

# GOOD OLD BOAT

*The sailing magazine for the rest of us!*



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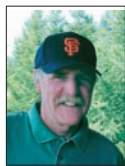
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**Ed Lawrence** (*The San Juan 21*, Page 4) writes about boats and off-beat subjects for several national magazines from his home base in Montana. His wife, Judy, just bought a San Juan 23. Ed is allowed to crew on it.

## Aussie Bray

(*Propeller options*, Page 9) is a freelance writer and professional engineer based in Sydney, Australia.

He has built four yachts of various materials, including his current 44-foot lift-keel aluminum cruiser, *Starship*. He and his wife and children circumnavigated the globe via South Africa, North Europe, the Mediterranean, and Panama between 1988 and 1993.



**Ted Brewer** (*The double fin advantage*, Page 14; *Fireside chats with Ted*, Page 43; and *A husky little ship*, Page 56) is one of North America's best-known yacht designers. He is the man who designed scores of good old boats . . . the ones still sailing after all these years.



**Phillip Reid** (*Curing leaky portlights*, Page 17) and his wife, Andie, and their Bernese mountain dogs, Tugboat and Steamboat, live in Wilmington, North Carolina, where Phillip writes, teaches college history, sails, dives, and works on his boat. He learned to sail on Lake Lanier near Atlanta. He and Andie sail their Pearson 28, *Miss Bohicket*, on the coast of North Carolina.

**Gord May** (*Ohm's law and you*, Page 22) and his wife, Maggie, cruised Florida and the Bahamas for nine years aboard their C&C 29, *Southbound*. They swallowed the anchor and returned to Thunder Bay, Ontario, where Gord, a Master Electrician and Shipwright, is an electrical designer and project coordinator with Cuthbertson Engineers.



**Susan Peterson Gateley** (*Chris-Craft's classic sailboats*, Page 26) has written two books about boats she has known. *Ariel's World* and *Sweet Water* both feature her good old 23-foot 1930s-vintage homebuilt sloop. She now sails Lake Ontario on *Titania*, a Chris-Craft Cherokee 32, and gives sailing lessons with a Lippincott Lightning.

**Jill Knight** (*What the sea has taught me*, Page 33) bought *Cohee*, a 37-foot, 100-year-old wooden cutter and set about learning to maintain and singlehand her. She apparently learned both lessons well: *Cohee* is still



sailing, and the two circumnavigated before returning to Australia.

**John Vigor** (*Contessa 32: A talented aristocrat*, Page 37) has sailed for more than 40 years and logged some 15,000 miles of ocean voyaging. In 1987 he and his wife, June, and their 17-year-old-son sailed their 31-foot sloop from South Africa to the U.S. This series of boat reviews is based on articles from John's book, *Twenty Small Sailboats to Take You Anywhere*.

## John Karklins

(*Wrapped in plastic*, Page 41) always had an interest in boats. Latvian-born, he emigrated to the U.S. at age 10 and lived in Chicago, learning to sail on Lake Michigan. His sailboats have included a Cape Dory Typhoon, a Bristol Sailstar Corsair, and now an Allied Seawind. He practiced architecture until retiring recently.



**Michael Kahn** (*Classic beauty — Photo spread*, Page 44) travels the world photographing classic sailboats and seascapes. His photographs are shown in more than a dozen galleries and appear in numerous publications and calendars. Visit his website at MichaelKahn.com.



**Gregg Nestor** (*Trailer-ing begins with "trailer,"* Page 46) and his wife, Joyce, sail their O'Day 222, *Splash*, on Pymatuning Reservoir on the Ohio/Pennsylvania border.



**Butch Evans** (*Winter sail*, Page 50) learned to sail with a book in one hand and a tiller in the other. He and his wife, Gretchen, sail a West Wight Potter 15 and a Bayfield 25. There's a third boat in their future: they're planning an extended escape within the next couple of years to go cruising.



After ocean voyaging separately with their respective families for years, **Bob and Mary Drake** (*Bristol delights*, Page 53) returned to the U.S. where they eventually married. They spend summers in Maine and winters in the Florida Keys.



Now retired after a career that included boatbuilding, boat deliveries, and writing, **Jack Dillon** (*Simple solutions: Advanced swigging*, Page 59) lives in Hamden, Conn. He lived aboard a 27-foot cutter for 11 years, cruising both coasts and Bermuda.



In 1995-96, British sailors **Peter Bonsey** (*Simple solutions: Banish the damp*, Page 61) and his wife, Sylvia, cruised to southern Portugal and the

Azores. On the trip they decided that cruising was for them but their Nicholson 26 was too small. They built a Nick Skeates-designed Wylo 11 32-foot gaff cutter. With *Can Pryan*, they crossed the Atlantic last summer and are wintering in Nova Scotia.

**Glyn Judson** (*Quick and easy: Handy ditch kit*, Page 65) is a retired aerospace photographer who owns a 1979 Ericson

Independence 31, the *Dawn Treader*. Since purchasing his first sailboat in the early 1980s, he has created a number of innovative systems to make his boats as user-friendly, efficient, safe, and "shippy" as possible.



**Greg Delezynski** (*Quick and easy: Double-duty cooler*, Page 65) and his wife, Jill, are liveaboards on *Guenevere*, the Nor'Sea 27 featured in *Good Old Boat* in November 2002.



They plan to cut the docklines soon and are counting the days and hours until they begin a South Pacific cruise.

**Don Launer** (*Quick and easy: Have a soda blast*, Page 67) has held a USCG captain's license for more than 20 years. He built his two-masted schooner,

*Delphinus*, from a bare hull and sails it on the East Coast from his home on Barnegat Bay in New Jersey.



**Sally Cole**, husband, Robert, and Loki (*Black Lab in the doghouse*, Page 81) moved aboard their 24-foot Snap-dragon in 1998 when their daughter went off to college. After a difficult "adjustment period," they now cruise the Pacific Northwest and enjoy their new lifestyle tremendously. Loki, their Black Lab, died early in 2001, at the age of 17½ years. Many of those years were spent before the mast, visiting her favorite beaches.



**Dan McDougal** (*Reflections: The Shipwright Principle*, Page 88) grew up in and on the Pacific Ocean with salt water in his blood.

Boating has been a fixed part of his psyche since the first time he went out on the water in a vessel. He practiced medicine after marrying one of the anatomy instructors (he says the jokes are abundant and obvious).



**Editor and Publisher,** Karen Larson,  
karen@goodoldboat.com

**Technical Editor,** Jerry Powlas,  
jerry@goodoldboat.com

**Business Advisory Board**

Bill Hammond, Chair,

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**Contributing Editors**

Ted Brewer, Theresa Fort,

Donald Launer, Ed Lawrence,

Gregg Nestor, Bill Sandifer

**Director of Circulation/Retail,**

Mark Busta, mark@goodoldboat.com

**Advertising Sales,** Michael Facius,

michael@goodoldboat.com

763-420-8923

**Director of Special Projects,** Fred Street

fred@goodoldboat.com

**Financial Manager,** Karla Houdek,

karla@goodoldboat.com

**Copy Editor,** John Vigor

**Proofreader,** Pat Morris

**Art Director,** Mary Endres

**Webmaster,** Jerry Stearns

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## About the cover...

A crewmember on Jill Knight's *Cohee* knows the bowsprit is the perfect place to enjoy the ride... watch for porpoises... get away from it all. Jill's 100-year-old gaff cutter is 37 feet on deck with an additional 10 feet of bowsprit. Jill writes of the lessons learned in singlehanded *Cohee*, see Page 33.

*The view from here*

# The Flying Dutchman

THE SLATE ISLANDS ARE A PLACE OF beginnings. The concept for *Good Old Boat* magazine was born there. Five years later, we were back looking for more inspiration. Once the hooks were down, we retired for a mid-afternoon nap to recover the sleep we'd lost from a wee-small-hours departure.

When we awoke, we found we were not alone in Pikes Bay. *Go Gently* had anchored in the shallower end of the very small, all-weather storm hole. The next morning I watched the lone sailor of the smart-looking little boat diving on his anchor rode, which was wrapped around a piece of the ubiquitous slash. Even the fish in Lake Superior think the 46-degree water is cold, but Henk Vanderhulst swam and dove for several minutes without a wetsuit. This guy was tough.

The weather had been "freshening" throughout our crossing, and by the time we arrived, we were glad to get off the lake. Henk had come in several hours of "freshening" later in a much smaller boat. That told me some things about Henk, too. In fact, his credentials were rather thoroughly established by his mere presence at that moment. Navigation is not easy in the Slates. There are no really detailed charts, and the price of a grounding is a meeting with a "ship-eating rock" of which there are many. It took *both* of us to navigate in that group of islands. Henk was singlehanded.

We invited Henk to dinner that night and he, in turn, invited us the next night. We learned of his interesting life. He'd volunteered in the Dutch air force as soon as his part of Holland had been liberated. He'd served in the Pacific as a flight engineer, built airfields, and moved from one job to another in one country after another. He'd seized opportunity where there was one and made opportunity where there was none. He finally retired in Sarnia, Ontario. To explain his varied career, he'd said he was a "quick study."

I kept studying the smart-looking Precision 23 he'd been cruising in for a month around Lake Superior. Though smaller than our 30-footer, she was good enough to cross through weather that had made us glad to be off the lake. At one point, Henk said, the small kayak he was towing started trying to

come into the cockpit with him, so he had pulled it aboard and thrown it down below.

When we went aboard for dinner Henk proudly showed us the modifications and improvements he'd made. He'd converted her from a fractional rig to a masthead rig, provided her with some very interesting canvas-work, and done some nice interior modifications that showed off his design and woodworking skills. By the time we got to that point, I did not expect less.

But still the basic boat intrigued me. She was a little short on hull speed compared to our boat, but she could travel at over 10 times hull speed on her trailer. She could cross the land to sail in one interesting cruising area after another. In fact she had. She and Henk had cruised more than 10,000 sea miles since he traded his 27-footer for her. She was the archetypical trailersailer. An amphibious cruiser of the land and the sea. *Go Gently* was 16 years old. Henk was 76 years old, but the idea behind their union is hundreds or perhaps thousands of years old. A portable craft that can serve the needs of her owner in a variety of locations. The coracle, the canoe, the kayak, and, in modern form, the trailersailer.

With this issue we are introducing a new series about these valiant and versatile boats. We see them as members of the family of good old boats.

Thanks, Henk.



**Henk Vanderhulst and *Go Gently*.**



# The San Juan 21

*This fast, versatile, trailersailer is easy to launch, rig, and maintain*

*by Ed Lawrence*

**R**OB ANDERSON IS ONE OF THOSE larger-than-life, overgrown kids who's always up to his neck in some type of Major Project. Large, as in 6 feet, 4 inches and 285 pounds. Large, as in taking on a fixer-upper project that turned out to be a circa-1930, 12-Meter America's Cup sloop. Large, as in competing in the 1984 Olympic sailing trials in a Finn, and the Star World Championships against many of the best sailors in the world.

So it was no surprise when he told me he'd abandoned life as the administrator of a sailing program at the University of California and relocated to Lewiston, Idaho.

"I'm a stay-at-home dad now," he said, announcing the move and the birth of a son, Karsten. Rob assumed responsibility for the stewardship of his son while his wife, Devon, slaves away at an executive position at a nearby university . . . not that being a stay-at-home dad is a part-time job.

"But there's no water there, Rob," I told him.

"Sure there is. The Snake River and lots of inland lakes," he replied. (This from the same guy I'd sailed with on an Admiral's Cup boat!) "And I bought a trailerable San Juan 21. We've been sailing it all over Oregon, Washington, Idaho, and on Flathead Lake in Montana."

Some quick math led me to the conclusion that Rob's body was almost half the length of the deck, and his weight about the same as that of the retractable keel.

"I'm now a 'movable weight module,'" he quipped.

## **Handicap problem**

I'd never considered Rob to be a poster child for trailerable boats, but

his logic makes sense. From a competitive standpoint, he said, "I was tired of IMS, IOR, and PHRF racing. I wanted a trailerable, one-design boat, and the SJ 21 fleet is the largest in this area. It's not uncommon to see 12 to 15 boats attending a weekend regatta." These, as I soon learned, are com-

posed of equal parts of sailing and socializing. "And we camp in it," he added.

Since the boats are portable, owners don't become bored sailing the same patch of blue. The boats are easy to rig, require little maintenance, and serve as family entertainment centers. Rob tows the sloop with a pickup that has 170,000 miles on the odometer. And this trailerable is much easier on a checkbook than a 12-Meter was.

"There's a ton of information on the San Juan 21 website. Most of the racing is done with white sails, so

singlehanding is a snap. If we're all going the same speed, who cares if there's no spinnaker?" he said.

What's not to like?

## **Some background**

The San Juan 21 and her sisters were built by a company that expanded from obscure roots in the Pacific Northwest to become a national presence in the sailboat-building industry.

Like many boats of the era, the San Juan's modest origins were in a garage. Robert Clark worked in the auto industry in the northeast, and his wife, Cora, was a nurse. When not designing prototypes for fixtures on automobiles (dashboards, for example), he built Lightnings and Thistles and was among the first to use fiberglass.

In 1960, the couple moved with their sons — Don, Dennis, and David — to Renton, Washington, to form Clark Boats and pursue their dream. Cora's salary put bread on the table while Robert struggled to survive using his sons as a form of slave labor. Not to be confused with a real production facility, the "factory" was a shed.

Because boatyards became magnets of a sort, Robert soon attracted 15 do-it-yourselfers assembling homebuilt vessels. Robert eventually began building OK and Optimist dinghies in a joint effort with Axel Olsen, an immigrant bricklayer from Denmark who apprenticed with Paul Elvstrom. He also built International 14s, Thistles, 505s, Stars

**Rob Anderson leads the fleet at the mark, above. A San Juan 21 Mark II, on facing page, sails eastern Washington's Lake Chelan with the Chelan Mountains as a backdrop.**



for Olympian Bill Buchan, and 150 Lightnings that the U.S. Marine Corps bought for use by soldiers on R and R.

"People were always bringing projects to us," Dennis recalls. Along the way, Robert learned construction methods that would come in handy when the company began building bigger boats.

### Head of production

When Don completed his degree work at the University of Washington, he became the firm's designer and head of production. Among his early designs was a modified International 14 that became the Sea Lark. Dennis filled the slot as sailmaker and manager of tooling, and David was in charge of marketing.

With its reputation spreading beyond the Pacific Northwest, the Clark business flourished to the extent that, in 1969, Robert and Cora moved to North Carolina to set up a second production facility.

Somewhat suspicious of their motives, Dennis says, "I think our parents needed a new adventure."

*"It's a stump-dumb simple rig that is best when the mast is raked and the backstay tensioned when sailing to weather."*

In the ensuing years Don designed performance-oriented pocket cruisers ranging in size from 21 to 34 feet. The company introduced the San Juan 24, a Bruce Kirby design that was an immediate winner on the racecourse. Clark Boats also built the Kirby Four.

Before the industry suffered a contraction, the company employed 1,500 workers in a 32,000-square-foot facility in Washington, and 150 on the East Coast. After building 6,000 San Juans and 2,000 dinghies, and with economic storms on the horizon, the company was sold in 1986. It eventually went the way of many endangered species.

However, Clark boats are still easy to find on all corners of the Lower 48. Today's San Juan owners look to Gene Adams, of Port Gardner Sailboats, for

parts, service, repairs, and good advice about the company's products (see resources on Page 8).

### Enter the San Juan 21

When Robert and his sons decided late in the 1960s to enter the trailerable sailboat market, Don designed the San Juan 21 Mark I, which was an instant hit.

Of the design, Don says she has a conservative rig carrying 190 square feet of canvas and is "on the fast side of cruising. She has good windward performance and is well-behaved." She also sails extremely well in light air, as I learned during a two-day regatta in eastern Washington.

Don says, "She has no weather helm," an observation echoed by owners who prefer more feel on the tiller when windspeed is less than 10 knots.

Except for a V-berth adequate for most couples, the San Juan 21 could be described as a "sorta" boat below-decks. Settees and headroom are sorta big enough for four. Quarterberths are sorta OK as cramped sleeping quar-



ters. And a Porta Potti and a one-burner stove make her sorta adequate for indoor camping. She's about what you'd expect in a 21-foot boat.

In response to requests for roomier accommodations, Don designed the Mark II. The Mark I has a traditional doghouse layout with an elevated cabintop and a traditional deck forward of the mast (*top photo, Page 7*). The Mark II has a flush deck from companionway to bow, providing room for sunbathers and easing crew work up forward (*center photo, Page 7*).



**The interior of the San Juan 21 is simple, but adequate. The Mark II made a few improvements in belowdecks spaces over its predecessor. These historical photos, from Gene Adam's collection, show weekend accommodations for a small family.**

The modification increases headroom in the V-berth, and extends the length of the quarter-berths.

A Mark I cockpit is 90 inches long on the centerline and 23.5 inches wide with 12-inch-high backrests on 21-inch-wide seats. Belowdecks, the length between the companionway and the V-berth is 43 inches. Headroom starts at 36 inches and steps down to 30 inches.

In comparison, a Mark II cockpit is 78.5 inches on centerline. Seats are 21 inches wide at the companionway, tapering to 18.5 inches aft; backrests are 10.5 inches high. The length between the foot of the companionway and the V-berth is 54 inches, and headroom between the deck and the top of the V-berth is 33 inches at the mast-support column. The quarter-berth length is 80 inches. Other subtle changes were made belowdecks in a Mark III that enjoyed a limited production run. Altogether, more than 3,000 San Juan 21s were built.

## Construction

Despite being an early entrant in the world of fiberglass construction, the company enjoyed a reputation for building solid, durable yachts.

Hulls were solid fiberglass with  $\frac{7}{16}$ -inch-thick bottoms, and  $\frac{3}{16}$ -inch-thick topsides. Dennis Clark says a typical layup schedule called for a

*"Since the Clarks shared a passion for racing, all of the company's boats were designed and outfitted with an eye to the best performance and easy working."*

layer of high-quality gelcoat that, even on the earliest boats, still shines under a new coat of wax. The skincoat was either cloth or mat plus roving, hand-laid to avoid voids, followed by sheets of mat, and "small

amounts of chopped mat between the roving."

The hull-deck joint was an inward-turning flange onto which the deck was laid, bedded in polysulfide, and fastened with screws on 6-inch centers. The solid glass toerail was attached through deck and hull.

The deck layout followed a similar schedule, though it was cored with balsa, or marine plywood where hardware was fastened.

Since these boats are no longer spring chickens, they can be expected to require more preventive maintenance than a NewandFast 21.

First step: check the chainplates for leaks every year. A common complaint is that leaky chainplates allow water to invade the bulkhead, requiring strengthening with fiberglass, or replacement. Deck fasteners always introduce the possibility of water penetrating the balsa, a common problem that may produce soft spots.

Though a high percentage of owners report these problems, they have a rather cavalier attitude. Typical comments are, "I had to (a) replace the bulkhead, or (b) rebed the chain-



plates, or (c) remove part of the deck and reglass it, or (d) all of the above.” However, they seem so

emotionally attached to their boats that the condition is similar to taking Fido to the vet for shots.

There are some other miscellaneous concerns. Since the transoms were constructed with balsa inserts, they should be checked in areas where motor mounts are installed.

You’ll know the keel pivot bolt is loosened or bent when you hear a mysterious thumping while underway.

Spreaders on the earliest boats may crack at the mast because they were parallel, causing excessive loads at the mast.

### Eye to performance

Since the Clarks shared a passion for racing, all of the company’s boats were designed and outfitted with an eye to the best performance and easy working.

### San Juan 21 Marks I and II

LOA	20' 6"
LWL	17' 0"
Beam	7' 0"
Sail Area	190 sq. ft.
Draft, board down	4' 0"
Draft, board up	1' 0"
Displacement	1,250 lb.
Keel	400 lb.

*“Most of the racing is done with white sails, so singlehanding is a snap.”*

The single-spreader rig supported by stainless-steel standing rigging is easily hoisted by

one person. A turnbuckle on the backstay tensions the headstay and improves windward performance. However, to maximize performance, a block and tackle eases the process and adds flexibility. A vang was standard equipment on most boats.

So what’s the key to sailing them?

Gene Adams, who has been sailing and selling San Juan boats since the 1980s, was the 1997 San Juan 21



Tight racing on a nearly windless day. Author Ed Lawrence notes that the race was punctuated by laughter. Another clue that this race is just for fun is the four-legged crewmember on *Yellow Jacket*.

A San Juan 21 Mark I is at top. Compare the foredeck with the Mark II versions in center photo. *Yellow Jacket* is a Mark II version.

*"I'd say the boats  
measure a solid 10  
on the Fun-O-Meter."*

Western champion and fleet champion four times. He says, "It's a stump-dumb simple rig that is best when the mast is raked and the backstay tensioned when sailing to weather. The secret to maximum performance is keeping the keel gasket in good shape to avoid turbulence. Keep the bottom clean." He recommends shortening the backstay and adding a sheet adjuster with 4:1 tackle.

"She sails best heeled 10 to 15 degrees," he adds.

Rob Anderson says, "Keep it simple. Be patient. It's easy to sail when the wind blows, but it takes patience to work through the lulls."

After spending two days hanging out with two fleets at a regatta, I'd say the boats

measure a solid 10 on the Fun-O-Meter. Before the event began, 15 owners agreed to sail with white sails only. The race instructions included directions to the home of a local sailor for a post-race barbecue.

On the course, old sails propelled old boats in a tightly packed fleet that rewarded the ability to read the wind more than the acquisition of new gadgetry. And the loudest sounds during the competition were laughter. After the racing, couples converted the boats to fiberglass tents.

As Rob's old pickup began towing his boat south, it was easy to add to memories of the two of us racing in the Big Boat Series . . . images of Rob, Devon, and Karsten reaching across a lake. Or the Sea of Cortez.

His newest, larger-than-life project looks like another winner. 

## Resources

**Gene Adams/Port Gardner Sailboats**  
22450 C Franklin Rd.  
Mt. Vernon, WA 98273  
360-445-2814  
pgardnersj@aol.com

**San Juan Class Association**  
<<http://sanjuan21.net/national>>

# Love at first sight (for *him*, anyway)

*by Judy Anderson*

ONE DAY, MY HUSBAND, ROGER, CAME home and dragged me out of the house to look at a boat that was at a car auction. It was dirty, but the rigging looked like it was all there. For Roger, it was love at first sight. I was not sure. It wasn't a pretty sight.

When the bidding was over, we had bought our first boat for \$900. We found out later that the majority of the people didn't realize it came with the trailer, too.

We found out by reading the title that it was a San Juan 21 Mark I, and we found an owner's manual on the Internet. We also found that Fleet #1 was here in Washington state, and we called Gene Adams. We not only got help in getting our boat together, but the wonderful people in the fleet invited us to race with them.


Until then we didn't know how to sail. We crewed for a day on Gene's boat. We were ready to give it a try after studying the "How to Sail" book very intently for weeks. We were barely able to sail around in circles, which is what we did for the day. But we were so excited!

Anyone who is afraid to go out and race should not be; we have learned so much from our fleet. *Windever* received first place in the Working Sails category this year!

At the end of spring racing, we stripped the rigging, and we sanded, patched, and sanded some more. Then came the barrier coat and primers. Roger rolled on several coats of two-part epoxy. We masked off the nonskid patches and added a rubbery non-slip additive.

The San Juan 21 is as much fun to cruise in as it is to race. We like to take day trips and weekend overnights in Puget Sound. We added electrical power along with a depth sounder when we restored the boat. We have a compass that quickly mounts over the cockpit hatch and a handheld GPS. Along with the Porta Potti and a fluorescent lantern, we're set to go.

Last summer we spent nine days in August on our boat, sailing with the fleet through the San Juans and into the Canadian Gulf Islands. I could have stayed out longer.

Cruising on a small boat is definitely a challenge, but it is so rewarding. I think of everything I would have missed if we had held out until we could have afforded a big sailboat. We can take our boat anywhere with us . . . we have raced in Lake Chelan and the Snake River, which are miles from the ocean. It has really expanded our horizons. 



***Windever, before and after. Judy and Roger Anderson know that cruising on a small boat has its advantages and disadvantages. Small is, well, small for extended time belowdecks, of course. But small is maneuverable when sailing, easy to take from lake to ocean and back, and simple to rig. Besides, the community of San Juan 21 sailors is sociable and easy to join, as Judy and Roger learned.***



Assembling an Autostream self-feathering propeller.

# Propeller options

## *A quick look at the complicated business of finding the right propeller*

by Aussie Bray

**N**EARLY ALL CRUISING AND MOST racing sailboats have an auxiliary engine and an associated propeller. Apart from the inescapable technical factors that determine propeller dimensions, there are quite a few options offering different compromises between efficient propulsion under engine and minimizing drag under sail.

### Propulsion basics

We won't delve into the technology of propeller design or selection for particular boats here; there are books, Internet sites, and firms specializing in this business. Even so, one can't escape a few technical terms.

At the most basic level, a propeller is described by its diameter, pitch, and number of blades. In theory, propellers are selected for a particular power, design boat speed, and shaft speed. The total blade area must be large enough to convert the available power into thrust and is, therefore, linked to the number and shape of the blades and their diameter.

Pitch may be thought of as the distance the propeller would, in theory, screw itself forward in one revolution through a solid material.

The pitch is selected so that at the design speed of revolution and boat speed, the theoretical advance speed of the propeller (pitch times revolutions per minute) is somewhat faster than the boat speed. The difference is termed "slip" and is necessary to produce an angle of attack between the blades and the water.

Propellers produce thrust over a wide range of slippage, but there is an optimum value that maximizes thrust per horsepower. The number of shaft revolutions per minute (rpm) is not usually the same as the engine's rpm, because most yachts have a reduction gearbox that can also reverse the shaft rotation direction so the boat can go astern.

The gearbox reduction ratio is another variable in propeller selection — greater reduction leads to larger, slower, and more efficient propellers, but there are practical limits on this. These include cost, mounting space, and especially, drag under sail.

### Engines and propellers

The diagram at left shows representative curves for the power output of a typical diesel engine and the power required by three propellers at varying propeller-shaft speeds. In theory, to be able to make full use of all the power available, the propeller curve should intersect the engine curve

where the engine is producing its maximum rated power. If the propeller had greater (coarser) pitch or larger blade area, it would require more power at lower rpm, and the engine would begin blowing black

smoke as the governor supplied excess fuel in a vain attempt to reach its rated speed.

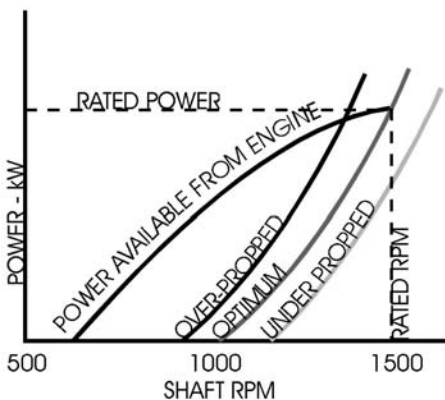
In this case, the boat is said to be over-propped, and the engine is showing signs of overloading. If, on

the other hand, the propeller has less (finer) pitch or smaller blade area, the engine will run up easily to full speed without blowing smoke but will not be using as much fuel, nor producing as much power, as it is rated to do. In this case, the boat is under-propped.

In real life, few yacht owners routinely run their engines at full power, but most expect it to reach its rated revs when they want it to and not to blow black smoke. The propeller could be selected for any lesser boat speed but, given a sufficiently large engine, most are chosen so the boat can achieve pretty close to displacement hull speed in calm water.

This is a reasonable basis for selection, but it means that the propeller pitch is inefficiently coarse if full engine speed is called for when conditions prevent the boat from moving at hull speed. The engine might even be overloaded. Head seas, a headwind, a

*"In real life, few yacht owners routinely run their engines at full power . . ."*



fouled hull, or the need to tow another yacht can all have this effect. Furthermore, there is definite merit in choosing a finer-pitched propeller (for lesser boat speed) so full power can be efficiently applied when really needed.

There are also inefficiencies in the other direction — yachts that are motorsailing generally run their engines in supplementary mode at moderate or low engine speeds, and then the pitch of their propellers is inefficiently fine.

Some propeller options address these pitch/efficiency problems, and the possibility of maximum thrust under adverse conditions is worth considering. Sailors are less inclined than motorboat owners to be greatly concerned by fuel efficiency but are very likely to be interested in minimizing propeller drag under sail.

## Sailing drag

When the engine is not supplying power, a propeller creates drag that increases rapidly with boat speed. At low speeds or at high speeds when there is plenty of wind, propeller drag is not of much consequence for a displacement yacht, but in between these two extremes it can slow the boat significantly. The difference between a folding and fixed propeller may be half a knot or more in your sailing speed.

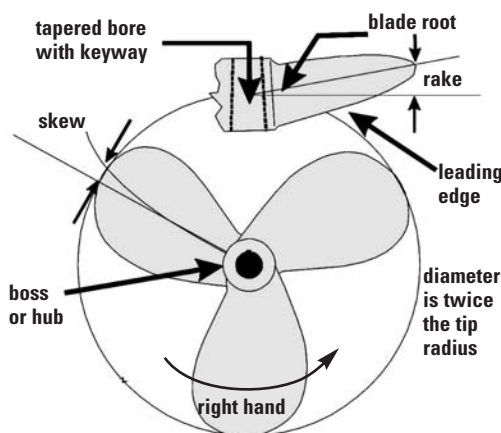
At some speeds, the drag of a fixed-blade propeller may be reduced by allowing it to freewheel, but at others it may even increase. This might be worth experimenting with (the speed log or GPS should reveal any significant benefit).

For cruising boats, however, the additional noise and wear count against this, especially since some gearboxes don't have an oil supply to their thrust bearing unless the engine is also rotating. The usual practice is to lock propellers when sailing by engaging reverse gear, although in some cases a disk brake is fitted, acting on a disk at the gearbox/shaft coupling.

## Fixed blades

So far we have been considering the situation as it exists for the conventional fixed-blade propeller. The main advantages of fixed blades are that they are strong, relatively cheap, and

## Propeller terminology



**Right hand propellers rotate clockwise for forward propulsion when viewed from astern, looking forward.**

built with a twist in the blades so the whole blade has the same angle of attack on the water. A blade experiences a relative water flow that is a combination of the boat's forward motion plus a much larger tangential component due to rotation. The tangential component increases with radius, so the blade angle needs to reduce toward the tips. The resulting twisted blade produces maximum efficiency but only under the specific conditions for which it was selected, including an assumed speed through the water.

Over-throwing can be counteracted by reducing the diameter in a lathe, and in some cases it is possible to take a fixed-blade prop to a propeller shop for slight changes of pitch, but such experimentation is expensive. Other possibilities become available with propellers that have articulated, rather than fixed, blades.



## Folding props

Folding propellers remain a common choice on racing yachts. The two-bladed versions have a longer history and are mechanically simpler. The basic type has just a single pivot about which the blades can swing independently. More recent patterns with separ-

ate pivots link the blade movements by meshing gears at the base of each blade, ensuring that both open by the same amount. The propeller pitch is fixed during manufacture.

When rotated by the engine, the blades fly open under centrifugal force, and in forward gear are also forced forward against stops by the lift forces on the blades. When the boat is sailing and the engine is not engaged, the passing water pushes the blades backward. Two-bladed versions can nest the blades compactly back to back, while three-bladed versions rest the trailing edges together or slightly separated. Either type presents a greatly reduced resistance to the flow and, compared with all other options, is the least likely to catch seaweed or ropes when sailing.

Some versions claim additional features, such as the Gori overdrive, in which the three blades can open either way, depending on which way the shaft initially rotates from the folded position, presenting the same leading edge in forward or reverse. If they are opened in reverse and the engine is given a good squirt, the resulting water flow can hold the blades open long enough for forward gear to be engaged. In this orientation the blades have greater pitch, which better suits motorsailing.

Folding propellers are available in a wide range of sizes and can be quite satisfactory for auxiliary power, but are heir to several problems. The most significant is their poor and sometimes unreliable performance in reverse. In this mode, centrifugal force attempts to open the blades, but blade lift tends to close them.

To maximize their opening, operators need to run them at high rpm, which maximizes centrifugal force but creates massive cavitation, destroying thrust. The problem is worst during emergency stops because the yacht's forward motion also tends to fold the blades.

Another common problem with single-pivot, twin-blade folding propellers is that gravity may partly open the lower blade if the pivot is horizontal. Locking the shaft with the pin vertical may minimize this, but before a race many crews put an elastic band around both blades (which breaks or dislodges when the engine is engaged).



## Self-feathering props

Self-feathering props are also available in two- or three-bladed versions. The blades are mounted into a hollow hub on spigots that are able to rotate between stops. The blades are without any twist and are shaped such that their center of lift (and drag) is behind their pivot. This tends to make them self-align with the water flow.

When the shaft is stationary, the blades are edge-on to the passing water and present a small cross-section. When the shaft is rotated by the engine in forward or reverse, the blades attempt to align themselves with the relative water flow but are prevented from completely doing so by stops which hold them at some pre-set maximum angle.

A useful characteristic of these systems is that their blades also reverse to face the flow when going astern, which gives them unusually good performance in this mode. This compares favorably with fixed-bladed and some controllable-pitch propellers whose blades are designed to operate efficiently in forward gear and are significantly less effective when operated in the reverse direction.

In most cases, the blades of self-feathering props are linked by gears or other mechanisms within the hub so they open simultaneously by the same amount. Most incorporate adjustments that allow the owner to alter the pitch stops. In some cases this can be done by a diver without having to dismantle anything. This can be very useful when you're trying to match the propeller to the boat and engine, and it allows the investment to be transferred to another boat or another engine.

Being able to adjust forward and reverse pitch stops independently is another useful feature, allowing experimentation in reverse settings,

*"The difference between a folding and fixed propeller may be half a knot or more in your sailing speed."*

for example, to maximize thrust or reduce prop-walk.

Disadvantages may be the need for occasional lubrication of the hub (which must have little friction if the blades are to self-align under sail), usually from a grease gun. There is also an increased vulnerability to mechanical damage. A blade is replaceable and a spare might even be carried, but it should really be factory-balanced to match the original.

The lack of blade twist means that self-feathering propellers are not quite as efficient as propellers with twist when operated under design conditions. However, most yacht motoring and motorsailing takes place under quite different conditions, and most owners would rate reduction in drag under sail as more important than peak efficiencies anyway. Feathering propellers are made by many firms and have such useful advantages —

less drag and the ability to alter pitch — that price is probably the only consideration preventing them from completely supplanting fixed-blade propellers in sailing boats. While most are made from bronze or stainless steel, composite engineering plastics are starting to be used for some components.



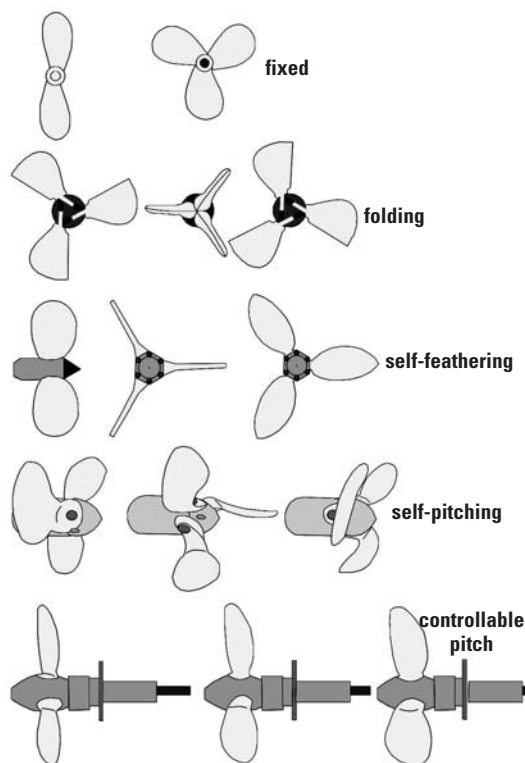
## Self-pitching props

Self-pitching propellers are a quite different approach to the pitch-selection problem. Each blade is independently mounted on a radially pivoted crank arm so that it is essentially free to align itself with the passing water. When rotated by the shaft, centrifugal force tries to swing the blades square to the shaft, but the blade sections are slightly asymmetric and shaped so they naturally adopt the correct angle of attack to the water flow. They therefore develop lift, much like a cambered wing. When the yacht is sailing, the blade wings point nearly straight ahead, but if the engine is engaged and the propeller as a whole rotates, they automatically pivot to maintain their angle of attack to the water.

Compared with a fixed-blade propeller, this is a great improvement, increasing the effectiveness of the propeller when operated away from the assumed design boat speed. The practical results bear this out, with people I've spoken to agreeing with the manufacturers' claims for increased boat speed at maximum and intermediate rpm, and noticeable fuel savings.

These propellers also self-feather under sail, but the asymmetric blades tend to rotate the shaft, so locking is still advised.

## Propeller classes



Self-pitching propellers may have slightly more sailing drag than ordinary self-feathering types, but the difference is probably too small to notice.

The arrangement works in forward and reverse gears, and the only drawbacks seem to be price, damage vulnerability (probably similar to feathering props in this regard), and perhaps the greater axial space needed to accommodate the blades, which are in different positions in forward and reverse.

Most boatowners could never justify the extra cost of a self-pitching propeller on the basis of fuel saved, but the ability to get extra thrust when the boat is already sailing fast under sail or to effectively use full power against a headwind or sea are more tangible benefits. The ability of these props to extend the range yielded by a given fuel load may also justify their cost to some cruisers who need a long motoring range. They seem destined to become more common, particularly on motorsailers where they may be seen as a reasonable alternative to our last propeller option, which is very expensive.

### Controllable-pitch propellers

Controllable-pitch propellers are widely used in commercial vessels and might be more common in yachts if it weren't for their price and installation requirements. All the previously considered options can be designed to mount on a conventional propeller shaft, with a standard shaft taper, keyway, locknuts, split pins, and so forth and can usually be retrofitted easily. But controllable-pitch propellers use a hollow propeller shaft through which control tubes or rods move forward or backward to simultaneously change the pitch of all the blades. In some cases, the propeller and shaft actually move forward and aft, too.

The hollow shaft, control system and, in some cases, the shaft tube and bearings are supplied as a unit. The gearbox may also be an

*"Controllable-pitch propellers are widely used in commercial vessels and might be more common in yachts if it weren't for their price and installation requirements."*

integral part of the installation. Several levels of control sophistication are possible, but essentially a controllable-pitch propeller can be adjusted to absorb as much power as the engine is able to supply at any combination of shaft rpm and boat speed. Diesels operate more efficiently when well loaded. An adjustable-pitch propeller can be thought of as being the equivalent of a whole range of different propellers (with the same diameters) selectable at the push of a button or lever.

Some systems are fully reversible and don't need a reversing gearbox, but these types may not be able to align the blades fore-and-aft for minimum drag under sail.

There also is, or was, a cheaper version that could only adjust the pitch when the shaft was stationary, but the main brands can be adjusted under power. Finding the sweet point for a given situation may involve a little trial and error, but the exhaust gas temperature is sometimes monitored to avoid overloading the engine, and a speed log in combination with a fuel-flow

monitor can also be useful in revealing efficiency changes.

As with feathering propellers, the blades of adjustable-pitch propellers are not twisted. Therefore the actual blade angle of attack is different at different diameters, so the overall result is an average and is, as a result, less efficient than a fixed-blade propeller operated under its design conditions. For sailing yachts, this is not a significant issue compared with the reduced drag under sail and an ability to adjust pitch to suit actual conditions.



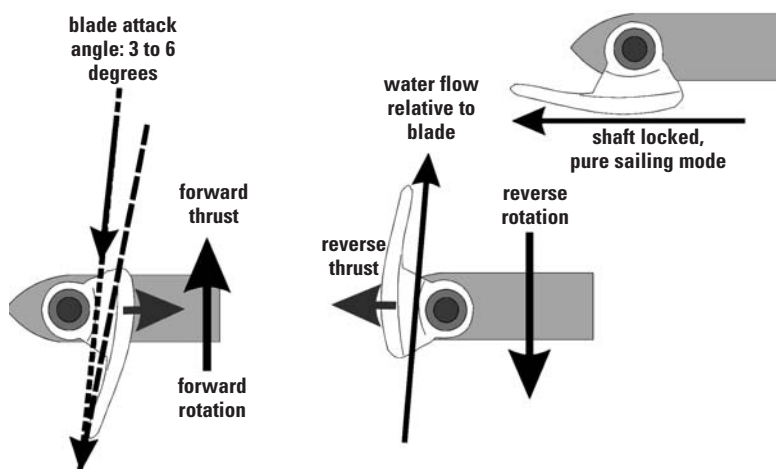
### The Atomic 4 problem

The use of the Atomic 4 engine in smaller boats caused special problems. The engine is rated at 30 horsepower when turning at 3,500 rpm. It was fitted to many smaller boats that did not require even half this horsepower. These small-boat applications used a direct-drive transmission and a fairly small-diameter prop. The final drive ratio of 1:1 allowed the prop to turn reasonably fast at a low engine speed. At that low engine speed the Atomic 4 was able to develop about half of its rated horsepower, but that was all the horsepower that was needed.

The engine and prop were reasonably effective in the original form, but some boatowners complained of poor performance in reverse, and there were serious problems when these boats were retrofitted with diesel engines. In both cases, the small prop was the cause of the problem. This was further aggravated by the A4's planetary transmission, which had a very low gear ratio in reverse.

Retrofit diesels that are used to replace the Atomic 4 will typically have about a 2:1

### Self-pitching propeller concept (other blades omitted for clarity)



reduction gear in their transmissions. This means the prop will be turning at half the speed that it would be turning with a direct drive. The diesels tend to be rated at about half the horsepower at 3,000 or even 3,600 rpm and so need to be able to run very close to maximum rated speed to do the job.

The 2:1 reduction gear would allow this, but at half speed the original props are not able to deliver the power to the water. The solution is to select a much larger-diameter prop, but the physical arrangements of the hulls often do not allow these larger props the space they need. Apertures are too small, and the shaft and strut layout on fin-keel boats does not allow adequate clearance between the prop and the hull.

These problems cause people installing diesels to choose three-bladed props where two-blades had been used with the A4. This compromised solution is not always as effective as a larger two-bladed prop would be.

There are two special propeller designs on the market that target these problems. Indigo Electronics offers a nickel-aluminum-bronze alloy, three-bladed propeller with a shape that is very wide near the ends of the blades. This allows the three-bladed prop to deliver the necessary power with only a 10-inch diameter. The blades have winglets to reduce the noise generated by vortices coming off the tips and striking the hull. These same winglets will increase the lift of the short blades.

The prop has better than normal performance using the Atomic 4 engine in the original application. It allows more engine speed to develop, and allows the engine to deliver the required horsepower at a higher rpm with less lugging.

The CDI Extendo prop attacks the diesel conversion problem. This prop has a 6-inch-long hub forward of the blades that allows the blades to be positioned farther aft. In the case of most fin-keeled boats, the hull is sloping up in the vicinity of the prop, and the shaft is angled down. Additional clearance is gained by moving the blade disk further aft. This can allow the application of a 15- or 16-inch prop where only a 13- or 14-inch prop could be used before. The added overhung loading is mitigated to some

*“... there is definite merit in choosing a finer-pitched propeller (for lesser boat speed) so full power can be efficiently applied when really needed.”*

extent by the prop being made of a lightweight urethane material. In addition to allowing clearance for a larger-diameter prop, the Extendo has the variable-pitch features of the PerfectPitch prop that is also offered by CDI.



### Variable pitch

The CDI PerfectPitch prop achieves pitch variation by a controlled distortion and deflection of the blade as the load changes. The prop is made of a hard, high-strength urethane material engineered to change shape in response to loading and direction of rotation. In the forward direction under light load the prop is (by selection) slightly overpitched. This allows the engine to run at a reduced speed but still be well within its appropriate loading range so that it does not smoke or lug. As the loading increases in the forward direction because of higher speed and/or rougher seas, the prop depitches to allow the engine to reach full speed and still remain properly loaded.

The cross-sectional blade shape of the PerfectPitch prop is closer to a symmetrical foil so the prop will function better in reverse. In reverse the prop pitches up, instead of down, compensating for the lower gear ratio that marine transmissions have in reverse. This gives the prop better performance than a fixed prop when backing.

### Two vs. three blades

Yacht propellers are generally two- or three-bladed, and most varieties are available in either form. In principle, two-bladed props can be more efficient and, if fixed, may also produce less sailing drag if the propeller can be locked vertically behind a keel. This advantage isn't a possibility in modern short-keeled yachts, so the choice between two or three blades usually depends on other factors.

Three blades are likely to produce less vibration and may be more robust than an equivalent two-blade, but the deciding factor may well be the space available to swing the propeller, because three-bladed propellers can be smaller in diameter. The closer the blade tips pass by the hull, the more noise and increased vibration is likely to be felt within the boat.

The usual rule of thumb is to provide a tip/hull clearance of at least 20 percent of the propeller diameter. Another factor encouraging smaller diameter, three-bladed, rather than two-bladed, propellers is the need to keep the tips immersed as deeply as possible to minimize air entrainment and cavitation. However, a counter-acting factor comes into play when considering propellers with articulated or adjustable blades because two-bladed systems may be cheaper or stronger.

### A few last points

- Propellers with articulated blades are intrinsically more vulnerable to fouling, damage, and galvanic corrosion. They need good, but not excessive, cathodic protection, periodic lubrication, and inspection to remove barnacles or debris that may prevent articulation.
- Be critical when considering manufacturers' claims — efficiency comparisons are sometimes misleading and, for most sailors, efficiency is a secondary consideration compared with reliability, prime cost, and sailing drag.
- Whatever sort of propeller you use routinely, it's a good idea to carry a backup. Even if the backup is far from optimum — provided it has a compatible taper and keyway and you carry spare nuts, split pins, and a diving mask — you are prepared for something that probably won't (but just might) happen.



# The double fin advantage

**Toussaire, a 38-foot steel bilge fin motorsailer with 4-foot draft.**

*Twins are good, says noted yacht designer. Just don't call them keels*

by Ted Brewer

**F**IRST, I'D LIKE TO CLEAR UP THE terms I use. Every dictionary I've seen agrees that the maritime "keel" is the structural backbone of the vessel. So, to my way of thinking, there is no such thing as a fin-keel yacht any more than a shark is a "fin-backbone fish." The boat is a fin yacht. Similarly, with apologies to Craig Anderson, editor of the very informative and interesting *Twin-Keeler* newsletter, I prefer to call the boats "twin-fin" and "bilge-fin" yachts.

The bilge-fin yacht carries its main ballast in a central fin, which may be full length, as in a full-keel yacht, or carried in a shorter fin. However, the vessel's main lateral plane is provided by an unballasted or lightly ballasted fin on each side of the central fin. In effect, she really has three fins! I feel this form is best suited to heavier displacement vessels of the motor-sailer type, where minimal draft is essential since wetted surface is increased substantially and performance hampered by the added resistance.



**Westerly Fulmar 32**

The true twin-fin yacht, on the other hand, has no central ballast fin, and the ballast is carried in the fins with perhaps a small amount of trim ballast in the canoe hull itself. Thus, wetted surface is kept reasonable and, with good design, the yacht's performance can be as good as, or better than, that of a full-keel yacht of the same draft.

My introduction to twin-fin yachts came in the late 1950s when a U.S. firm was heavily touting the Robert Tucker-designed *Silhouette*, a 17-foot, V-bottom, plywood cruiser built in England. The importer ran big ads in all the yachting magazines . . . ads replete with greatly exaggerated blurbs about the advantages of the twin-fin design, with the result that several thousand of the little yachts were sold in only a few years.

## Could not resist

I was working in Canada at the time, and bringing an English boat up from the U.S. was simply not practical. But in 1958 I ran across an ad in a British yachting journal for the V-bottom *Caprice*, an 18-foot 4-inch Tucker design, also built of marine plywood. The price was right (I could just barely afford it) at about \$1,450 delivered to Toronto, Canada, complete with a very temperamental Vincent two-stroke inboard motor of about two Shetland-pony-power. I could not

resist it and quickly placed my order.

The new boat, which I named *Phialle* (Greek: a small drinking vessel), arrived in the spring of 1959 and looked very attractive in the dockyard, her bright red hull sitting upright on her twin fins with no need for a cradle. We cleared her through customs, launched her, stepped the mast, unpacked the sails, and were away and sailing inside of two days. Unfortunately, we soon found that, having been designed for the blustery winds of the English Channel, she was woefully undercannvassed for the light summer breezes of Lake Ontario. So *Phialle* was sold when I moved to Connecticut to work for Bill Luders in 1960.

In defense of Robert Tucker designs, I must add that Shane Acton and his *Caprice*, *Super Shrimp*, eventually circumnavigated the globe, and Tristan Jones cruised his Tucker-designed 21-foot, bilge-fin *Debutante*, *Sea Dart*, across oceans and up the Amazon. Tucker designs were simple, but able, small yachts with a deserved reputation for seaworthiness. Other British



**Silhouette**

*"The real potential  
of the type is still  
largely unexplored ..."*

designers were working on twin-fin yachts in the late 1960s also, resulting in a raft of small cruisers and a number of larger ones. Many of these craft were built in fiberglass and exported to North America. One 20-foot Vivacity, *Mini*, was sailed from the West Coast to Hawaii in 1992, despite 40-knot winds and 35-foot seas . . . solid proof of the ability of these mini-yachts.

## Bigger boats

Larger twin-fin designs were not ignored and, in the 1960s and '70s, Macwester Marine produced a series in sizes 26, 28, and 32 feet, while Kingfisher offered a line of 22-, 26-, and 30-footers. According to Kingfisher, one of their 26-footers placed second overall in the Round Great Britain Race and later won the Singlehanded Transatlantic Race Monohull Handicap, being the first boat under 30 feet to finish; definitely an enviable record for any boat whether single-fin or twin.

Twin-fin yachts are not exactly new; the history of the type began about 80 years ago in 1923 when Lord Riverdale performed towing tests, upright and heeled, along with free-sailing tests, on 25-inch-long models. Eventually this resulted in a design for a 25-foot double-ended, twin-fin, twin-rudder cruiser, *Bluebird*, which he built himself in 1923 and '24. She was, as he admitted, a bit extreme with her symmetrical fins and rudders angled outboard at 30 degrees, but she was definitely successful and was still sailing more than 45 years after her launching when I checked.

In 1939, Lord Riverdale tested and designed a larger vessel, the 48-foot *Bluebird of Thorne*, an unusual twin-fin yacht with a central ballast "pod" and with the twin fins angled 25 degrees from the vertical and connected to her twin rudders. He sailed her some 40,000 miles in the years up to 1961 and claimed she had good seakeeping and balance qualities but was slow in light winds. He admitted that she was a step backward with her central ballast pod. It is signifi-

cant that, on his last yacht, Lord Riverdale returned to the twin-fin design with no central ballast.

## True twin-fin

His final twin-finner, the 50-foot *Bluebird of Thorne*, was designed by the well-known British designer Arthur Robb, in collaboration with Lord Riverdale, and launched in 1963. This was a

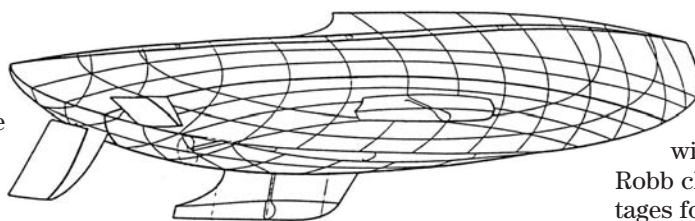
true twin-fin hull and perhaps the first to have asymmetrical fins, fitted at 24 degrees from the vertical, along with twin symmetrical rudders of unusually small area. The table shows some data on the three *Bluebirds*, and the reader will note the great difference in heeled and upright draft. Unfortunately, Lord Riverdale did not indicate the heel angle but, on the lines of the 1963 boat, I roughly worked out the 6-foot 9-inch draft to be with the fin vertical at a 24-degree heel.

I think this is a bit extreme as, when heeled that far, the weather fin will be at the surface, creating added wave resistance. I feel that 20 degrees would be a more realistic maximum heel and would result in a heeled draft of about 6 feet 6 inches. That is still quite impressive when you consider the draft of a similar single-fin hull would be reduced to about 5 feet 2 inches at 20 degrees of heel. The much deeper twin-fin will make a substantial difference in reduced leeway.

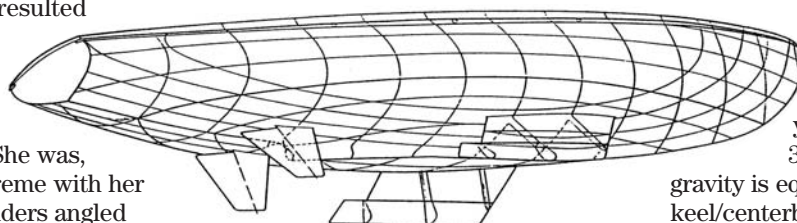
Based on his experience with the 1963 design, Arthur Robb claimed several major advantages for twin-fin craft:

1. Elimination of the complexity of the centerboard (no doubt about that!).
2. Lateral-plane efficiency increases with heel angle, rather than decreasing as it does on a single-fin yacht.
3. The vertical center of gravity is equal to that of a single-fin or keel/centerboard yacht of equal draft; thus stability is not impaired.
4. The weather fin produces downward lift that increases heeled stability.
5. The fins provide some lift at speed when the hull is upright.
6. Directional stability is enhanced.
7. Improved efficiency under power and better control in reverse.
8. The ability to ground out upright in tidal waters.
9. Smaller rudder area is possible if twin rudders are fitted, as the lee rudder is nearly vertical and in the accelerated flow from the fin.

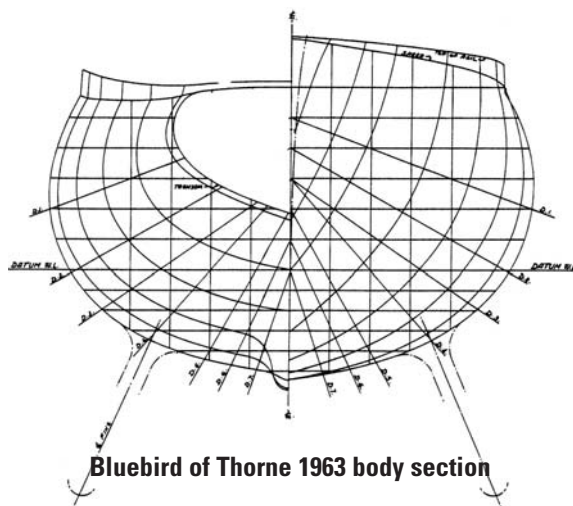
	Bluebird 1924	Bluebird of Thorne 1939	Bluebird of Thorne 1963
LOA	25' 0"	48' 0"	50' 0"
LWL	22' 0"	39' 0"	40' 0"
Beam	6' 7½"	11' 0"	12' 2"
Draft Upright	2' 9"	4' 9"	5' 4¾"
Draft Heeled	3' 9"	6' 6"	6' 9"
Displacement	6,720 lb.	37,000 lb.	33,600 lb.
Sail Area	250 sq. ft.	950 sq. ft.	950 sq. ft.



Bluebird 1924



Bluebird of Thorne 1963



Bluebird of Thorne 1963 body section

I used single centerline rudders on my twin-fin designs so I cannot comment on the last claim. The complexity and extra cost of twin rudders seems to outweigh their benefits, and most twin-fin boats I've seen use a single rudder.

The twin-fin design improves efficiency under power since the propeller can work in clean water, undisturbed by the wake of a central fin. Then, if a folding propeller is fitted, the drag under sail will be absolutely minimal. Arthur Robb also claimed higher speeds under sail for the twin-fin than for "an orthodox cruising yacht." By "orthodox," I believe he meant a typical full-keel auxiliary of that era. Robb may well be right in this respect as the twin-fin yacht can have less wetted area than a full-keel vessel. This is not necessarily true of the modern deep draft, single-fin cruiser which, I feel, still has a performance edge over a well-designed twin-fin craft, particularly at lesser heel angles.

### Ratio changes

However, as heel angle increases, the effective aspect ratio of the single fin decreases, while the aspect ratio of the twin fin increases up to the point where it becomes vertical to the surface due to heel angle. Thus, there may be some angle of heel at which the twin-fin equals or outperforms the single-fin even if the latter yacht is of slightly deeper draft when at rest.

Ed Dubois, a well known English designer, points out that the extra wetted surface of the twin-fin yacht is only significant at low speeds, where surface friction is the major component of resistance. Wave-making is the prime source of drag at more usual sailing speeds, and surface friction is only a small portion of the total resistance. Thus the performance of twin- and single-fin yachts tends to even out as speeds increase. Dubois also claims the twin-fin yacht to be steadier on the helm in a seaway, while Patrick Bray, a Canadian designer, believes that the twin-fin yacht has superior performance in heavy weather due to the damping action of the fins reducing roll and pitch.

Bray also states that properly designed and placed twin fins alter the wave pattern, reducing the midship wave trough and flattening the stern wave. He feels that this can increase the maximum hull speed by as much

*"...with good design,  
the yacht's performance  
can be as good as,  
or better than,  
that of a full-keel yacht  
of the same draft."*


as 15 to 20 percent. Although he has tank tested a model of a 38-foot motorsailer, I have to admit to being skeptical about such a huge performance increase. Still, it would be fascinating to tank test a complete series of twin versus single fins; shoal fins, deep narrow fins, single vs. twin rudders, and so on. Would any reader care to donate several hundred thousand dollars for science?

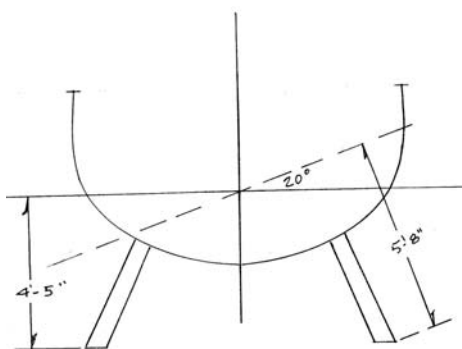
### Increased angle

Lord Riverdale, and many other designers, commonly toed in the twin fins at a 1- to 2-degree angle to the hull centerline in order to increase the angle of attack and so increase lift. This would seem to be advantageous if the fins were symmetrical foils. However I used asymmetrical foils on my twin-fin designs and set them parallel to the centerline as I felt that the asymmetrical foil would

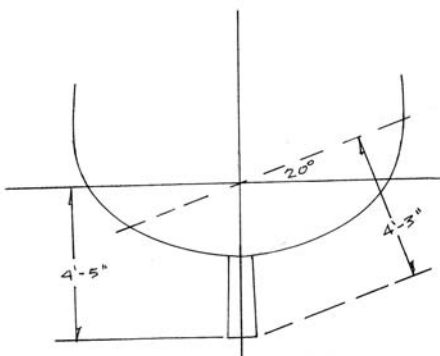
develop adequate lift while toeing-in would simply increase resistance when running free or under power. Again, only a complete tank testing program could determine which is the best route to go and, even then, it might vary with hull and fin type.

On my own twin-fin designs, a 54-foot ketch, a 60-foot ketch, and a 60-foot schooner, I set the fins at a 15-degree angle to the vertical as I felt the modern, beamy boats would heel to a lesser degree than Lord Riverdale's narrower *Bluebirds*. On studying things further I'd be tempted to set the fins at a 20-degree angle today as there would seem to be some advantage to having the fin angled slightly to leeward even when the boat is sailing at a good angle of heel. Patrick Bray has noted that if the fin is still angled outboard 5 degrees or so when the boat is heeled, there is less tendency for crossflow beneath the fin with its resultant vortex-forming drag. I have used wide "foot plates," protruding 5 to 6 inches outboard of the fin, to reduce crossflow, and they also help keep the boat from sinking too deeply into the muck when dried on an outgoing tide.

There's still much to learn about the capability of twin-fin yachts. It is quite possible that the type would form the majority of cruising yachts today if half as much experimenting and tank-testing had been done on twin-fin as has been done on full-keel and single-fin sailing craft. The real potential of the type is still largely unexplored. I hope future designers will approach the twin-fin yacht with an open mind and give it the chance it deserves. 



Comparing twin- and single-fin hulls at 20° heel



### For further information

*Twin-Keeler Quarterly*, Craig Anderson, 632 Brindisi Ct., Punta Gorda, FL 33950.

*The Proper Yacht* by Arthur Beiser (MacMillan & Co., New York, 1966).

Thanks to Capt. Martin Hederich for information on the Westerly Pageant. Capt. Hederich is the author of *Cruising: From Dream to Reality* (Brentwood Productions, 10247 County Road 10, RR #2, New Lowell, ON, L0M 1N0, Canada), which is replete with inspiration and advice on voyaging in a small sailboat.



# Curing leaky portlights

*Even the worst-case scenario is a pretty straightforward repair*

by Phillip Reid,  
with Mark Petrush

**W**HEN I DISCOVERED THE WEEPING portlights on our Pearson 28, my first thought was: “Caulk ‘em.” So, not knowing any better, I did — around the outside edges. Tightened the screws, too. The ports still leaked.

Closer inspection revealed that over a long period of time water had dripped down the cabin-trunk liner in the head onto the toilet plumbing, leaving a long rust stain on the head sole. Water then ran out of the head and pooled in the forepeak under the notch of the V-berth.

On the other side, water dripping down the liner had corroded the dome light over the main locker into a fossilized state of uselessness; when I tried to work the switch, it and the surrounding metal broke off in my hand. (See photo above.) The contents of this locker were well-dampened after every rain shower. There was no point in replacing that light or improving the locker until the portlight quit leaking.

Next, I looked at the gaskets. I concluded they were original. They looked like desiccated reptile hide from the Cretaceous period. Replacing them with black neoprene adhesive hatch seal from the marine store was simple and quick.

The darn things still leaked. I got on the Pearson 28 Forum email discussion list and solicited suggestions. I

found out that I was looking at what I considered the worst-case scenario: the portlights needed to be removed and rebbed in structurally modified openings. Arrgh!

But wait — don’t flip to the next article yet. It wasn’t that bad — really.

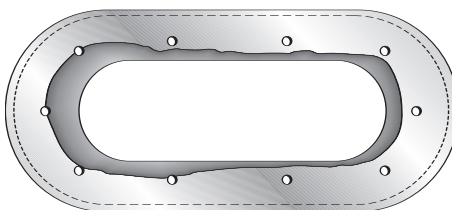
Mark Petrush, an experienced P-28 owner and moderator of the forum, had come up with a permanent fix. The problem is one common to production boats with liners — which most of us sail. When Mark took his leaky portlights off, he discovered that the cut-outs made by the builder looked as though the man with the saw had sniffed a few too many resin fumes. The cut-outs were rough and wallowed-out, with large gaps between the “spigot” (the lip of the portlight that goes through the opening to the other side) and the boat. The builder had filled these gaps with about half a tube of caulk. (See illustration below.)

Mark also discovered that the gap between the cabin trunk itself and its

liner wasn’t filled, leaving a flexible, fairly flimsy mounting surface for the portlight. With all that caulk and no solid mounting surface, a good whack and/or some caulk aging could easily cause leaking. It could also allow water to leak between the liner and the cabin trunk, down into the who-knows-where.

The solution was to pack these gaps with a permanent, strong, hard-curing adhesive filler, creating a solid mounting surface for the portlight (by filling the gap between cabin trunk and liner), and a cutout that fit the portlight spigot exactly, with room only for a bead of caulk. Then, only a normal bead of caulk (and some in the screw holes) was needed to seal the portlights. Now they’re held firmly in place against solid surfaces on both sides, so jostling them won’t break the caulk seal and cause leaks.

**At top, years of dripping from this portlight ruined the dome light below it and dampened anything stored in the area. The powder corrosion visible on the lower flange of the portlight was caused by bad gaskets. The water droplets visible on the liner were coming from under the flange. At left, an illustration of gaps left by the builder which caused leaking many years later.**



The project requires only basic tools and skills and readily available materials. The time required for the project, including getting the stuff together, was 30 hours for me, but I'm slow. It took Mark only about 12 hours. I worked on it a little at a time over a couple of weeks, but if you can't work during the week, one or two full weekends should suffice. The total cost for materials should be about \$25, excluding two-part marine epoxy and filler, which is optional — see Step 4.

Following this procedure will allow you to avoid the minor pitfalls and delays I stumbled into, even if you're not experienced at this sort of thing.

## Step 1: Gather tools and materials

You may be able to get everything you need at the local hardware store or home improvement warehouse and the auto parts store.

### Tools:

- Several 3- to 4-inch C-clamps. I used six.
- Puttyknife
- Razor scraper (sold to get paint off windows)
- Pocketknife
- Screwdriver(s) to fit your screws. You'll need two at the same time — one on one side, and one on the other.
- Detail sander with 100-grit pads
- Hammer
- Caulking gun
- Goggles
- Breathing masks
- Long nail or coat hanger to punch through caulk seal
- Tap tool to match your portlight screws (if your portlights aren't through-bolted — you'll have to take them off to find out).
- Drill and bit to match your screw holes



*“Mark also discovered that the gap between the cabin trunk itself and its liner wasn't filled, leaving a flexible, fairly flimsy mounting surface for the portlight.”*

- Old toothbrush to clean off powder corrosion (if your portlights are metal)
- Calipers (optional)
- Tape measure

### Materials:

- Strips of scrap lumber, about 1/4-inch thick and 1 1/2 inches wide, to “frame” the portlight opening
- Clear, thin-wall, vinyl tubing, non-adhesive weatherstripping, pipe insulation, Caulk Saver, or some other flexible material to stuff down into the gap between the liner and the cabin trunk. (I recommend taking your portlights off before buying this, to see how much of a gap you have. The sealing material should be just thicker than the gap.) Here's how to calculate the length of the material you need: [(horizontal length of portlight + 2 inches) x 2] + [(height of portlight + 2 inches) x 2] for each portlight.
- Plastic body filler with chopped-strand fiberglass and cream hardener (Bond-Tite or Bondo-Hair — the hardener and a plastic mixing tray come with it). About 2/3 of a quart will easily do two portlights. (Again, I would take off the portlights before you buy this (see Step 2) — if your liner/cabin-trunk gap is 1/8 inch or less, you might find it easier (but more expensive) to use thickened marine epoxy. I found the epoxy more difficult to work with, and it's expensive, so I'd suggest using body filler, if you can.)
- If you opt for epoxy — this could happen if you have a very narrow liner-cabin trunk gap — you'll need a two-part marine epoxy and high-

density filler. You'll also need syringes or empty caulking gun tubes. The tubes will work if a tube tip will fit all the way inside your gap; you'll need syringes for smaller gaps. You might need two syringes per portlight; if you don't clean them out completely before the epoxy kicks (tedious), you have to throw them away.

- (Optional.) Empty cans, jars, or plastic dairy cartons for mixing epoxy
- Roll of blue masking tape (Long Mask) about 1 1/2 inches wide
- Box of disposable latex gloves (I used wads of them — they don't last long)
- A couple of paper plates to catch mixing spills
- Rags to wipe surfaces with acetone
- Pipe cleaner to wipe out screw holes with acetone
- Paper towels to wipe up filler, epoxy, and caulk
- Silicone grease or silicone-based vinyl and rubber protectant (such as Armor All)
- Tube of caulk (I used clear silicone; you could also use polysulfide; I wouldn't use 3M 5200 because you'll never be able to get the portlights back off if you need to repair or replace one).
- Can of acetone
- Plastic grocery bags or kitchen-size plastic garbage bags
- For non-through-bolted portlights only: machine screws to replace self-tapping screws, same size
- For non-through-bolted portlights only: Loctite or other screw-thread or pipe-thread adhesive sealant (*Caution: some thread sealants attack plastic —Ed.*)

## Step 2: Remove your portlights

This job makes a mess, so if possible move everything under the portlights



**You can gather some of your equipment in advance, but you'll need to remove your portlights before you'll know exactly what you need.**

*"The problem is one common to production boats with liners — which most of us sail."*

out of the way or cover it well beforehand. I was able to do this step without assistance; the caulk in the bolt holes held the nuts in place while I turned the bolts and vice versa.

Your portlights might be through-bolted with barrel nuts (these have a head like a screw), or they might be screwed in from each side with self-tapping screws (like Mark's plastic ones). On one side is the portlight and on the other is a ring that fits around the protruding spigot. (You can tell which is which because the ring and spigot are not attached to each other but merely fit closely.)

Take the ring off first. You may have to use a hammer and putty knife to break the caulk seal on the outside. Tap the putty knife, corner first, gently between the portlight (or ring) and the boat (it'll need to be a fairly thin putty knife) — going all the way around until the ring or portlight will pull off with moderate steady pulling. Once you have the ring off (you may bend it a little in the process if it's aluminum like mine — don't worry about that), you'll be able to see the cut-out, along with any gobs of old caulk used to fill it. Note how much space there is between the cut-out and the portlight spigot.

To get the portlight out, carefully slice through as much of this as you can with a pocketknife. You should then be able to pry out the portlight by getting the claw of your hammer under the flange (where the screws go) and pulling gently and steadily. Don't put brute force to it or you may damage the liner (if your portlight goes in from the inside, like mine) or gelcoat (if from the outside, like Mark's). If you're prying from the outside, masking tape can help protect the gelcoat surface.

### Step 3: Clean up the openings

Cut out the big pieces of caulk with a sharp pocketknife or razorknife. Cut and pry the caulk out of the gap between the liner and cabin trunk. Now you can measure the gap between the liner and cabin trunk. It may be uneven. Your goal is a gap of consistent width; shoot for a rough average of the narrowest and widest points. (Note: Whenever you need to leave the project for a while, just tape a plastic grocery bag over each opening with

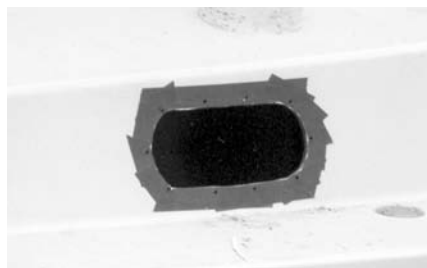
blue masking tape, from the outside. Don't leave it more than a week.)

### Step 4: Filler and gap-stuffing material

If your liner-cabin trunk gap is  $\frac{3}{8}$  inch or more, you can use thin-wall clear vinyl tubing from the plumbing section of the home improvement warehouse for the stuffing material. It's flexible enough to stuff in the gap but firm enough to stay put. If your gap is like mine and closer to  $\frac{1}{8}$  inch, you'll need to use something smaller. I used round closed-cell foam Caulk Saver. It comes in rolls of 20 feet, and you'll find it with the weatherstripping. I actually had to cut mine in half lengthwise to use it, but that was easy. Your gap stuffing will need to be slightly thicker than your gap.

If the spaces between the spigot and the cut-out are pretty big, like ours, I'd get the body filler for those (Bond-Tite with chopped strand or Bondo-Hair) from the auto parts store. It costs about \$7. If your liner-cabin trunk gap is closer to  $\frac{1}{8}$  inch than  $\frac{3}{8}$  inch, I'd use the filler for that, too.

If, like mine, your liner-cabin trunk gap is  $\frac{1}{8}$  inch or even less, the body filler will be too thick to cram in there. You'll need to use epoxy. If you don't already have some, be prepared to spend \$50 for two-part marine epoxy, dispensing pumps, and filler. The syringes or caulk-gun tubes will cost you another \$5 to \$10. The good news is that you won't use nearly all the epoxy, even if you get the smallest containers, and this stuff is great to have for all sorts of repairs and projects. It keeps indefinitely if properly stored.



**Mask both sides of the opening, and your cleanup will go much faster.**

This is also the time to buy machine screws to replace your self-tapping screws if your portlights aren't through-bolted. Get the same size screws. You'll also need a tap tool to match the machine screws. Ask someone knowledgeable at the local hardware store.

### Step 5: Stuff and even the gap

Use a putty knife or something with a thin blade (but not a sharp edge) to push the tubing or foam stuffing into the gap all around. It helps to use a screwdriver to gently pry apart the liner and cabin trunk as you stuff in the tubing or foam strip. Be careful, though; the liner can crack. Try to get the stuffing in at an even depth of 1 inch. Use tape wrapped around your putty knife at a 1-inch point as a gauge. If the cabin trunk takes a turn before 1 inch, use as close to 1 inch as you can all the way around. If the stuffing material ends up a little long, trim off the end so it just meets the other end.

Once your gap is completely stuffed and depth is consistent, wipe down all surfaces that will contact filler (inside of gap, edges of cut-out, screw holes) with acetone. Then mask the surface around the cut-out on both sides, covering the screw holes. (A 1½-inch tape will do.) This will save you a lot of time and trouble later. (See photo below.)

Place the wooden strips around the cut-out like a frame, on both sides. (Do one pair at a time.) Keep the strips clear of the edge of the cut-out. Clamp the whole "sandwich" together with two C-clamps for each long pair and one for each short (side) pair.

By tightening or loosening the clamps, even out the gap all the way around, using calipers or a simple homemade gauge (like the putty knife with tape on it) to get a consistent gap. This will give you a completely flat and straight mounting surface on both sides.

It's important to keep the gap on the narrow side — certainly no wider than the widest point you find when you take the portlight off. Otherwise, your bolts may wind up being too short.

### Step 6: Fill the gap

Now's the time to put on your latex gloves. Mix up your body filler or epoxy according to the directions. The body filler has a very short pot

*"The project requires only basic tools, basic skills and readily-available materials."*

life; it will kick off in as little as five minutes. Mix only about a golf-ball-size gob of it at a time on the plastic mixing tray that comes with it. Use only about a toddler's toothpaste dab of cream hardener per gob. Mix with the putty knife. Working with one small section of the gap at a time, press the filler firmly into the gap, wipe up what oozes to the sides, and press that in too. Keep dabbing on and pressing in until that gob of filler is gone. Mix up another and keep going. For this stage, keep your filler even with the edge of the cut-out; you'll fill in the other spaces in Step 7.

If you're using epoxy, you'll need to add filler until you get a peanut-butter consistency so it won't sag and ooze out of the overhead gap. For one 1/8-inch liner-cabin trunk gap, I used about a half pint. You'll use a lot of the high-density filler to get it thick enough. If you mix it with a tool you want to use again, clean the tool with acetone before the epoxy kicks.

Epoxy has a longer pot life than body filler; how long depends on the hardener you use and the ambient temperature. Check the manufacturer's instructions. Make sure the tip of your syringe or caulk gun tube will go all the way inside the gap. Load up and squirt the epoxy all the way in, applying it from the inside out. Have a rag and some acetone handy to wipe up any drips.

If you use epoxy for the gap but you're going to use body filler for the spaces around the portlight spigot, you'll want to let the epoxy cure first. Call it a day and give the epoxy whatever cure time the manufacturer calls for.

If you're using epoxy for the space fill as well, you'll need to let the epoxy set up before proceeding to Step 7. Again, check the instructions for setup time. It will be less than half an hour in most cases.

If you used body filler for the gap, you only need to let the filler set up for about seven to 10 minutes before proceeding to the next step. You can test the filler by pressing gently on it with a gloved fingertip while it dries. When it's set up, it will be hard; the chopped fibers will be almost brittle.

### **Step 7: Pack filler in**

Before you get started on this step, clean off your portlights. Remove the screens. Remove any traces of old caulk. A paint scraper works well for this. Brush off powder corrosion. Clean out screw holes. Check for any damage. Clean the glass. Clean the gaskets (I'm assuming they're in good condition) and put some silicone grease or silicone-based vinyl and rubber protectant on them. Wipe the mounting surfaces down with acetone (something milder if they're plastic or have a delicate finish).

Once clean, wrap the outer surface of the portlight spigot with three layers of blue masking tape. (See photo on Page 21.) This adds a little thickness to the spigot so that when the filler cures, a little room is built-in for expansion. It also masks the surface to keep it clean. Also, mask the inside of the portlight flange (where the screws go). One layer is fine there.

Remove the clamps and wood strips from the cut-out. Trim away any excess filler sticking out of the cut-out.

Replace the portlight in the cut-out. Make sure the flange still fits flush against the liner or cabin trunk. If not, take it out and carefully trim away any filler material that's sticking out past the edge of the cut-out. Feel with your gloved finger to make sure the surface is smooth and flush.

You may need to tape or clamp the portlight to the boat to hold it flush, depending on how loose the opening is. Make sure it stays flush, or you'll

have time-consuming trimming and sanding to do after this step.

From the other side, pack filler into the spaces around the portlight spigot, using the same procedure as in Step 6. Don't let filler protrude out of the cut-out, or you'll have to trim and sand it away later. Your goal is a flush surface. Once you're done, let the filler set up only until rubbery — not until fully cured — about seven minutes for body filler. Proceed immediately to Step 8.

### **Step 8: Trim away excess filler**

Once the filler has set up, but before it has fully hardened, gently pull the portlight back out. Trim away any loose fibers or rough edges sticking out. This will be easy. Gently pry up the masking tape on both sides. The excess filler on them should come off with the tape. Check your screw holes on both sides. They should be completely filled. If not, you'll need to fill them with filler or epoxy and let that harden. Wipe away any excess around the screw holes with acetone before it hardens.

### **Step 9: Final surface prep**

You need a completely flush surface on both sides. Any raised spots on the liner or cabin trunk should now be easy to take off with a detail sander with a 100-grit pad. Be sure to wear eye protection and a breathing mask or respirator whenever you sand epoxy or fiberglass. Don't let fiberglass dust get on your skin. Wear long sleeves and long pants. If you feel an itch after working with it, take a piece of new masking tape and stick it firmly to the itchy area, then pull it off. Do this a few times to take the fibers off your skin. If you have sanded filler, wash your outerwear separately before wearing it again.

### **Step 10: Re-drill screw holes**

Take all the tape off the portlight. Clean up the ring if you haven't already. If it's metal and a bit bent, beat it flat with moderate hammer taps on both sides. Sight down its edge to make sure it's flat and straight.

#### **Through-bolted portlights:**

After the filler in the screw holes has completely hardened, put the port-



**Mark Petrush fills the liner-cabin trunk gap. His gap was relatively wide. Once the first layer of filler sets up, the clamps can be removed.**

light back up. Put the ring on the other side. Tape or clamp both so they stay put. Drill new holes from the portlight side, all the way through, being careful to keep the bit perpendicular to the portlight both horizontally and vertically. Then go to the other side and drill from that side, through the holes in the ring, to “neaten” the holes and make sure screws and barrel nuts will align.

**Screwed-in portlights (not through-bolted):** Drill the holes only to the original depth — put a piece of tape or a paint mark on your drill bit to gauge hole depth. Then use the tap tool to tap (cut threads into) the holes.

### Step 11: Remove dust and filler

Take the portlight back down first, of course. Use a pipe cleaner dipped in acetone to clean out the screw holes.

### Step 12: Caulk

Lay a generous bead of caulk on the new edge of the opening (the surface that fits around the spigot). Lay another bead around and right next to the outside edge of the cut-out on the exterior side. Squirt a little bit of caulk into each screw hole on the exterior side.

Have a paper towel handy for wipe-ups, but if you dribble, it's frequently easier to wait for the caulk to cure and then just pull it off — it doesn't smear that way. (This won't work with 3M 5200, but I wouldn't use that anyway.)

Non-through-bolted portlights: You'll only need to caulk the outside holes, since the others don't go all the way through, but I'd put some Loctite on the inside screws to help hold them in place over time.

### Step 13: Reinstall portlight

Do this with the screen out so you can reach through. Put the portlight in carefully, then put the barrel nuts or screws in the holes on that side. Then put the ring on the other side. This can get messy so have paper towels handy. Put the screws or barrel nuts in on that side. Push them in as far as they'll go. If caulk squeezes out, wipe it up carefully; if you smear it around during this

*“You’ve now installed  
your portlights  
the way they should  
have been installed  
in the first place,  
permanently enhancing  
your boat’s integrity.”*

process, you'll probably want to wipe up the smears before they dry. With polysulfide, this might be easier if you use acetone.

You'll need to hold one side (nut or bolt) with one screwdriver while tightening the other from the other side. I found that propping up a small mirror was helpful. Tighten each bolt or screw a little at a time, then move to the next one in sequence. This will help prevent warping the ring. Continue tightening until all bolts and nuts (or screws) are as tight as you can get them. A little caulk should have been squeezed out around the outer edge of the ring and between the edge of the spigot and the ring. The ring and portlight should be completely flush with their contact surfaces (liner and cabin trunk). You can neatly and quickly clean up the excess caulk by bending and creasing a piece of thin cardboard — like a piece of cereal box or packaging — into an L-shape and running it along the seam so it lies flat against each surface and scoops up the caulk.

Replace the screens in your portlights once you've cleaned up any excess caulk inside the spigot.

### Step 14: Clean up


The debris from this job made my boat look like a war zone, but almost all of it vacuumed up easily and quickly. I had to do more sanding than you will if you follow these instruc-

**Mask the clean portlight spigot with three layers of tape on the outside and one layer of tape on the inside, above. Ready for re-installation, at right. Notice the dark areas where the gaps were. These are now filled with body filler. The surfaces are flush on both sides.**

tions, so I had to give the interior a wipe-down as well. I keep a 1-gallon, 1-hp \$20 Shop-Vac on board that I run off the boat's shorepower. It is about as good a way to spend \$20 on the boat as I've found. Cleaning up the whole mess took about an hour.

### Step 15: Celebrate

You've now installed your portlights the way they should have been installed in the first place, permanently enhancing your boat's integrity. You can feel good about that. If your portlights are in good condition, you can also feel good knowing that the next time it rains or you're in some boisterous water, you won't pull damp underwear out of your locker. (It's the little things that count.)

Mark says, “This was one of the sweetest boat ‘fixes’ I have ever done. Those windows absolutely will not leak again.” So go home, take a shower, have a cold one, and take yourself out to dinner with your favorite company. 



# OHM'S LAW and you

## Thinking of a rewiring job? Here's what you need to know

by Gord May

**T**HERE ARE A FEW FUNDAMENTAL principles you need to understand before you do any boat wiring. They are derived from Ohm's law, which describes the relationship between voltage, resistance, and current in a direct-current (DC) circuit. Unfortunately, some marine electricians, boatbuilders, and owners ignore the implications of Ohm's law, and do substandard work that won't operate well and may even be dangerous.

There's no excuse for this. The concepts and mathematical expressions that describe Ohm's law are simple. A little time spent understanding these concepts will prepare you to do it right. Ohm's law provides the fundamental basis for all electrical and electronic circuit design. It states:

*"Current flow is directly proportional to the applied voltage and inversely proportional to the circuit resistance."*

Simply put, any increase in resistance will cause a commensurate decrease in current flow.

The descriptive term "voltage drop" denotes the power losses in the wiring and other circuit elements and also denotes the power actually delivered to the intended load, such as a bilge pump. This is a useful concept because the voltage drop across the entire circuit is always equal to the battery voltage that powers the circuit.

Every section of wire and each termination has resistance and, therefore, voltage drop. Too bad. We'd like all the voltage to reach the load and "drop" there. The typical boat only has about 12.5 volts available to begin with, so even very small increases in circuit resistance will cause a serious loss of power at the intended load.

### The math

The fundamental expression of Ohm's law is:

$$I = E / R$$

where:

I = current expressed in amps

E = electromotive force expressed in volts

R = resistance expressed in ohms

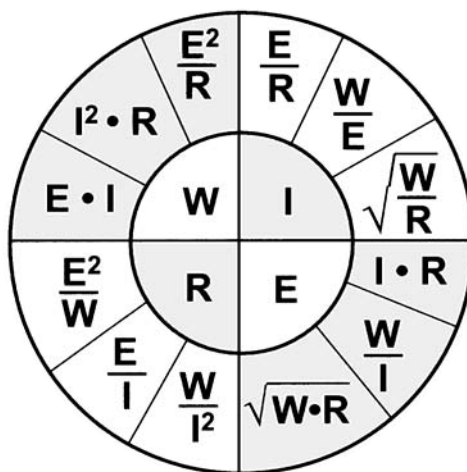
We also need:

W = power expressed in watts

One expression for power (watts) is  $W = E \times I$ . This is read as power equals volts times amps.

There are actually three useful mathematical expressions for each of the four terms (current, voltage, resistance, and power). These may be arranged as shown below.

### Ohm's law for DC and non-inductive AC currents



I = current in amps  
E = electromotive force (potential) in volts  
R = resistance in ohms  
W = power in watts

The four fundamental terms are in the inside circle. Next to them in the sectors of the outside circle are the three expressions that equal each term. For example, if you need expressions that equal resistance, you find the R (inner circle, lower left) and see that resistance is equal to:

- Voltage squared, divided by power
- Voltage divided by current
- Power divided by the square of current.

Note that each of the three outer expressions is significantly different because each expresses resistance in a different pair of the other terms.

The 12 expressions you will need to understand Ohm's law and calculate aspects of the circuit are arranged in this figure in a way that makes them easy to find and apply.

### Critical expression

There is one other expression related to Ohm's law that is critical for doing good wiring. It describes the fact that resistances of components in a series circuit add up to make the total circuit resistance. This expression is:

$$R_t = R_1 + R_2 + R_3 \text{ (etc.)}$$

where:

$R_t$  = total circuit resistance in ohms;

$R_1$  = any resistance such as a wire;

$R_2$  = any other resistance, perhaps a crimp terminal;

$R_3$  = all other circuit components, including the load itself.

The point here is that every circuit element adds resistance to the circuit. Voltage drops across each and every resistance in the circuit and therefore robs the circuit of power. We want to minimize this effect, but we can't avoid it.

The American Boat and Yacht Council's (ABYC) standard E9 specifies the maximum voltage drop permitted in the wires of a DC circuit as follows:

- A 3-percent maximum drop for panel feeders, navigation lights, bilge pumps and blowers, electronic equipment, and other essential equipment. This category encompasses most situations.
- A 10-percent maximum drop for non-essential equipment such as cabin lighting.

*(Be aware that the ABYC develops standards by consensus. According to the ABYC board rules, these standards are advisory only. Compliance with ABYC standards is — according to ABYC literature — entirely voluntary. The standards are not law but, as a practical matter, parts or all of them may be adopted into law by various authorities. Some surveyors and representatives of insurance companies use them as guidelines. Unfortunately, access to these standards is restricted to members of ABYC. Short of going to the substantial expense of becoming a member, there is no easy way to know what ABYC standards require. Much of the information and many of the needed tables, however, are published in Charlie Wing's book, Boat Owner's Illustrated Handbook of Wiring. —Ed.)*

## Size calculations

You can find tables in marine catalogs that will suggest what wire size to use to meet these 3-percent and 10-percent requirements, but the correct wire size can also be calculated as well. The industry standard for this calculation involves the concept of circular mil area, or CM.

Circular mil area is the effective cross-sectional area of the wire expressed in circular mils. One circular mil is the area of a wire that is 0.001 inches in diameter. The area calculation is easy for solid wire, but for stranded wire it is the sum of the areas of all the strands expressed in circular mils. Don't get hung up on calculating the circular mil area of wire by gauge. It is always given in tables.

What you want to know is how heavy a wire you need to use to stay within the guideline in the specific circuit you are wiring.

*"The typical boat only has about 12.5 volts available to begin with, so even very small increases in circuit resistance will cause a serious loss of power at the intended load."*

The equation for the required circular mil area is:

$$CM = (K \times A \times L) / V_d$$

where:

- K = 10.75 and is a constant representing the mil-foot resistance of copper wire;  
 L = total length of the wire in feet (this is the round-trip length)  
 A = current in the circuit (Note: "A," or amps, can denote current, just as the term "I" did in earlier expressions.)  
 V<sub>d</sub> = maximum voltage drop allowed.

You may assume that battery voltage is 12.5 for this calculation, and so a 3-percent drop will be 0.375 volts.

This expression does not address the resistance added to the circuit by the terminations (joints and splices). The reality is that each "old" termination could, after a time in service, add a resistance of between 0.01 and 0.03

ohms to the circuit. This additional resistance is, in many installations, greater than the resistance of the wire.

## A practical example

You are going to wire a bilge pump with a capacity of 2,000 gallons per hour (GPH). It is rated at 110 watts when connected to a nominal 12-volt circuit. The wire run is 20 feet to the pump, so the two-way length of wire is 40 feet. Assume a moderately charged battery is at 12.5 volts.

First we find the current in the circuit. Since we know watts and volts and want to find current we select the expression

$$I = W / E,$$

or current equals watts divided by volts.  
 110 watts/12.5 volts = 8.8 amps  
 The allowed 3-percent voltage drop for the bilge pump (critical item) is 0.03 x 12.5 volts = 0.375 volts.

The minimum wire size required is found with the circular mil calculation:

$$CM = (10.75 \times 8.8 \text{ amps} \times 40 \text{ feet}) / 0.375 = 10,090$$

So you need wire with at least an area of 10,090 circular mils. You go to the table below and find that #10 wire

Copper Wire Specifications

Area in circular mils AWG <sup>1</sup>	Wire Gauge <sup>2</sup>	Ohms/Ft <sup>3</sup>	Pull-out force <sup>4</sup> (lbs.)
211,600	4/0	0.000050	225
167,800	3/0	0.000063	175
133,100	2/0	0.000079	150
105,600	1/0	0.000100	125
83,690	#1	0.000126	100
66,360	#2	0.000159	90
52,600	#3	0.000201	80
41,740	#4	0.000253	70
26,240	#6	0.000403	50
16,510	#8	0.000641	45
10,380	#10	0.001020	40
6,530	#12	0.001620	35
4,110	#14	0.002580	30
2,580	#16	0.004090	25

1. Cross-sectional area in circular mils for American Wire Gauge (AWG) only. Do not use SAE.
2. Size (diameter) designation of wire/cable.
3. Resistance of copper AWG wire per foot at 77 degrees Fahrenheit. Resistance increases with temperature increase.
4. Minimum tensile force required to pull wire out of termination. Do not use wire smaller than #16 AWG. Do not use SAE wire. It has more resistance than AWG wire.

has an area of 10,380 circular mils. That is what you need. Don't skimp on the wire. Always pick a wire with an area as large as, or larger than, calculated.

**Note:** The table is for American Wire Gauge (AWG). It is not for SAE wire, which has a smaller area for the same gauge. It is best **not** to use SAE wire at all, but if you are in a pinch, always bump the gauge up by one, so if you needed #10 AWG you will need #8 SAE.

The voltage drop with #10 wire, according to Ohm's law, is  $I \times R$ , or  $8.8 \text{ amps} \times 40 \text{ feet} \times 0.00102 \text{ ohms/foot} = 0.359 \text{ volts}$ . (You get wire resistance in ohms/foot from the table.) Ignoring the connections for a moment, we get 12.5 volts less 0.359 volts, or 12.141 volts for the pump.

If we'd chosen #12 wire, the calculation would show that the wire voltage drop was 0.570 and only 11.93 volts was left to power the pump. This would severely reduce the output of the pump.

### It gets worse

But remember that our calculations did not include any termination resistance. If we assume **only** 6 "old" splices in our circuit, two each at the panel, switch, and pump, and the old splices have as much as 0.03 ohms, we find that if voltage equals current divided by resistance ( $E = I \times R$ ), then  $8.8 \text{ amps} \times (0.03 \times 6) = 1.584 \text{ volts}$ . And that is just the splices.

Now add in the voltage drop of the wire (0.359 volts), and the pump gets  $12.5 - (1.584 + 0.359) = 10.56 \text{ volts}$ , which approaches its minimum operating voltage. Any further deterioration, such as a low battery, and the pump may not operate at all.

From these calculations we can see the implications of Ohm's law and how it affects our electrical system. Obviously we don't want "old" dirty connections and undersized wire powering that bilge

*"... soldering is often very difficult to accomplish in tight quarters. I only solder bilge-pump wiring and battery lugs."*

pump. Resistance is a fact of life in these circuit elements, but we need to minimize it as much as possible if we want the pump to work.

In fact, the major causes of poor performance and electrical failures in a boat are:

- High resistance from loose, corroded terminals caused by the corrosive effects of moisture penetration.
- Undersized wire, often factory installed.
- Vibration and mechanical damage to wires.

To avoid these electrical problems:

- Plan your wiring to eliminate all unnecessary joints and splices (terminations).
- Make high-quality terminations that are clean, tight, and water/moisture resistant.
- Install wiring and terminations in high, dry locations.
- Use high-quality marine-related materials, including Type III tinned copper marine wire.
- Calculate and select adequate wire size.

### Code them yourself

Wherever possible, calculate and

select adequate wire size and use color-coded conductors, or code them yourself by adding a band of colored tape near the termination. Also, leave a loop of extra wire at each end because this acts as a strain relief, provides a drip loop, and provides added length that might be needed for a future repair.

Always select the proper size and type of terminal for the wire. The smaller terminals are sized to each fit two sizes of wire. Red terminals fit #18 and #22, which are not gauges used for normal power wiring. Blue terminals fit #14 and #16, and yellow terminals fit #10 and #12.

I prefer to use the larger size of wire in each case. For example, if I calculate that I need #12, I'll use #10 because it will give a tighter fit in the terminal and less voltage drop. It will also be mechanically stronger.

Match the stud size of the terminal to the mounting screw when using ring or locking fork terminals. Never use open-fork terminals.

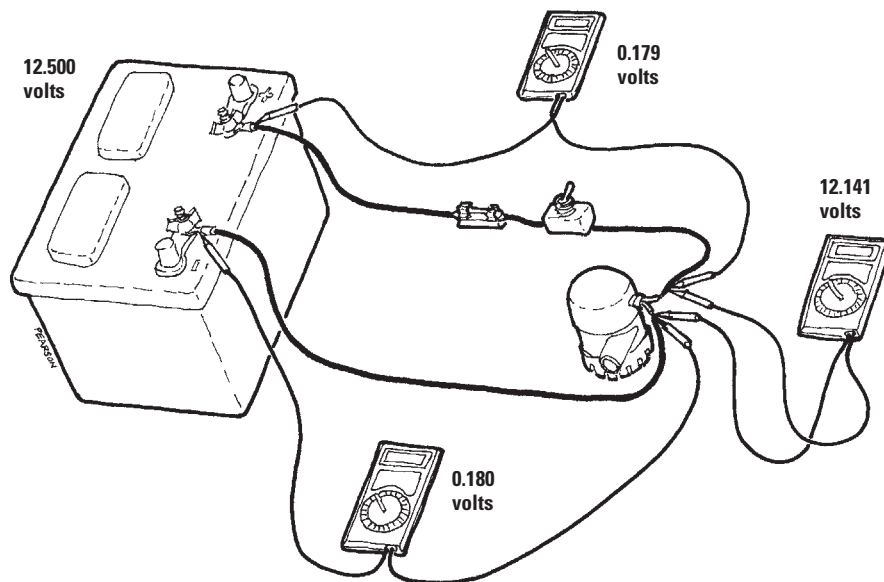
Strip the wire, taking care not to nick any strands. The exposed conductor should only be long enough to fit the barrel of the termination. A high quality "automatic" wire stripper is useful.

Apply a permanent identification tag and color code about 6 inches from the end of the wire. This will identify the load and source of the circuit. I use appropriately typed mailing labels and colored tape. A typical label might say "Cct. 3 -12V bilge pump #1, c/w" and have a brown

band of tape. Slide on a clear, heat-shrink tube long enough to cover the label. Shrink the tubing in place over the label using a hot air gun.

### Very tight fit

Slide on an adhesive-lined heat-shrink tube that is about three times as long as the terminal barrel. This shrink tubing must be sized to fit very tightly when



finished. Don't shrink yet. Battery cables require insulating boots, and these are installed at this point. Coat the stripped conductor with an anti-oxidant compound.

Insert the stripped conductor into the terminal barrel. The wire insulation should be butted against the barrel edge. If you are using an open ended terminal, the wire should extend slightly through the barrel.

Use a good-quality, size-matched crimper. If the terminal is a seamed type, ensure that the seam is lying on the crimper's flat. An automatic-ratcheting crimper will ensure that the proper crimping force is applied. A good tool will provide a double crimp in a single action. The second crimp is a strain relief near the barrel end. If you don't have a ratcheting crimper, you have to squeeze very hard to get a good crimp. Crimpers designed for insulated terminals are not the same as crimpers designed for non-insulated terminals. You must use the proper crimper to match your type of terminal.

Apply a thin coating of silicone sealant to the terminal. Slide the

*"When storing wire in the boat's inventory, always seal the ends against moisture penetration with silicone sealant or liquid tape."*

shrink sleeve back down the wire, cover the terminal, and shrink the sleeve, ensuring a watertight fit.

Route the wires away from water (high and dry, remember) and secure them with wire ties or other means of support. Ensure that the finished termination is not under any strain.

If you are using screw terminals to attach to terminal strips or circuit breakers, cover the finished assembly with anti-oxidant compound and install a dead front barrier.

### Soldered joints

The ABYC standard does not allow solder-only joints. Where crimped joints are also soldered, adequate support must be provided so as to minimize flexing. The solder causes a hard spot in the wire which may cause it to break if it is subjected to stress or vibration. While soldering will greatly reduce moisture penetration and joint resistance, it is often very difficult to accomplish in tight quarters. I only solder bilge-pump wiring and battery lugs.

### Bilge pumps

Not only do bilge pumps reside in a harsh environment, but the manufacturers provide inadequate wire leads on their pumps. They provide #16 AWG leads which must be connected to much larger branch-circuit wires, seldom smaller than #12, and often larger. The leads are often too short to permit the connection to be made above the water level, and they are often not tinned wire. One solution to the mismatched wires is to use a butt splice one size larger than the branch circuit wire, crimping the feeder wire and the pump lead into the same end. Extend the heat shrink so it extends beyond the end of the splice and fill the end with silicone sealant, then shrink the tube. *(Another way to solve this problem is to use the butt connector in the normal way but double over*

*the smaller wire so it fills the end of the larger terminal better. —Ed.)*

### Heat-shrink tubing

I like clear, thin-wall tubing with a 2:1 shrink ratio for protecting labels, and adhesive-lined, thick-wall tubing with a 3:1 shrink ratio to waterproof terminations. Use flame-retardant tubing if possible. Shrink ratio is the difference between the size before and after shrinking. To ensure a tight final fit, use the smallest-diameter tube with the highest-available shrink ratio possible.

### Sealants and anti-oxidants

There are several compounds suitable for protecting joints. Always ensure that the product is suitable for use on energized circuits.

Sealants include Starbrite Liquid Electrical Tape, 3M Scotchkote Electrical Coating, and #1602/1603 Insulating Sealers. Anti-oxidants include Corrosion X penetrant, Ideal No-Alox, Burndy Penetrox, GB Ox-Guard, and Vaseline (which will liquefy at higher temperatures).


### Terminals and lugs

I like heat-shrink terminals and butt splices or nylon-insulated terminals. Insist on tin-plated terminals with serrated barrels and seamless or brazed barrel construction. Larger lugs should be of the closed end and seamless type, and all terminations must be sized to match the wire used.

Suppliers include Anchor Marine, 3M, T&B, and Panduit.

### Wire and cable

Use only properly sized, new, tin-plated marine wire made to UL standard 1426-BC-5W2. Finely stranded type III wire is more flexible than type II and is preferred especially where the wire is subject to vibration.

When storing wire in the boat's inventory, always seal the ends against moisture penetration with silicone sealant or liquid tape. 

## Editors' tests

WE MEASURED THE RESISTANCE OF splices made with a variety of methods, materials, and tools, before and after subjecting them to a highly corrosive hot saltwater bath. We found that ratcheting crimpers are vastly superior. Marine terminals and tinned wire were also better. The best materials, tools, and methods (per Gord's advice) were equivalent to unspliced wire before and after the corrosion test.

A sample, using untinned wire, a non-ratcheting crimper, and cheap hardware-store terminals deteriorated quickly even before the salt bath. *After the salt bath test it was downright dangerous.* The surface temperature of one of the butt connectors reached 235 degrees F in 20 minutes carrying a moderate current.

See our website for more:  
<<http://www.goodoldboat.com/electrical.html>>. 

## Resources

<<http://www.ancorproducts.com>>  
<<http://www.panduiteeg.com>>  
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# Chris-Craft's classic sailboats

*This famous builder of mahogany runabouts and cabin cruisers also built fiberglass sailboats*

*by Susan Peterson Gateley*



**T**ELL SOMEONE YOUR SAILBOAT IS A Chris-Craft and the usual response is, "Chris-Craft? I didn't know they made sailboats."

But yes, Chris-Craft, founded at the dawn of the 20th century and the largest American builder of pleasure boats during the 1960s, did indeed build sailboats. Between 1964 and 1973 Chris-Craft produced nine different models (10 if you count one hull with two deck designs). Today they're still turning up in boatyards, backyards, and yacht clubs on both coasts, on the Great Lakes, and in a few harbors overseas. Several have even graced the pages of *Good Old Boat* (May 2001, "The Quick Haulout").

They aren't the fastest, fanciest, or saltiest of sailboats. And there never were very many of them — most models had production runs of less than 100.

*"Chris-Craft . . . the largest American builder of pleasure boats during the 1960s, did indeed build sailboats."*

Chris-Craft's line of sailboats belongs to the classic glass fleet from the 1960s and early 1970s when most designs were heavily influenced by the Cruising Club of America (CCA) rule that predated the International Offshore Rule (IOR). They are generally slender of beam, have moderate displacement, low freeboard, large mainsails and small foretriangles, and

show fairly long overhangs and a nice sheer.

They are less roomy below than modern designs, but some authorities maintain these types of hulls are more seakindly when compared to newer designs

with wide beams and nearly flat bottoms.

These 30-year-old yachts still sail sweetly, working up eagerly to windward in the puffs, meeting the waves with a bold bow, and coming through

**Chris-Craft, named for its founder, Chris Smith, offered sailboats beginning with this 35-foot Sail Yacht in 1963.**

when conditions grow lively. And they still do it with style.

## **Company history**

Chris-Craft's corporate history dates back to the early 1900s, originating on the inland waters of Michigan. It was founded by Christopher Columbus Smith, born May 20, 1861. He and his brother, Henry, were professional hunters, so their first boats were sinkboxes and duck boats for shooting birds on the St. Clair River, north of Detroit. In 1919, the brothers began building boats for hunting clients.

Soon, Henry left to pursue other interests, and Chris set off on his own. By 1921, the famous raceboat driver, Gar Wood, invested heavily in the company. At the end of the decade, sales of its varnished mahogany runabouts totaled nearly \$3.5 million. Chris Smith died in 1939, leaving the business in the hands of his son, Jay W. Smith.

*"These 30-year-old yachts still sail sweetly, working up eagerly to windward in the puffs . . . And they still do it with style."*

By the century's midpoint, Chris-Craft was one of the largest American boatbuilders, with more than 100 different models of powerboats in production. Its name became synonymous with sport and class. And it was all-American — the first boat to land on a Normandy beach, heralding the Allied invasion of Europe, was a Chris-Craft personnel carrier.

In the late 1950s, Chris-Craft began experimenting with fiberglass construction, though it had such a huge investment in wooden-boat production that it was slow to embrace the new technology. In 1957, it bought a company called Lake 'n Sea that built runabouts of plywood and Styrofoam covered with fiberglass. Predictably, these hulls delaminated badly, furthering Chris-Craft's skepticism of fiberglass. Finally, however, they could no longer ignore the inevitable, and in 1962 the company established a research-and-development department to learn to build more successfully with the material.

By the time their sailboat models were in production in the mid- to late 1960s, the company's designers and shop workers had a thorough understanding of how to work with fiberglass and polyester resins. But Chris-Craft's wooden boat production didn't cease until 1972.

In 1960, Chris-Craft was sold to National Automotive Fiber, a maker of automobile seat covers. According to Robert Pemberton, founder and secretary of the Sailboat Division of the Chris-Craft Antique Boat Club, it was interest in sailing yachts on the part of major shareholder Cornelius Shields, a keenly competitive yachtsman, that probably led to the launch of Chris-Craft's first sailboat, a heavy, 35-foot sloop.

### The Sail Yacht

Chris-Craft had the resources to hire the best for their new sailboat line and chose the firm of Sparkman & Stephens to design it. S&S had drawn the lines of high-profile America's Cup winners, like *Intrepid*, and ocean racers, such as *Finisterre* and *Dorade*.

The company's first sailboat, the 35-foot Sail Yacht (pictured on the facing page), was introduced in 1963 and billed as a motorsailer due to its 563 square feet of working sail area and

18,000-pound displacement. The Sail Yacht's sail area/displacement ratio is 13.1, definitely low for lively sailing performance, and its displacement/length ratio is a moderately heavy 347. Perhaps this was a reasonable marketing approach considering the company's reputation as a builder of powerboats. She has a full keel and a simple sloop rig designed for comfortable cruising. She has a midships cockpit, and some models came with the company's hardtop option that converted the cockpit and its windshield into a pilothouse of sorts. (This predates by many years its use by Hallberg-Rassy, which now markets the windshield as a trademark design element (See January 2003 *Good Old Boat*). Draft is 4 feet 8 inches and beam is 11 feet.

Like a number of early fiberglass boats, the first Sail Yachts had cabin sides of mahogany and cabintops of plywood. The original power plant was a husky 60-hp gasoline engine in keeping with the motorsailer concept and, unlike some of the later Chris-Craft sailboats, the Sail Yacht, according to sales literature, carried a goodly amount of fuel — 160 gallons — so she had a cruising range under power of more than 1,000 miles.

The Sail Yacht's moderate draft, low cabin profile, and full keel, along with the midship cockpit and the pilothouse option, are appealing to many people who like conservative designs, private accommodations, and comfortable coastal cruising. She is a steady, sure-

footed cruiser that will get you to your destination comfortably, if not with blazing speed.

About 80 Sail Yachts were built. The hull was then reworked and given new topsides and cabin and sold as the Caribbean 35, with either a sloop or ketch rig. This was Chris-Craft's last sailboat design; production ceased in 1973 with hull number 110.

### Other offerings

Chris-Craft's next offerings were the 30-foot Capri, followed by the Shields 30 one-design, and the 26-foot Capri and Capitan. Both 26-footers have the same fin-keel hull but very different cabin and deck layouts. The Capri has a rather bulky cabin for maximum headroom, while the Capitan was given a minimal cuddy and a huge cockpit. Aimed at a hardier set of yachtsmen, both are considerably livelier sailers than the easy-going Sail Yacht.

The Capri 30 is a keel centerboarder that draws just 3 feet 9 inches with the board up. She displaces 11,700 pounds with 4,000 pounds of lead in her keel, and she spreads 476 feet of sail. The Capri 30 came equipped with a 25-hp Graymarine gas inboard engine. According to the sales literature, she was intended for "the sailing family of modest income."

The 30-foot Capri, the 35-foot Sail Yacht, and the Caribbean were cruisers first and foremost. Chris-Craft built with good-quality materials



The author's  
Cherokee 32, *Titania*.

and workmanship and, for the most part, the boats have held up well through the decades.

Three of the larger boats that S&S designed — the Cherokee, Apache, and Comanche — were intended like many of their CCA contemporaries to serve as racers and cruisers. The two smaller sloops — the 26-foot Capri and Capitan — were designed to race under the MORC (Midget Ocean Racing Club) rule. The company also produced the 30-foot Shield's one-design, designed by S&S and commissioned, of course, by shareholder Cornelius Shields. Several other yards also built these one-designs, and a number are still in use today as trainers and racers at colleges and sailing schools around the country.

The so-called Indian series — the 26-

*“Chris-Craft’s line of sailboats belongs to the classic glass fleet from the 1960s and early 1970s . . . ”*

performers, with a strong family resemblance to one another.

### A quick end

Chris-Craft had a long association with speed and the racecourse. For many decades, racing was the test bed for design and construction. Chris-Craft promoted its sailboats as sharp performers and winners on the racing circuit just as it had for the previous 50 years of powerboat production. A full-page ad in *Yachting* magazine for the Comanche touted

her windward ability and her overall lively performance, while the 26-foot Capitan, with its big cockpit and small cuddy, was billed as an “out and

**Chris Gateley’s previous boat, a 26-foot Capitan.**

out racer.” A newly commissioned Comanche won the Chicago-Mackinac Race, and fleets of Capitans raced as one-designs in Canada. Yet

after just 12 years of production the company abandoned them and nearly all their other sailboats.

So what went wrong?

They were well-designed boats and as well made as contemporary competitors’ boats. Robert Pemberton

explains that one reason for the short-lived foray into sailboats was the difficulty Chris-Craft had with its distribution system. Most boat sales were through dealers, and most Chris-Craft dealers knew and serviced only powerboats. Mastering the peculiarities of sailboats was another game altogether, and the learning curve associated with servicing this new “culture” was a steep one. The wide gulf between sail and power is illustrated by an anecdote (possibly apocryphal) regarding the new owner of a Comanche who stipulated that the customary trademark Chris-Craft builder’s plate **not** be affixed to his new yacht’s cabin.

### Scattered production

Another reason, Robert writes in the sailboat owners’ newsletter, is that (unlike most smaller builders) Chris-Craft scattered its production around the country at four different plants. For the short production runs of sailboats (at least compared to the huge volume of powerboats turned out), this was neither efficient nor economical. With engineering and service departments spread widely at a time when inter-company communications weren’t as easy as they are today, inefficiencies and production glitches resulted.

In analyzing the rapid demise of Chris-Craft’s sailboat line, Robert points out that most small builders launch a boat, test it, campaign it on the racecourse, and then tool up for production after working the bugs out. Chris-Craft, he says, worked on the inevitable bugs and problems *after* they had already begun production.

Partly because of this and the generally high-quality construction, Chris-Craft sailboats were not cheap compared to other offerings of the time. But while this probably contri-



foot Pawnee, the 32-foot Cherokee, the 37-foot Apache, and the 42-foot Comanche — were built between 1967 and 1971. Only 40 Cherokees, 65 Apaches, and about 25 Comanches were built in 1967 and 1968. All three are handsome, sweet-lined sailers and reasonably good

### Specifications for Chris-Craft Yachts

	Pawnee 26 1970-71	Capitan 26 1966-67	Capri 26 1965-67	Capri 30 1964-65	Shields 30 1965-69	Cherokee 32 1967-68	Caribbean 35* 1971-73	Apache 37 1966-69	Comanche 42 1968-71
LOA	26' 2"	26' 3"	26' 3"	30' 0"	30' 3"	32' 0"	35' 2"	37' 0"	42' 0"
LWL	20' 0"	19' 0"	20' 0"	25' 0"	20' 8"	22' 6"	28' 6"	26' 3"	30' 4"
Beam	8' 0"	8' 2"	8' 2"	9' 8"	6' 5"	9' 0"	11' 0"	10' 2"	10' 10"
Draft	4' 0"	4' 0"	4' 0"	3' 9"	4' 9"	5' 1"	4' 8"	5' 9"	6' 6"
Displ.	4,800 lb.	4,300 lb.	4,800 lb.	11,740 lb.	4,600 lb.	8,698 lb.	18,000 lb.	14,280 lb.	17,641 lb.
Ballast	2,000 lb.	1,830 lb.	1,830 lb.	4,000 lb.	3,080 lb.	3,350 lb.	5,000 lb.	6,000 lb.	8,650 lb.
SA	340 sq. ft.	301 sq. ft.	301 sq. ft.	476 sq. ft.	580 sq. ft.	434 sq. ft.	577 sq. ft.	606 sq. ft.	740 sq. ft.

\*Sail Yacht 35 1963-65 same hull as the Caribbean 35

buted to the company's brief dalliance with sailboats, it was to the benefit of those budget-minded sailors who sought quality and bought a Chris-Craft in the closing years of the 20th century. While the boats aren't perfect, they have held up very well on the whole.

## Construction

The general quality of the deck hardware and fittings on Chris-Craft sailboats is at least as good as, if not better than, other comparable contemporary production boats — Monel fuel and water tanks, heavy bronze seacocks, and open-body turnbuckles. And the keel-stepped spar, sturdy bridge deck, comfortable cockpit, and a deck cored with foam (that has well resisted water absorption) are additional pluses.

But no boat, even a 30-year-old plastic classic, is perfect, and when Robert surveyed the membership of the sailboat owners' association a few years ago, he found a few consistent complaints and problems, a couple of

*“Chris-Craft promoted its sailboats as sharp performers and winners on the racing circuit just as it had for the previous 50 years of powerboat production.”*

which are also detailed on Internet websites.

Some problems, such as deck leaks, are fairly common among sailboats built at that time. But a couple of fairly specific and chronic problems also show up.

One is the skeg-and-rudder arrangement present on the fin keel Capitan 26, Capri 26, Cherokee 42, and Apache 37. These boats have rudders attached to skegs that sometimes develop cracks and other structural weaknesses. And on the Cherokee and Apache, the so-called balanced rudder was quite shoal. Several owners have replaced these rudders with deeper, higher-aspect-ratio blades and have reported excellent results. The original low-aspect-ratio rudder has a tendency to stall in heavy seas. And under power the balanced rudders cause an excessive pull on the boat's helm, generated by prop wash hitting the leading edge of the blade. It's so obnoxious on the Cherokee that it is wise to keep speed below 6 knots. One owner said it's only proper that a powerboat company would design a sailboat that sails sweetly and motors badly. On the plus side, the Cherokee is very maneuverable in reverse.

## Backing plates

Several models have steel backing plates embedded in their decks. When saltwater penetrates the deck they rust and swell, causing cracking and delamination of the deck. One owner of a saltwater Apache faced with this problem cut out the old rusted steel plates and glassed in replacement stainless plates, working from below to make the repair less conspicuous.

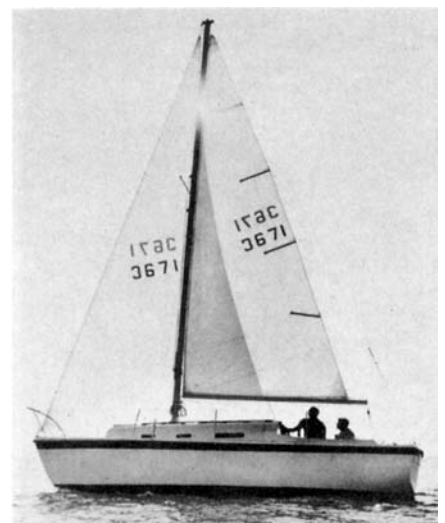
The fin-keelers have cast-iron keels

and galvanized keel bolts, also suffering a predictable problem with corrosion and sometimes with subsequent leaks at the keel-hull joint. A few well-meaning owners have replaced the original bolts with stainless-steel ones (see Mail Buoy in the November 2001 issue of *Good Old Boat* for why this is not a good idea).

Another design flaw that some of the Chris-Craft boats share with a number of other older sailboats is that of chainplate attachment. Both the Capitan and Capri use the plywood bulkheads belowdecks to anchor the chainplates. If (when) the water finds its way through the deck and down along the chainplate, the result is a rotten spot. If not noticed and repaired, dismasting may be the result, as it was a few years ago with a 26-foot Capri that was in a close race on a blustery day off Sodus Bay, Lake Ontario.

The Cherokee, for one, has a lot of holes in its bottom. Two of the

*continued on Page 69*



The Apache 37, top left, Capri 26, top right, Comanche 42, bottom left, and Pawnee 26, bottom right.



# Turk's Heads and Cape Dories

*Boating writer's circuitous  
voyage to the Pacific Northwest*

by Karen Larson

**S**PEND A DAY WITH JOHN VIGOR (PRONOUNCED VIGH-gor) and you'll soon be creating Turk's Head knots and delving into long-forgotten nautical lore. John's the author of *The Practical Mariner's Book of Knowledge*, *The Sailor's Assistant* (now in paperback also as *Boatowner's Handbook*), and a 150,000-word volume to be published by International Marine called *The Practical A-Z Encyclopedia of Boating*.

All these are well-known collections of facts and information of use to mariners. *Good Old Boat* readers know him as the author of *Twenty Small Sailboats to Take You Anywhere* (one chapter is featured in this issue on Page 37) and *The Seaworthy Off-shore Sailboat*. But John may go down in history for two concepts that won devoted fans from coast to coast: Vigor's Black Box Theory and his popular boat "denaming" ceremony.

How does a British-born and South Africa-raised journalist wind up in the Pacific Northwest sailing, writing books, and doing freelance writing and editing for U.S. publishers as diverse as International Marine and *Good Old Boat*? To understand where John is today you have to start at the beginning. The story includes a transatlantic voyage in a 31-foot sailboat and a dinghy class national championship.

The son of a British Royal Navy Chief ERA (chief petty officer) and the woman he met while stationed in South Africa, John was destined to live

periods of his young life at opposite ends of the globe — Britain and one of its far-flung colonies. He was born in Britain where his parents spent the early years of their marriage during the darkest days of World War II.

## Watched dogfights

"From the school playground I watched dogfights between Spitfires and Messerschmitts," John recalls. Not long after the war was over John's father retired from active duty, and the Vigors chose to return to South Africa's balmy climate. John, by now a young teenager, finished his education in South Africa. "The schooling was completely different," John says. "I had to learn Afrikaans in order to pass." He had less than a year to conquer his new country's other official language. He passed.

It was in Simonstown, South Africa, that John discovered sailing. The family lived near the beach, and John had his first sailing experience at age 13.

A few years later, his family moved to Durban, and Point Yacht Club became a favorite hangout. "This is a working man's yacht club," John points out, "not one of those snobbish affairs. These were practical men who

had come home from the war. They built their own boats out of plywood." John was able to crew on larger boats and take 14-foot dinghies out for racing and pleasure sailing. "It was fun to go out amongst the big swells," John recalls. "It's 3,000 miles to Australia. That's a big fetch."

The ocean introduced John to sailing, and it started him on a career path as well. He had a Yashica camera that he used to take photos of cruisers arriving in Durban. He'd write captions for these photos and sell them to the newspaper. Sometimes he'd sell stories he'd written about people who were

sailing around the world.

When an Australian who owned a 52-foot cutter announced that he was sailing to England and needed a crew of four, John was hired. But the day

before the boat was to set forth, a court bailiff nailed a writ to the mast for the non-payment of taxes. The cutter was impounded.

But John, who knew the remainder of the crew, was aware that one of them had quit his job as a reporter on a local daily newspaper. John also knew that the fellow didn't want that job anymore. John did. He applied for the opening and became a journalist in training.

*"His life took a new twist when a young American woman, a fellow journalist . . . caught his eye."*

## Photographic stint

The newspaper sent him to school and provided on-the-job training. So his editors were mightily disappointed when John — as so many 20-somethings before and since — decided he had pretty much learned all there was to know about the beats he covered and chose to concentrate on becoming a photographer instead. He apprenticed for a couple of years with a well-known photographer.

At the time it was understood that “European kids” in South Africa would spend a year or so in Britain, Canada, New Zealand, or Australia. So, while still in his early 20s, John next worked a passage to London, washing dishes on a Union-Castle passenger liner.

While he still had his sea legs John was offered the job as mate on a 72-foot ketch named *Thelma II*, which was headed for the Mediterranean on a promotional tour sponsored by the British Federation of Industries. John spent six weeks aboard as navigator. Then he returned to England to take a job with the *Kent Messenger* as a photojournalist. Later he learned that the *Thelma* had sunk in the West Indies.

His life took a new twist when a young American woman, a fellow journalist with the *Kent Messenger*, caught his eye. John and June Vigor were married in England and returned to South Africa a few years later, when John was offered a reporter's job there. The couple found the good life in Durban and raised three sons there. They both had jobs they enjoyed: John with a daily newspaper and June with a prominent parenting magazine. They were active in the community. John introduced the International Mirror-class dinghy designed by British naval architect Jack Holt, one of the most successful home-built plywood designs ever, with more than 70,000 built, including thousands in the United States. It's an 11-foot stitch-and-glue sailboat. He built four of these boats himself and started a class in South Africa. In 1972, John and June won the South African Mirror-Class National Championship.

## Increasing violence

But the South African political environment in the 1980s was unpleasant and sometimes frightening as the African National Congress turned

*“June Vigor remembers  
the pain of returning  
to the country she left  
so long ago.*

*‘I’d been out of the  
country long enough  
that I felt totally  
foreign . . . ’ ”*

increasingly violent. When John was spotted doing manual labor at his own home (bricklaying), something that was considered “black man's work,” their home was sprayed with graffiti, and they feared they had been singled out for special terrorist attention.

Their two oldest sons, Trent and Terry, had finished school and reached the age of conscription into the army, but they had no heart for the black-vs.-white battle that was coming to a head. The Vigors bought them one-way tickets to the United States, vowing to catch up with them soon. June and her sons were American citizens, which made this transition easier.

That left Kevin, the youngest son, who was still in school. The Vigors sold their home, bought a five-year-old boat, and prepared for an ocean voyage. The boat, a Performance 31, designed by Cape Town naval architect Angelo Lavranos, was named *Freelance*. They sold her when they arrived in the States, but they miss *Freelance* and wish they had her still.

Finances were tight, however. The South African Reserve Bank allowed emigrant families to take a maximum of \$39,000 from the country. The cost of their boat was deducted from this amount, leaving them with not quite \$6,000 with which to finance their needs

**John Vigor creating a Turk's Head, facing page. *Jabula*, the Vigor's Cape Dory 25D, has been replaced by *Sangoma*, a Cape Dory 27. But the Vigors still miss *Freelance*, the Performance 31 which brought them to Florida from South Africa.**

during the six-month voyage, to start searching for work in America, and to get Kevin started in college.

## Smuggled coins

Against the rules, John bought one-ounce Krugerrands to smuggle out of the country in order to capture some of the family's capital that would otherwise be seized. Smuggling anything is a risky business, and the two were terrified of having their deception discovered before leaving the country. They also had to find a way to turn these coins into U.S. dollars before arriving in this country. New coins could not be imported into the United States because of trade embargoes imposed against South Africa. “We needed two miracles,” John says.

Both miracles happened. They left the country without being caught, and the coins were converted in St. Maarten. As a result, the family was able to bring an additional \$7,500 of their savings along on their voyage. This is not a worldly sum, but together with the sale of their boat, the Vigors were able to begin their new lives.

The voyage itself was perhaps the most arduous at the southernmost tip of Africa, where they encountered one storm after another. A total of seven gales hit *Freelance* while they rounded the so-named “Cape of Storms.” Thanks to their involvement with the Mirror-class sailing program, June and Kevin were experienced dinghy sailors, but they had never been to sea overnight on a sailboat. Theirs was a “baptism by storm.”



That first offshore passage was from Cape Town to St. Helena, 1,700 miles to the northwest. In a story of their voyage, John writes, "Watching Africa drop astern, we felt no joy. We felt nothing but deep sadness, too deep for tears or even words." He tells that story in two parts in *Cruising World*, January and February 1992. As it ends, the Vigers are still "finding themselves" in this country. June Vigor remembers the pain of returning to the country she left so long ago. "I'd been out of the country long enough that I felt totally foreign . . . in fact worse than foreign, because it was my country," she says.

### Began search


After arrival in Fort Lauderdale in June 1987, the threesome toasted their safe arrival, sold the boat, and began the search for the rest of their lives. It's not easy to start from scratch at any point in your life. It's harder still when you're in your 50s. Kevin went off to study computer science in Salt Lake City. John and June bought a car and traveled from Key West to Seattle and partway

back, looking for jobs for two experienced journalists. But the large newspapers weren't hiring, and the small ones didn't pay a living wage. Southern California was home for a while, but they were uncomfortable there. Neither the jobs nor the communities in which they lived were right for them.

These days June is a copy editor with the *Bellingham Herald* in northwest Washington state, and John works at writing books, editing other people's books, and freelancing articles for sailing publications. When we met with them last winter, they were sailing *Jabula*, a Cape Dory 25D, with which they were exploring the Pacific Northwest, including a circumnavigation of Vancouver Island one summer.

For her part, *Jabula*, which means joy or happiness in Zulu, was a shipshape and seaworthy replacement for their trusted friend. She was decked out in Turk's Heads "for luck," John explains. Since then, *Jabula* has been replaced by a slightly larger sister, a

Cape Dory 27 called *Sangoma*. It stands to reason that this new boat will also be properly decorated for luck.

Naturally the visitor, upon hearing that luck can be had with a piece of string and a bit of skill, will want to acquire the skill for use on his own boat. Thus, before he knows it, the unwary will be passing the evening winding small rope into impossible patterns. Kind of like the pattern of John and June Vigor's lives. Its very complexity is what makes this knot so interesting. The same can be said of John Vigor. 



June and John Vigor belowdecks on *Jabula*.

## Where did the book reviews go?

We're still reviewing new sailing books with the help of subscribers who volunteer to do a bit of reading and writing in exchange for a small sum of cash and a free book. These days, however, the book reviews are printed in our newsletter\* and posted on our website at [http://www.goodoldboat.com/book\\_reviews.html](http://www.goodoldboat.com/book_reviews.html).

**If you're wondering what book reviews you've missed, here's the list:**

### October 2002

- *At Sea in the City: New York from the Water's Edge*, by William Kornblum
- *By the Grace of the Sea: A Woman's Solo Odyssey Around the World*, by Pat Henry
- *After the Storm: True Stories of Disaster and Recovery at Sea*, by John Rousmaniere
- *Wooden Boats: In Pursuit of the Perfect Craft at an American Boatyard*, by Michael Ruhlman
- *Tropical Cruising Handbook*, by Mark Smaalders and Kim des Rochers
- *Ready for Sea: How to Outfit the Modern Cruising Sailboat and Prepare Your Vessel and Yourself for Extended Passagemaking and Living Aboard*, by Tor Pinney
- *A Year in Paradise: How We Lived Our Dream*, by Stephen Wright

- *The Unlikely Voyage of Jack de Crow*, by A. J. "Sandy" Mackinnon
- *Used Boat Notebook*, by John Kretschmer

### December 2002

- *Cruising in Catamarans*, by Charles Kanter
- *White Hurricane*, by David Brown
- *A Deadly Exchange*, by Sheryl Jane Stafford
- *The Oceans are Waiting*, by Sharon Ragle
- *Telegram from the Palace*, by Geoffrey Towe
- *Susan's Sailing Adventures*, by Jahnn Swanker Gibson
- *Boat Interior Construction*, by Michael Naujok
- *The Voyage Alone in the Yawl Rob Roy*, by John MacGregor
- *Cruising and Living Without Refrigeration: A Collection of Recipes and Storage Ideas*, by Melissa Fisher

\*The newsletter is for subscribers only. Some get theirs online. Others get theirs in the mail. If you're a subscriber and don't get a newsletter, it's because we send you an email notification which is being screened out unbeknownst to you or to us. Let us know you'd like to get your newsletter, and we'll start mailing it the old-fashioned way.

# What the sea taught me

## Ten lessons one woman singlehander learned during 20 years of offshore cruising

by Jill Knight

**A**SINGULAR DISADVANTAGE OF THE sea lies in the fact that having successfully surmounted one wave, you discover that there is another behind it.”

When he made that observation in *The Open Boat*, Stephen Crane meant to express humorous resignation. From another point of view he is illuminating one major reason we never tire of the sea: the lessons come one behind another. As in literature, our own voyages inevitably turn out to be journeys of exploration and discovery, almost always of spiritual as well as practical dimensions. The sea and our boats are tireless coaches.

My old gaff cutter, *Cooee*, has been coming up with new lessons for me for nearly 20 years now. For the first five of those years I sailed with her previous owner, Peter. Then he set her up for me to singlehand. Imagining yourself as a singlehander when setting up a cruising boat is not a bad idea even if you are certain you will never venture out to sea alone. Most cruising boats have only two people aboard, so sailing and maintenance

jobs are usually done by one person anyway.

Both alone and as a part of a cruising couple, I learned many things from *Cooee* and the sea the hard way. My experience was gained from long-term, long-distance cruising, which creates a particular set of conditions, demands, and rewards. But most of what I learned applies to any sort of messing about in boats. Here are some of the most important lessons I've learned:

### 1. Simple is beautiful

Bernard Moitessier, writing of his 1968 round-the-world voyage, tells how he chose to carry his “old, quiet friend, the slingshot” rather than a radio; “so much better to shift for yourself, with the two hands God gave you and a pair of elastic bands.” Readers of his book will recall how, with the three great capes behind him, he fired his legendary message onto the bridge of a ship anchored outside Cape Town: “I am continuing non-stop toward the Pacific Islands [instead of finishing the first singlehanded round-the-world

race] because I am happy at sea and perhaps also to save my soul.” Moitessier's choice of a slingshot may seem a little extreme in these days

**Small is beautiful: a dinghy Jill can carry and an outboard motor she can easily lift.**



**The option of employing small sails in brisk or changeable conditions takes the work and stress out of sailing *Cooee*, above, on the Indian Ocean under jib and staysail and with a laced-on trysail replacing the mainsail.**

of relatively tiny and inexpensive radios, but the principle holds: part of what cruising is about is self-sufficiency, paring down, and simplifying.

There is a practical corollary to this. When you're cruising, you spend a lot less time sailing than you spend on maintenance. The year I crossed the Indian Ocean, I spent 10 weeks at sea and it felt as though I was always on the move — preparing, sailing, or arriving. The year I left the Virgin Islands in the Caribbean was the same year I arrived back in Australia — 11 weeks on passage, plus local daysailing — another big sailing year. The cruising life is, in reality, the life of boat maintenance, albeit in some spectacular settings.

Even though *Cooee* was and is very simple, with her laced-on mainsail, no halyard winches, no shower, a sink I empty over the side, no fridge, and few electronics, maintenance is a large part of life aboard when she and I are actively cruising. With little boat maintenance experience, this was initially a problem for me (see *Good Old Boat*, November 2002). First, I thought taking a lot of money with me would be a good solution. No matter how remote the port, I was usually





At left, Jill Knight raises *Cooe*'s big gaff mainsail. Three-to-one purchase on both throat and peak halyards means this is not difficult even without winches. The headsails, center, are raised using belaying pins: easy and simple (See "Advanced swigging," Page 59). At right, even engines can be beautiful. *Cooe* has a lightweight Westerbeke 20B. Jill is adjusting the valve clearances with guidance from the manual.

able to find willing help. But it often turned out that no one knew much more than I did. And there were times when things broke at sea and I had to rely on myself anyhow.

My solution, which evolved over time, was to grow to love boat jobs. I even came to love intimidating bits of equipment. Two of my favorite things on this lovely old classic cutter are my engine and my anchor winch. After a while, they became less malignant, quite fun really. If you do not enjoy maintaining and repairing things, it is worth considering what you can do without.

## 2. Small is beautiful

For a singlehander, small is good. I have an inflatable dinghy I can carry, an outboard I can lift onto the boat, jerry cans and gas bottles I can handle when they are full, an inboard engine I can winch out on my own, using blocks and tackle and the boom. I haven't tried launching the life raft; I can lift it and trust in adrenaline for the rest.

Small is beautiful in heavy weather, as is practice. Once I had worked out how *Cooe* hove to under a manageable sail plan, I practiced this from time to time in order to have a rest or to manage severe weather. In winds approaching or passing storm force, *Cooe* sits nicely under just the storm trysail with the helm lashed down; I would not like to be playing with the gaff main on my own in that situation. In headwinds around gale force, she will jog along at a couple of knots

under the trysail and staysail, both small sails. I would lash the helm down, though I could probably use the Aries windvane for the same effect. I haven't tried that.

This leads me to self-steering.

## 3. Self-steering is very beautiful

We take many of the great inventions for granted — the magnetic compass, the sextant, the chronometer, and electronic navigation aids. We are similarly blasé these days about the single most important development that allows us to sail singlehanded or shorthanded: self-steering.

*"When I went cruising alone more — not less — of my time was spent socializing."*

This was my first and biggest problem as a singlehander and the one that took the longest to sort out. It may have taken so long because I set out to cross the Indian Ocean (not many chandleries there) before I understood fully how important it was not to be tied to the tiller. Carrying three Autohelm 2000s, I crossed to South Africa. *Cooe* is very heavy on the helm and, while the Autohelms were marvelous, they were not up to all conditions. Through necessity I became expert at repairing them — swapping motors, brushes, and

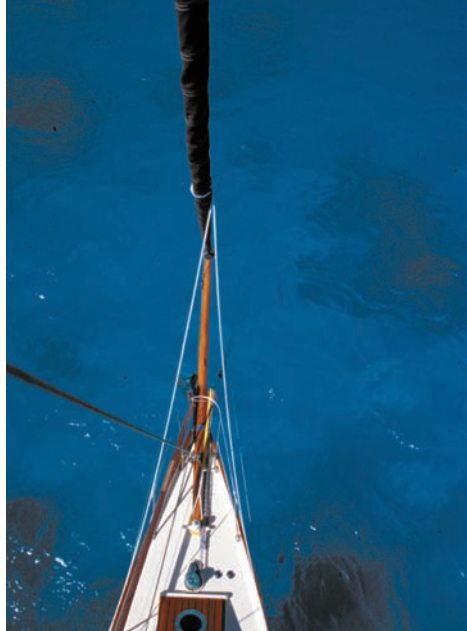
control boxes, and improvising pins. In South Africa, I exchanged my bike for a secondhand Aries windvane and never looked back. The combination, including the ability to put the Autohelm on the Aries, means I never have to steer unless I want to.

## 4. Even engines can be beautiful

*Cooe*'s engine stopped running almost immediately after I took over its care. She was exiting a reefy pass off Palawan in the western Philippines, a remote and sparsely populated area at that time undiscovered by cruising boats. The only thing I knew how to do on the engine was bleed the fuel system. I put more fuel in the tank and bled the lines. This made no difference. A faint breeze took us back into Bacuit Bay where I anchored on a shallow shelf of reef. Later I went to bed still trying to persuade myself that this was a sailing boat, and it did not really matter if the engine did not run.

That night *Cooe* was blown out of her anchorage, and I was forced to flee to better shelter in a bay lined with palm trees and a few bamboo houses above the beach. The radio said we were on the edge of Typhoon Nelson. I was a very inexperienced sailor in charge of a precious old boat. Having a reliable engine really did matter. For the first time ever, I opened the Bukh shop manual.

The manual was very detailed but difficult to follow because the terminology was foreign to me. Even where there were diagrams, I could rarely



**At left, Jill loves her electric anchor winch with one foot switch for “up” and one for “down.” She operates it from the foredeck since *Cooee* has complications of bowsprit rigging and a long uphill run between the winch and the bow roller.**

**Center, Jill uses the same arrangement of blocks on the bosun’s chair and on the mainsheet. She says hauling herself up the mast with this purchase is not difficult.**

**At right, *Cooee* has two bronze winches for the jib sheets. Bronze Highfield levers simplify the running backstay work.**

recognize the part described since I had never looked — really looked — at an engine before. I reminded myself that I was at least as smart as the *average* person and that a lot of average people were out there fixing diesel engines.

The fuel system seemed the most comprehensible part so I decided to concentrate on that. I found where the fuel left the tank, followed it through its ups and downs, ins and outs, until it reached the injector pump. Plenty of fuel was reaching the pump but almost none was coming out. Dismounting the pump sounded easy on paper, so I began. Then I lost my nerve, reconnected the pipes and reconsidered. What if I got it dismantled? Even if the problem was obvious, then what? Among these remote islands there was little to be done.

### All were beaten

In time, I made the acquaintance of local people with a knowledge of engines. One man after another took up the challenge, but all went away greasy and beaten. The saga continued over about six weeks, complicated, after Typhoon Nelson, by threats from Odessa, Pat, Ruby, Skip, and Tess. The upside of the experience was that I went through an unavoidable crash course in diesel mechanics as, manual in hand, I lived through it all. Slowly, I came to understand that none of these men had seen an engine like mine before. They could not read English, so they got no help from the

manual. They had undoubtedly fixed a lot of engines, but the main advantage they had over me, I decided, was one of attitude. They were not intimidated by the task. They began with the belief that the engine could be made to go and that it would take only time, commonsense and, in these isolated parts, some improvisation. Through no fault of Bukh, the engine never ran again, but I learned much of importance during those weeks.

I sailed for Borneo and further lessons in diesel mechanics and then for Singapore. There I replaced the

*“... it took me some time to understand that I preferred sailing slowly to going fast.”*

engine with a new one and from then on did all the maintenance and repairs myself. I am grateful now for the fact that I was sailing mainly in third-world countries where I did not speak the language. Doing the work myself was the path of least resistance, and I came to find satisfaction and even pleasure in it. In different circumstances, with expert assistance a phone call away, I doubt that I would have learned a thing.

I am still no engine mechanic, but even though I currently have access to experts, I make a point of doing the

maintenance myself. It keeps my familiarity and confidence levels up. Given time to fiddle and find my way out of a few dead-ends, I can usually manage.

### 5. One is often easier than two

When people see I’m singlehanding, they ask, “Aren’t you scared?” and “How do you manage in a storm?” Then they often add, “I couldn’t do it — I’d be too lonely.”

When I went cruising alone, more — not less — of my time was spent socializing. It is a very social activity. No matter where you sail, the occupants of the little group of anchored yachts comprise your tribe. You may never have seen any of them before, but welcome and friendship, however transient, can be assumed. Outside the self-sufficient capsule of coupledom lie almost unlimited social possibilities as long as one does not require continuity.

As for solitary time at sea, I can think of nothing more wonderful. One is very alone on the ocean; it is difficult to imagine anywhere else of equal solitude.

When I first sailed alone, I set all the sails as Peter and I had done — full main, topsail, hanked-on jib, and staysail. The mainsail throat and peak halyards had three-to-one purchases, so raising the main was easy even without winches (all of *Cooee*’s halyards run to a pinrail at the foot of the mast). The sail and gaff were contained within lazy-jacks for controlled reefing or dropping.

Speed was not something I presumed to have an opinion about when Peter was skipper, and it took me some time to understand that I preferred sailing slowly to going fast. At sea, under a billow of white cloth, I felt euphoric, but always on edge and alert for potential problems. More often than not when I arrived at a destination, I wondered why I had hurried. This feeling usually wore off as I explored the new place, but when I slowed the boat down I began to discover profound pleasure in our passages.

With two reefs in the main, the self-steering systems could manage, and the boat maintained a more comfortable angle of heel. *Cooee* is easily driven; she moves along with just a fraction of her canvas up. These days, when conditions are squally or when I am tired, a storm trysail replaces the main; I adjust the sail area with the headsails, which are easier to manage, especially now that I have a roller furler on the jib. The topsail, a small, easily managed, and effective sail, can still fly above the reefed main.

### Up the mast solo

Apart from the sailing itself, most boat jobs can be tackled by one person. I pull myself up the mast with a block and tackle on a masthead halyard after hoisting the bosun's chair to the spreaders (up to which *Cooee* has ratlines); it is not at all difficult. The head of a bolt which is on deck can usually be jammed with Vise-Grips while the nut is tightened belowdecks. Aligning the engine takes longer, but there is only one person swearing.

Apart from two fine old bronze sheet winches for the jib, the only winch on *Cooee* is a beefy electric anchor winch.

Another advantage to being alone on a boat is that there is no one to impress or feel a fool for. Often I prepare to enter a pass through a reef, to approach a dock, or even to anchor, long before I need to. With someone else on board, however, I would like to appear more nonchalant. I am not unaware of the delights of two close people on a sailing boat, but sailing alone has



***Cooee* is sailing in light conditions in Thai waters, above, with two reefs in the main. Jill adds sail area using the small, easily handled topsail. At left below, *Cooee* has belaying pins instead of halyard winches. At right below, *Cooee* with the Thai courtesy flag flying. The mainsail is laced to the mast and double-reefed. This is pre-roller furler when the jib was hanked on to a circular halyard then taken to the end of the bowsprit using an outhaul.**

rewards I cannot imagine relinquishing. Without Fletcher, my cat, and the BBC World Service, however, I am sure I would feel just a little lonely.

### 6. The money is never enough

Regarding money, I learned that it does not matter whether you have very little or a lot. Whatever you have, it's always *almost* enough.

People often ask what it costs to live aboard and cruise. In summary, cruising takes what you have plus just a little more. Interestingly enough, the same seems to apply to boat accommodation space, and neither has much to do with satisfaction or pleasure.

### 7. Travel light

The year my mother moved from her home, Peter and I were boatbuilding in China. Everything I owned that was not aboard *Cooee* was stored in a room under her house: furniture, household appliances, business and evening clothes, leather briefcases. I flew home for Christmas and gave it all away. Flying back to China, I felt exquisitely light. By the time I returned to Australia again with *Cooee*, 10 years later, I felt even lighter: I had managed to spend all my money, too.

Recently I heard an author in a radio interview regretting the fact that while impotence was acceptable in the modern world, indigence was not. I know what he means, but I disagree. Acquisition is not all there is, but if you're reading *Good Old Boat*, you already know that.

### 8. Focus on the voyage itself

A voyage is a natural vehicle for reflection, and it is difficult to ignore it

March/April 2003

as a metaphor for life's journey. For many of us, the coastal aspect of cruising makes another nice metaphor for life on the fringes. The vastness of the ocean — and the image of our trustful selves and our little ships adrift in it — means that even the most resolutely practical among us engages in a certain amount of metaphysical brooding.

That goals and their timeframes no longer have control of our lives is an unavoidable conclusion. We sometimes take an hour, or even 24, to cover five miles. It doesn't matter. There are fish to be caught, flags to be sewn, worn lines to be turned into baggywrinkle. Arriving is not so much the goal as another step in the process.

### 9. Wood is beautiful

Wooden boats exude history and romance; they feel like boats, sound like boats, smell like boats. They are a joy to live and sail and work in. John Ruskin, in *The Harbours of England*, 1856, said:

"The boat's bow is naively perfect: complete without an effort. The man who made it knew not that he was making anything beautiful, as he bent its planks into those mysterious, ever-changing curves. It grows under his hand into the image of a sea-shell; the seal, as it were, of the flowing of the great tides and streams of ocean stamped on its delicate rounding. He leaves it when all is done, without a boast. It is simple work, but it will keep out water. And every plank thenceforward is a Fate and has men's lives wreathed in the knots of it . . ."

Could a metal or plastic boat have inspired this kind of ecstasy? I hear you cry, "Of course it could!" and that leads me to my final point.

### 10. Lessons are personal things

Hearing about the experiences of others is a fine and useful thing. Learning one's own lessons, even if they are the same lessons, is an entirely different thing. That is what makes cruising (and life) worth doing.

The waves keep on coming, and we are grateful. 





by John Vigor

# Contessa 32: A talented aristocrat

A CONTESSA 32 NAMED *ASSENT* was fated to go down in nautical history when she was the only yacht in her class to finish a race marred by a storm so bad that five boats sank, 19 were abandoned, and 15 competitors were drowned. It was the infamous Fastnet Race of 1979, in which 303 yachts were overwhelmed by 65-knot winds between England and Ireland.

*Assent's* success assured her, and her British designer, David Sadler, of instant fame. Sales of the already-popular racer/cruiser soared, and the boat became the subject of intense scrutiny by safety committees and experts interested in finding out what made her so seaworthy. The fascinating fact was that the Contessa 32 was a fin-keeler with a detached rudder set on a skeg, not the kind of full-keeled design traditionally associated with good seakeeping.

She turned out to be a very moderate boat, a clever transition between the traditional heavy-displacement Bristol Channel cutters or Falmouth Quay punts and the modern lightweight designs which were designed to the IOR rule, with lots of beam and high centers of gravity.

David Sadler created a boat with a displacement-to-length ratio of 310, which placed her firmly in the medium-displacement class. Her beam was quite narrow — 9 feet 6 inches on a 24-foot waterline — and her center of gravity was kept low by a draft of 5 feet 6 inches and a ballast keel weighing 4,500 pounds. That's a whopping 47 percent of her total designed displacement.

So the Contessa 32 ended up with a very wide range of positive stabil-

ity, plus the promise of a quick recovery in the event of a 180-degree capsize. And, as competitors in that ill-fated Fastnet Race discovered, even the most seaworthy of yachts can be turned upside down by a plunging breaker that is big enough. Under survival conditions, ultimate stability, (the speed with which a boat will pull herself upright after a capsize) becomes of more importance than initial stability, which storm waves can and do overcome.

It was difficult in those days for the traditionalists to accept that a fin-and-skeg boat could be as seaworthy as a full-keeled Colin Archer or a pilot cutter. In fact, to this day there are people who won't have it. But what *Assent* proved in practice, Tony Marchaj and other marine researchers proved in theory, namely, that there is nothing inherently unseaworthy about a correctly-designed fin-keeler.

The difference between a Contessa 32 and most other fin keelers, of course, is that she is deep and narrow, whereas they are shallow and wide. Shallow and wide usually translates into more speed than deep and narrow. It also provides more room down below. It's lighter, and cheaper. So, naturally, it's more popular with the builders and the public who buy from them. Most people, after all, are happy to trade a bit of sea-

worthiness in return for more speed and accommodation. Only those who want to cross oceans or sail in all conditions with an easy mind will appreciate the extra seaworthiness the slower, more cramped Contessa 32 provides.

## Basic design

This boat was touched by magic from the start. When she was introduced to the public at the International Boat Show in London in 1973, the Contessa 32 walked away with the coveted Boat of the Show Award. Her builders, the Jeremy Rogers Boatyard, in Lymington, prepared for the rush, and

**Contessa, Gerry and Allan Hodge's Contessa 32, above, sails in the San Diego area. Richard Whitehouse's Ceres, at right. Richard sails in the area of Pamlico Sound.**





The interior of *Contessa* shows a U-shaped galley to port and a main saloon with a narrow double-berth to port and a single to starboard. A dedicated navigation table is opposite the galley. Allan says, "It's sparse below, but easy to keep clean, and everything you want always seems to be where it should be."

between then and 1982 they turned out more than 700 boats.

At the same time, however, the Contessa 32 was being built under license in Canada by the J. J. Taylor company in Ontario. Their production run ended in 1990, by which time 87 Contessa 32s had been built. Many of them have since found their way to the United States.

She was designed to do well in offshore races organized by the British Royal Ocean Racing Club (RORC) and, while her fin-and-skeg underbody made her reasonably fast, it was her reputation for seaworthiness that really got the attention of long-distance cruisers. It has been calculated that she will heel over to 157 degrees from the vertical before she loses the ability to right herself.

Besides finishing the 1979 Fastnet Race, Contessa 32s have been used for a singlehanded circumnavigation and a double-handed rounding of Cape Horn the "wrong way" — against the prevailing storm winds.

Although she is technically a fin-keeler, the Contessa 32's fin is quite large in area by today's standards, and extends a long way fore and aft. It's as if one of Ted Brewer's trademark "bites" had been taken out of the aft end of a full keel, leaving a truncated long keel and a stubby little skeg. The skeg runs the full length of the rudder, making it a very strong installation, and the rounded, cut-away forefoot of the keel makes her reasonably easy to manage downwind. The bottom of the keel is flat for several feet, so she can dry out against a harbor wall or post without too much fuss.

She appears to have a straight

sheerline but in fact there is just enough spring to the sheer to prevent her from looking humpbacked, and the lowest part of the gunwale lies slightly forward of the cockpit.

The Contessa's cockpit is quite long and comfortable. High coamings provide excellent shelter at the helm, and a strong bridgedeck separates the cockpit well from the main saloon. Access to the clear foredeck is reasonably easy, thanks to wide sidedecks.

*"The fascinating fact was that the Contessa 32 was a fin-keeler, with a detached rudder set on a skeg . . ."*

A tiller was the standard fitting, but a wheel was offered as an option, and most owners seem to have taken the option, not because steering with a tiller was difficult but because a wheel frees up more cockpit space.

### Accommodations

You'll notice the difference between a British-built Contessa 32 and a Canadian-built one in the accommodations. Both used the same basic layout, but while British boats were finished completely in wood down below, the Canadian manufacturer used white fiberglass moldings trimmed with wood.

The interior is cramped by modern standards, although trading interior space for seaworthiness is not a bad plan in a long-distance cruiser. In any

case, this is a boat for one or two people, no more — except, of course, for weekend sailing.

Headroom varies from 6 feet 1 inch to about 5 feet 10 inches. There's a chain locker and V-berth up forward, followed by a head to port and a hanging locker to starboard. The main saloon has a narrow double-berth to port and a single to starboard. The U-shaped galley lies to port, and opposite there is the luxury of a dedicated chart table, although the navigator must sit on the head of anyone sleeping in the quarterberth tucked in behind it. Incidentally, that makes six berths in all — four too many for long-distance cruising if you wish to retain your sanity.

Most Contessa 32s were fitted with diesel engines of decent size, starting with the 24-hp Farymann, and changing over at intervals to the 20-hp Bukh, the 28-hp Volvo, and the 27-hp Yanmar. Owners of Contessas with engines of 12 hp or less complain about lack of reserve power.

### The rig

She has a single-spreader masthead sloop rig that could be converted to a cutter for cruising or rule-cheating purposes, but is otherwise unremarkable. Her mainsail has a high aspect ratio, efficiently tall and thin, and her foresail area is large, so you'll need powerful, easily managed sheet winches in the cockpit.

It's obviously a strong rig. Several Contessas sailing in marginal conditions have dipped their masts under water and survived with the rig standing, but you'd want to replace the whole gang of rigging as a matter



Headroom in the Contessa varies from 6 feet 1 inch to about 5 feet 10 inches. Views here are of Gerry and Allan Hodge's *Contessa*, at left, and Richard Whitehouse's *Ceres*, at right. Both are J. J. Taylor boats and show that builder's trademark fiberglass interior moldings trimmed with wood.

of principle before leaving on an ocean voyage.

The main boom is short, barely overlapping the forward end of the cockpit, which results in an awkward sheeting position just aft of the companionway entrance. On a cruising boat, a longer, heftier boom might enable the mainsheet track to be set up well aft, clear of the helm and crew.

### Performance

Good all-round performance is the hallmark of this Sadler design but, as already noted, she gets an A+ for heavy-weather work.

Declan Mackell, who sailed *Sean-Ois* around the world singlehanded between 1979 and 1983, reported a day's run of 186 miles between the Canaries and Barbados. She really shouldn't have done better than 157 miles, because her theoretical maximum hull speed is 6.56 knots, but sometimes there's a little magic that helps the Irish do better than other mortals. In any case, this boat is no mean performer under twin running sails in the trades.

### Known weaknesses

- You'll need to figure out how to carry more fresh water, since the water tank encapsulated in the keel holds only 15 imperial gallons.
- The double berth to port is really a wide single. Don't get any fancy ideas.
- Check the chainplates. There have been reports of failures.

### Owner's opinion

British physicist Alex Nichol owned a Contessa 32 called *Royal Crescent*

with a partner for 18 years, sailing *Royal Crescent* out of Parkstone Yacht Club in Poole, Dorset. His cruising grounds encompassed the English Channel and the French coast from Cherbourg to the mouth of the Loire — an area known for sudden storms and short choppy seas.

"It's a very strong and seaworthy basic design," he says, "but for long-distance heavy work some reinforcement of the bow is required. We had a pair of extra foam stringers molded in from the head compartment forward."

*"... there is nothing inherently unseaworthy about a correctly-designed fin-keeler."*

He advises buyers of used boats to check and possibly strengthen the shroud plates. "The other point of weakness is the forestay tack fitting — this is a  $\frac{3}{8}$ -inch stainless-steel U-bolt, and ours just broke one day in quite moderate weather. It was what the metallurgists call a 'corrosion crack,' where a tiny superficial crack at deck level corroded and then failed. We had a new fitting made to wrap over the stemhead and bolted it through."

*Royal Crescent's* mast developed corrosion under the fittings just above deck level after about 12 years and was replaced as a precaution.

Alex detected no sign of osmosis in the hull, even when the boat was

approaching 20 years of age. "The rudder is on a very heavy skeg and should give no worries. We had some work done at 16 years, but that kind of thing is to be expected. A point to note, however, is that if you do have to do anything to the rudder or engine shaft, you have to start by cutting off the bottom tip of the skeg, where it wraps around below the bottom of the rudder, so as to get at the deeply embedded lower pintle."

*Royal Crescent* points well, tacking through just under 70 degrees with the original #1 genoa. She starts to get weather helm at about 15 knots of windspeed, Alex notes, but it's easily cured by reefing. "You should reef the mainsail first. Then she will re-balance and go faster. A second reef in the mainsail, with a suitable foresail, makes her easy to handle in any wind up to Force 7." He once beat 70 miles across the channel in a Force 7 wind. That's 28 to 33 knots, and officially described as a "near-gale."

"We got caught in Alderney by a northeasterly blow that came up from nothing, and we had to get back to Poole. We hoisted a double-reefed main and a small jib. She just loved it, and we were sailing past other boats of similar size which were wallowing — probably because they were overcanvassed."

Alex feels it pays to reef the Contessa early. "Indeed, our boat would sail to windward very happily on just a foresail — a flat-cut, rather heavy #2 genoa designed for roller reefing."

The Contessa's performance under headsail alone is exceptional.



"One day we were going from Treguier to Lesardrieux through the Passe de la Gaine and Moisie channels. It was a dead run down the Gaine, so rather than have the mainsail blanket the foresail, and have the mainsail jibe back and forth, we put up just the #2 genoa. It was then a nice reach into the Moisie under just that sail, so we left it. We came around into the Grand Chenal to Lesardrieux and I said: 'Let's see if she'll lay it.' And she did — overhauling a lot of French boats that were beating and wondering how on earth we were doing it."

According to Alex, the Contessa's galley is adequate for extended

cooking while living on board, and well placed for use at sea.

He also feels the cockpit is about the right size for ocean work, although it gets rather wet during a beat to windward in a blow. "By modern standards, the Contessas are low in freeboard."


*Royal Crescent* had a Yanmar, single-cylinder 12-hp diesel engine, which Alex found a little lacking in power. "I would prefer a little more power in reserve and two cylinders. The 18-hp Bukh is reckoned to be the best of the various ones installed as standard. The Yanmar's great merit was an incredibly low fuel consump-



tion — about 4 or 5 hours to the British gallon."

Finally, one of Alex's favorite cruising anecdotes:

"We were sailing in the Morbihan (northwest France) between the two major islands, where the direction of buoyage is not obvious. We knew where we were and had a large-scale chart. Halfway, near a channel buoy, we came upon a large French yacht on the wrong side of it, hard aground — and apparently trying to haul himself even further aground with a kedge.

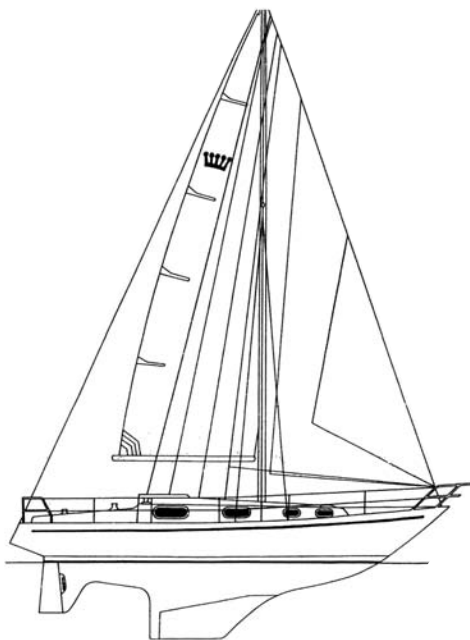
"As we came up, he made great gesticulations, pointing at the buoy and waving us to pass well on his side of it. As we complacently slid by on the other side, realization hit him. A great cry of 'Merde!' came across the water." 

## Contessa 32 In short

**Designer:** David Sadler (1972)  
**LOA:** 32 feet 0 inches  
**LWL:** 24 feet 0 inches  
**Beam:** 9 feet 6 inches  
**Draft:** 5 feet 6 inches  
**Displacement:** 9,500 pounds  
**Sail area:** 562 square feet  
**Ballast:** 4,500 pounds, lead  
**Spars:** Aluminum  
**Auxiliary:** Diesel, 12 to 28 hp  
**Designed as:** Ocean racer/fast cruiser.

## In comparison

- **Safety-at-sea factor:** 9 (Rated out of 10, with 10 being the safest.)
- **Speed rating:** PHRF rating 189. Fast for a cruiser, but slower than modern raceboats.
- **Ocean comfort level:** One or two adults in comfort; two adults and two kids in less comfort. In racing trim (no comfort) she sleeps five.



**The Contessa has a long and comfortable cockpit with coamings and a strong bridge deck. Most owners opted for a wheel, such as the one shown above left on Allan Hodge's *Contessa*, although a tiller was offered as standard equipment. Side-decks are wide, providing access to the foredeck. As pretty out of the water as on it, *Ceres*, above right, shows a fin keel which is quite large in area by today's standards, extending a long way fore and aft.**

# Wrapped in plastic

## *Sheathed wreck of the wooden Ulysses still going strong*

*by John Karklins*

SINCE BECOMING A SUBSCRIBER TO *Good Old Boat* in 1999, I have enjoyed two articles on the subject of sheathing wooden boats in plastic. The first, in the July 2000 issue, was a one-page piece that mentioned some drawbacks of the practice as well as successful applications with the use of mechanical fasteners or applications over relatively stable plywood construction.

The second article, in July 2001, was a description of work done on *Mustang*, a Sparkman & Stephens New York 32 that included refastening of the hull and complete sheathing in a cold-molded “second skin” before the final covering in what amounts to a fiberglass moisture barrier. *Good Old Boat* technical editor Jerry Powlas, commenting on the controversy of the *Mustang* renovation (between those who saw the application of plastic to a wooden boat as sacrilege and more pragmatic souls who saw it as a means to extend the life of the vessel) noted, “the fundamental problem is to keep the water out of the boat.”

This fundamental was the stated goal of another project to save what amounted to a wreck by cladding it in plastic. The work, in which I assisted, lasted from 1974 to 1977 in Berlin, Germany, while my wife and I were living there. The boat, *Ulysses*, still

sails on the Baltic and North Seas from ports in Germany some 25 years later. In view of the well-known German insistence on inspections and licensure, this should indicate that the goal was met.

### **Third sinking**

The story begins in what used to be West Berlin. *Ulysses* (her previous name is unknown) was salvaged from her third sinking in the Wannsee, one of a chain of lakes stretching along the western border of Berlin. Since her owner, a businessman with little boating experience, almost lost his life in the third sinking, he was eager to part with the boat. She was thus purchased by the present owners for “the salvage value of the lead keel.”

She was a one-design created in Germany, known as a Nationale Kreuzer 45, with her lines superficially resembling a Dragon-class sloop. The first of

her type was built by Abeking & Rasmussen in 1912. She is 10.3 meters (34 feet) long on deck and sports a 12-meter (40-foot) timber mast. The present owners, my brother-in-law and a partner, think she was built and launched in the mid-1920s. She was originally gaff-rigged, but she was Marconi-rigged at the time of the sinkings and to this

*“The ... boat is now more than 75 years old, has been sheathed in fiberglass for a quarter of a century, is actively sailed, and shows no ill effect ...”*



***Ulysses, a Nationale Kreuzer 45,  
sailing in recent years.***

day. She was engineless; her cockpit sole was a grating over open bilges.

The sinkings were caused by the poor condition of the vessel, specifically by the thrust of the mast under load on the keel timbers. This opened her seams, since the bulkheads and ribs were too rotten to resist the downward thrust.

The rot in the structural members was so extensive that the keel would actually deflect, or sag downward, when the boat was pushed hard and heeling. The resulting inrush of water necessitated rapid bucket bailing by at least two crewmembers. In a word, she was old, tired, and in very poor condition.

### **Long dry-out**

In 1974 she was hauled out and put under cover for the entire restoration. She was, therefore, able to dry out for two-and-a-half to three years before the application of glass.

After 25 years, I no longer recall the exact specifics of the renovation — the numbers or weights of glass cloth and matting applied, the species of wood used to replace the rotten timbers, the materials of the screws and other fasteners — but the



***Ulysses' deck is not wet. It shines from the unfinished polyester sheathing which is semi-transparent. The co-owners plan to deck it with teak soon. John notes after reviewing these photos, that the owners have aged more than the boat.***

general procedures and sequences were as follows:

1. The entire structure (hull, deck, cabin) were stripped of finish and the interior was gutted to provide full access to any rotten wood, which was then removed. We used rasps and coarse sandpaper to remove paint and varnish and to roughen the wood in preparation for the application of polyester resin. At this time, all rubstrakes, moldings, fittings, railings, through-hulls, and equipment were removed.

2. The removed planks and other rotten components were used when feasible as patterns for replacement parts. The work was extensive and at one point involved the removal and replacement of the entire stem timber from the keel to the bow. I recall it being a good 12 feet long. The bow planking was spread apart, leaving a gaping hole that made me skeptical about the prospects of ever putting it all together again. Ribs were laminated to a pattern and not simply laid up in place or sistered. I don't know why this was done "the hard way." Keel timbers were so rotten that entire portions could be scooped out by

hand. Several bulkheads were also replaced entirely with what must have been at least 1-inch marine plywood. As a rule, the new owners bought the best of all materials that needed replacing. We built a solid cockpit with an engine-access hatch in the sole at the same time.

### Numerous layers

3. The entire boat was covered with glass matting followed by glass cloth in numerous layers applied with polyester resin. The concept was to create a monolithic continuous envelope covering the cabin, decks, cockpit, and topsides, and encapsulating the keel.

4. The usual fairing, sanding, and painting took place. We installed a diesel engine and reinstalled or replaced flexible tankage, through-

hulls, ports, moldings, hardware, and other items that, while interesting, have no real bearing on the plastic sheathing process.

5. As a final measure, we saturated the entire interior of the boat with a mixture of turpentine and linseed oil to preserve the wood. One of the owners recently admitted that the smell was initially objectionable and that there may be better wood

preservatives available today. However, I sailed on the boat a year or so after completion of the work and do not recall any objectionable fumes.

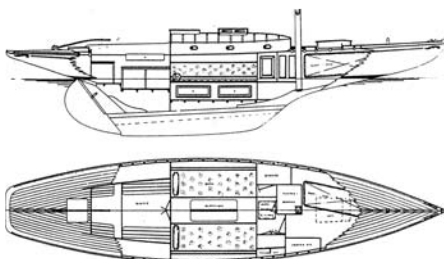
6. The reinstallation of the interior was carried out in a Spartan manner with pipe berths and open shelving in lieu of cabinets and such to ensure air circulation to the interior wood surfaces and avoidance of dead spaces that could lead to the formation of rot. The idea was that if any rot was found the entire wood member would be removed and the resulting void filled with reinforced polyester. This has not yet been necessary.

As with most boats, the refitting and improving of *Ulysses* is continuous. The solid timber mast was recently replaced with a modern, hollow, laminated spar and a teak-veneer deck and other improvements are pending. But these modifications have nothing to do with the question of whether sheathing in polyester resin is a viable method of "keeping the water out."

The fact that the boat is now more than 75 years old, has been sheathed in fiberglass for a quarter of a century, is actively sailed, and shows no ill effects from the procedure should speak for itself.

A few years ago the addition of some piece of equipment or other necessitated the installation of some through-hull fittings. The boring of these provided some beautiful core samples of the wood-polyester glass bond. I examined these carefully looking for any evidence of separation and found none.

*"She was thus purchased by the present owners for 'the salvage value of the lead keel.' "*



# Days at the Luders' yard

*by Ted Brewer*

IT WAS NOT ALL AMERICA'S CUP AND 5.5-Meter yachts in my years at Luders, as the yard still had its regular work maintaining and repairing clients' boats, and I was kept busy in 1963 designing a new yard workboat, a beefy 42-foot all-teak yacht built in Hong Kong. I have a photo above my desk showing her in New York Harbor in 1964, taken when Bob Wallstrom had run the old 1926 workboat, *You'll Do*, down to pick up her replacement and tow it back to Stamford. He took the photo of the two boats side by side with his dad, my dad, and John, the yard machinist, standing on deck; a rough-looking crew indeed!

There were many other things going on in the yard, even during the 12-Meter series. During the summer of 1964, while the new workboat was having her machinery installed, I was working on the design of the Luders 33, as well as slight modifications to the *Eagle* and making the occasional trip up to the Allied plant in Catskill, New York, to go over the 33's design and construction. Lew Banks and Bob Wallstrom lofted the 33 that fall, and the first boats came out in the spring of 1965. Bill's talent had produced another winner. That was doubly proved when he took first overall in the Block Island Week aboard the Luders 33 *Pinkletink* quite a few years later.

One summer day I came close to destroying a 5.5-Meter and seriously injuring myself as well. There was a cantankerous dock crane at the corner of the office that we used to lift the smaller boats in and out for bottom cleaning and minor work. I never really mastered that old rig and was quite in awe of it as, if you didn't have the gears just right, it could run away on you with disastrous results. Usually I stayed well clear of it but one day a 5.5 on the dock had to be launched right away. Shorty, the haulout crew boss, and Bob were both away for some reason, so I was pressed into service.

Bill's son, Jack, held the docklines as I engaged the gears, pressed the motor button, and lifted her up high enough to clear the edge of the dock. Then Jack swung her out so she was over the water, and I shifted gears to lower her down. Unfortunately, I did something wrong and, ho boy, did she go down! The winch went into free wheeling, the winch handle spun and knocked me off the platform almost breaking my arm, and the crane boom fell like a stone with the boat on the end of it.

My luck held though. The tide was out. The boat hit the water like a two-ton rock, sank well down with momentum, and then bounced up about 2 feet where, according to Jack, she just missed by inches ramming her deck into the crane boom which was lying flat across the dock. Once I recovered and was able to inspect the situation, while nursing my arm, I found to my immense relief that there was no damage to the boat or the crane . . . just to my pride. On the other hand, I never again was asked to run that miserable piece of treacherous machinery, so every cloud does have a silver lining!

Another time we were asked to repair a badly damaged 42-foot Chris-Craft. Apparently the accident involved a crew of liquored up Coast Guard (reservists, I believe) who T-boned the yacht with their USCG motor whaleboat one dark night while she was sitting at her mooring. The Chris was towed to the yard. It's a wonder she hadn't sunk, as the port side was smashed in from the sheer to about a foot above the waterline with all the galley furniture pushed 2 feet in toward the centerline; a real mess!

Harry Klipp, the boatbuilder foreman, and I had to work up a repair cost for the insurance company. We

went over the material cost very carefully together and had Lew Banks and Ted Malde, both top-notch woodworkers and boatbuilders, give us their estimate of the hours involved. Tony, the paint gang foreman, also had to provide us with the time and material for his crew's work. Then Harry and I sharpened our pencils, put our heads together, added it all up, added a couple of hundred just in case, and came up with a figure of \$4,700 to rebuild her as before, with every broken plank replaced with one of the original length.


The insurance surveyor visited the yard a few days later, looked over the sad wreck, read our estimate with obvious surprise and said, "No way, fellows. You can't possibly do a good job for that; it's not nearly enough money." He told us the boat was insured for \$10,000 and he didn't want to total it, so he'd allow \$8,400 for the job. Well, Harry and I were understandably happy with that, and we were careful to get it in writing.

Work commenced and in a few

*"I never really mastered that old rig and was quite in awe of it . . ."*

weeks the Chris looked every bit as good as she had before the accident, probably better, as her whole port side was repainted and the galley was all

new. When I totaled the actual materials and hours, the entire job could have been billed for \$4,500 at our normal rates, but I sent in a bill to the insurance company for the \$8,400 their surveyor had allowed, and they paid it without a kick. Bill was tickled pink, as you can imagine!

Of course, wages were just a bit lower in those days than they are now, so labor costs were reasonable. The average boatbuilder would make \$120 to \$130 for a 40-hour week, a foreman earned \$140 or so, and the yard charged the labor out at about \$8 to \$9 per hour. Materials were slightly less too; I can recall prime mahogany going for well under \$300 a thousand board feet and teak for \$400. They truly were "the good old days" in some respects! 



# Cl bea

b  
Michael



# Classic Beauty

y  
l Kahn



# Trailersailing begins with “trailer”



## *A little attention takes your trailer a long way*

*by Gregg Nestor*

ONE OF THE BIGGEST ADVANTAGES of trailersailing is that you are not limited to one sailing area in a single sailing season; you can experience a cornucopia of sailing destinations, thanks to our extensive highway system.

While much attention is spent on selecting, outfitting, and maintaining a seaworthy trailerable craft, less attention is paid to the contraption that allows trailersailors to achieve this enviable versatility . . . the trailer.

A trailer's systems are few and relatively simple. However, if neglected they can be a continual source of unwelcome distractions. With care and understanding, you can make the

trailering portion of every trip uneventful and the sailing eventful.

### **Tires and wheel bearings**

Tires and wheel bearings are the most critical items on your trailer and require special attention throughout the season. Make sure they're rated for trailer service and that they're the correct size and type. Don't mix radials with bias-ply tires. Unlike passenger-car tires, trailer tires are subject to greater flex, weight, and heat stresses.

While they do not appear to be different from passenger-vehicle tires, trailer tires possess a much higher load-range rating, typically a

load-range rating of C or D, approximately 1,000 to 2,500 pounds. Compare this with A or B, rated at 850 pounds or less. This increase in load range is mostly due to the increased number of plies used in the construction of the tire, especially in its sidewalls. Typical passenger-vehicle tires generally have two-ply sidewalls, whereas trailer tires often have as many as eight plies and usually no less than six.

While trailer tires are still available in bias- and radial-ply configurations, the overwhelming trend is toward radial-ply tires. Bias-ply tires have plies that crisscross the tire diagonally from bead to bead. They are less expensive than radials and are therefore the typical choice for lighter loads. The ply of radial tires run at a 90-degree angle from bead to bead. Radials dissipate heat better than bias-ply tires and are the tires of choice for long-distance travel or heavier loads.

You shouldn't mix radials with bias-ply tires because they exhibit very different handling characteristics, which will result in severe sway and tracking problems. Also, never use a tube in either of these tubeless

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**Don't trust your boat's security solely to the winch's anti-reverse mechanism. Use a short length of chain or cable to secure the bow eye to the winch's base, this page. Example of screw-type coupler, facing page. Note the emergency breakaway cable. Make sure that this cable is shorter than the safety chains. Should the trailer accidentally separate from the tow vehicle, this cable will automatically set the trailer brakes.**

tires. A tube increases heat development and retards heat dissipation.

Check tire pressure often and make sure they are properly inflated. Follow the manufacturer's recommendations. Proper tire pressure reduces damage caused by overheating.

In the off-season, when storing your trailer with your boat on it, use blocks to get the load off the tires. This also takes the load off the springs, axles, and wheel bearings.

Shade the tires from sunlight, since UV rays dry out the oil in the tires' rubber. Watch for cracking on the sidewalls. This sign of old age indicates it's time to replace the tires.

In the normal course of launching and retrieving your boat, the trailer's tires and wheel bearings are immersed in water. If the bearings are cool and the hubs are filled with grease, this is not too much of a problem. However, when traveling down the highway, even well lubricated bearings can get hot. Then, when they are immersed in cold water, a vacuum is created and water is drawn into the wheel hubs. This condition can cause the bearings to seize up, rendering them useless. Salt water aggravates this condition. To protect your wheel bearings, try to keep your hubs out of the water when launching and retrieving your boat. If this is not possible, install bearing protectors on each wheel hub.

These are spring-loaded devices that maintain a slight pressure on the grease packing in the hub, which helps prevent water intrusion when the trailer wheels are submerged. Since bearing protectors incorporate a zerk (grease) fitting, they make lubricating wheel hubs dramatically easier.

On an annual basis, inspect and repack your wheel bearings, making sure to fill the wheel hub completely with marine-grade wheel-bearing grease. Unlike standard wheel-bearing grease used on passenger vehicles, this grease is formulated for the marine environment. In addition to its

*"A trailer's systems are few and relatively simple. However, if neglected they can be a continual source of unwelcome distractions."*

lubricating properties, marine-grade wheel-bearing grease is water-insoluble and contains corrosion inhibitors and antioxidants. It affords corrosion protection against moist or wet conditions, especially the highly corrosive saltwater environment. Marine-grade wheel bearing grease won't soften, break down, or wash out in water. It maintains its stability and lubricity under the heat resulting from pressure and high speed.

### Brakes

Depending upon the gross weight the trailer is designed for and/or the state in which it is registered, trailer brakes may be required.

There are two types of legal braking systems: electric and surge (hydraulic). Electric brakes function by sending a voltage to the trailer via an electric brake controller in the tow vehicle. This voltage activates the trailer's brakes when the tow vehicle's brakes are applied.

Surge brakes work from the trailer's inertia. When the tow vehicle's brakes are applied, inertia causes the trailer to continue forward and apply its brakes through a closed hydraulic system. Most modern boat trailers use surge-braking systems.

Trailer brakes are designed to activate in conjunction with the tow vehicle's brakes and should continue to operate even if the trailer is accidentally separated. Be sure that the brake cable leading from the trailer to the tow vehicle is shorter than the safety chains. This cable sets the brakes if the trailer breaks loose.

After immersion, the brakes temporarily lose a significant portion of their braking power. Allow them to drain before heading out. If you have electrical brakes, you can also maintain slight pressure on the brake pedal for the first quarter mile or so to generate some heat. This will help dry out the brakes.

As with most metallic components, immersion in water can result in corrosion, and salt water corrodes most aggressively. While repacking the wheel bearings, inspect the condition of your brakes. If you suspect anything is amiss, have a qualified brake technician take a closer look.

### Lights

Lights on boat trailers experience rougher treatment than lights on passenger vehicles. No lighting system can tolerate repeated immersion, not even those rated "water-proof." Salt water is especially corrosive. Having the trailer lights removable or mounted high enough so they don't get immersed, goes a long way in reducing premature lighting failures. If this cannot be done, unplug them from the tow vehicle prior to backing down the launch ramp. Hot bulbs can crack when touched by cold water, so allow the bulbs enough time to cool before they are immersed.

If the lights do not operate, and the bulbs appear to be good, you may need to polish the bulb terminals with fine sandpaper or steel wool. Even a small amount of corrosion will keep them from making good electrical contact. Corrosion on the electrical connector between the tow vehicle and trailer



can also be removed by sanding. The most frequent cause of trailer light failure is a faulty ground, which creates an open or poor circuit. The ground is normally identified as a white wire. Make sure it is bonded to the trailer frame and the tow vehicle.

Lastly, you may want to consider adding additional lights or reflectors beyond those required by law, especially to the trailer's sides. This substantially increases night safety. Install a heavy-duty flasher in the tow vehicle to handle the increased lighting load, and routinely check the operation of all trailer lights before heading out.

## The hitch

Trailer hitches, or more correctly, those portions permanently attached to the tow vehicles, are classified by gross trailer weight (GTW) and tongue weight (TW). GTW is the combined weight of the trailer, boat, and gear, while TW is the weight the loaded trailer places on the towing hitch. Here are the classifications:

Class	GTW	TW*
1	Up to 2,000 lb.	200 lb.
2	2,000 – 3,500 lb.	350 lb.
3	3,500 – 5,000 lb.	500 lb.
4	> 5,000 lb.	> 500 lb.

(\*Ideally, the tongue weight should be 7 to 10 percent of the gross trailer weight.)

Too much tongue weight results in "tail dragging" of the tow vehicle. Too little causes the trailer to sway excessively while being towed. Unfortunately, there are no guidelines or relationships between the tow vehicle and trailer. The manufacturer of the tow vehicle has the first and last word in setting the towing specifications. Check the owner's manual before hitching up. Assuming that the tow vehicle can adequately handle the load, match the hitch to the load. When in doubt, move up to the next higher rated hitch.

There are two types of trailer hitches used with boat trailers: weight-carrying and weight-distributing. Both are bolted to the tow vehicle's frame. Weight-carrying hitches come in all classes and, as the name implies, bear the entire trailer's

*"One of the few absolutes in trailering a boat is its width. The widest boat you can legally tow on most state roads is 8 feet. Anything wider requires a special permit."*

tongue weight. They are most commonly used in Class 1, 2, and 3 configurations. Rather than supporting the tongue weight, weight-distributing hitches apply leverage between the tow vehicle and trailer by means of a spring bar or bars. This causes the tongue weight to be borne by all axles of the tow vehicle and trailer. Typically, weight-distributing hitches are used with heavier loads (Class 4 and larger).

In connecting the tow vehicle to the trailer, the coupler on the trailer's tongue is attached to the ball on the tow vehicle's hitch. These balls come in several sizes. Be sure to use the correct size ball for your coupler. A ball that is too small can cause the coupler to come loose; one that's too large will bind, and the trailer will not track the tow vehicle correctly.

Before connecting the trailer to the tow vehicle, grease the ball slightly. This makes for smoother movement of the hitch.

Trailer couplings can be screw-type or latch-type. Secure one that is latch type with a pin or lock to keep it from coming loose.

Associated with the hitch are safety chains that are permanently attached to the trailer's tongue and secured to the tow vehicle with a hook or shackle. Don't allow the chains to drag on the road surface. They only need to be long enough to allow free turning of the hitch. When connecting them to the tow vehicle, cross the chains under the hitch, forming a cradle. If the coupling fails, the cradle will prevent the trailer tongue from hitting the pavement and digging in.

## Winch and tie-downs

The primary point of attachment of a sailboat to the trailer is the bow eye, to which the trailer winch is connected. The winch line is usually a steel cable or a polypropylene rope or strapping. While cable may rust over time and eventually need to be replaced, synthetics will deteriorate more rapidly due to the UV rays in sunlight. Inspect the winch line annually and replace a synthetic line or cable if you suspect degradation. Do not use nylon; it stretches too much.

Be sure the winch has an anti-reverse lock in working order, but don't rely on it totally. Use a short length of cable or chain to secure the bow eye to the base of the winch. Fasten a cable from the bow eye to the tongue of the trailer as well. This prevents the boat from sliding forward if you need to stop abruptly.

The boat should be firmly secured to the trailer. While the bow is held in place by means of the winch cable, tie-downs should be fastened at or near the stern of the boat. A gunwale tie-down stretching across the boat



**Coupler with integrated tongue extender in the secured position.**



**Make sure that your trailer tires are rated for "Trailer Use," at left. Bearing protectors, at right, are designed to keep water out of your wheel bearings. Grease can be routinely added by means of the zerk fitting (center of hub).**

and hooked to either side of the trailer or transom tie-downs connected to lifting rings and to the trailer will accomplish this. A larger boat requires larger and more tie-downs.

Remember, should you need to stop in a hurry, you want your boat to stay on the trailer and stop when you do!

## Launching

If there is but one thing that you do before launching, it is to make sure that the water at the launch ramp is deep enough. Some ramps are marked. If not, check with the marina, ramp operator, or other sailors. If all else fails, get wet!

If you determine that adequate water depth requires that your trailer be extended far out, you may need to employ a tongue extender. Many sailboat trailers incorporate them as part of their design. Some marina and launch ramps have them available for use, either free or for a fee. If you can't use an extender, you'll need to locate a deeper ramp. Under no circumstances should you allow the rear wheels of the tow vehicle to go past the water's edge.

The following is a list of other items to consider when launching your sailboat, before backing down the ramp:

- Remove all tie-downs, but do not disconnect the winch line from the bow eye.
- Raise and lock anything that may snag on the trailer or in shallow water. This includes the outboard

motor, rudder, and centerboard or swing keel.

- Insert drain plug(s), if so equipped.
- Attach bow and stern lines to maintain control of the boat and to help ease it off the trailer.
- If you can remain in the tow vehicle, leave the engine on, keep your foot on the brake, and the transmission in park (if automatic) or first gear (if manual).
- If you must get out of the tow vehicle to assist, turn off the engine, set the parking brake, put the transmission in park (if automatic) or first gear (if manual), and chock both rear wheels.

## Legal considerations

One of the few absolutes in trailering a boat is its width. The widest boat you can legally tow on most state roads is 8 feet. Anything wider requires a special permit.

On interstates, some access roads, and on federally funded highways having 12-foot-wide lanes, the maximum width is 8 feet, 6 inches. These widths include the boat and the trailer.

Regulations are continually changing and differ from state to state, so consult your state police and your bureau of motor


vehicles to obtain the most current ones.

## Trailer gear

Regardless of how diligent you are in maintaining your trailer, sooner or later a breakdown will occur. Make

the following items part of your trailer gear inventory:

- Mounted spare trailer tire inflated to the proper pressure.
- Trailer jack or scissors-jack and handle.
- Lug wrench sized to fit the trailer's lug nuts.
- Spare wheel bearings and wheel-bearing grease.
- Spare light bulbs.
- Tools to replace wheel bearings and make minor repairs.

With the above items, the majority of trailer breakdowns can be easily and quickly remedied. This is especially important on those hot Sunday afternoons when you are driving through the middle of nowhere. 

*"If there is but one thing that you do before launching, it is to make sure that the water at the launch ramp is deep enough."*

## Resources

### Trailer Sailors Association

<<http://www.trailersailors.org>>  
Wayne Bell  
724-794-4704  
belltoil@nauticom.net  
Discussion groups are at  
trailsail@egroups.com

### Southern Chesapeake Trailer Sailors Association

<<http://www.geocities.com/nmirtt>>  
<<http://groups.yahoo.com/group/scbtrailersailors>>  
Raleigh Martin  
757-465-8473  
raleigh.martin@netzero.net

### Books

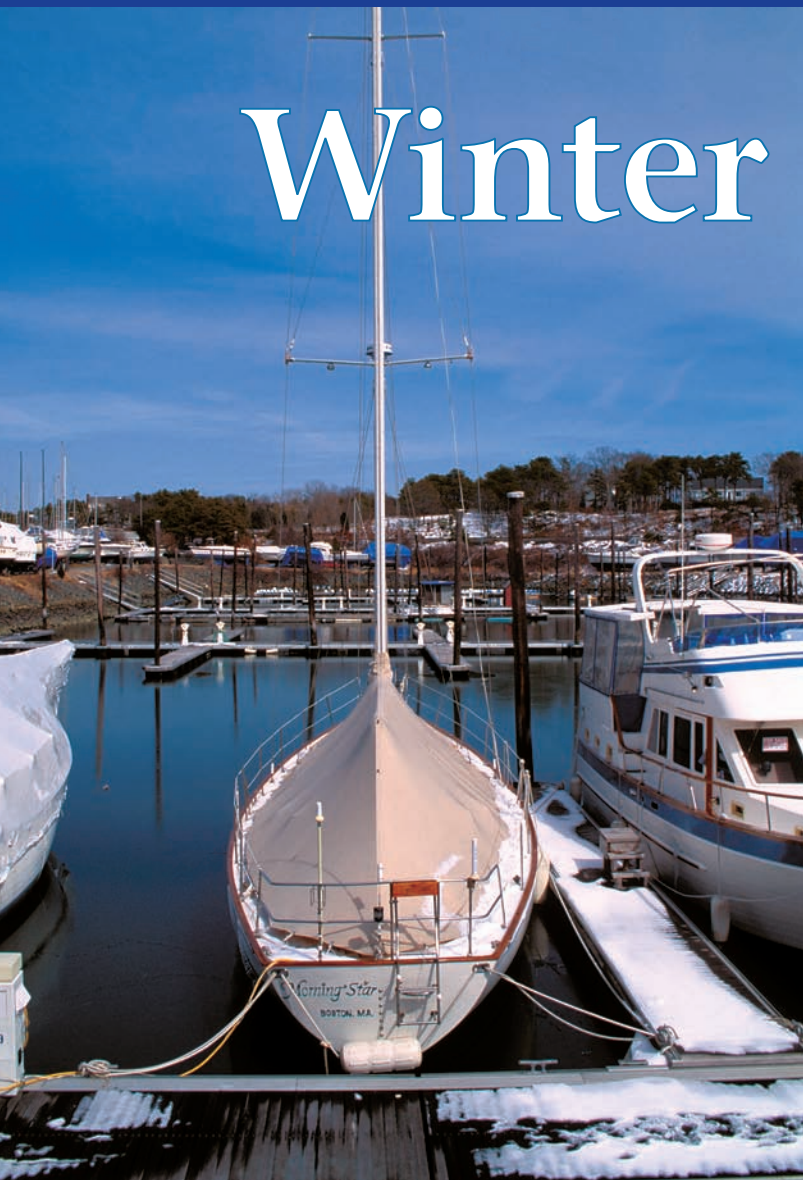
*Cruising Trailerable Sailboats*, 1993, by Fred Jones

*Handbook of Trailer Sailing*, second edition, 1992, by Robert Burgess

# Winter sail

*A short  
but joyful respite  
from the long,  
frustrating idleness*

*by Butch Evans*



**B**REAKING OUT OF LOW GRAY WINTER clouds for the first time in days, the sun illuminates only brown grass and leafless trees. Even with the promise of spring's warmth a few short weeks ahead, the sun's warm rays today are a deception. The few fleeting hours they shine down this afternoon are a tease. When the sun sets at the end of this foreshortened winter day, the temperature will drop back to its winter register, once again locking the world in cold.

For these few hours, however, I intend to disregard the calendar. As if it's a warm spring day, I go sailing. Walking down the creaking planks of the floating dock, I see my sailboat waiting forlornly in its slip, perceptibly neglected these last few months. Dirty and bare, stiff with cold, she sits patient as the Sphinx. Opening the companionway and looking into



*Photos by Mary Jane Hayes*

the boat is like looking into a hollowed out pumpkin. The colorful cushions that normally add brightness are tucked away in the garage at home along with the dishcloths and bright swim towels. The sun, low and far away, doesn't illuminate the windows as it does in warm summertime. A single empty coffee cup sits on the stove.

Protesting its winter awakening with a cloud of light blue smoke, the diesel chugs to life reluctantly. The steady beat of the single cylinder creates the illusion of warmth, but my breath, visible in the cold air, keeps the illusion at bay. The dock-lines, stiff with idleness, grudgingly release their grip.

We back out of the slip, breaking the neat symmetry of the long line of winterized boats that nuzzle the dock, tied to electric lines like calves at the teat. Free of the confines of the marina, the diesel is now happily warm and purring smoothly. We unbag the sails and shake out the lines. As we head up, the main lies flaccid and weak, hanging wrinkled and lifeless from the halyard. But as we fall off and the breeze begins to come across the beam, an amazing transformation takes place almost in the blink of an eye. The sails come to life, snapping, full of the cold air. Suddenly the boat is alive and straining at her sheets like a racehorse. Winter is banished in that moment.

Heeling over and accelerating, the boat celebrates this reprieve from the weeks tied to the dock by eagerly driving forward. When I shut off the noisy hammering of the diesel, silence fills the air with a wonderful clarity.

Fully alive now, we race along. The only sounds are the swish of the hull through the water and the creak of halyards and stays as she flexes her muscles like an awakening athlete. The breeze is still cold, but underneath, like a bud breaking through the snow, lies the promise of warm breezes and sunny days. Spring seems close enough to touch.

After a few short hours of prancing on the water like a spring colt, we

*"Heeling over  
and accelerating,  
the boat celebrates this  
reprieve from  
the weeks tied  
to the dock by eagerly  
driving forward."*

are driven back to the slip by lengthening shadows. The sun, settling into the horizon like an old man settling into a favorite chair, casts long black shadows as it grows dim. Today's pleasant, but chilly, winter sail was warmed by the anticipation of times to come. As I walk away, boat secured once again, I look back.

I swear I see a gleam in her eye.





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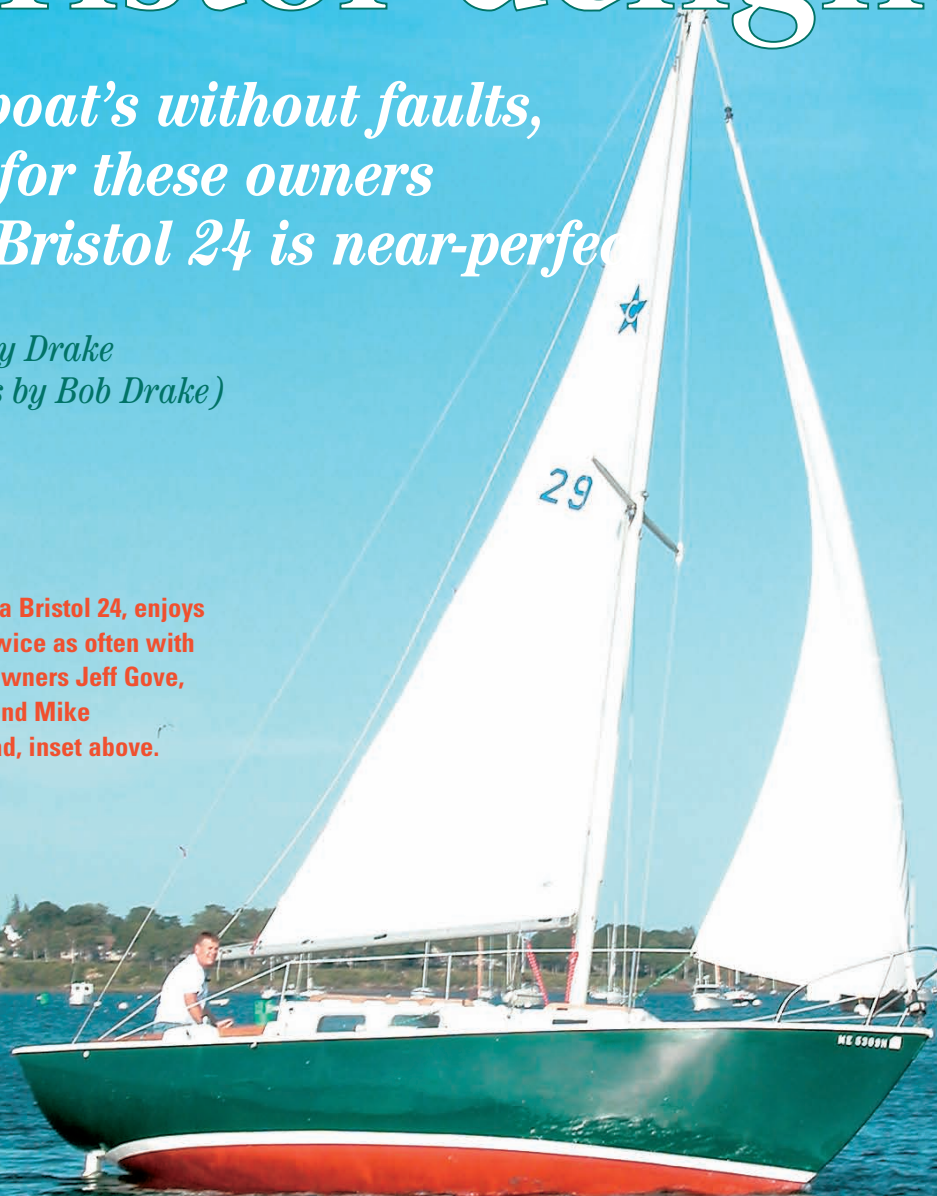
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# Bristol delights

*No boat's without faults,  
but for these owners  
the Bristol 24 is near-perfect*

*by Mary Drake  
(photos by Bob Drake)*

***Dovekie, a Bristol 24, enjoys outings twice as often with her two owners Jeff Gove, at right, and Mike Whitehead, inset above.***



**M**IKE WHITEHEAD AND JEFF GOVE, sailmakers with Pope Sails and Rigging Inc., in Rockland, Maine, were in the right place at the right time. *Dovekie*, a just-restored Bristol 24 complete with mooring and dinghy, fell into their laps last spring at a bargain price. And the sloop sails much better than they expected.

"At first I didn't want the hassles of ownership; I often sail on other people's boats," says Mike, 49, a relaxed, competent helmsman who raced Lasers on Long Island Sound as a youngster and never stopped sailing. "When my wife, Kate, was after me to buy a boat so we could get out on the water, we looked at an 18-footer, but it was too small. *Dovekie* is exactly right." Kate, who sailed a Sunfish as a teenager in Ohio, is a delighted, enthusiastic mate.

When Mike asked Jeff, also 49, to buy *Dovekie* with him, Jeff considered it "all of 30 seconds." Jeff learned to

## ***Dovekie***

sail aboard his father's daysailer but felt he couldn't afford his own boat. His wife, Judy, a teacher of at-risk seventh- and eighth-graders, also embraced the idea. She joined a rowing team and began sailing lessons on a Bristol 24 at Atlantic Challenge Foundation. "She doesn't want me to teach her . . . for good reason," says Jeff.

The Whiteheads and the Goves take turns sailing *Dovekie* on spacious Rockland Harbor or Penobscot Bay, Maine's premier sailing grounds, most weekends and after work. It's only a five-minute drive from the sail loft to the dinghy dock — perfect for an evening cruise around the harbor.

## **Fast and nimble**

Their 1966 24-footer, hull #29, is surprisingly fast and nimble, moves smoothly through the water in light air and

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Kate and Mike Whitehead, top left, Jeff and Judy Gove, top right, and the interior of *Dovekie*, below each. These sailing partners keep *Dovekie* in Rockland, Maine, with instant access to Penobscot Bay.

handles well in heavy weather. "She's no race boat, though the handicap is such that we'd probably do well," says Jeff, who also crews for his boss aboard a Tartan 10.

"*Dovekie's* extremely seaworthy, as I found out when we were surfing six-foot seas," he says. "I thought 'Wow!' when the GPS registered 7.5 knots. My fastest time was 8.2 knots — maybe a world record for Bristol 24s. I felt comfortable, though it was a wild ride in mighty big waves. There are few 24-footers I'd want to be out on in that kind of weather."

The boat needed little work, a big plus to Mike and Jeff. They bought a GPS and a Honda 5-hp four-stroke outboard, changed some blocks, varnished the mahogany interior bulkheads, and applied teak oil to the exterior trim.

"Patrick Rowling (the previous owner) redid all the structural parts inside and out, replaced the lifelines, added roller furling, and added really nice cushions," says Mike. The two sailmakers plan to change the main-sheet system, add a spinnaker, and build new sails.

*Dovekie's* full keel (with a draft of 3 feet, 6 inches) pleases Jeff in Maine's lobster-pot-infested waters. The pot buoys slide right off and don't get tangled in the rudder or prop, a constant worry aboard boats with fin keels and


spade rudders.

"So far there's nothing we dislike about our boat," says Jeff. "Down below is well-designed, with lots of stowage, great space (eight-foot beam), six-foot headroom, and five very comfortable bunks."

#### Casual planning

They operate their partnership on a laissez-faire basis. "I'd like to cruise next weekend," is often the extent of advance planning. Partnership has another virtue: "We can sail farther because one couple can cruise Down East for a week, and the other can spend a week cruising back," says Mike, who has sailed in the Caribbean. "The coast of Maine is a sailor's paradise, as long as you keep a chart handy."

Kate has more distant dreams. "We *could* sail down the Intracoastal Waterway in this boat, couldn't we?" To Mike's reply, "We could, but I can't see any reason for it," she instantly responds, "For fun!"

The Whiteheads and Goves agree that all the pieces fell into place — the boat, the price, the timing, the partnership, Pope Sails' new property where they can store and work on the boat, everything. Mike speaks for all when he says "I'm very happy we bought it." 

#### Resources for Bristol owners

Beautiful old boats for connoisseurs, the Bristol Owners Association. [Bristol32@aol.com](mailto:Bristol32@aol.com)  
Doug Axtell's website, offering information on all the Bristol models:

<<http://www.hometown.aol.com/bristolyht/index.html>>

SailNet's Bristol discussion list: <<http://members.sailnet.com/resources/links/list/index-new.cfm?id=bristol>>

**J**OHN KEEFE, OF WINDHAM, MAINE, HAS A Bristol 24 that he keeps in Portland Harbor. “Exhilarating, riding the waves in 15 to 17 knots of wind,” he says of a recent cruise in Maine’s Casco Bay. “I took spray over the whole boat — the first time I’ve ever done that.”

John simply casts off from his mooring and broad-reaches into Casco Bay. Then wind and tides determine where among the more than 300 islands he’ll sail that day or weekend.

“I bought this boat three years ago because I liked its lines and full keel,” says the 44-year-old FAA aviation safety inspector who lives about an hour inland. “I singlehand a lot, and she’s stable, safe, and easy to handle.”

John named his 1969 sloop *Agassiz*, after Mt. Agassiz, New Hampshire, where he owns property. In both places he can find solitude away from the rat race.

“Casco Bay is a wonderful place to sail, because of the variety,” he says. “The sea breeze comes up almost every afternoon by 1 p.m., but conditions are always different, often perfect. Light air can be discouraging because she’s built heavy, of prehistoric fiberglass, so she sails best in lots of wind.”

Though John often solos, co-workers join him on Wednesday evenings, and he gathers friends for weekend cruises. “Saturdays and Sunday mornings can be a zoo on the water, but Sunday afternoon through Tuesday, few people are sailing,” he says. “It’s wonderful then.”

### Laser sailor

The sailing bug bit John when he was in his 20s and first sailed in Lasers on Cape Cod. “I kept my hand in by sailing with friends, watching, and asking lots of questions, until I bought this Bristol. I still crew occasionally on other people’s boats. But usually they come with me.”

He has little trouble rounding up a crew, for he keeps his 8-foot Walker Bay dinghy at Portland Yacht Services, a cruising-boat-oriented marina run by former circumnavigators Phineas and Joanna Sprague. “The people here are real friendly,” says John. “And some neat boats from all over the world come in here.”

On paper, his boat sleeps five (in a convertible dinette double berth, a double V-berth forward and a starboard quarter berth). “Really, it has rustic cruising accommoda-

tions for two with good headroom,” says John. “The solar-powered fan provides good ventilation when the forward hatch is closed.”

The cabin has a vintage look with mahogany trim, varnished sole, and starboard galley with Formica counters, mahogany cabinets, sink, water system, icebox, and new stove. The V-berth conceals a Porta Potti.

The sweet sheer, aluminum mast, and 269 square feet of Dacron sail reveal hull #390’s age. The bulkhead-mounted compass and GPS are easily seen from the tiller.

John replaced the topping lift, added a GPS, and picks up fenders that float past his mooring. “When I haven’t gone to the marine store in a week, I consider that good,” he says.

### Mixed blessing

Maine’s normally cool summers make the dodger “a good deal, though when it’s up, the boat’s harder to sail,” John says. “The sidedecks are hard to reach, and the dodger tie-downs interfere with the winches.

“I’m not fond of the outboard in the lazarette, because the controls are inconvenient, and it overheats if I motor a long time,” he says. Hence, he often powers with the lazarette hatch open. “I’d rather have a diesel inboard, but it would take up too much space.”

John likes the Bristol’s solidness, seakeeping ability, and ease of handling but has succumbed to three-foot-itis. “I’m looking for a second-generation Bristol 29.9 or 33.3 (built in the 1970s or ’80s) with an inboard engine,” he admits.

Meanwhile, he’s saving his vacation time for a cruise to Maine’s mid-coast region. His job as a maintenance inspector of balloons, helicopters, and small jets in Maine, New Hampshire, and

Vermont often runs more than 40 hours a week, allowing him to accumulate enough compensatory time for the 150-mile round trip.

After a solo cruise, he deftly noses *Agassiz* up to the dock and competently secures the lines by himself. “You have to get creative when you sail alone,” he notes.

Once John puts his boat away for the season, he works weekends on Mt. Washington’s (New Hampshire) ski patrol. “Sailing all summer, skiing all winter. I have the best of both worlds.”



**John Keefe, of Windham, Maine, keeps his Bristol 24, *Agassiz*, in Portland Harbor. From here he enjoys immediate access to Casco Bay.**



# A husky little ship

by Ted Brewer

## *The Bristol 24: Relatively comfortable, stiff, and forgiving in extreme conditions*

**T**HIS REVIEW IS A BIT UNUSUAL BECAUSE, for the first time, I've selected a custom wooden yacht for inclusion instead of a complete pack of Clorox-bottle boats. I fell in love with Bill Shaw's yawl-rigged MORC racer, *Trina*, about 45 years ago, and I thought it would be interesting to see how she stacks up against some other cruisers in her size range. The reader may note the similarity between *Trina* and the Sparkman & Stephens Dolphin 24. I'm convinced that the Dolphin was influenced by *Trina's* racing success. Indeed, Bill Shaw was still working for S&S in the early 1960s when I first met him.

The Paul Coble-designed Bristol 24 is the subject of this review, of course, and she is a husky little ship in her own right. She has by far the heaviest displacement of the group. This results in a high Motion Comfort Ratio, higher than some 28- to 30-footers, along with the best Capsize Screening Factor of this group as well. Her high ballast ratio is also very reassuring, and she should prove to be relatively comfortable, stiff, and forgiving in extreme conditions. The Bristol also has the shortest waterline. This will hinder her performance to a degree, although her long ends will pick up additional waterline length when she is heeled under sail. Given good condition and proper equipment, the Bristol would appear to be a small yacht that is well suited to sailing the deep-blue waters of this world.

### Husky displacement

Unfortunately, the 24 is a bit light on sail area, given her husky displacement and wetted area, so a big 150-percent genoa will be necessary to

get the best out of her in the lighter breezes and, even then, she will not be a sparkler. The Dolphin and *Trina*, much lighter, and with lower wetted surface by virtue of their keel/centerboard hulls, would have a definite edge in the zephyrs. The Cape Dory 25D, with her lighter displacement, fits somewhere in the middle, but she is also cut away more underwater so probably has a bit less wetted area than the Bristol. This should add up to slightly better light-weather performance, but Cape Dory owners have reported that a 150 genoa is still a necessity in light air.

The Bristol will do well in a stiff breeze where, given her displacement and heavy ballast, she should stand up to the weather and scoot right along. The Cape Dory 25D will not be far behind her, but I'd be very interested to see how the two keel/centerboarders fared. *Trina* has the lightest ballast and could be at a disadvantage compared to the two deep-keel boats.

It must be remembered that she has a fully framed and planked wooden hull, so her construction is, undoubtedly, heavier than that of the fiberglass boats. This reduces the amount of ballast she can carry, of course, but *Trina* is also narrower than the keelboats, so she will have less form stability as well. Despite their racing heritage, I think the keel/centerboarders would have a job keeping up with the heavier and stiffer Bristol 24 in a blow.

In any case, none of these long-ended, short-waterline yachts is going to be competitive with contemporary light-displacement auxiliaries. Rather, they have their place as safe and solid coastal cruisers for family vacations and, just possibly, as mini trans-ocean voyagers for the more adventurous sailors among our readers.

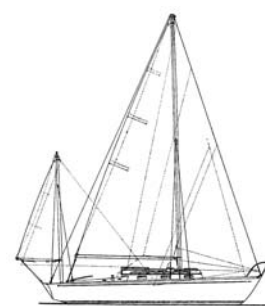
	Bristol 24	Dolphin 24	<i>Trina</i>	Cape Dory 25D
LOA	24' 7"	24' 2"	23' 11"	25' 0"
LWL	18' 1"	19' 0"	18' 6"	19' 0"
Beam	8' 0"	7' 8"	7' 5"	8' 0"
Draft	3' 5"	2' 10" <sup>5</sup> / <sub>8</sub> "	2' 9" <sup>5</sup> / <sub>8</sub> "	3' 6"
Displacement	5,920 lb.	4,250 lb.	4,303 lb.	5,120 lb.
Ballast	2,500 lb.	1,750 lb.	1,500 lb.	2,050 lb.
LOA/LWL	1.36	1.27	1.29	1.32
Disp./LWL Ratio	447	277	303	333
Bal/Disp. Ratio	42.2%	41.1%	34.9%	40%
Sail Area, sq. ft.	296	297	289	304
SA/Disp. Ratio	14.47	18.1	17.51	16.37
Capsize SF	1.77	1.89	1.83	1.86
Motion Comfort	28.4	21.05	22.74	23.69



Bristol 24



Dolphin 24



*Trina*



Cape Dory 25D



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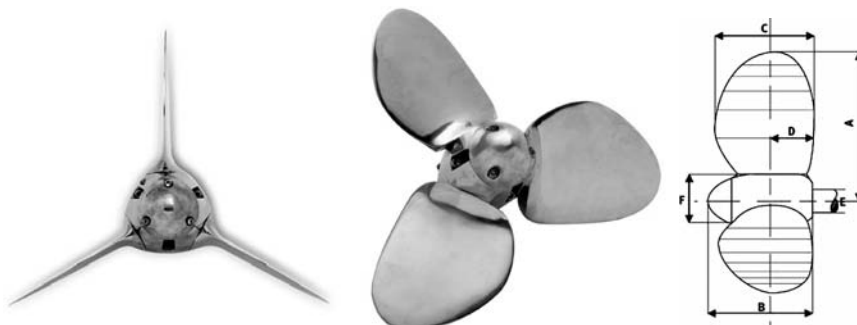
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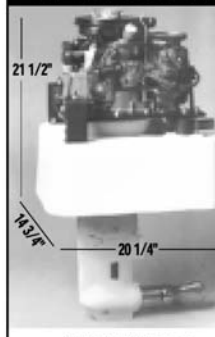


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# Advanced swigging

by Jack Dillon

with an electric saber saw or a dovetail saw. In a pinch, use a hacksaw. Use a rat-tail file to cut the lead-in groove on the fixed cam, so the line can smoothly enter between both cams. Don't go too far or the ability of the teeth to hold the tensioned line will be compromised.

You may ask where one gets a torsion spring. You don't have to look too far unless you're a bit fussy. I cannibalized mine from a small spring clamp found in most hardware stores. It's of ferrous metal, but I can replace it with a new one anytime. For the more sophisticated, a brass or stainless-steel spring is available from Rich Industries, Inc., or your neighborhood Home Depot. Determine

*Cam cleat brings an ancient art up-to-date*

SWIGGING UP A HALYARD CAN BE A BIT DAUNTING FOR YOUNGSTERS, since it takes coordination. At the other end of the age spectrum, older sailors may face physical limitations. Setting a taut jib — essential for windward work — is difficult for arthritic hands. Faced with both contingencies, I came up with a swigger, a homemade device combining a belaying pin and a cam cleat. It's even useful for those whose ages fit somewhere in between. With the help of a swigger, tightening a jib halyard is easier for everyone. (An additional illustration of swigging on a traditional craft is on Page 34 —Ed.)

## What's needed

Scrap hardwood (locust, ash, cherry, and so on), a couple of screws and a torsion spring. Your existing belaying pin needn't be altered. The swigger shown can handle lines of  $\frac{1}{4}$  inch to  $\frac{3}{8}$  inch and is fitted to a belaying pin of  $\frac{5}{16}$ -inch outside diameter.

The finished assembly comprises four parts:

1. A fixed-toothed cam, slid onto the underside of the belaying pin in its rail.
2. A moveable toothed cam with lever.
3. A torsion spring, right or left.
4. Wood screws.

## Making your swigger

After selecting the wood, lay out the outline as shown in the illustration at right. The wood used for the fixed cam needs to be  $\frac{3}{8}$  inch thicker than the moveable cam. This allows for cutting in a lead-in groove. Drill the hole for the belaying pin first, then cut the teeth

what hand — right or left — you want, as it makes a difference. A right-hand spring is illustrated.

Cut the recess in the movable cam with a router set to the depth thickness of the spring plus a little. The recess should pinch the spring closed about  $\frac{1}{8}$  inch. The pivot hole is for the pivot screw and the torsion spring. The spring should be a loose slip fit on the screw. Cut out the outline shape including the teeth. Round out the handle with a knife or rasp. Sand all to smooth out the rough spots but leave a decent point on the teeth. Apply several coats of varnish to both cams.

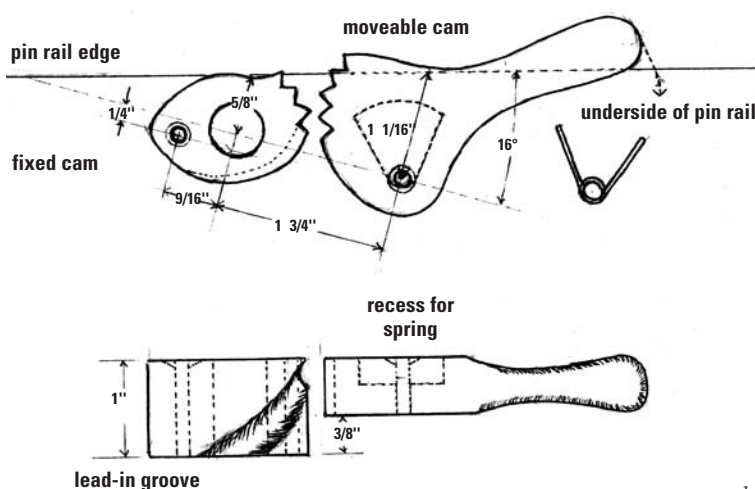
The illustration on Page 60 shows where things go. Notice the torsion spring. One extended arm must lie flat on the underside of the pin rail. It is held in position with the bent nail. The other arm rests snugly against the wall of the recess in the moveable cam, enabling the moveable cam to constantly bear pressure on the halyard.

## Assembling your swigger

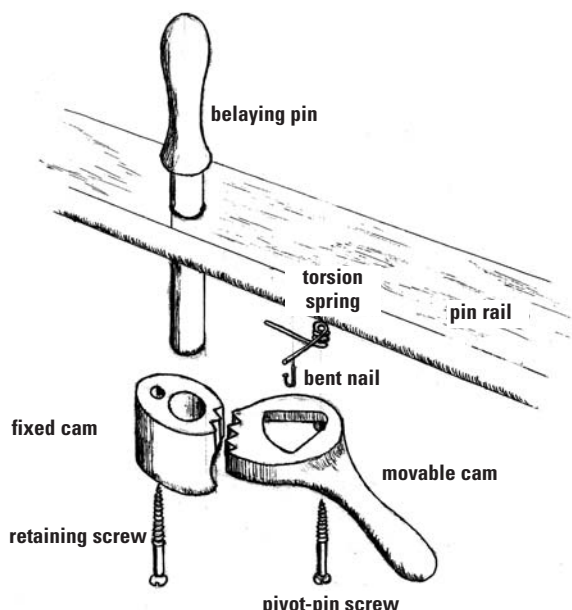
Assemble the whole unit on a scrap piece of wood to establish the working relationships of all the removable parts and check that it works smoothly. Once this is established, make a template of the holes to transfer to the underside of the pinrail.

After you mount the fixed cam, remove the pin. This will allow the fixed cam to be moved slightly so the moveable cam can be mounted. Later it will be locked again by the insertion of the pin. Place the moveable cam according to the dimensions given in the illustration or by

The underside of the rail, showing both cams mounted



The underside of the levered cam. Notice the recess to accommodate the spring.



your template. Pre-drill for the pivot-pin screw. Position the spring with the screw, predrill for the bent nail, and tap it into place to hold the spring.

Remove the pivot-pin screw and put it through the moveable cam. Screw down the moveable cam. As you come close to tightening down, the other arm of the spring will bear up against the wall of the recess. Just turn the cam a little, and it will snap into place. Do not overtighten. Now swing back the fixed pin and insert the belaying pin to lock it in position.

### Using your swigger

It's easier then you think. After raising the sail, lead the fall around the back of the pin, guiding the line into the groove on the fixed cam. Then just swig up in the usual fashion. The spring-loaded cam does the rest, clamping up on the line and allowing you to leisurely tail off and take in the slack. Once the desired tension is achieved, the line can be made off on the pin in the traditional way. Open the cam with the lever. This will put the load on the pin and the rail where it belongs.

When you're ready to lower the sail, remove the made-up coils of line from the pin. Spring tension on the moveable cam will re-engage the line to be cast off the pin and hold the halyard in place. When all looks clear for running, press in on the moveable cam's lever, and the sail will come down. If a more controlled, slower lowering is desired, cast off the line from the pin, and slide it out of the cams and on the pin itself below the cam.

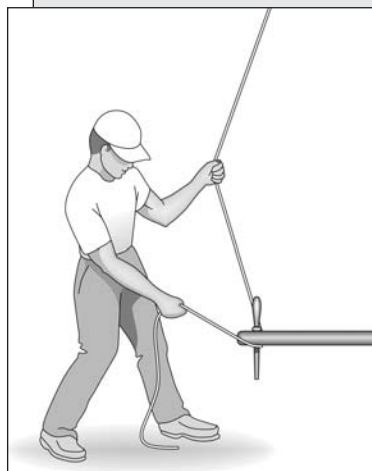
### Resources

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## Vocabulary lesson

THE VERB TO SWIG CAN HAVE SEVERAL MEANINGS. TO THE landlubber and to any sailor too young to have used



a pin rail, it may mean to "drink in long drafts" (*Merriam-Webster*). To sailors of traditional craft and even some modern small craft that do not have halyard winches, swigging off — also sometimes called sweating — is "to pull on the center of a taut rope at right angles to the fall, and to give the slack so gained to the man on the pin" (*Ashley Book of Knots*).

While this may seem to be a crude way to tighten a halyard, the math associated with it is interesting. When you pull on the middle of a taut halyard, the initial mechanical advantage is infinity. Even when the included angle made at your hand by the two sections of line above and below it is 150 degrees, the mechanical advantage is still almost 2:1. Good to know.

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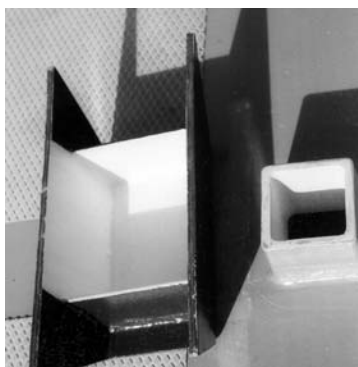
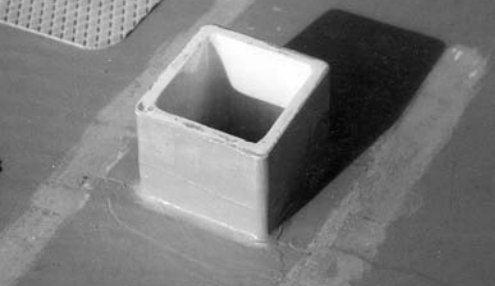
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The top photo shows the square plywood vent epoxied into the deck. It sticks up 4 inches above deck level and is painted white

inside to give a light impression from down below. The two lighter marks along the deck show where the cover will fit. They have been sanded down to give good adhesion to the epoxy resin that will be used to secure the cover to the deck. The upside-down cover, bottom, next to the through-deck vent. The part of the cover painted white is the part that goes over the vent, and the color, again, is to provide some luminosity inside. The baffles also clearly show in this picture, and some idea can be gained of the relative sizes of the vent and the part of the cover that goes over the vent.

# Banish *the* damp

*Make your own ventilators  
to keep fresh air flowing down below*

*by Peter Bonsey*

IF I WERE TO ASK ALL THOSE SAILORS WHOSE BOATS HAVE ADE-quate ventilation to raise their hands, I think there would be more wry smiles than hands in the air.

Ventilation in a boat is a very important issue because if a wooden boat is not properly ventilated it will surely rot. If any other kind of boat is not ventilated, it will soon become musty and smelly.

A damp, airless atmosphere is bad for electrical and electronic systems and, however simple our boats, we all have quite a few of those these days. Furnishings will attract mildew, foulweather gear left on board will become revolting, and the world will generally be an unpleasant place.

Even if you have no cabin heating on board, you will be using gas, alcohol, or kerosene for cooking, all of which burn oxygen and create water vapor. Without an adequate replenishment for the oxygen, you'll end up with a head-

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ache at best, or unconscious or dead at worst.

When we were fitting out *Can Pyran*, our new good old boat, we had another consideration: we have an air-cooled diesel engine. (Like most of our friends, you probably think we're mad, but we have never understood why salt water is such a good substance to pass through hot steel, aluminum, or copper.) In any event, the engine draws air from the cabin, and an adequate supply is needed.

For all of these reasons, we gave good thought to our ventilation. Maybe our conclusions could help you improve the ventilation on your boat if you did not smugly raise your hand at the beginning of this article. All that is required is some ½-inch external-grade plywood, some epoxy, woven roving, and simple hand tools. This project also requires space on deck of approximately 19 inches by 8 inches. The maximum height above deck is 6 inches. There is nothing magical about these figures, so you can adapt the concept to suit your own circumstances. However, give the air vent sufficient space within its cover so the air can circulate.

### Conflicting requirements

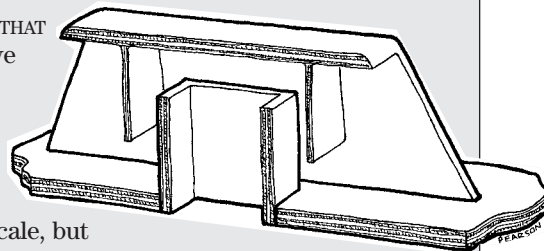
There are two equally important, but conflicting, requirements in a ventilation system. The first is to let air in, and the second is to keep water out.

As far as letting air in is concerned, a little high-school math helps. If you have a ventilator with a 3-inch-diameter hole, then the cross-sectional area is 7.06 square inches. If you increase the diameter to 4 inches, then the cross-

## Make a mock-up

PLEASE NOTE THAT

the plans we have on *Can Pyran* are not engineering drawings and are not accurately to scale, but they do approximately represent the ventilators.



If you want to see whether this idea is suitable for your boat, I would suggest you do what we did and make a mock-up in ½-inch hardboard sewn together with thin wire. You can then alter it to suit your own boat before committing yourself to anything too drastic. It's only when you cut the hole in the deck that things become serious.

If you look at the plans in conjunction with the photos, they should be fairly self-explanatory. Although measurements can be altered, I doubt whether the 2-inch clearance above the vent should be reduced at all. Possibly the height of the vent above deck could be reduced, but that would depend on your boat. *Can Pyran's* deck is very dry even in bad conditions, but if green water was sloshing around the place I don't know that I'd want a lot less than 4 inches.



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section becomes 12.57 square inches. The 4-inch-diameter hole is only a third larger across, but it has a cross-sectional area, and therefore air flow, that is nearly three-quarters as much again. We can do better still. If we use a square 4-inch hole, we have a cross-sectional area of 16 square inches, which is a quarter as much again as a circular 4-inch hole, and two and a quarter times the 3-inch circular hole. We did our math, and our starting point was therefore a square, 4-inch hole.

Then there is the question of keeping the water out. The standard way of doing this is the Dorade vent. This is a rectangular box fitted to the deck with a cowl at one end to collect the air, and the hole into the boat at the other end protected by a tube passing into the Dorade box. Any water that falls into the box goes out through drain holes, while air passes down the box and through the tube into the cabin. This is a fine system, but we were put off by the expense of cowl vents and believe they are ideally shaped to trip you and to catch ropes. We built one of our own design. We find that it works extremely well.

### Hollow box

The heart of the system is the through-deck vent, a hollow box made out of ½-inch ply with an internal measurement of 4 inches by 4 inches (5 inches by 5 inches externally, of course.) The corners are butted and epoxied together. The

*"All that is required  
is some ½-inch  
external-grade  
plywood,  
some epoxy,  
woven roving  
and simple hand tools."*

outside edges are rounded and then covered in 4-inch woven roving epoxied into place. The insides of the corners have thickened epoxy fillets. We cut a 5-inch-square hole in the deck (measure twice, cut once!), and the vent stuck up through the hole to a height of 4 inches above deck where it was epoxied into place with woven roving.

It is covered by a separate rectangular structure that is open to the air at

both ends and which gives a minimum clearance around the vent of about 2 inches horizontally and vertically. The 2-inch vertical clearance means that the inside of the top of the cover is 6 inches above deck level. The trick to keeping water out is that suspended from the roof of the cover are two plywood baffles. These are 4 inches deep and come down to 2 inches above the deck and 2 inches below the top of the vent. Except for the skirt, the cover is made of ½-inch plywood and constructed with epoxy and woven roving as described above. The cover itself is epoxied to the deck with woven roving. Our deck is plywood, but I would expect the idea, suitably modified, to work just as well with fiberglass or composite decks.

In effect, the box is a wind tunnel. Wind passes down the tunnel on either side of the vent, and a really surprising amount of it goes down through the vent. We thought that it might only work with the wind from forward or aft but not on the beam. In fact, this seems not to be the case; we have



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good airflow at all times. Regardless of weather conditions, we've never had a drop of water down the vents.

In case of gales, we have made up blanks that fit on either end of the covers.

These should stop all but the most catastrophic seas from coming down below. Since we are born-pessimists, my wife also made some 5-inch-square storm covers that can be passed up through the vents from down below and twisted into place to cover the top of the vent. There is a strongback against the underside of the deckhead and a bolt to hold the cover in place. I profoundly hope never to be out in conditions when they might prove necessary!

We have never had anything snag on the covers; their shape ensures that any stray ropes slide over the top. Best of all, they cost only a few dollars to make, and we had most of the materials on hand anyway. They might not look as beautiful as a lovely brass cowl, but those run \$150 each, and you are going to install several ventilators, aren't you?

*"We have never had anything snag in the covers, and their shape ensures that any stray ropes slide over the top."*

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# Handy ditch kit

*Make this excellent abandon-ship kit for next to nothing*


by Glyn Judson

I PUT TOGETHER AN ABANDON-SHIP MODULE BECAUSE I WANTED TO have just one safety item to grab if we ever have to go over the side. It needed to float and to be easy to secure to the Avon Redcrest that we use as our life raft. It's made from a short piece of 6-inch PVC irrigation pipe to which I glued an end cap and a threaded adapter.

I attached a 6-inch nylon cleat to the threaded cap. When I bedded and torqued it down, the cleat base conformed to the crown of the PVC top, making for a very clean installation. I attached a Sea-Dog transom step/handle to the body of the module and added a strip of adhesive-backed, white non-skid all the way around the side of the end cap. I applied SOLAS-grade (Safety of Life at Sea) reflective tape and orange vinyl tape to the outside to make it more visible in the water. And finally, I attached 20 feet of polypropylene line with a plastic snap shackle to the cleat. There are acorn nuts on the ends of the fasteners to protect things from getting torn up on the inside.

To open the module, I hold it between my knees with the step handle against one leg. My feet grab the end on the non-skid, and I use the cleat as a handle to unscrew the

threaded cap. It's totally waterproof; I even greased the threads to facilitate ease of opening and to keep water from creeping in. It resides in our starboard lazarette, but could be stowed on deck if painted to protect the PVC from the sun.

We primarily visit the Channel Islands off the Southern California coast and have filled the module accordingly with sunblock, hats, sunglasses, space blankets, dried food, water, and energy bars for two people for one day. I've also added flares, a signal mirror, a first-aid kit, a strobe, a flashlight, a knife, a handheld radio, a Class B EPIRB, and a sea anchor. If I had wanted to put more in the module, I would have made it longer. As it is, everything fits, and it floats well enough to support one person holding on to it. 



# Double-duty cooler

*When space is an issue, this busy bag works two jobs*

by Greg Delezynski

JILL AND I LIVE ABOARD OUR NOR'SEA 27, *GUENEVERE*. ON A boat of this size you can imagine how important the size and amount of your belongings can be. We decided that one of the best things we could do would be find multiple uses for items we have aboard.

At a boat show we found a great-looking, soft-sided ice chest. It came in a number of colors and a wide range of sizes. It was waterproof and had a five-year limited warranty on the exterior and a lifetime warranty against manufacturer's defects on the liner. Jill and I decided to purchase one in hunter green to match our boat colors.

The one we wanted was about \$40. We planned to purchase it at the end of the day at the show, so we didn't



have to carry it around with us.

We walked to the end of that row of displays and started up the next row. Almost directly behind the booth

**On *Guenevere*, the big cooler is a cooler or an abandon-ship bag. The small bag also serves two purposes on the dinghy.**

with the ice chest was a supplier of emergency equipment for offshore sailing. We decided that an abandon-ship bag was going to be required in case we had to take to the raft. We priced out some of the items that would go into the bag and then looked at the bag itself. They were asking about \$95. It was an orange color, buoyant, and water-resistant.

### What difference?

A big light went on over my head! What was the difference between the soft-sided cooler and this ditch bag? We spent the next hour walking back and forth between the two booths looking at each bag and the differences between them. From every way we could compare them, the cooler came out as the superior product for both jobs. In the end, we bought the soft-sided cooler. But we bought it in red instead of hunter green.

We now use the bag as a cooler when we are at the marina or in port. The cooler works very well, has lasted

more than five years, and is still waterproof. The performance of this product has far surpassed the promise. A number of times we have still had ice in it after a week of sailing. When we are about to head out, we make sure we dry it out well and then re-pack it with all of the gear we feel should be in a good abandon-ship bag. We find that repacking the bag is an added benefit because it makes us check each item before it goes in the bag. We check batteries, medical expiration dates, and all the items for any problems.

The large cooler worked so well for our Nor'Sea that we asked why shouldn't *Lance-A-Little*, *Guenevere's* tender, have its own ditch bag? We purchased a small lunch-type cooler bag and have it packed with equipment that may be needed. We now put this into the dink any time we use it.

We pack this small bag with a spare set of oarlocks, a spare spark plug and wrench to install it, a spare pull starter cord, two small bottles of fresh water, a space blanket, a small VHF radio and, last but not least, a small EPIRB.



Wondering what to put in your abandon-ship bag? This book, by Frances and Michael Howorth and published by Paradise Cay, is an excellent resource.

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# Have a soda blast

*This unique paint-stripping material won't rip off your gelcoat*

by Don Launer

CHANCES ARE YOUR BOAT HAS MANY YEARS' WORTH OF PAINT ON the bottom. Removing the paint buildup without ruining the substrate — wood, fiberglass gelcoat, aluminum, or steel — is a vexing problem.

For years, one method has been sandblasting. All blasting processes use pressurized air containing suspended particles that are projected onto a surface for the purpose of removing a coating. But recently a new variation of abrasive blasting has become popular with boaters: sodablasting. Instead of sand, baking soda, or sodium bicarbonate ( $\text{NaHCO}_3$ ), is used as the abrasive material. Although seemingly a bit bizarre, baking soda has many advantages over sand when removing bottom paint, especially on recreational boats.

Sodium bicarbonate is a unique blasting medium because its crystals are sharp, yet soft. When they hit a surface they fracture into smaller particles, intensifying the cleaning

action. Abrasive particles that act in this manner are termed "friable." This friable characteristic is especially effective in removing grease, dirt, and bottom paint without substantially affecting the boat's hull. If the soda-blasting nozzle is aimed too long on one spot, gelcoat will eventually be worn through, of course, so the operator's experience and technique are important. This blasting process produces a cleaner surface than other processes currently being used. After the surface has been washed of residue and neutralized, it's ready to be painted.

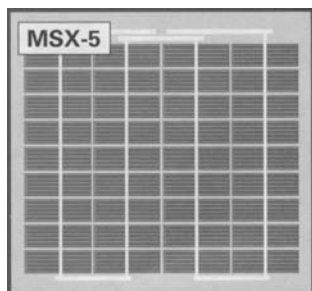
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The operator connects his hoses to the soda-blasting equipment.

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flammable, non-toxic, and not hazardous to the health of the worker. (The coating being removed, however, can be very toxic and requires protective measures for the workers. Proper containment and waste disposal are also necessary).

Although all baking sodas are chemically the same, the baking soda used for soda blasting is not your mother's kitchen variety. There are over a dozen formulations of abrasive sodas available, depending on the application. The differences are mainly in particle size and uniformity, as well as the added ingredients for flowability and rinsability. These soda particles are delivered under relatively low pressure

but at a high velocity that enables them to scour virtually any coating while softening the impact on the substrate.

The blasting process begins with creating a tent around the boat. On the ground inside this tent is a tarpaulin to collect the residue — primarily bottom paint. The operator, dressed in a hazardous-materials suit with facemask and respirator, begins the blasting, which can take several hours for a sailboat with multiple layers of paint. Water is used with the blasting process to reduce the dust. After soda blasting, the boat is hosed down. It is then washed with a low-pH solution to neutralize the baking soda's higher pH.



The bottom of Don's boat before the soda-blasting operation, at left. A plastic tent, center, is built around the boat's hull. At right, the hull is now down to the bare gelcoat and is slightly abraded, making it an ideal painting surface. It is now ready for a barrier coat and bottom paint or bottom paint only.

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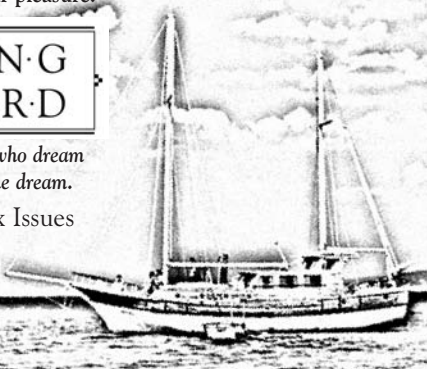
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This is followed by hosing or power spraying to remove the neutralizer. When dry, the hull is ready for painting.

The cost of the procedure runs in the neighborhood of \$16 per foot of waterline length, plus the cost of each bag of baking soda used. The number of bags used will be determined by the number of layers and type of bottom paint being removed.



**Relieved of about 300 pounds of old bottom paint and repainted, Don's boat is ready for launching.**

For a boat with several years of accumulated paint, figure about a bag of soda for every 4 to 5 feet of waterline, at roughly \$25 a bag.

Don't be surprised if your boat is sprightlier once the old bottom paint has been removed. The weight of paint removed can be in the hundreds of pounds. Powerboat owners report that their boats get up on a plane at much lower engine revolutions than before.

## Chris-Craft continued from Page 29

through-hulls that seem a bit unnecessary are connected to a pair of deck scuppers. At least one owner has closed them and redirected deck drainage overboard through the rail.

### A loyal following

So the boats aren't perfect. But the relatively small number of Chris-Craft sailboats that were produced still seem to have gathered an intensely loyal following. David and Robyn Waltrip, who recently purchased a Caribbean 35 ketch, wrote in the sailboat owners' newsletter, "Due to our experience with the Capri, we only seriously considered other Chris-Crafts as an option."

Another long-time owner of a Capri 30 is Jack Klang, who has sailed his boat since 1974. He writes of his "trusted friend," *Hells Bells*: "I hope that our family will enjoy sailing her for many, many years. After all, a good friendship lasts forever."

Chris-Craft changed hands several times during the 1980s. In 1981, G. Dale Murray, celebrity attorney F Lee Bailey, Walt Schumacher, and Tonight Show host Ed McMahon bought the company. Murray then sold \$32 million worth of interest to Saudi Arabian billionaire Ghaith R. Pharaon, who brought in aircraft-industry executive Chuck Husick to jump-start the financially feeble outfit. But debts mounted — \$69 million in 1989 against assets of \$61 million — and in 1989 it was purchased by OMC (Outboard Marine Corporation). That onetime giant of the industry, maker of Evinrude and Johnson outboard motors, declared bankruptcy in 2000. Arch rival Genmar Holdings bought Chris-Craft at auction and then resold it to Stephen Julius and

Stephen Heese, who now run the company.

Today, Chris-Craft builds a small line of fast power cruisers — nine models ranging from the Launch 22 to the Roamer 43 — but no sailboats. It's doubtful it ever will again. But people still remember the Chris-Craft sailboats of the 1960s and '70s, which now are a legendary part of modern sailing history.

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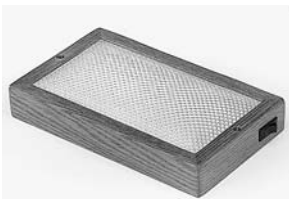
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1947. Double-ender sloop. LOA 31' 4", LWL 24', beam 8' 10", draft 4' 5", displ. 11,100 lbs. Hull is hot molded 7/8" laminates. Classic layout sleeps 4, Concordia-style bunks in main cabin. Tiller steering to outboard rudder, self-bailing cockpit, Deck has 10-oz. fiberglass over plywood, Volvo 3-cyl, 28-hp freshwater-cooled. A wonderful boat to sail. Must sell, moving. In Mass. Asking \$19,800.

**Gary Knight**  
978-667-9936  
knightflier@msn.com

### Gulf Pilothouse 29

1982. Roller furling gennaker w/chute. 2-speed winches, dual wheels, diesel, dodger, full enclosure screens and windows. Autopilot, micro-wave, AM/FM, 2 VHF's, radar, knot meter, log, GPS, WS, AW, 12-110, 2 battery chargers, swim platform, ladder, grill, teak interior. Inflatable w/4-hp. Evinrude, mast steps. Been freshwater until Oct. '02, never blisters, Interlux barrier Apr. '02,

Micron extra bottom. In S.C. Beautiful and ready to cruise! Asking \$29,500.

**Greg Indrysek**  
219-617-4572  
or 843-283-9488  
elizarkov@aol.com

### Catalina 27

1973. Hard to find a classic this beautiful. Refit and painted '97. New bottom '02. Standard layout, newer upholstery, wool carpet, Origo 6000. 15-hp Honda 4-stroke w/cockpit controls, Autohelm 800ST, Humminbird 100SX fishfinder, new lower chainplates, solar panel/inverter, VHF, compass. Newer main, 170 and 130 genoas, 110 jib, tri-radial spinnaker w/pole — all good cond. Lots more! Sails like a dream! In Portland, Ore. \$10,000.

**LaDonna Bubak**  
503-236-8665  
bubak@qwest.net

### O'Day 35

1988. Storage cradle, jib (140%) and mainsail, wheel, autopilot, refrigerator and icebox, winter canvas, life-saving apparatus, and life jackets. Well maintained and cared for. In Chicago at Crowley's boatyard.

**Robert Antonio**  
630-833-1847  
bokay21@aol.com

### Albin Vega 27 Sloop

1976. Hull #2902, repowered 2002 w/new Beta diesel, shaft, prop, instrument panel, transmission. Hood furler w/135 genoa. Original main boat exterior. Inside clean. New cushions in forward cabin. Origo stove, Force 10 kerosene cabin heater. Stereo and all recent electronics. JRC radar. Garmin chart plotter. Standard Horizon S/D, VHF, batteries and Navico tiller pilot. Great buy on an offshore classic. In Mass.

**Jim Reardon**  
508-747-1432  
vega27@aol.com

### Columbia 26

1966. Columbia 26 MK I. Fiberglass hull, teak interior, tall headroom (over 6'). Enclosed head. Spartan double-axle trailer.

30-hp Universal Atomic 4 inboard. LOA 26', LWL 19', beam 8'. Draws 3' 6". Sink, stove, 4 berths. Affordable. A good old boat looking for a loving home.

**R. Jerome Boge**  
608-784-3952  
rjboge@charter.net



### Hughes 38

1969. Fiberglass classic Sparkman & Stephens sloop. Rebuilt Atomic 4, updated. Sailplan and sails, good hull and decks. Always in fresh water. Actively cruised over 1,000 miles every summer. A great sailer and ready to sail! Asking \$29,500.

**Erik Saxon**  
231-929-0979  
ees@chartermi.net



### Pearson P303

1983. Continually upgraded and maintained in a willing manner. Always in fresh water and in exc. cond. It has had continuous upgrades and maintenance. Sailed in the Apostle Islands, Lake Superior. Located in Washburn, Wis. Asking \$43,900. Call for photos, specs, and equipment list.

**Greg Gallion**  
612-819-2080  
Gallion851@aol.com

### Ericson 29

1976. Beautiful freshwater boat in very good cond. Ready for your sailing season. Spacious, large, and bright interior. 4'4" draft, exc. 42% ballast/displ. ratio. Atomic 4, professionally maintained; runs beautifully. Main w/3

reef points, 105 jib w/3 reef, 150 Genoa. New cabin cushions and drapes. Custom-made dodger and sail covers. New head. Autopilot with remote. New barrier coat under waterline. Steel cradle. In Bayfield, Wis. Asking \$20,000 OBO.

**Stephen Terwileger**  
715-597-3869  
twileger@jackelec.com

## Catalina 30

1981. Exc. cond. Full-batten main and 110% jib. All lines lead aft. Jib lead tracks at rail and on cabintop. 2 autopilots, 2 VHF's, 2 12v battery banks, shorepower. H/C pressure water w/dual tanks, marine toilet, holding tank w/macerator, shower. Custom V-berth mattress. TV/VCR/stereo CD w/custom sound system. Pressure alcohol range/oven, shorepower microwave and hot-plate. Lines, fenders, etc. Custom sunshade. In Long Beach, Calif. Asking \$21,500.

**Mike Turner**  
562-856-1202  
MTurner318@aol.com



## Seaward Fox

LOA 19' 9", beam 8', draft 21", displ. 1350 lbs. This sloop-rigged weekender needs nothing. Ready to sail; comes w/many extras. She's roomy but will launch at virtually any ramp due to her fixed-wing keel. A Suzuki 4-hp is included. We've purchased a Seaward 23 and are motivated to sell. In heated storage in Holland, Mich. Asking \$8,400 OBO. Midwest delivery available.

**Mike Fairchild**  
269-751-4018  
lunditheboat@hotmail.com

## Tanzer 26

1978. Hull #253. Exc. cond. w/2-year old headsail and Profurl furling. 9.9 Johnson OB plus 2 new batteries. Custom winter cover and frame 3-years old. Up-

graded holding tank, water system w/foot pump. Loran and new President 715 VHF radio. Motor rebuilt 3 years ago. Navico S/D. Trilight on mast and full running lights. Shorepower and battery charger. Asking \$10,500 CAN.

**Ron Ouwehand**  
905-692-4684  
ron.ouwehand@sympatico.ca



## Pearson 26

1981. Extensive renovations. New rudder, bearings, rubrail, lifelines, halyards. Original main, working jib, 150% genoa re-stitched. All jibs use roller furling. Cockpit teak, handrails replaced w/maintenance-free Starboard. Mast wiring, lights replaced. All wiring checked and replaced, if needed. Seacocks checked, new hoses installed. Transom reinforced, OB motor mount installed. Installed Porta Potti, but original fittings and tank available. 1991 Mercury Sailmaster exc. cond. Winter cover. 2001 survey available. In Darien, Conn. \$10,500.

**Richard Jarbeau**  
203-967-7057 days;  
203-662-9506 eves, weekends  
Richardjarbeau@aol.com

## Tanzer 26

1981. New main and genoa in 1998. All lines lead aft. Lake Simcoe Champion racer 4 of last 5 years. Great cruiser w/lots of storage. Only been in fresh water. Honda 10-hp OB, Trickle charger. In Ont. Asking \$13,000 CAN.

**Martin Hayes**  
905-898-0191  
captainmarty@hotmail.com

## Catalina 36

1983. Diesel. 135% and 155% furling genoas, whisker pole, exc. mainsail. Dodger w/extension, sailcover, etc., new for '03 season. Large self-tailing winches. Ray-marine autopilot w/remote, new Garmin 168 GPS w/depth

and bottom reader, new Icom marine radio, new Pioneer stereo/CD player. VC17 bottom paint, aft perch seats, cockpit cushions, anchor, life jackets, exc. cond. In Muskegon, Mich. A real bargain at \$42,000.

**Mike Miller**  
231-740-0507  
miller0526@aol.com

## O'Day 22

1975. Good cond., 2 sails, sail bag, VHF, sink, stove, water tank, compass, sleeps 4, Porta Potti, boathook, paddles. In Ossining, N.Y. at Westerly Marina. Asking \$3,000 OBO.

**Lisa Lettieri**  
914-528-2412  
lisa@lhai.com

## 33-foot ketch

1936. Wooden, double-ended, Marconi-rigged ketch. 33' on deck plus 3' bowsprit. Needs some hull planking and cockpit repair. Design your own. Has masts, sails, etc. New cradle. In Muskegon, Mich. Asking \$40,000.

**Robert Hunter**  
989-684-2892

## Pearson 26

1966. Classic Carl Alberg design restored. Keelboat w/3' 8" draft. New 4-tire heavy-duty trailer and 9.9 Mercury OB. 4 sails, (main and 3 jibs: Yankee, 100%, and 150%), refrig., microwave, TV, battery charger, Porta Potti. New: power selector switch, cushions, bilge pumps, depth finder, 120v shorepower wiring, domestic water piping, manual pump sink faucet. Plus all original parts and several uninstalled new parts. In Oklahoma City. Ready to sail. Asking \$6,550.

**Eckie Prater**  
405-417-6299  
eckieprater@earthlink.net

## C&C 24

1976. C&C Niagara sloop. 24' x 8' 9" x 4'. Exc. cond. Sleeps 4. USCG safety package with lights, VHF radio, knots, compass. 1998 Evinrude 8-hp OB w/alternator. 2 mains, 3 headsails. New lifelines, mainsail cover, standing rigging. Sunbrella Bimini and custom

mahogany companionway hatch boards. Very well maintained. Fast, fun, easy to sail. In Chesapeake Bay. Asking \$4,995.

**Warren Milberg**  
703-354-3292  
hmseconomy@aol.com

## Catalina 25

1977. In very good cond. 9.8 Mercury OB w/new stainless transom mount and teak swim ladder. Pop-top cabin w/windowed skirting, dinette interior, alcohol stove, sink, 18-gal water, recent upholstery. New head, hoses, 18-gal tank. S/D, VHF, 2 anchors. North sails: main, 150, 100, cruising spinnaker. Bottom stripped and fared '02. Steel cradle and keel w/4' draft. In Mystic, Conn. Asking \$6,800.

**Chuck Densmore**  
860-655-9241

## Watkins 27

1979. 10' 6" beam, which makes her a very comfortable coastal cruiser. Meticulously maintained by engineer-owner. 12-hp Yanmar, GPS, radar, Loran, refrigeration, new cushions in main cabin, roller furling, rope and chain rode, all USCG safety equipment. Asking \$10,000.

**James Overbey**  
603-743-3722  
SOverbey@msn.com

## Alberg 22

1979. Carl Alberg-designed pocket cruiser. New halyards and sheets. Depth and VHF. 3 sails (reconditioned in '01), dodger and sail cover. Powered by 5-hp Johnson longshaft on transom. Good, clean cond. In Belleville, Ont. Asking \$6,500 CAN.

**Dave Rutherford**  
613-962-3089 (evenings)  
drutherford@hpedsb.on.ca

## Tanzer 22

1974. Sail #476, swing keel. 8-hp Johnson motor, custom trailer w/tongue extension, single-handed mast stepping jack. Full sail inventory: original main, working jib, reworked 110, 150, 160, almost-new main w/sailcover. 2 rudders (original and competition), extra tiller handle, new 2" whisker pole. New 4"

cockpit cushions, Porta Potti, compass, life jackets, more. A joy to sail and a proven winner. Asking \$5,000.

**Mike and Barbara Sherlock**  
352-489-4617  
bilge476@aol.com



#### **Rob Roy 23**

1986. Canoe yawl LOA 28' 8", LOD 22' 8", beam 6' 11", draft 1' 7" board up, 4' 8" board down. Displ. 2,800 lbs. 2 berths, new cushions, Porta Potti, sink w/14-gal tank, 1986 Honda 7.5 w/alt. (just rebuilt), bronze portholes, water pump. Trailerable. Unique, extremely rugged boat. Fair cond. In Orlando, Fla. Asking \$8,900.

**Jim VanNatta**  
407-977-4397  
jvannatta@cfl.rr.com



#### **Lord Nelson 41**

If you know boats, you already know about the legendary reputation that Lord Nelson yachts have concerning construction, ease of maintenance, and seaworthy attributes. What sets this Lord Nelson apart from the others is its late model, lead ballast, 55-hp Yanmar and double-spreader tall rig perfect for the Northwest. Lots of cruising equipment included. In Roche Harbor, Wash. Asking \$184,500.

**www.rockisland.com/**  
~bradgis/Brad Gislason  
360-378-4860

#### **Alberg 37**

1973. MKII, hull #107. Well-found documented beauty. Just completed 2-year refit. Rebuilt

Westerbeke 4-107/Paragon SA1D transmission. New: rigging (316 SS wire w/Sta-Loks), chainplates, sails, wiring (Blue Seas distribution panel), SL 555 windlass, Sunbrella upholstery. Autopilot, Aries windvane, SSB, 2 GPS, Harken furling, dinghy, extensive ground tackle, Strongtrack, inverter, Siemens solar panel, lots more. Turnkey and ready to cruise. In central Fla. Asking \$49,900 OBO.

**Rick Jeffs**  
352-854-4702  
or 949-500-9631  
surfleo@aol.com

#### **Alberg/Ericson 35**

1965. Recent rebuild on Universal M-18, new prop and shaft. Full canvas: dodger, cockpit cover, sailcovers. Recent LP on mast and topsides, new interior upholstery, good electronics, w/radar, GPS and autopilot, Force 10 cabin heater, new aluminum propane cylinder. Fresh non-skid on decks. Rigging new in '91w/recent inspection. Central Coast of California. Asking \$34,500.

**Paul Amaral**  
805-440-8263  
bamaral@starband.net

#### **O'Day 25**

Shoal draft w/dual-axle trailer and 2-yr old Yamaha 9.9-hp electric start. Solid deck and hull. New paint: top and bottom. New standing rigging. Self-tailing winches, stereo, more. In Charlotte Harbor, Fla. Asking \$7,900.

**Mardon DeMichele**  
317-299-8273  
ldemichele@comcast.net

#### **Bristol 24.7**

1977. Great sailing, pampered pocket yacht w/classic lines! Inboard diesel. Dodger and cockpit awning. Main, 100, and 180 drifter w/pole. Running rigging replaced '00. Custom mahogany bridge for mainsheet traveler '01. Mahogany rails, coaming, hatch boards all finished bright. Varnished mahogany interior w/hanging locker. New cushions and tweed upholstery. Marine head. Galley w/Origo stove. VHF, depth. A

motivated seller! In Chesapeake Bay. Asking \$8,900.

**Bill King**  
804-788-8961

#### **Helms 27**

1980. Stuart Windley-designed fast, comfortable cruiser. LOA 26' 10", beam 9' 8", draft 4' 3", headroom 6' 2". Reconditioned 130% roller-furled genoa, 100% jib, mainsail new in '01. New Bimini, dodger, upholstery. Inboard removed, hull faired. '00 9.9-hp Yamaha 4-stroke. Beautiful teak interior w/full galley, head w/holding tank. Wheel steering. Recent survey available. In SW Fla. Asking \$8,000.

**Joe & Peggy Corey**  
941-464-0916

#### **Tartan 30**

1972. Side galley, new main and genoa (full compliment of used sails including 2 spinnakers). New Schaefer 1100 furler, Nexus system, compass, head. S/D, good running Atomic 4, monel fuel tank, Autohelm, radar, Loran, Force 10 propane heater with leak detector, VHF radio, AM/FM/ tape stereo, dual life-lines, Bruce anchor, holding tank, hot water and shower. In Princeton, Mass. Asking \$17,200.

**Andy Brown**  
978-464-2742 (home)  
or 978-348-2677 (work)  
lecomte@gis.net

#### **Tartan 30**

1978. A Sparkman & Stephens classic. LOA 29' 11", beam 10', draft 4' 11", displ. 8,500 lbs. Exc. cond. Freshwater boat. All sails included. Cruising spinnaker. VHF, D/S, Loran, shorepower, battery charger, solid fuel cabin heater, dinghy. Custom steel cradle. In Mich. Asking \$19,500.

**Gerry Dyer**  
616-956-3475

#### **Erickson MD 28+**

Bruce King boat show special - custom refit 2001. Highly modified bluewater/coastal cruiser. New cushions, shades, fireplace, 2 showers, compost head, gel batteries, full electronics, stereo, ST winches, jiffy reefs, helm seat, Dutchman, roller furling,

freshwater diesel, dual anchor windlass. Bristol! New 9+ survey. In Md. Asking \$49,950.

**John Hollenbach**  
(301) 855-3851

#### **C&C Redwing 30**

1969. Atomic 4 runs great, never had to add oil. New exhaust system (stainless). 9 sails, spinnaker and gear. Fiberglass dinghy, kerosene stove and heater, compass, D/S, new VHF, GPS. New Trinidad 10 System antifouling. New dodger w/bows, all new cushions never used. Navik vane, more gear. Proper tackle plus free mooring. In Port Charlotte, Fla., at Charlotte Harbor. \$14,300 OBO.

**Rod Mac Iver**  
941-627-5035  
rkmgem@tnh.net

#### **Famous ocean cruiser**

Ted Brewer-designed, powerful, one-off cutter rig, 46-foot blue-water cruiser. Delivered to us 1980. Rebuilt inside and out 2003 to Bristol fashion. Cost of refurbishing, \$100,000. No expense spared. Indistinguishable from new. Has completed 18-year circumnavigation and is the subject of 4 books and scores of articles. In Key West, Fla. Asking firm \$218,000.

**Reese Palley**  
305-295-0700  
unlikely@aol.com

#### **Cape Dory 28**

1978. Volvo Diesel, draft 4', beam 8' 10", blue accent Bimini, dodger, sailcover, nonskid. Exc. hull, bottom, deck. New interior cushions. Cockpit cushions, newer North full-batten main and genoa, storm jib. North roller furling and spinnaker with sock. Refrig, S/D/W, alcohol stove, Autohelm, ICOM VHF, twin battery, anchors, lazy-jacks, whisker pole. Offshore proven. In Apollo Beach, Fla. Asking \$19,500 OBO.

**Bill Borrer**  
813-645-7308  
bborrer@ij.net

#### **Pearson 30**

1977. Hull #985. Atomic 4, wheel helm. Mainsail, working jib, 150.

New head, new sheets and hal-yards in '00. Main and working jib cleaned and reconditioned in '02. Sailcovers. Sleeps 4. 15-gal. fuel, 20-gal. water w/whaler pumps. Dual batteries. Clean – good cond. Email for add'l photos. In West Harbor, Lake Erie. Asking \$12,900.

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

## Westail 32

1972. Hull #47. New engine in '01. Everything upgraded in last 2 years. Factory custom-built boat. Radar, Maptech, auto-pilots, dingy w/Nissan, 5 sails. Pictured in *Good Old Boat* September '00. Sailed down river system from Lake Michigan last fall. In Port Charlotte, Fla.

**Russ Oldfather**  
941-625-1869  
judieruss@aol.com

## Westerly Pageant 23

Twin-keel trailer sailboat. British built "hell for stout." Rare in the U.S. Draft only 3'. Room for 4. Many features in this boat usually only available on larger boats. 6' headroom, enclosed

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**Joe Balden**  
503-368-7807  
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## Pacific Seacraft Dana

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**Lawrence Dahlin**  
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## Gear for sale

### Atomic 4 and tank

1964 Atomic 4 from a fresh-water Pearson Vanguard, in running condition w/shaft, 2 propellers, and spare water and fuel pumps plus new electric fuel pump in box w/controls. Asking \$700 OBO. Original model 20-gallon fuel tank in very good cond. In Mich. Asking \$50.

**Peter Polasek**  
248-944-0340  
pp10@dcx.com

## Yanmar 1G diesel

8-hp, 1-cyl. 1990 w/new cylinder head, valves, injector and exhaust elbow. Transmissi recently rebuilt. In T Fla. Asking \$900.

**Gil**  
7751  
gboet@comcast.net

## Pumps and more

2 auto bilge pump switches, roller ball mechanism type. 2 PAR Y-valve, 1 1/2", 2-position diverter valves (new). 1 Raritan PH II electric head assembly, base-motor-pump. 1 Raritan PH II base and pump assembly.

**Bernie Pierce**  
317-706-0309  
bpiercePRC@aol.com

## 2000 Origo alcohol stove

Single burner. Little use. Exc. cond. Manual included. In Davison, Mich. Asking \$150.

**Richard Bowman**  
810-577-4430  
forinfo@qix.net

## Wanted

### Contessa 26

I would prefer a boat needing lots of work, as cost is a factor. Give me your tired, your poor, your yearning to be free (or as close to free as possible), and I will rebuild it. If you have something close to a Contessa, contact me. I am in Louisville Ky., where circumnavigable boats are unheard of.

**Russell Salsman**  
502-261-9793  
rgjsalsman@juno.com

### Anchor and jib

Looking for a small Northill anchor and jib for Cal 20.

**Chris Campbell**  
231-935-1873  
clcampbl@traverse.com

### Ericson 30+

Looking for an Ericson 30+ w/shoal draft on the East Coast or Gulf Coast.

**Ray Worthington**  
912-634-8228  
rawor@thebest.net

## Trailer

Looking for a 4-wheel boat trailer for a Cape Dory Typhoon. LOA 18' 6", beam 6' 3", draft 2' 7", displ. 2,000 lbs, ballast 900 lbs. Surge brakes required. Preferably located in the Midwest.

**Chase Cornelius**  
952-474-6392  
achase718@aol.com

## Hydrovane, nesting dinghy

Looking for a Hydrovane wind-vane in good cond. for a 26' boat. Also looking for a 2-part dinghy that nests into a length of 4' to 5'.

**Roger Martin**  
804-366-4613  
rsmartin200@yahoo.com

## Sailboat

Looking for a 24-30' sailboat in the Chicago/Indiana/Michigan area under \$10,000.

**Sergio Bracco**  
765-378-3549  
baires1425@aol.com



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- Payment is made in advance by check or credit card.

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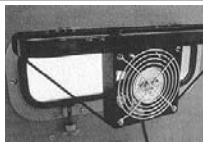
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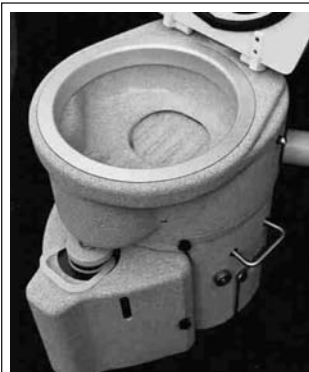
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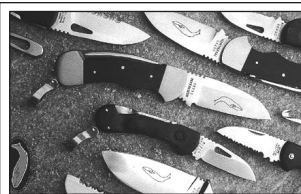
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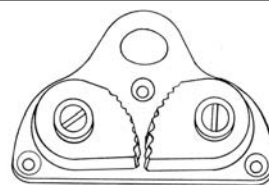
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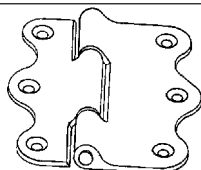
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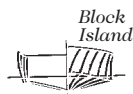
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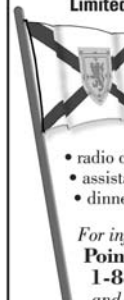
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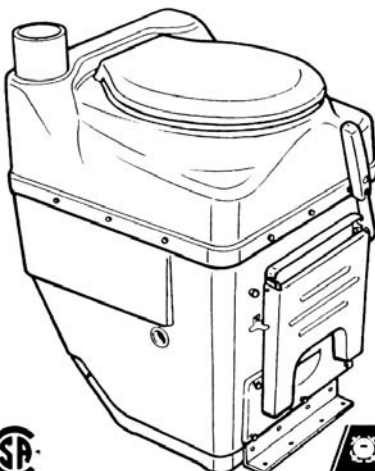
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# Black Lab in the doghouse



## *Loki's big day*

*by Sally Cole*

**W**E HAD SURVIVED THE SAVAGE SEA! THE DAY BEFORE, WE'D sailed across Georgia Strait for the first time, and we were feeling pretty feisty. We should have known better. Neptune wasn't through with us yet.

As the gull flies, it's 20-odd miles from Vancouver, British Columbia, to Newcastle Island Marine Park near Nanaimo. True, we'd almost been run down by a freighter. And true, it had taken us 12 hours, when most sailors made the trip in less than five. But now, as we swung at anchor in *Eleuthera Soleil*, our 24-foot, British-built Snapdragon bilge-keel sailboat, it was a new morning. We basked in the glow of . . . a passage well made. Ahem . . . maybe not well made . . . but we were alive, and that was a definite plus.



While Robert made breakfast, I rowed Loki, our 15-year-old Black Lab, to shore in the inflatable to explore Newcastle. All went well until we tried to return to the boat. We had a stiff southeast breeze in our teeth, and the water was choppy. Worse, the Nanaimo harbor was full of fast-moving sailboats, racing in and out among the anchored boats. The racers showed no regard for dinghies. Time after time, our inflatable was almost capsized as one after another of these wildly careening racers sheered past mere inches away. I got tossed back and forth in their wake and lost one of my oars.

Then the current caught us and started to suck us out to sea. I flailed wildly with my one oar. "Robert!" I shrieked, waving desperately to get his attention. He looked up, saw me, waved casually, and went back to his cooking.

The racing sailboats knifed past far too close for comfort, the wind snatched my howls for help right off my lips — and Loki lurched from side to side of the dinghy, hunting wasps while I fought to keep us from capsizing.

Finally, Robert realized I wasn't just kidding around; we really were in trouble. He started the engine and motored to save us . . . with breakfast still on the Origo stove in the cockpit and all the bedding snapping in the wind. But he couldn't get too near, because of a reef, and had to circle at a distance, while I paddled madly with my one oar, trying to get to him. Finally, he got near enough to throw us a line. Before I could shout "No!" he tossed a rope to us.

Loki instantly leaped overboard, grabbed the rope, and

*"'Robert!' I shrieked, waving desperately to get his attention. He looked up, saw me, waved casually, and went back to his cooking."*

**Robert and Sally Cole's 24-foot Snapdragon, at left. Robert and Loki, above, in a time of grace.**



**Sally contemplating whether fixing spaghetti will be worth the temptation for Loki.**

— good retriever that she was — swam back to Robert with it. Meanwhile, I was drifting rapidly away, and Robert was being pushed toward the rocks. He couldn't start the engine with Loki dog-paddling beside the boat. Finally, he was able to grab Loki's collar and haul her aboard as she was going down for the third time. As her head and shoulders came through the lifelines, she spotted the pot of spaghetti. Her favorite! With her hind legs still dangling off the side of the boat, she dove right into the pasta, and started wolfing it down happily.

Robert, meanwhile, was trying to wrestle the boat away from the rocks and was unable to do anything about Loki scarfing our breakfast. He managed to toss me a line and slowly towed me behind the sailboat back to the anchorage while I sputtered and choked in the thick diesel smoke. We puttered over to the dock, Loki still feasting merrily on the pasta, which she had claimed as her own. We tied up next to a gleaming classic motor yacht, with all our flapping bedding, wet towels, my bloodshot eyes squinting out of my sooty face like a rat in a tar pit, our dog sucking spaghetti off the stove . . .

The owner of the yacht paused in polishing his brass and stared in horror at our floating dogpatch. He was a fellow I had gone to school with. His jaw dropped. "Sally?" he said.

*"We tied up next to a gleaming classic motor yacht . . . my bloodshot eyes squinting out of my sooty face like a rat in a tar pit, our dog sucking spaghetti off the stove . . ."*

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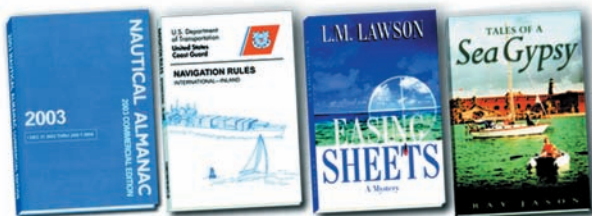
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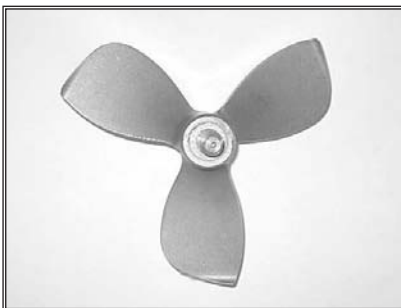


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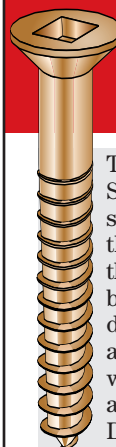
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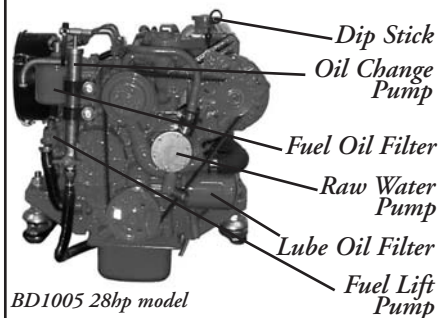
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### Cover image

Thanks for the issue with my boat on the cover (November 2002, drawing by Peter Kiidumae). I thoroughly enjoyed it, particularly the articles on C&C and repowering. I have attached a photo of *Volador*, taken this summer off the Sunshine Coast, near Sechart, B.C.

**Al Cohen**

**Abbotsford, British Columbia**

### Home sewing machines

I really enjoyed the sewing article by Theresa Fort (January 2003). However, there are more than 8,000 sewing machine entries on eBay alone. We need some model numbers to narrow the search somewhat. I hope she can help.

**J.J. Birchard**  
**Hillsboro, Texas**

### Help from Theresa

When looking for a sewing machine to buy, I would hesitate to buy online, especially through an auction site. You will not be able to try the machine out with the fabric and thread you want to use on it, it may have been an abused machine that will need a mechanical overhaul, and sewing machines can easily go out of adjustment during a rough shipping even if packed properly (and packing properly may not happen).

Instead, call local sewing centers and ask if they sell used machines — I would look for machines built in the late '50s to '60s or even '70s. Ask them if they have any older heavy models. Bring your fabric and thread with you and test any of the machines they may have. Thrift stores periodically have older model sewing machines as well. I would stay away from Singers that have the bobbin and shuttle system horizontal to the needle . . . look for a shuttle system (where the bobbin is

located) — that is vertical to the needle. Being able to see and lift the machine, you will be able to tell if it is a heavy-weight model. Really any heavy older model will work well as long as it is smooth running with a motor in good condition — choose the one that also looks the newest — has few scratches and wear marks. You're trying to find one that was used lightly by its previous owner(s).

**Theresa Fort**  
**Fort Washington, Md.**

### Added a balance wheel

I have an older model Kenmore portable sewing machine that I used to make sailcovers for my Clipper Marine 32 ketch. I added an old cast-iron valve wheel to make a heavier balance wheel similar to the Sailrite Monster II balance wheel. It handled the Sunbrella fabric easily. I have about \$100 invested in it.

**Royce Herman Hall**  
**via email**

### Refreshing!

Your magazine is a true delight to read. Your sewing machine article saying, "cheap and local won out over expensive and hard to find," in the same issue with an ad for a professional sail sewing machine gives you refreshing editorial stature!

**Chase Cornelius**  
**Excelsior, Minn.**

### In praise of winch company

I am writing to praise the assistance I recently received from the Australian Yacht Winch Company, 4 - 11 Stoddart Rd., Prospect, New South Wales 2149, Australia, <winches@attglobal.net>.

I was unable to determine how to disassemble one of the approximately 20-year-old Barlow winches on my boat. Searching the web, I found the Australian Yacht Winch Company site and sent an email message asking for assistance. I received a prompt reply, requesting a photograph of my winch. The day after I sent this to them, I received a response describing the steps I should take — with a full schematic diagram — and the incidental suggestion that I might want to replace the broken upper ring which could be seen in my photo. This company carries spare parts for Barlow and Barient winches and

clearly has very competent and co-operative service people. They spent some time researching and replying to my problem without any expectation that I would actually buy anything from them. I would highly recommend them to anyone needing help or parts not immediately available close to home base.

**Judy Millard**  
**Kemer, Turkey**

*Judy and her husband, Aubrey, are circumnavigating in Veleda, an Ontario 32, which was the subject of a refit article in Good Old Boat in January 2001.*

### Strong Track worked for us

We installed a Strong Track (Tides Marine) sail track system on our Morgan, replacing the external sail slide system that was a huge frustration because of the high friction and jamming. The StrongTrack system is a UHMWP track that is installed (in minutes) over the existing track (or in an internal groove) and uses proprietary SST sliders (including batten cars). It is so free-moving that when you release the halyard, the sail comes crashing down. We love it. It made a big difference to our sail handling and overall boat enjoyment. Most sailmakers and riggers sell it. It costs \$25/ft.

**Dale Hedtke**  
**St. Paul, Minn.**

### Blooper becomes spinnaker

I've enclosed a photo of *Meander* with a new "cruising spinnaker." This was a blooper from another boat. The owner never used it (probably *lots* of sails like this around). I bought it for \$200 and had it cut into a very serviceable sail.

**Geoff Cooke**  
**Bristol, R.I.**



### Caution: NPT is *not* NPS

I always look forward to your magazine, especially the how-to articles. "Build your own Watermaker" in the January 2003 edition is a most interesting article, but I am very concerned about the reference to NPT as National Pipe Thread. You and the author note the importance of safety in such high-pressure systems, and I think it is important for readers to understand that NPT is the abbreviation for National Pipe Tapered threads and not National Pipe Thread as stated. The full specification is covered by American National Standard Taper Thread (NPT) (ANSI/ASME B1.20.1).

Similarly, there is a specification for NPS which is the abbreviation for National Pipe Straight threads. Simply stated, NPT refers to tapered pipe fittings while NPS refers to straight pipe fittings. It is very important not to mix NPS and NPT in a single connection since the actual connection will be reduced to one thread where the straight and tapered threads meet. This misunderstanding is common in many publications. Similar inaccuracies are often seen in articles concerning through-hulls, seacocks, and other plumbing. Take care in choosing and matching the correct threads to ensure a sound connection and to provide safety to people and property.

Nigel Weymont  
Sparks, Md.

### A real letter to the "real editor"

I think that this is the first time I've ever written to a "real editor." Since you are the "technical editor" of such a fine magazine, I feel compelled to point out a technical error. For artistic sake, the photo at the bottom of Page 52 (January 2003) appears to be oriented well. But, as a longtime Scout Leader, I must point out that the photo is printed left/right reverse! No self-respecting Boy Scout or Webelo Cub Scout (the little guy) would have his rank insignia on the right pocket. It's always over the heart.

Keep up the great work, sorry the Good Old Boat of the Year was a one-shot deal. I would have loved to enter my 1971 Cal 2-24 in the contest when I'm done with it.

Don Gilmer  
Twain Harte, Calif.

*Some days, Don, we don't feel like "real editors" (we're more like a*

*couple of sailors down the dock from you, actually). But Jerry was a "real Boy Scout" for many years and was chagrined to have that flopped photo pointed out to him. Slides can be tricky. Somehow this one was reversed when scanned.*

### C'est moi!

I picked up a November copy of *Good Old Boat* to read about one of my favorite boats, the Cascade 29, and much to my surprise I was reading about myself. But you got my name wrong. It's Ed Hart, not John Hart. My boat's name is *Hooligan*, so I guess it's me that Ed Lawrence is writing about. The Cascade 29 was an ideal boat for a circumnavigation. *Hooligan* was strong, easy to sail, and the price was right. I wanted a boat less than 30 feet with standing headroom; that is not easy to find. The Cascade is a very strong boat. I bounced off reefs in the Pacific, was beat up in a storm off Africa, and run down by a 600-foot bulk carrier. There are not too many boats that could take this kind of punishment, and make it back to port. If you are thinking about making a circumnavigation, consider a Cascade. It worked for me.

Ed Hart  
Imperial Beach, Calif.

### Isolated incident? Definitely!

I've just received my latest issue (January 2003) of *Good Old Boat* magazine which I always enjoy, mostly because it is so much *unlike* other boating magazines, with its seemingly honest, down-to-earth attitude toward sailing. I subscribed only a few months ago; it seemed to me that this was one of the few magazines that didn't take itself too seriously, even if it was still a business. After reading your latest issue, now I'm not quite so sure. As I read toward the end of the Boat of the Year Award article (Dinghy Class competition), for a minute I thought I was reading one of the other large magazines. All this bickering, unprofessional, and immature behavior over *boats*? I'm still not sure if the article was serious or if they were just kidding. I realize, as Jerry Powlas said in the "Jeep

Carriers" article, that the new boat business is tough and many have come and gone, but so have magazines.

I noticed that the two competitors have each advertised their dinghies as the "uncontested winner." I'm sure that most sailors can make an informed, intelligent buying decision without the help of a panel of judges or an ad stating that their boat had won some sort of competition. I usually don't write responses to magazines. I just hope that this is an isolated incident and I don't get to read any more insets of one contributor explaining the content of another's article. I used to love reading *Small Boat Journal*, and I hope this magazine doesn't become just another memory of a good magazine.

Dave Boboc  
Naugatuck, Conn.

*Well, Dave, we confused more people than we entertained with our Good Old Boat of the Year article. It was all in fun (or meant to be). But since this magazine is generally so serious, there were many who believed it somehow (no matter how preposterous the events we conjured up). There were no judges, no sinkings, no Rangerettes, no chainsaws, no animosity between Chris Bauer of Bauteck and John Harris of Chesapeake Light Craft, no*



*shenanigans of any kind. There were no dinghy awards and no uncontested winners. Since Good Old Boat is seen as serious — and obviously better at that than stand-up comedy — we'll stick to serious in the future.*

*Yes, it was an isolated incident.*

## Motorsailers

I read with interest Ted Brewer's article in the January 2003 issue, "Dissecting the motorsailer." He tells it well. There are very few sailboats that at some time have not been motorsailers. I remember complaining to an old salt, while sailing around Lake Michigan 30 years ago in an S2, about the wind on the nose and was advised at that time, "If you have a motor, don't be ashamed to use it."

I took his advice and bought a 33-foot Nauticat in which I have logged 30,000 nautical miles, much of it crossing the Atlantic to Spain and back. It is definitely a good old boat and does not lack comfort in bad weather.

I am amazed that Ted didn't refer to Nauticat motorsailers which have been built since early 1970s and are still in production. His reference to the 38-foot Finnsailer should have been stricken. I sailed one from Venezuela to Martinique and found it to be unseaworthy and poorly constructed. Nauticat eventually bought them out to avoid negatives reflecting on Finnish quality.

Now that waivers have been permanently granted to foreign-built recreational vessels, which can now be used in charter service, I imagine savvy

charterers will be looking at Nauticats.

**Ralph Talbott**  
Ponte Vedra Beach, Fla.

## Bully for Niki!

Niki Perryman is right ("What would we do without goo?" November 2002). Generic petroleum jelly has been my marine lubricant of choice since the 1950s when I discovered it was the only lube that would keep bronze turnbuckles from seizing. I coat the rudder sleeve with it, wipe hinges, cabinet latches, winch gears and pawls, all hose connections I need to pull off, water filter and tank cover threads, deck-fill threads, control cable ends — all metal-on-metal moving or removable parts. Nothing else works as well.

**Bob Brodsky**  
Rowley, Mass.

## Heaving to

Enjoyed Geoffrey Toye's piece on heaving to. I sail from the same dock as Glyn Judson on a not-as-yet good old boat, a 2002 Catalina 310. I often use heaving to for our lunch stop. My usual pattern is to leave Marina Del Rey about 11 a.m., at least in the summer. Then about an hour so out of the marina on our way up the coast, I will heave to and serve lunch. I find it easier to eat on a flat boat than a heeling boat. I just tack and then once the jib backwinds I turn the wheel the other way, and the boat stops. To leave I just bring the wheel back, and the boat comes around. No sheet to change.

I have owned three old boats in the past. My last was a 1976 Islander 30. Before that, a 1969 Columbia 31 and an Erickson 26. My first boat was a Cal 20. I must say my wife and I really have been enjoying the Catalina.

SailNet.com has a survey of what boaters read. *Good Old Boat* is doing well.

**Roger Marshutz**  
Los Angeles, Calif.

*Roger and others pointed out a poll of what magazines sailors on SailNet.com subscribe to. Good Old Boat did indeed score extremely well considering how many people have not yet heard about this magazine (but we're working on that).*

## Outstanding!

After trying other sailing magazines which mostly cover new or expensive or big sailboats, I finally found the sailing magazine I wanted in *Good Old Boat*. The format and the contents are outstanding. Master designer Ted Brewer's boat reviews are outstanding.

**Ayhan Akcar**  
Montrose, Colo.

*Send questions and comments to Good Old Boat, 7340 Niagara Lane North, Maple Grove, MN 55311-2655, or by email to [jerry@goodoldboat.com](mailto:jerry@goodoldboat.com). Please limit messages to 150 or fewer words. We reserve the right to edit.*



*Good Old Boat* has opened up a whole new line of work for several local kids who don't have to flip hamburgers to make an extra buck. It started with Jesse Busta, 13, at right, son of staff member Mark Busta (also known as BookMark). As our renewal mailings got bigger and bigger, Jesse took on the job as "mail house" for those mailings. But Jesse has homework and other fun things to do (like sailing) and our efforts expanded to Katelyn and Heather Bodine (ages 14 and 11), at left, who live down the street from the *Good Old Boat* international/world headquarters. These three make up

"the first string" of mailers handling most materials going to subscribers and potential subscribers. But then we had another big mailing to advertisers and another one to folks who'd said they'd subscribe "someday" (and we thought "someday" might be now). Pretty soon we had kids up and down the block helping us out on these special mailings. We may be a small player in the publishing world, but we're making a big impact on the local teen economy.





Karen cooks, at left, and leaves the foul-weather driving to Jerry, below.



by Karen Larson

## An admitted fair-weather sailor


I JUST DROPPED MY FOUL-WEATHER GEAR IN A DRIPPING PILE ON the cabin floor. Small rivulets run off into the bilge. An old towel will mop up the rest. Dry again, I think once more about how our 1976 sailboat reminds us of an earlier time — one when men were men and all sailors (men and women) were often soaking wet.

Our cockpit offers no protection from the rain and mist that surrounds us. There is no canvaswork — not a dodger, not a Bimini. We say we don't want frames and plastic windows and the canvas barriers they present to crawl around. We say these devices prevent us from seeing the sail shape and limit 360-degree visibility.


But the truth is that we *can't* install a dodger or Bimini on *Mystic*. Our boom is too low to make it feasible. For this we get a larger mainsail and full exposure to the elements. Today, when the elements limit visibility to less than a mile anyway, and rain pours from our visors and reduces our glasses to blurry face shields, we think kinder thoughts of dodgers and Biminis, and we long for some protection from the relentless elements.

During these times, I usually find as many excuses as possible to be below. We both know I'm doing this. The galley suddenly has an attraction like never before. I bake bread or muffins, make hot tea, prepare meals, wash the dishes — all with a gusto I don't usually feel.

Our "navigation suite" (if that's not too grand a term for use on *Mystic*) takes on new significance, too. Suddenly I find the radar and GPS infinitely fascinating, and I decide Jerry needs more navigation assistance from below. From where it's dry. From where it's protected from the wind. I figure if only one of us has to be cold and miserable it might as well be . . . Jerry. I'll take my turn at the helm, but I don't want to go on deck just to make idle conversation.

Until the weather clears, I'm the first to volunteer to do all the jobs that need to be done belowdecks. I'm an admitted fair-weather sailor. Call me when the sun is shining again. 

# The Shipwright principle



*Boating actually means  
working on boats — and loving it*

*by Dan McDougal*

**I**N A HALF-CENTURY OF BEING thrilled by boats and boating in myriad facets, from racing Naples Sabots in Southern California to float-fishing the Susquehanna, I have had many very different boats on many different waters. Yet the single feature of every boat, no matter whether it be factory-fresh or a rehab project, is working on it. My view is that working on your boat, far from being an annoyance, is the heart and soul of the whole endeavor.

Here we run into a serious vocabulary problem; maintenance, fixing up, upgrading, and other commonplace terms of the sort all are too restrictive and create distinctions which ought not to be present. Thus, I began a search for a term to

use for the entire process whereby one washes, paints, polishes, tightens, oils, tests, and generally checks everything serially for any flaw. It is, I submit, an epic (if miniaturized) clash of man or woman against the laws of thermodynamics. It can be seen, I claim, as a chess game involving physics and chemistry in which the human tries to find, if not anticipate, the next move by Father Time and Mother Nature. This is the real dynamic duo. Always, you prevent damage to the extent possible, and repair it if discovered.

This process of caring for and nurturing a vessel needed a fresh nomenclature, which I wish to present as the “Shipwright Principle.” In days of yore, when vessels were made of wood and the crew of iron, the shipwright was an admired, skilled, and indispensable member of the crew whose sole task was to keep everything on the ship in working order. Any damage was promptly dealt with by some combination of repairing, rebuilding, replacing, or jury-rigging. Shipwrights were strongly motivated, from internal and external pressures, to catch the process of progressive disrepair before failure — at which time lives and limbs, if not the entire ship, could be lost.

*"You will reap money  
and fulfillment of spirit  
by your attention to your vessel,  
and it will be far safer  
and more effective at everything it does."*

### **Constant vigilance**

It is said that many ships arrived back in port in the best shape they would ever see. This was due to the constant vigilance of the crew toward every piece of gear aboard. The term "maintenance" poorly describes what the shipwright brought to the ship; it was a thoroughgoing study, really a continuous survey.

Every time something aboard a boat gets attention, it needs study simultaneously. You go to fix one thing and find four more. The key to the full enjoyment of boating is to find pleasure, satiety, and even excitement in the search for the flaw. The real Zen of boat maintenance is doing the washing, polishing, tightening, lubricating, and just plain old rubbing of your vessel with the emotional and intellectual mindset of your childhood Easter-egg hunts. Just as then, your eager search is guaranteed to be fruitful, and the potential for reward is ever-present and invigorating.

This is not maintenance forever in a vacuum of drudgery and perspiration, but rather care of your vessel . . . keeping it in the complete and total rectitude and shiny strength that you seek. Upgrading is simply the replacement or repair to new levels of functional and/or aesthetic excellence. You must be determined to leave nothing as it was but always somehow better. The end result is a vessel that looks and works with ease and grace and exudes that special aura of the well-found and shipshape.

The rewards here are not only monetary. You will reap money and fulfillment of spirit by your attention to your vessel, and it will be far safer and more effective at everything it does. My wife chides me about speaking (and feeling) of my vessel as one would about a pet. But of course it is! Just as a dog fancier/trainer/breeder/showperson grooms, rubs, cleans, and tends to the totality of the animal's needs, the true boater behaves identically. The vet is the mechanic and so on. The secret to success, as defined by hedonistic standards or objective achievements, is the totality of the approach. Boating is working on it, and the rest is frosting.


### **Specific points**

Allow me to extend the above thesis into two more specific points.

1. The true joy of boats is not solely the possession of the larger boat, the sailboat, the wooden boat, or the elaborate and high-tech. The spiritual refreshment from boating is derived from clear and complete insight into the never-ending struggle between man and the thermodynamics of the universe. You can join the fray with any vessel at all simply by committing to making it better each time you are together. I try to do something for my boating appetite each day. I may order a part, check a magazine or catalog, or service some item I brought home for work. True boating is neither seasonal nor dependent on the proximity of water.

2. The really big change in behavior from what I see around me would be in the approach to used vs. new vessels. First and foremost, the Shipwright Principle predicts and explains the attractiveness of the used boat. You will survey the boat, formally or personally, and then get to work on it. The shipwright doesn't do anything different. The big mythology in today's market is that between buying new and some warranty feature, the consumer is lulled into the demonstrably false proposition that the boat is perfect and free of defects, and that any that arise will be corrected by someone else. From the Shipwright Principle, you can be sure both have defects of varying severity and need considerable time, money, and careful analysis before you will have a truly good boat.

I will even take this reasoning to its logical extreme and state that a used boat is a safer purchase than new. The used boat will get a thorough and analytical survey with price pegged to allow for the needed work. The soundness of the design and construction are a known factor, and the wider range of all-boats-ever-built vs. built-this-year is a plus in shopping. Lastly, you go into the deal with a plan and the proper orientation, namely, the Shipwright Principle that you will take charge of this vessel and make it ever better . . .

In sum, the purchase of a boat is a life-changing event, comparable to the arrival of a pet or even a child into your life. It is the Garden of Eden story lived out in real life for the billionth time: once you have tasted the fruit of knowledge, you are condemned to labor all of your days. 

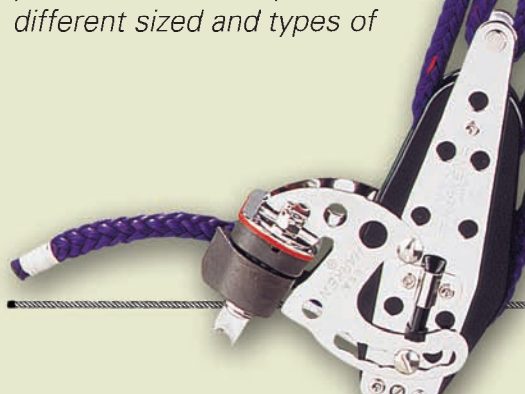
# KNOW·THE·ROPES

Do you know which rope is best for each application on your boat? Mainsheets are more likely to suffer from wear and dirt absorption than other sheets. A spinnaker halyard needs a little "give" to take the shock of loading and losing the sail. A roller furling Genoa halyard can be made up of two different sized and types of

rope to save weight and clutter at the winch or cleat.

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