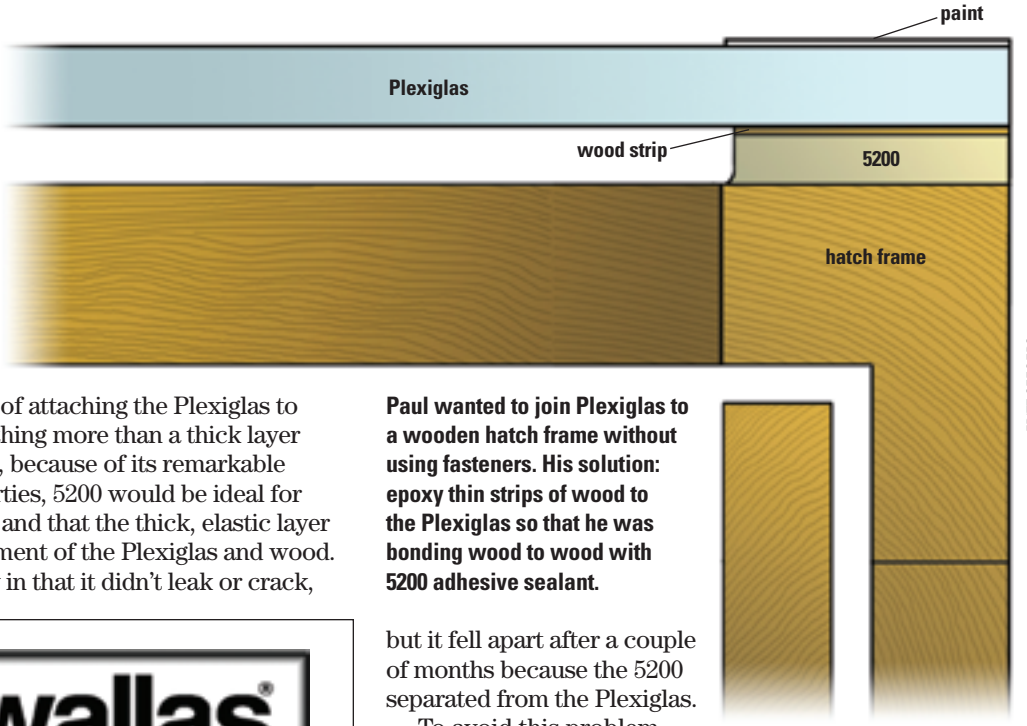
Gregg Nestor's sailing bio appears on page 35. In addition to the information noted there, Gregg is also the author of three marine books: All Hands on Deck: Become Part of a Caribbean Sailing Adventure *(2005);* Twenty Affordable Sailboats to Take You Anywhere *(2006);* The Trailer Sailer Owner's Manual: Buy-Outfit-Trail-Maintain *(2009).*

The finished toerail, above. The finished handrail, at right.

Bonding Plexiglas to wood

A flexible joint accommodates different expansion rates

by Paul Campbell



FRITZ SEEGERS

Paul wanted to join Plexiglas to a wooden hatch frame without using fasteners. His solution: epoxy thin strips of wood to the Plexiglas so that he was bonding wood to wood with 5200 adhesive sealant.

Leaks and cracks are all too common when Plexiglas is fastened to a wooden hatch frame with screws. They are largely a result of the differences in thermal expansion between the two materials.

Several years ago, when I made a new hatch cover, I conceived the idea of attaching the Plexiglas to the wooden frame with nothing more than a thick layer of 3M 5200. I reasoned that, because of its remarkable adhesive and elastic properties, 5200 would be ideal for bonding the two materials, and that the thick, elastic layer would allow relative movement of the Plexiglas and wood. This joint worked perfectly in that it didn't leak or crack, but it fell apart after a couple of months because the 5200 separated from the Plexiglas.

To avoid this problem when I reassembled the hatch cover, I cemented very thin strips of wood to the Plexiglas, with epoxy cement, in the areas where it would be in contact with the 5200.

After the epoxy had cured, I set the Plexiglas in place, with the attached wooden strips laying on a very thick layer of 5200, and allowed the assembly to cure indoors at a constant temperature.

This hatch has been in place in my boat for three years of Florida sun and rain with no sign of leaks or cracks in the Plexiglas or of failure in the joint.

The strips of wood must be very thin so they will expand and contract with the Plexiglas. I made them of cypress, but any close-grained wood should be satisfactory. I cut them on a table saw, about 1/32-inch thick.

I made the layer of 5200 about 1/4-inch thick, but I suspect it would work as well if it were considerably thinner. (***Note:*** *Alternatives to 5200 include 3M's 4200, UltraGlaze by GE, and Life Seal by BoatLife.* ***–Eds.***)

To protect the epoxy-wood-Plexiglas joint from damage by sunlight, I painted the outer surface in that region.

Three years is not long enough to determine the durability of this joint, but I feel confident that it will last for many years to come.

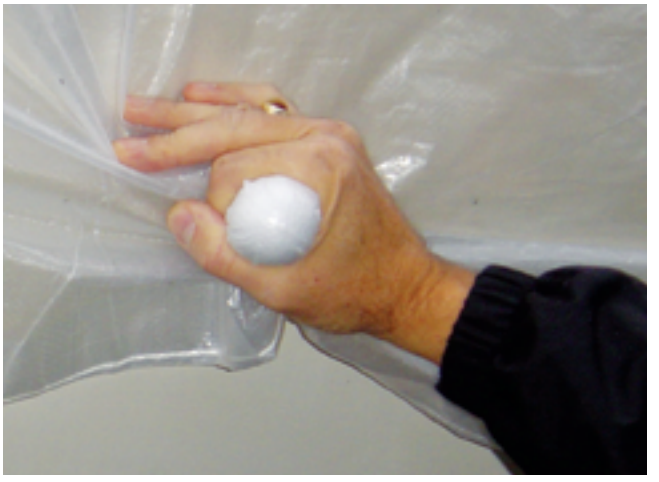
Paul Campbell has sailed several boats in New England and Florida, including a 25-foot Hinckley, a Cheoy Lee Robb 35, a Krogen 38 cutter, and a 25-foot Beachcomber.

Ready fore winter

Putting golf balls to a higher purpose

by Bill Van Allen

Bunching a handful of tarp around a golf ball, below, creates a secure form around which to tie a line, bottom. With a bucket of balls, even a mediocre golfer-turned-sailor can defeat the bogey of insufficient and ill-placed tie-down grommets in a winter tarp, left.



At haulout time in northern climates, sailors perform an annual ritual of cleaning, packing, winterizing, and covering their boats to protect them from the ravages of winter. As a boatowner who strives to be as self-sufficient as possible, I do my own winterizing and tarp my boat myself. I recently came upon a simple trick that makes the tarping process easier and also employs the long-standing boating principle of putting objects to more than one use.

Anyone who has ever used a tarpaulin to cover anything knows that the grommets are always located anywhere but in the places you need them to be. This year, in fact, when I took my two brand-new tarps out of their packaging, some of the grommets were already falling out. There are some fancy new two-piece rubber clips on the market that would enable me to add tie-downs where I need them, but similar devices I've tried in the past were so difficult to use that I quickly abandoned them.

Since I took up sailing eight years ago, my golf clubs have been totally neglected but I still have a good supply of golf balls . . . as I used to go through so many of them. I discovered that a golf ball makes an excellent anchor for tying down a tarp. Place a golf ball under the tarp and gather slack fabric around it in a tight bunch. Loop a length of ⅛-inch line around the ball, and you have a stable tie-down.

By using golf balls, you can place tie-downs wherever you need them. When spring arrives, you can return them to your golf bag to gather dust for another sailing season. I found that inexpensive hollow practice balls work just as well as premium-grade balls. In fact, as my former golf partners can verify, this is probably the best use I have ever made of a golf ball.

Bill Van Allen and his wife, Emily, sail their 1981 Bayfield 32, Ocypete, *out of Penetanguishene, Ontario, on Lake Huron's Southern Georgian Bay.*

Straight talk

Clean cuts in fiberglass cloth

by Stan Freihofer

Working with fiberglass cloth presents a number of challenges. One of them is making a straight cut across the width of the material. To draw a line with a felt-tip marker and a straightedge, you need a large flat surface on which to lay out the cloth for marking and cutting, something that's often difficult to find at home, never mind aboard the boat. Even with a well-drawn line, your cut may waver across the strands, resulting in a raveled edge. However, a simple technique ensures you can always cut a perfectly straight line, even if the cloth is not lying flat.

Fiberglass cloth is woven. Warp fibers run the length of the material and weft fibers run back and forth across it. At the edges of the cloth, where the weft fibers double back, they form a series of loops.

To cut square across the cloth, first measure your desired length along one edge and mark the loop in the weft at that point. You now need to snag this loop, which you can do by poking through it with a sharp pointed object such as a nail, a marlinspike, or an awl. Be careful to snag only the loop.

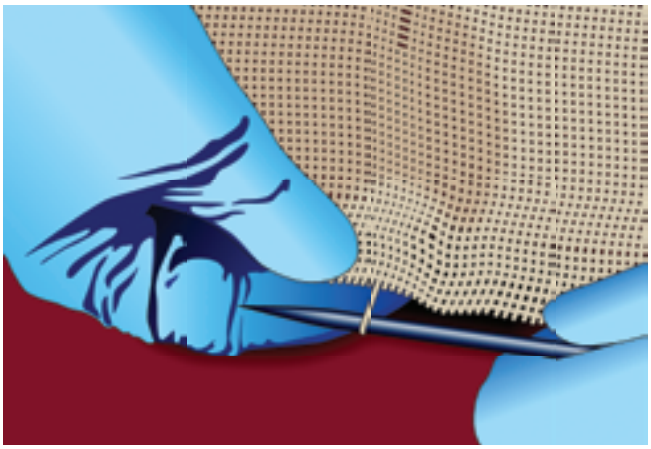
> "You will see a distinct line where you removed the threads."

Pull on the loop. This will cause the cloth to bunch up along these threads. While keeping tension on the loop, milk the bunching fabric along until you reach the other side of the cloth. Pinch the edge of the cloth at the bunching, and snip off just the corner of the fold to cut the weft threads where they return across the cloth.

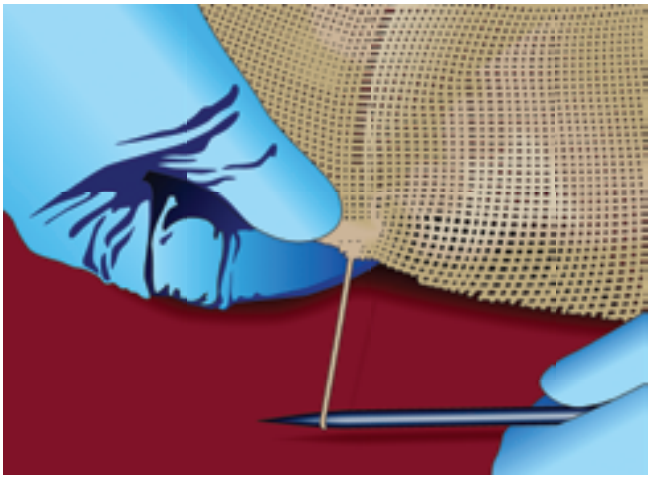
Pull on the loop, milking the cloth off the threads until the loop is free of the cloth. You will see a distinct line where you removed the threads. This is your cutting guide. It's perpendicular to the woven edge, easy to see and to follow. When you cut along it, you will get your straight cut.

If you need to cut along the length of the cloth, or whenever there is no edge loop to snag, just grab two or three of the lengthwise threads and pull on them, milking the threads out of the cloth in the same fashion. Cut along the gap you created by removing these threads.

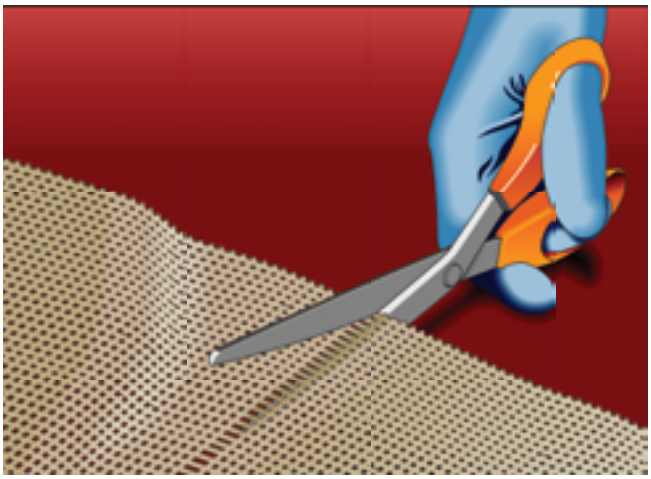
Stan Freihofer retired recently after 32 years with U.S. Agriculture Quarantine Inspection, which later became part of the Department of Homeland Security. These days, he's restoring a 1981 Cape Dory 25 that unfortunately spent most of her life out of the water. His restoration story is at <http://www.reefroof.com>.



Measure the length of cloth you need along one edge and mark it. At that mark, use a pointed object to snag the loop in the weft fiber. Pull on the loop and milk the fabric along the two fibers that form the loop to trace them across the width of the cloth.



When you've traced the pair of fibers across the cloth to the other edge, snip them from their neighbors. By pulling on the loop, you can now extract the fibers from the cloth. They will leave an obvious gap in the weave.



The gap you created by removing the pair of weft fibers makes a perfect guide for cutting the cloth square to its edge. When cut in this way, the cloth is less likely to unravel when you handle it.

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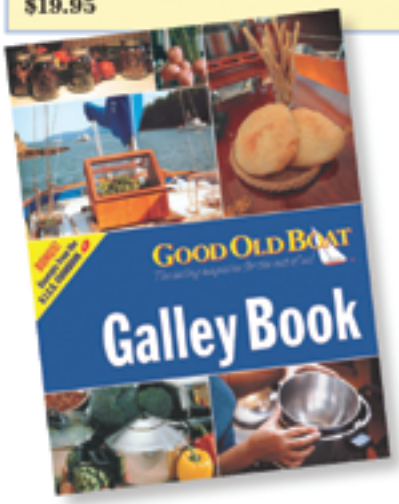

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Hull Number MDZ43510H873. LOA 35'2", beam 11', draft 4'8", displ 18,000 lbs. Designed by Sparkman & Stephens as a motorsailer for the Caribbean charter trade. Built by Chris Craft in 1973. Fiberglass hull, Perkins 4-107 diesel, 3 cabins, 6 bunks, 2 heads. Galley equipped w/propane stove/oven, AC/DC refrig. Shorepower heat pump for cooling and heating. Good rough-water sailer. Overall condition fair but many things need attention. Edenton, NC. $12,500.
Gerald Thompson
252-482-8770
jerrthom2000@yahoo.com

Aleutka 25
1984. Twin-keel production hull in fiberglass. As seen in Máté's *Best Boats to Build or Buy*. Professionally finished. Cutter rig. Custom trailer. 8-hp OB. Good sails and ground tackle. Excellent cond. Interior is simple in keeping w/original design. Lyons, CO. $9,500.
Tom Russell
303-462-1507
rosy12@juno.com

Morgan 38
1978 sloop. 668 sq ft. Roller jib, HW stove, 12/120 refrigerator. Yanmar 3QM30H 2.03:1 red. Anchor windlass new in box. Sailaway cond. Estate sale. In NY. $40,000.
Donald Vanderveer
631-423-9811

Philip Rhodes Custom 28
1964 fiberglass custom, 4'/6'-draft swing keel. Lazarette w/original OB. Tufnol hardware. A piece of history. Original drawings from Mystic Seaport. Boat #783. Deck needs finishing (fiberglass). All wood sanded w/one coat of Cetol. Main, jib, and genoa all in good cond. New trailer w/brakes. 80% finished. Sails beautifully, a well-balanced classic. Scottsville, KY. $8,000.
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Emrick Pohling
541-660-8914
irie@clearwire.net

Tripp Lentsch 29
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Nancy Brogden
802-436-2785
nancybrogden@vermontel.net

Tartan 30
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Bill Schmitzer
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Rhodes New Weekender 39
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Mary Jorgenson
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Vancouver 25
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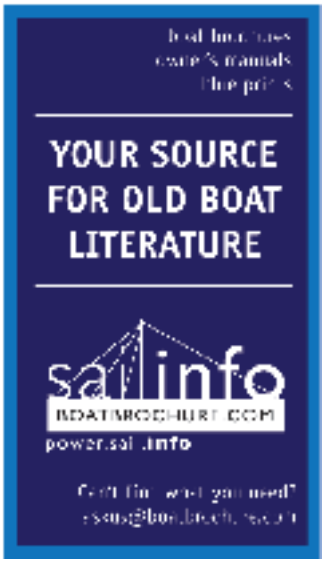

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Hinckley Bermuda 40, continued from page 13

The head, just forward of the mast, is spacious and includes a shower and good stowage. Cedar-lined clothes closets occupy the space opposite, to starboard.

The forward cabin has a spacious V-berth. It's fitted sufficiently aft to have plenty of toe room at its foot, leaving lots of room forward in the narrow point at the bow for a rope locker and a large battery box. A small dresser and good storage lockers are fitted against the port bulkhead.

Although the basic layout is pretty much the same from boat to boat, because each B 40 was made to order, interior details differ.

Performance

B 40s were raced extensively by their early owners and enjoyed considerable success. These days, the B 40's design is considered to be dated, particularly in terms of windward ability. Off the wind, however, her performance improves significantly. The less-than-stellar performance to windward is reflected in the average PHRF ratings assigned: 168 for the Custom, 162 for the Mark II, and 150 for the Mark III, both sloop and yawl. However, the Bermuda 40 is a very capable offshore passagemaker.

I found *Charisma* to be a joy to sail. The weather was unsettled with a northeast wind ranging from 10 to 15 knots. While flying main and jib only, I jotted down these performance notes: reaching, 6.3 to 6.6 knots; broad reaching, 5.4 knots; to windward, 5.3 to 5.6 knots. From tack to tack, our course-over-ground vector shifted through 105 degrees, with the board up! *Charisma* was exceptionally well-mannered and balanced, and she tracked well. Previous experience has shown me the B 40 is a great boat to be aboard for a long ride.

Performance under power depends on the boat's age or what was installed when it was repowered. Early boats had gasoline engines. By now, I should imagine nearly all of these have been replaced with diesels. Around 1970, a diesel became standard on the B 40; the Westerbeke 4-107 was the most popular. Horsepower ranged from 35 to 50, depending on how it was rated, but this was plenty for the boat.

Backing a B 40 — as is true for all boats with a full keel and attached rudder — can be an adventure. Watching John back into his slip, I noted that finesse can overcome most of the difficulty: position the boat to allow for prop walk when beginning; when correction is needed, put the helm over and give the engine a quick shot forward to move the stern over; back again until prop walk makes necessary another short burst forward with the helm over; repeat as necessary.

Conclusions

The earliest Hinckley Bermuda 40s are 50 years old. While it took the magic of the Hinckley Company's continuing comprehensive support to restore *Charisma* to her present beauty, that she was a worthwhile candidate for restoration is due to the quality of her original construction. There's no denying that a Hinckley mystique attaches to all its boats; the quality is also undeniable. In 33 years, Hinckley built only 203 Bermuda 40s but, because they are treasured and carefully maintained by their owners, most of them are still sailing.

Hinckleys are expensive and the B 40 is no exception; however, the long production run translates into a wide range of prices. BUC Research's Used Boat Price Guide lists a 1961 B 40 in excellent condition for $91,440 to $100,440. A 1976 Mark II in BUC condition (having average equipment and requiring no additional work) ranges in price from $126,500 to $139,000. A 1992 Mark III sloop in similar condition ranges $271,500 to $298,000. While expensive, if purchased at a fair price, a used B 40 represents real value that will depreciate very slowly compared to lesser boats . . . and almost all others are.

Paul Ring is a contributing editor with Good Old Boat. *He has sailed, repaired, modified, restored, and built boats for 42 years. Paul sails his Nonsuch 260 with first mate, Barbara Brown, on Mobile Bay.*

On owning a boat

Reviewing those occasional moments of chaos — and bliss

by Tony Allport

In a frustrating moment during a mechanical refit on *Pleiades*, I sat wondering, "Why do I even *own* a boat?" My lack of an immediate answer worried me, so I gave it some serious thought. "Well, it must be fun," I mused, as I stared at a sooty exhaust manifold lying across my knees . . .

We sail on the boundary between two vast and turbulent fluids in a sideways variation of flight, finding balance between opposing forces to hold a desired course. We enter this domain by choice but never solely on our own terms. Managing the occasional moments of chaos is essential to enjoying it.

For me, sailing is the source of many rewards: pride in my personal accomplishment and skill, the satisfaction that comes from choosing a boat wisely and handling it well, and a sense of belonging to a rich tradition of innovation and excellence. Nor can I overlook the access it affords to a world of overwhelming beauty and collapsing social distance.

A boat is also a thing of beauty, shaped by the demands of the sea and by human desire. A great boat represents the yearning for perfection. It is perhaps the ultimate expression of completeness: an earnest investment of dreams, skill, and resources. These qualities are palpable and can be breathtaking.

There really is no such thing as a universal boat. Boats tend to be very specific in their qualities. From the naked truth and efficiency of a kayak to the uncanny swiftness and balance of a sailboat, there is but one boat, maybe two, that will suit any individual. In my practice as a marine surveyor, I find that boats mirror their owners' spirits.

If you sail around the world or across the bay, the experience is focused and immediate. Somewhere in it all is an opportunity to grow, succeed, and wonder. That is why I own a boat.

Tony Allport is a SAMS marine surveyor. He lives on Anderson Island in southern Puget Sound and sails extensively with his wife, Ann, and children, Alden and Claire, on their classic 30-foot Albin Ballad sloop, Pleiades.

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