Good Old Boat

The sailing magazine for the rest of us!™

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Our contributors

Gregg Nestor (*C&C 33 MK I*, Page 4; *American 23*, Page 33) is a contributing editor with *Good Old Boat*. More than 20 years and four boats ago, he discovered sailing and has been an avid "trailersailor" ever since. He and his wife, Joyce, sail an O'Day 222, *Splash*.

John Butler (*The Catnapper*, Page 8) was a Coast Guard search and rescue pilot. He retired as a commander in 1974 and now lives with his wife, Mary Lu, on Beaver Lake in Northwest Arkansas and sails a 1963 Cape Cod Catboat whenever he gets the chance.

Ted Brewer (*The Tayana 37 in perspective*, Page 13; *Thoughts on sail plans*, Page 20) is a contributing editor with *Good Old Boat* and one of North America's best-known yacht designers. He also is the man who designed scores of good old boats…the ones still sailing after all these years.

Doug Elliot (*Removing the teak deck*, Page 14) was a sane and sedate business owner until five years ago when he and his wife, Diane, bought an aged and badly maintained 1983 Cheoy Lee Pedrick design. They left Houston in July 2000 to explore the Bahamas, followed by extensive refitting in Key West. Next they sailed to Grenada, reworked the deck during hurricane season, and went on to Puerto Rico then south to Venezuela. Neither is likely to return to sanity any time soon.

Dan Spurr (*Charley Morgan and the fiberglasss factory*, Page 24) is research editor with *Good Old Boat* magazine. He has written a score of boating books, including *Spurr's Boatbook*, *Yacht Style*, and *Heart of Glass*.

Rob Rielly (*Sailing cat gets 10th life*, Page 28) has been sailing for more than 35 years. He built his first wooden 21-foot sailboat in 1972 and has since owned a Pearson Triton and a Marshall Sanderling. He currently owns a Marshall 22, which he keeps in Forked River, N.J., and sails on Barnegat Bay. A writer of naval history, Rob's last book, *Mighty Midgets at War*, was *Sea Classics* magazine's Book of the Year for 2000.

Don Casey (*Adding a deck wash*, Page 37) co-authored *Sensible Cruising: The Thoreau Approach* and became the authority on boat fix-it projects with *This Old Boat*. He is the author of a series of books in the International Marine Sailboat Library and of *Dragged Aboard — A Cruising Guide for the Reluctant Mate*. He and his wife, Olga, are cruising aboard their 29-year-old Allied Seawind, *Richard Cory*.

Bill Sandifer (*Heat shrink hose clamps*, Page 40) is a contributing editor with *Good Old Boat* and a marine surveyor and boatbuilder who has been living, eating, and sleeping boats since the early '50s. He and his wife, Genie, sail an Eastward Ho 32.

Don Launer (*Chart Plotters 101*, Page 42) is a *Good Old Boat* contributing editor. He 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.

Mary Jane Hayes (*Center spread: Feathered friends*, Page 44) and her husband, Warren, have been boating for more than 25 years. They sailed *Serena*, a Sabre 28, for seven years and now cruise the East Coast in a Grand Banks 36, *Sea Story II*. A freelance writer and photographer, Mary Jane has been widely published in boating magazines. Her book, *Eye on the Sea*, has won a number of awards.

Mark Matthews (*Pitfalls in paradise*, Page 46) has a 50-ton USCG Master's license and has cruised the Mediterranean, the Caribbean, and Central America, learning as he went.

Heather Ilse (*Solar cooking*, Page 50) is a renewable energy enthusiast and stay-at-home-mom. She and Jeff, her husband, along with son, Ethan, and ever-seasick dog, Jedi, sail an Islander 30 among Lake Superior's Apostle Islands as often as possible from May through October.

Tom Young (*Dinette conversion*, Page 55), a lifelong sailor, lives on the coast of Maine in Rockport village. Tom and his wife, Mary Ann, have sailed from Down East Maine to the Exumas, Bahamas. They enjoy sailing the New England coast with their two children in *Christmas*, their 1961 38-foot Alden Challenger yawl.

Michael Facius (*Simple solutions: Quieting the iron beast*, Page 72) is *Good Old Boat's* advertising manager. He sails a 1979 C&C 30, named *Callisto*, out of Bayfield, Wisconsin, on Lake Superior. He and his wife, Patty, have been sailing since 1986, beginning with an O'Day 20.

Jim Martin (*Simple solutions: The toggle hitch*, Page 73) does not remember a time *before* he was boating: a Snipe, a Palmer Scott Wood-Pussy, a Pen Yan car top, a canoe, a Sunfish, a Yankee Clipper 41, and a Columbia 43, also intercollegiate and Chicago-Mac races, service in the Navy, and many years spent cruising with his family. In addition, he owned a sail loft for four years.

Andrew Wormer (*Simple solutions: A split-rail fence*, Page 77) cruises Lake Champlain with his family from their home in Ferrisburgh, Vermont. He's the author of *The Bathroom Idea Book* (Taunton Press, 1999) and a contributing editor to *Fine Homebuilding* magazine.

Frank Nowak (*Quick and easy: Screening out the bugs*, Page 79) and Dianne Piche of Bristol, Rhode Island, are experiencing the joys of sailing on Narragansett Bay in their 1982 Hunter 27. They are happy to be cruising the waters where so many good old boats were built and launched.

David Satter (*Quick and easy: Simplifying the shower*, Page 80) has been restoring antique furniture for 20 years. After attending the WoodenBoat School in Brooklin, Maine, he got the boat bug and now restores and repairs small wooden boats and canoes in northern New Jersey. In 2002 he bought a 1973 Bristol 30 with plans to cruise the East Coast with his wife, Sue, and two daughters.

Wayne Gagnon (*Reflections: Soon! Real soon!* Page 88) is a special education teacher from Antigo, Wisconsin, who has spent the past few summers in Racine, Wisconsin, upgrading his 1969 Westerly Centaur, *Tortuga*. Enough of the fixing! This summer he plans to explore northern Lake Michigan.

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About the cover . . .

Rob Rielly writes about the refit of *Meg*, his 1970 Marshall Sanderling. This photo was taken at Tices Shoal in Barnegat Bay and shows the result of his work. For more, turn to Page 28.

Time for the pros?

Even the most accomplished amateurs need help sometimes

In the January 2005 Mail Buoy I said repairing soft decks and blistered bottoms is prohibitively expensive in terms of yard costs or do-it-yourself time and that a prospective buyer is better off finding boats without these problems. Later, a friend who runs a professional service pointed out that there are times when even an adamant do-it-yourselfer will or must turn to the pros for help. "Prohibitively expensive" was a poor choice of words.

While this magazine strongly supports the do-it-yourself side of boat maintenance, we acknowledge that professionals play a very important role. When it comes to the upkeep of their boats, most boatowners balance their own efforts with professional services. The exact balance point moves around from situation to situation and owner to owner. For those who have all the billable hours they want and who bill hours at more than yard rates, there is a clear choice: they can work at the jobs they know best and pay professionals for the boatwork. For the rest, the choice is more complex. There will be some things that we simply can't do for want of skills, knowledge, tools, or a suitable place to work. The pros will get these tasks, or they won't get done.

"The most valuable commodity any of us has is time. At the end of a lifetime it will be time, not money, that will be seen to have had value."

In the case of insurance claims for damage to boats, insurance companies would much rather see the repair of insured losses done by professionals. We were presented with that situation ourselves following a lightning strike. It was nice not to have to take the time following this unanticipated strike to do the fiberglass repairs and repainting ourselves. And the job was done to a level higher than we could have achieved working with our own tools and skills.

If good professional work is available, the boatowner who is inclined to do as much as possible himself will find that, in many cases, it is difficult to work up to the quality level of the professionals and equally difficult to match their speed. In many cases, he will be getting advice from professionals and may be buying parts and materials from them for the work.

The most valuable commodity any of us has is time. At the end of a lifetime it will be time, not money, that will be seen to have had value. The whole concept of owning a good old boat is to trade some of your time and effort for the value you can put into a boat in order to own a finer, more satisfying craft than you would if you simply wrote a check for it or took on the payments. There are other benefits to this approach. When things break (not if, but when) someone who has already been involved with them in the course of doing boatwork is likely to know how to fix them. And, of course, there is satisfaction in doing these things self-sufficiently. For most of us, working on our boats is a hobby, not a living.

For the professionals, it is a living, but you won't see too many Rolls Royces parked alongside the marina repair building. And in the final analysis, when boatowners don't have the skills, equipment, or place to work . . . when they just can't or don't want to do a particular task . . . when they don't have the time . . . then they will bring in the pros and be glad to have them on the job. As in so many things, the matter is relative. When some of these criteria fit, professionally fixing soft decks or blistered bottoms is not prohibitively expensive; it is just the cost of having a complex and tedious job done by someone else. Fair is fair.

C&C 33 MK I

A classic performance cruiser, with the emphasis on performance

by Gregg Nestor

The squall has passed. The Wednesday night race start was delayed 30 minutes. *Night Train*, a 1975 C&C 33 MK I, owned by Dennis and Rose Kunc, is showing the C&C emphasis on "racer" in this racer/cruiser.

The year was 1961 when George Cuthbertson, a mechanical engineer, and George Cassian, an aircraft designer, got together and formed a partnership with the express intention of building performance sailboats. George Cuthbertson managed the business and developed the preliminary lines and calculations, while George Cassian handled interior plans and details. The two worked together in a true collaboration. However, it wasn't until George Hinterhoeller's company and a stockbroker were added to the mix that C&C Yachts Ltd. was born. The date was September 26, 1969.

For almost three decades the story of C&C Yachts runs deep and varied with the ups of numerous technical innovations and successes, both commercially and on the race circuit, and the downs of the turbulent 1980s and finally a "fire sale" to Fairport Marine in 1998. (For more on the company's history, see Dan Spurr's "The History of C&C Yachts," September 2002.)

Throughout its history, C&C's bread and butter was the racer/cruiser, with emphasis on the racer. Of the more than 50 designs, all but a handful fall into this category.

Like several of C&C's successes, the C&C 33 MK I began in the custom shop. However, after building just three boats, the company responded to market demand and started producing these hulls at its Niagara-on-the-Lake plant. Over a three-year period between 1975 and 1977, they built 165 C&C 33s. These were Mark I models, of course, since no further modifications had yet been made which would lead to Mark II or III versions.

The C&C 33 MK I is a classic example of why C&C Yachts achieved a reputation for building high-performance sailboats. It has an overall length of 32 feet 10½ inches and a waterline length of 26 feet 5 inches. The beam is 10 feet 6½ inches, draft 5 feet 6 inches, and displacement 9,800 pounds with 4,075 pounds of ballast.

Design and construction

Created in-house by the original C&C design group, the C&C 33 MK I exhibits the somewhat flat sheer common in the late 1970s. The sharp entry of its bow gives way to a

deep-chested hull shape with a noticeable tumblehome at its beamiest point. Aft, there is a reverse transom with a short overhang. All of these elements were designed to favor the handicap rule of the day, the International Offshore Rule (IOR). Completing the picture underwater is a swept-back fin keel and spade rudder.

The C&C 33 MK I was built as a solid fiberglass-laminate hull with a balsa-cored deck. Rather than being fabricated with the traditional square mat and roving that was employed by the majority of boatbuilders at that time, the C&C 33 MK I was one of the first boats to be built with unidirectional roving. This method of construction produces optimum weight/strength characteristics, strong yet lightweight for performance sailing.

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Another innovation is the hull-to-deck joint, which is well thought-out and practical. Sandwiched between the inward-facing hull flange and deck is a layer of butyl tape, followed by a vinyl rubrail and more butyl tape. This system is capped with a full-length anodized aluminum slotted toerail and fastened together with closely spaced ¼ x 20 stainless-steel bolts. C&C Yachts was one of the first builders to employ this novel design.

The deck hardware is of good quality and strength and is properly installed. The cleats, winches, and deck fittings are all through-bolted and secured to glassed-in backing plates. There's nothing like having the job done right.

On deck

Except for the cast-aluminum stemhead fitting and the two 10½-inch cleats, the boat's foredeck is clutter-free. Add to this a stainless-steel bow pulpit, dual lifelines on 25-inch stanchions, and a non-skid surface, and one has a good platform on which to make sail changes or move about safely. Just aft is a 21-inch square aluminum-framed hatch with an acrylic insert. This is the source of the boat's forward ventilation. Sidedecks are a wide 21 inches only slightly obstructed by the chainplates centered there. The coachroof is cambered and, like all the deck surfaces, is non-skid.

The C&C 33 MK I was designed to have all the halyards controlled from the base of the mast. Therefore, clustered around the base are four Barient winches (two #16s and two #10s) and their associated 7-inch cleats. Handholds in the form of two 9-foot 4-inch teak handrails are located along each side of the cabintop. Completing the picture aft is the full-length black aluminum slotted toerail, which is something of a C&C trademark. *(We have heard the slotted toerail on our own C&C 30 MK I referred to with affection — we hope — as a "Canadian picket fence." –**Ed.**)*

The T-shaped cockpit is a generous 7 feet long and more than 5 feet wide. Its coamings are 11 inches tall, straight and, in addition to keeping water out, offer good back support. The tops of the coamings are around 8 inches wide and were the original sites for Barient #26 sheet winches. The cockpit incorporates an excellent bridge deck to prevent water from cascading down below, should a wave fill the cockpit. The cockpit is self-bailing and has four drains. To starboard is a deep sail/equipment seat locker and to port a shallow seat locker, suitable for docklines, winch handle, emergency gear, and other small items. Even though the standard C&C 33 MK I was originally designed with a tiller, the T-shaped cockpit is well suited for wheel steering. The vast majority of boats were ordered with this $850 option. This frees up the forward cockpit space and also positions the helmsman close to the engine controls and instrument panel. Completing the on-deck package is a stainless-steel stern pulpit and incorpo-

The genoa track on the sidedeck, facing page far left, was an owner addition. The C&C 33 MK I relied on a slotted toerail and a snatch block for jib trim. The uncluttered foredeck and cambered coachroof, also on facing page. Four Barient winches, two #16s and two #10s, are located at the mast, below left. Another owner modification involved leading some lines aft and adding two more winches on the coachroof near the cockpit. The T-shaped cockpit, below.

Main cabin with centerline drop-leaf table open, above left. Above right, galley.

rated centerline swim ladder. Noticeably absent is a pair of stern mooring cleats. In order to tie off, one must use the sheet cleats — that is, if they haven't been removed through upgrading — or the sheet winches themselves.

Belowdecks

Starting at the boat's stem, just aft of a small rope locker, is the V-berth that measures 6 feet 4 inches at its longest point. With the filler cushion in place, it can comfortably accommodate two adults. In addition to stowage beneath, there are port and starboard shelves running the length, just above the V-berth. Overhead is the forward hatch, providing illumination and ventilation, and a folding teak door for privacy.

"Even though the standard C&C 33 MK I was originally designed with a tiller, the T-shaped cockpit is well suited for wheel steering. The vast majority of boats were ordered with this $850 option."

Directly abaft the V-berth and to starboard is the head, which consists of a small sink, a locker and shelves, and a marine toilet. Above is a mushroom vent. The toilet was available with direct discharge or a holding tank. As is the case with our review boat, most were delivered with holding tanks. Opposite the head is an 18-inch-wide hanging locker and three open-faced bins that provide quite a bit of usable stowage. A sliding door provides privacy and separation from the main cabin.

The centerline drop-leaf table measures 47 inches by 40 inches when open and is flanked by an L-shaped settee to starboard and a straight settee to port. Both measure 6 feet 6 inches. With the table lowered and the insert cushion in place, the starboard settee converts into a double, while the port settee remains a 21-inch-wide single. Shelves with 4-inch coamings incorporating bins and small cupboards run outboard of each settee.

There are stowage lockers behind the port and starboard settees' back cushions and beneath the starboard settee. The 30-gallon potable water tank is located beneath the port settee.

Adequate stowage

The L-shaped galley is directly behind the starboard settee and includes a three-burner pressurized alcohol stove and oven, an icebox that drains into a sump, and a small stainless-steel sink with a hand pump for water. Galley stowage space is adequate and counter space above average. The DC power panel is located beneath the companionway steps. Speaking of the companionway, it incorporates a 24-inch-square translucent sliding hatch, a sea hood, and a one-piece teak hatchboard (much more convenient than multi-part boards) to close out the elements. It also provides the sole source of ventilation for the main cabin if the fixed ports have not been upgraded.

Just across from the galley on the port side is the forward-facing navigation station. The 31-inch by 24-inch tabletop is hinged to provide chart storage below. In addition to an outboard stowage bin and drawer, there is additional storage space beneath the chart table as well as the dedicated navigator's seat. Aft of the navigation station is a 6-foot-long single quarterberth. Even though there is quite a bit of headroom, getting in and out of the quarterberth involves the traditional gymnastics. A fiddled shelf runs above and outboard of the berth, and there is stowage beneath. A port that opens into the cockpit footwell provides the quarterberth with illumination and ventilation.

With the exception of the fiberglass pan and overhead liner, the bulkheads and trim are oiled teak. All deck fittings can be reached from below through access panels in the overhead liner or from behind concealing flanges (well thought-out). Access to the bilge is by means of a wooden insert in the fiberglass sole. There is three-sided access to the engine from beneath the companionway steps as well as from the cockpit sail locker. Accessibility to the vital components of the engine rates better than average, but

Resources

The C&C Photo Album
<http://www.cncphotoalbum.com>

C&C Sailing Association
<http://www.cnc-owners.com>

C&C email discussion list
<http://members.sailnet.com/resources/links/lists/index-new.cfm?id-candc>

C&C Yachts
<http://www.c-cyachts.com>
Fairport Yachts, builders of Tartan Yachts in Ohio, owns the C&C name these days but does not support older C&C models developed by Cuthbertson, Cassian, and Hinterhoeller.

At left above, forward-facing navigation station, and at right, one of the many overhead panels giving access to deck hardware.

changing packing in the stuffing box would be a challenge. There's 6 feet of teak grabrail on both sides of the cabin overhead for good bracing in a seaway. And there is 6 feet 1 inch of headroom for ease of moving around below. Illumination is provided by four 23-inch-long fixed ports, in addition to the half dozen 12-volt dome lights. Overall, the accommodations of the C&C 33 MK I are roomy, offer good stowage, and are nicely finished.

The rig

The C&C 33 MK I has a bridge clearance of 46 feet 11 inches. The rig incorporates single foil-type spreaders, an aluminum diamond-shaped mast, and an aluminum boom. The standing rigging consists of a headstay, single backstay, single upper shroud, and dual lowers. The original standing rigging was Navtec #8 stainless-steel rod, rather than 7 x 19 stainless-steel wire. The C&C 33 MK I is a masthead-sloop with 514 square feet of sail area. The wire/rope halyards are internal and the sheets double-braided Dacron. A ball-bearing traveler, with stops, is located on the bridge deck. Originally, snatch blocks attached to the slotted toerail allowed for adjustment of the sheeting angle. Our review boat, *Night Train*, owned by Dennis and Rose Kunc, has had 10 feet of genoa track added to each sidedeck. Upon leaving the factory, the boat's halyard winches and cleats were located at the base of the mast, and the sheet winches and cleats were located on the cockpit coamings. The review boat has been upgraded with two additional winches on the cabintop. This allows for some lines to be run aft to the cockpit.

For auxiliary power, the C&C 33 MK I has the Universal Atomic 4. This venerable 30-hp gasoline power plant is raw-water-cooled and uses a 2:1 reduction gear V-drive. With its two-bladed propeller, it pushes the boat along at a tad over 6 knots. Fuel is supplied from a 20-gallon Monel fuel tank.

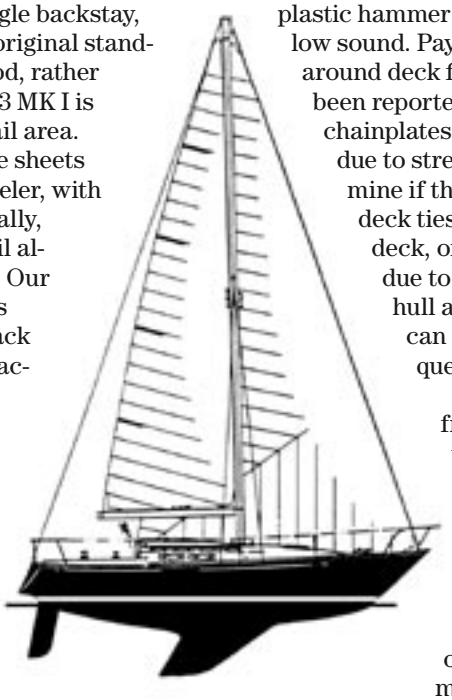
Under way

This boat is a good example of C&C's legendary performance reputation. It is quite stiff and seems to be balanced and very responsive. It points exceptionally well. In heavy air, the boat develops weather helm, but nothing that can't be overcome. She's a great spinnaker boat. On a reach she really performs. Downwind sailing may require some attention to maintain course and speed. It's been noted that the C&C 33 MK I tends to yaw a bit in a choppy following sea. Her pinched ends are the suspect contributors to this phenomenon. Overall, her bad manners are few and her attributes many.

Things to check out

As is the case with all boats with balsa-cored decks, check them carefully to determine if water intrusion and delamination have taken place. This is easily accomplished by tapping the area with the handle of a screwdriver or plastic hammer and listening for that telltale dull, hollow sound. Pay particular attention to areas under and around deck fittings, especially stanchions. It has been reported that the bases of the stainless-steel chainplates have sometimes separated from the hull due to stress. Carefully inspect this area to determine if they need to be reglassed. The T-shaped deck ties, used to attach the bulkheads to the deck, often precipitated deck cracks. This is due to the movement of the deck relative to the hull and bulkheads. These cracks in the deck can allow for water intrusion and subsequent delamination.

The boat was originally delivered from the factory with rod rigging. Over the years, most owners have had this replaced. Have any rod rigging that is still in place professionally examined. As with any boat of this vintage, be prepared for possible breakdowns in the wiring, sail-handling gear, pressurized alcohol stove, and the Atomic 4. All of these are pushing 30 years of use and may be getting tired.



C&C 33

Designer: C&C design group
LOA: 32 feet 10½ inches
LWL: 26 feet 5 inches
Beam: 10 feet 6½ inches
Draft: 5 feet 6 inches
Displacement: 9,800 pounds
Sail area: 514 square feet
Ballast: 4,075 pounds

Summing up

The C&C 33 MK I lives up to its performance pedigree. Its accommodations are roomy, stowage is ample, and it's nicely finished. When new in 1975, the C&C 33 MK I had a base price of $33,500. Nicely equipped boats retailed for about $36,500. In today's marketplace you can pick one up for between $22,000 and $33,000, depending upon year and condition.

The Catnapper

Relax or snooze in a custom-built recliner

by John Butler

IT WAS A BEAUTIFUL LATE-WINTER SAIL. The stout westerlies following the cold front had blasted me east. I dropped and furled my sail at the entrance to one of my favorite coves. Before motoring in, I checked the fire I had started in my stove while hove to for lunch. With a low in the 20s forecast, I looked forward to a quiet and warm night at anchor. Once all was secure for the night, I retired to my toasty cabin.

The long downwind runs and tacks were marvelous sailing to remember on days too calm, windy, or hot to sail, but they were also pretty tiring for an old man. A cat running off the wind can be most demanding of the helmsman. I was tired, but not sleepy, and my back wanted to relax a bit before supper.

There was time to recline in the cabin, perhaps to toast one or both of my heroes (Joshua Slocum and Sir Francis Chichester). I sliced some cheddar, sectioned a Granny Smith, and poured some wine. Then it took me all of 30 seconds to set up my onboard La-Z-Boy, which I have dubbed my "Catnapper." This addition was inspired by the discussion and a drawing in L. Francis Herreshoff's *The Compleat Cruiser.* With my back wanting support not available while sitting erect on my bunk, I made my first and very modified prototype of what his narrator described as "…a comfortable place in her to sit and read."

Knowing my shortcomings as a designer and upholsterer, I used some old canvas and fashioned my first version of a "comfortable place" in my small cabin. One-inch and ¼-inch hardwood dowels, scraps of mahogany from the shelf under my garage workbench, and odds and ends of braided Dacron small stuff make up the other required materials. My prototype was OK, but just barely. It needed more thinking.

New blue canvas

I checked off the many faults in my design, refined them, and then sewed up a nice new piece of blue canvas. Lacking a sewing machine, I hand-stitched everything. The end result is a satisfactory cross between a recliner and a hammock for comfortable reading and catnaps aboard my old wooden cat.

Jealous? You should be. Check out my concept, then make your own. Plan on making a prototype first to fully refine the design for your cabin and personal size. Then make the final product. Perhaps you may want to design one to be used by two? I don't know how, but it would be cozy. Two separate but side-by-side ones might be more practical.

Since each boat will present different design problems, I'll explain mine in general terms. The canvas should have finished dimensions long enough and wide enough to accommodate the largest user. I found 25 inches to be a comfortable width for me. I tapered the head to fit neatly between the ribs of the cabin overhead, where it is supported, and narrowed the foot the same for uniformity. To add strength, I sewed some small stuff in a hem on both sides and secured it well at the ends. Both the head and foot have large hems to allow a 1-inch dowel to be easily slipped through them. A nylon strap sewed to the canvas, with appropriate

The *Old Cat,* above, her design unchanged for 150 years and now home to a variety of cat-labeled accessories, under sail on Beaver Lake. The Catnapper, demonstrated by Amber Gail Klotz, the author's youngest granddaughter, at right. Foot end of the Catnapper in use, inset. Note the loop stretched over the end of the H-frame upright, and the strain imparted to the canvas. The heating stove, with the tea kettle on the fiddled top, and a cat outline on the door in the background.

"I sliced some cheddar, sectioned a Granny Smith, and poured some wine. Then it took me all of 30 seconds to set up my onboard La-Z-Boy, which I have dubbed my 'Catnapper.'"

Velcro pieces sewed to it and the canvas, holds the Catnapper securely out of the way when not in use.

Where my knees were located in my Catnapper, I sewed in another stout piece of small stuff to the hem, very firmly secured, and with a loop just big enough to slip over a 1-inch dowel. Don't skimp on the stitching here; there will be a lot of strain on the cloth transmitted to the dowel via the small stuff. I added an extra piece of cloth there, like sailmakers do at stress points.

Puckered up

I also sewed in a big pucker on each side, in the area of my ample butt. I suppose there is a good seamstress word for the pucker, but I sure don't know it. (Reverse gusset? Dart?) This shortened the sides by about 6 inches or, viewed the other way, allowed the material to be fuller and sort of making gunwales to contain me if (when?) I should nod off.

The head is fastened securely to the cabin overhead by two 1-inch mahogany blocks, securely screwed to the cabin's rafters, and having a 1-inch hole to accept the dowel that runs through the hem in the head. To prevent it from slipping out, while allowing for easy removal if I ever desire, I passed a ¼-inch dowel through each end of the big dowel. At one end it was glued in, but the other had a slightly oversize hole so the small dowel could be pulled out. A fine piece of small stuff fastened the small dowel to the large one so it wouldn't go adrift.

The foot is tethered by a long length of light line passing through loops of nylon webbing screwed to the ribs. A loop in each end of the line slips over the dowel passed through the hem in the foot. Adjustment of the length of this line determines the amount of droop in the hammock. As with the dowel through the head of the Catnapper, each end of this dowel has a ¼-inch piece passing through and glued in securely. This contains the loop and prevents "fallout."

In Herreshoff's book, the character, Weldon, had what he called a "folding deck chair" in his canoe yawl, *Rozinante*. It was neat, but I wanted something more reclining, not as erect. So I devised a leg support system that makes the difference between a yard hammock and a folding deck chair…more like a recliner with the footrest pulled up.

Fairly tight stretch

The support is sort of a wooden "H" with the crosspiece close to the top (see illustration below). The uprights' rounded ends go into the loops on the Catnapper's sides, and the crosspiece holds the uprights apart, thereby stretching the cloth fairly tight.

Both of the feet of the uprights have ¼-inch stainless-steel bolts turned into them and their heads then cut off. These slip into holes drilled into the floorboards and anchor the H-frame in place, but still allow some motion. The feet are wrapped with small stuff to strengthen them.

The crosspiece rests on small dowels running through the large dowel uprights to keep it from sliding down. And, after the crosspiece is installed on the uprights, small dowels are placed in their holes near the tops of the uprights. This keeps the loops in the edges of the canvas from sliding down. All the wooden parts were sanded smooth and given several coats of polyurethane varnish.

Setup is quick and easy. The nylon strap is pulled loose and the canvas unrolled. The three pieces of the H-frame, stored in the rolled-up canvas, are assembled: the feet in the holes in the sole and the crosspiece placed over the tops. Then the small dowels are placed through the tops of the uprights, and the loops on the canvas are stretched over them. Lastly, the dowel through the foot of the Catnapper is tethered to the two lines. Stowing is just the reverse, and it really does take much less than a minute to erect or stow.

One last instruction: enjoy yours; just try to stay awake!

The H-frame, at right, in place without the canvas secured to it.

The Catnapper, rolled up and secured close to the overhead with Velcro on a nylon strap. The three H-frame pieces and the dowel for the foot are all rolled up in it. Note the reading spotlight above the right shoulder.

Detail of one of the mahogany blocks fastened to the cabin's rafter to hold one end.

The head of the Catnapper with the dowel inserted in the wide hem. Note the small dowels to hold it in place and the nylon strap.

Detail of the "pucker" in the edge of the canvas. A similar one is on the other side.

Tayana 37

A class that owes much to an energetic owners' group

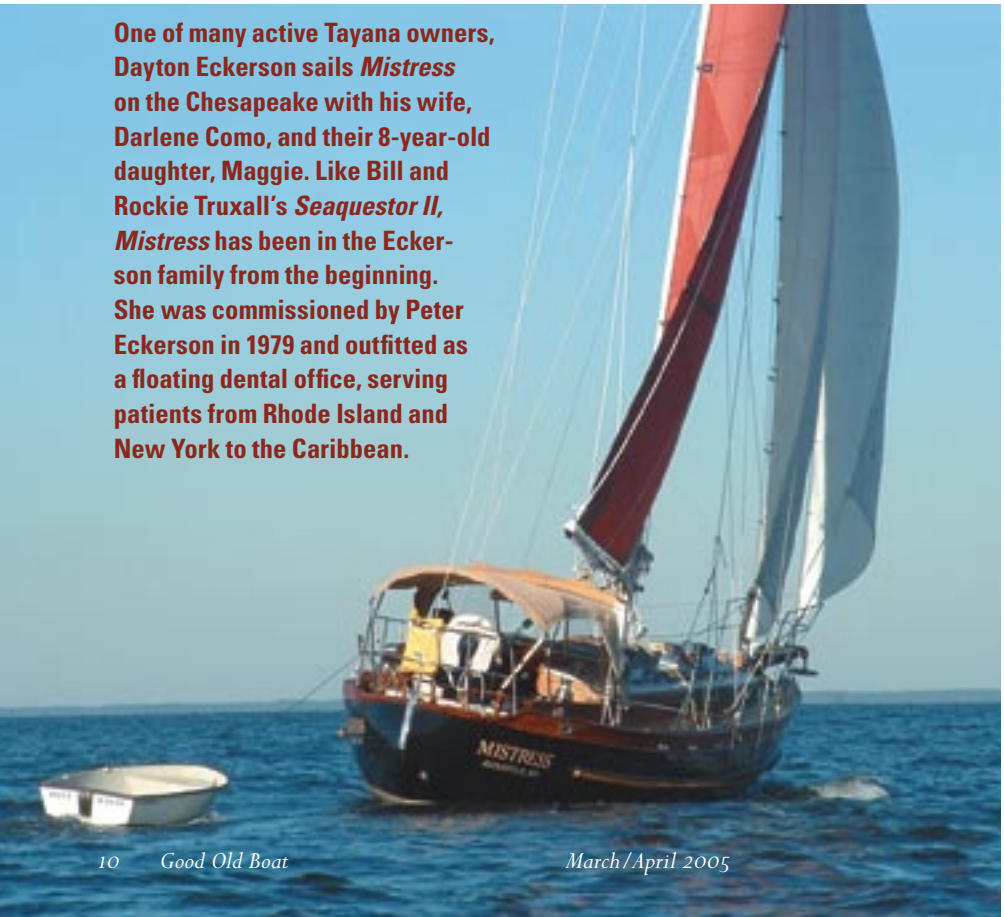
by Karen Larson

The Tayana Owners' Group (TOG) is a diverse, energetic, and passionate group of sailors of Tayana, CT, and Vancouver sailboats and motorsailers. For more than 10 years, Bill and Rockie Truxall have been the default leaders of this loyal clan due to their joint role as publishers of the member publication, *TOG News*.

Until recently, this 24-page newsletter has appeared quarterly in the mailboxes of up to 500 dues-paying members when many other sailboat owners' group newsletters were struggling to get members, to get news and article contributions from members, and to break even on the printing-and-postage-versus-dues-paid balance sheet.

Long before she became Rockie Truxall, Kathie Rocknee learned to sail at a YMCA camp in Iowa. Before long she was a camp sailing instructor. Many years went by before she met Bill in church, a church with three Kathys. Nicknames were assigned to keep the identities straight. Kathie Rocknee became Rockie, and so she remains today, although she's also known as Grandma Rockie to a select few.

Bill's course through life led through a 27-year career in the U.S. Navy: aircraft carriers, the battleship *New Jersey*, submarines, and destroyers. He saw service in Vietnam on a destroyer and on a sub. He ended his career as a commander and was captain of the destroyers USS *Robert L. Wilson* and USS *Vesole*.



One of many active Tayana owners, Dayton Eckerson sails *Mistress* on the Chesapeake with his wife, Darlene Como, and their 8-year-old daughter, Maggie. Like Bill and Rockie Truxall's *Seaquestor II*, *Mistress* has been in the Eckerson family from the beginning. She was commissioned by Peter Eckerson in 1979 and outfitted as a floating dental office, serving patients from Rhode Island and New York to the Caribbean.

Chris Knauss

Upon retirement from the Navy, he bought a Tanzer 28. The Tanzer served well, but Bill says, "It's really just a weekend boat."

Wanted a plane

Of his sailing passion, Bill says, "I really wanted to buy an airplane, but a sailboat is less expensive to run." That comment puts a new light on the old saw about a boat being nothing more than a hole in the water into which one pours money. An airplane, by extension then, would be a black hole that sucks money. To pay for his sailing habit, Bill worked as a consulting engineer (as many other retired military personnel do in the Washington, D.C., beltway) until his second retirement in 1995.

Bill and a mutual sailing friend, who owned a Cheoy Lee 33, began looking for their next boats. They both settled on the Bob Perry-designed Tayana 37 as the boat for them. "It was, at the

Bill and Rockie Truxall, below, were the Tayana Owners' Group newsletter editors for more than a decade. *Seaquestor II*, at left, is docked at their home in Reedville, Virginia.

time, considered to be the high end of what a couple could manage together," Bill says. The time was 1985. "You could get a Tayana 37," Bill recalls with a smile, "for $39,995 . . . sailaway FOB Taiwan." And some new owners *did* take ownership of their boats in Taiwan, saving an additional $5,000 charge for shipping and $5,000 more for insurance.

The interiors of the Tayanas were infinitely customizable. You'll scarcely see two the same. With the help of another Tayana 37 owner who was an architect, the Truxalls got their plans together and got their boat into production. They deliberated for 18 months on their interior layout. By the time they placed their order, the local dealer was in litigation with another dealer, and their boat was not delivered until 1988.

Seaquestor II was shipped to Baltimore Harbor. Bill remembers the day well. Moving from a Tanzer 28 to a Tayana 37, his perspective of this new, heftier, and much longer boat was that it was going to be huge. He expected to see his new boat the moment he arrived on the pier. In truth, he couldn't find her. *Seaquestor* was lost among the offloaded cargo of the delivering ship.

Beautiful interior

Now 15 years later, Bill says with fondness, "You can't buy a U.S. boat with a more beautiful interior," and Rockie nods in agreement. The two haven't done a great number of modifications to their good old boat, as so many boatowners do. They're the first owners, after all, and they got her the way they wanted her to begin with.

They've kept *Seaquestor* shipshape and pristine, although their plans for bluewater passages have faded a bit. Now they enjoy sailing the Chesapeake and attending owners' rendezvous. When Bill retired from his engineering career, they moved to a waterfront home in Reedville, Virginia, where *Seaquestor* is docked a few footsteps from the door.

Bringing their baby home from a Maryland marina may have been a mistake. "When your boat is somewhere else, you make a point of packing and going to the boat," Rockie points out. "When it's in your backyard, it seems almost everything else comes before the boat."

"There was much to be resolved in the early days. While the Taiwanese were expert craftsmen, they were not necessarily sailors."

The largest "everything else" that comes before their boat is that the Truxalls now spend their summers in Iowa supervising Rockie's family farms. She sails a 12-foot dinghy there on Spirit Lake. The Shell Lake dinghy is easily rigged and sailed by one. It brings back fond memories of teaching sailing to campers. In fact, Rockie is teaching sailing again during her summers there.

How did a couple of Chesapeake Bay sailors become the guardians of the *TOG News* and the entire owners' group? The founder of the newsletter was Norm Demain who was in touch with 20 or so fellow Tayana owners willing to share tips and frustrations. He started a small newsletter in order to better pass the information along.

Much to resolve

"Norm would write to the factory," Bill says. "He'd tell them, 'You've got to resolve this,' and they would. There was much to be resolved in the early days. While the Taiwanese were expert craftsmen, they were not necessarily sailors."

He smiles and continues, "The first boats were built in 1975. People needed support and information in those days. The builder was so unsophisticated." The story told most frequently concerns the company's decision to move a 90-gallon fuel tank from beneath a saloon settee to beneath the V-berth in order to create more useable storage space in the cabin. A good idea in theory. The problem is that, when full, this iron tank adds an extra 700 pounds to the bow, causing trim problems and hobby-horsing. Many owners have since relocated this awkward tank.

After 12 years, Norm Demain grew tired of the publishing job he'd created for himself. About that time the Truxalls were sitting in the cockpit with John Kraft, another Tayana 37 owner, looking at the *TOG News* which proclaimed in the headline: "This is your last newsletter." There was much discussion that day and at a later rendezvous about who would take over the job. The Truxalls allowed themselves to be persuaded. There were 190 members at the time.

Membership more than doubled to 500 on their watch. But now 12 more years have gone by, and Bill and Rockie still hope to find the next publishers after giving up the job themselves recently. "This is a labor of love," Bill notes. "Two have called to offer their services, but the first question each time was, 'What's your annual profit?'

There is no annual profit." And so the so-called "volunteers" melted away.

Strong organization

For the good of all, it behooves someone within the group to pick up the mantle of responsibility. In 1982, when Tayanas were relatively new, *Practical Sailor* recognized the value of a strong owners' organization.

The reviewer said, "The Tayana 37 is both typical and atypical of Taiwanese boats. She is typical in the problems that existed due to the builder's inexperience with seagoing yachts, typical with communication and language problems, typical in having dealers who varied widely in both ability and their desire to help their customers after the sale.

"She is atypical in that many of these problems have been solved over six years of production, in that a good owners' association and the domination of one dealer . . . have resulted in real improvements in the boat. Anyone considering a Tayana 37 should join the owners' association and read all the back newsletters before buying the boat. If your dealer either fails to mention the owners' association or denigrates it, find another dealer."

Another review, by British sailor David Phillips, stated even more emphatically: "One of the offshoots and great strengths of the T-37 is the existence of a thriving owners' association. Formed in 1979, it has faithfully recorded owners' views, voyages, problems, and the alleviation of those problems. It has campaigned on behalf of owners and has been instrumental in achieving gradual improvement in the boat and its gear . . . This group must surely rank as one of the most effective owners' groups dedicated to the products of a single company."

Since active owners' associations, ongoing publicity, reviews, and documentation increase the value of any sailboat, the incentive to maintain the group is strong. The question about who will take over the leadership role for the next 12 years remains. Bill and Rockie Truxall have done a dynamite job on behalf of Tayana owners everywhere.

CT 37 becomes the Tayana 37

Designed to compete with the popular Westsail 32, the Tayana 37 began life as the CT 37. In the early 1970s, after Bob Perry designed the CT 54, he was asked to design a 37-foot Colin Archer-type double-ender. The builder was to be the firm of Ta Chaio Brothers in Taiwan, builders of CT yachts.

To their regret, no doubt, the Ta Chaio yard eventually decided that the new 37-foot design would not become a commercial success, so they gave the building rights to another, less well-known (but somehow related) yard called Ta Yang. Ta Yang built the boat first as a CT 37 in the mid-1970s and as a Tayana 37 by the late 1970s. "Ta Yang" is said to mean "big ocean" in Chinese. The "a" on the end gives it a possessive sense similar to belonging in or being of the big ocean.

Indeed, these boats have crossed many oceans and can be found in anchorages around the world. Reviewers comment favorably on the boat's sailing characteristics. John Kretschmer noted in *Sailing* in 1997, "While it is quite a stretch to call the 37's hull shape progressive, especially by today's standards, in many important ways it was quite different from the Westsail. Perry cut away the forefoot of the Tayana 37's long keel and included a shapely constellation rudder. The boat was proportionally lighter with a more moderate displacement and leaner bilges. These features, combined with a good-sized rig and a generous 861-square-foot sail area, translated into a rather nice sailing boat with surprising performance, especially upwind."

Add to that the boat's overall beauty on deck and belowdecks, and she's a winner everywhere she sails.

Seaquestor **was customized for Bill and Rockie Truxall according to their plans. The U-shaped galley, nav station, and upholstery fabric are in the same great shape they were in 1988 when she was delivered. The grate at the bottom of the companionway catches sand, making it easier to keep the sole clean.**

Resources

Tayana Owners' Discussion list
tayana@list.sailnet.net

SailNet FTP site
<ftp://ftp.sailnet.com/tayana>

TOG Owners
<http://www.TOGnews.com>

John Hovan's Tayana website
<http://www.tayanaowners.org>

The Tayana 37 in perspective

Comparing a classic bluewater cruiser with three rivals

by Ted Brewer

Tayana 37

Crealock 38

Hans Christian 38T

Island Packet 38

The Bob Perry-designed Tayana 37 has long been considered one of the classic bluewater cruisers in her size range, as have the other three yachts in this comparison. Certainly the Tayana has a lot going for her: husky displacement, generous sail area, a high comfort ratio, very low capsize factor, and reasonable draft, neither too deep nor too shoal. Many cruising sailors will favor her full-keel configuration over that of the moderate fin keel of the Crealock 37 although I, for one, feel that either configuration is quite acceptable for offshore cruising.

My only concerns about the Tayana would be for her modest ballast ratio and her deck-stepped mast. Her good draft helps allay fears about the ballast ratio to some degree, and the deck-stepped mast (though not my preference) is acceptable, provided the tube is adequately strong. A friend of mine, a retired USCG commander, has sailed all over the world in his Tayana 37, and I've never heard a word from him about any problems with either her stability or her rig.

The three double-enders in this comparison have, far and away, the heaviest displacement/length ratios. There is certainly nothing wrong with that for an oceangoing vessel as long as the sail area is commensurate with the displacement. The Hans Christian has a rather low sail area/displacement ratio, though, and, with her long waterline and full keel, would not be at her liveliest in a light breeze. She may not be the best choice for summer sailing on Long Island Sound, but she definitely appears to be eminently suitable for rounding Cape Horn or equally adventurous voyages.

The Crealock 37 appears a bit light on sail area also, when compared to the Tayana and the Island Packet, but her narrower beam, shorter waterline, and moderate fin keel eliminate a great deal of wetted surface so I expect she would perform quite well in our usual summer breezes. Indeed, if it came to an around-the-buoys race, the Crealock may well have a slight edge over her full-keel competition.

The Tayana and Hans Christian have it in spades when it comes to motion comfort, due to their generous displacement. They would be the boats of choice to ride out a gale, but the other two are still in a normal range for yachts of their size and should have no problems encountering the usual ocean swells.

Selecting one of these four yachts over the others will definitely come down to a personal choice. They all have unique advantages: the versatility of the Tayana, the huskiness of the Hans Christian, the performance of the Crealock and, not to be overlooked, the shoal draft of the Island Packet for the kind of coastal gunkhole cruising that so many of us love. It's your choice.

	Tayana 37	Crealock 37	Hans Christian 38T	Island Packet 38
LOD*	36'8"	36'11"	37'11"	38'0" **
LWL	31'10"	27'9"	33'0"	33'0"
Beam	11'6"	10'10"	12'4"	12'8"
Draft	5'8"	5'6"	6'0"	5'0"
Displacement	24,000 lb	16,000 lb	26,500 lb	19,000 lb
Ballast	7,340 lb	6,200 lb	9,800 lb	7,600 lb
Beam/LWL ratio	0.36	0.39	0.374	0.384
Disp./LWL ratio	332.2	334.3	329.2	236.0
Bal./Displ. ratio	30.6%	38.8%	37%	40%
Sail area	864 sq ft	619 sq ft	791 sq ft	735 sq ft
SA/Displ. ratio	16.6	15.6	14.2	16.5
Capsize number	1.6	1.72	1.65	1.9
Comfort ratio	42.8	33.7	41.6	28.7

* LOD is Length on Deck and is used instead of LOA. All these yachts have bowsprits so LOD is more descriptive of the actual hull.

** LOA is given as 41 feet in some articles about the boat but appears to include the bowsprit. I've used an LOD of 38 feet for purposes of comparison.

Removing the teak deck

Hard work eliminates leaks and future hassles

by Doug Elliott

There were leaks aplenty aboard this Cheoy Lee. Because the teak was both a contributor and a concealer, Doug and Diane Elliott agreed it had to go.

My wife and I were thrilled with the teak decks that came with our now 21-year-old Cheoy Lee sloop when we bought it in 1999. That was five years ago. Today we're even more thrilled to have all that teak in a trash can and new Awlgrip non-skid deck surfaces. We did all the work ourselves, achieved a professional-looking result, and did so while working in a third-world country with tropical weather and limited suppliers. It's a project within the grasp of any serious boatowner. Just don't expect this to be a one- or two-weekend fixit project. It took us eight weeks of nearly full-time work.

Why go through this ordeal? The leaks had reached an intolerable level. When crossing the Straits of Florida in December 2002, we had leaks too numerous to count in spite of many hours spent diligently recaulking. Was the compound the wrong material? Was the procedure inadequate? None of this matters when water is dripping onto your bunk and infiltrating the main electrical panel. The only question becomes what to do about it? We reluctantly decided that the teak deck was at the end of its useful life.

There's a special moment in cruising: at the end of a long hard day bashing to windward with the anchor set in a nice calm anchorage. You go below to put things back in order only to find your bunk and all the bedding soaked with seawater. Now that's a test of spousal commitment as well as vocabulary. It took very few of these episodes before we agreed that every other project was going to take a back seat to getting the deck fixed.

We faced limits in terms of materials available and budget. Treadmaster looked like a terrific choice but the cost, including delivery to a location in the Caribbean, caused us to rule that out. Putting teak back down was out for sure.

"It's a project within the grasp of any serious boatowner. Just don't expect this to be a one- or two-weekend fixit project."

Superior, durable material

The best material for our purpose seemed to be two-part linear polyurethane paint. We chose Awlgrip since we had most of a quart of white on board along with the converter and hot weather retarder left over from repainting the stern. We would have done better to start from scratch and completely research the alternatives. That confession aside, Awlgrip is a superior and durable material. So while our costs were higher, we've gotten a satisfactory result that we expect to last many years. But we did find that type of coating demanding and unforgiving. The spec sheets from Awlgrip state that it should be used by professionals only.

The coconut telegraph in the Caribbean has reports that alkyd house enamel paint has proved to be just as good for a topside paint as Awlgrip and the other two-part polyurethane paints for 20 percent of the cost. I'd recommend further research into that question for anybody contemplating a hull or deck repaint or replacement today. A chandlery manager told me he sells material to a yard in Grenada that, under pressure from customers to save money, has begun using this house paint with excellent results. (***Note:*** *Don Casey says in his book,* Sailboat Hull and Deck Repair, *that alkyd house enamel is OK for decks but not recommended for hulls.* ***–Ed.***)

We are happy that we did the job ourselves. It's unlikely that a contractor would have taken the pains with the project that we did. The finished project cost us about $1,500 in materials. Add to this our marina expense. Our work was done in Grenada, where chandlers and contractors charge about the same as they do in the U.S. or sometimes a little more.

The background

Our grief with this deck started soon after purchasing the boat in 1999. After sailing around Clear Lake, Texas, we noticed that our coachroof was splotched with sticky black blobs. In the heat of the sun, the deck caulking looked like liquid asphalt. It's anybody's guess whether the wrong caulk was used by some previous corner-cutting owner or just old age and corruption taking the boatbuilder's material and liquefying it in its death throes. At some point in its past, the deck had been coated with what looked to me like Cetol. I wondered if that had interacted with the caulk to liquefy it. The sanding that preceded the Cetol had left some paper-thin bungs behind, and the nagging chore of gluing in new bungs and then trimming them flush with the deck became a frequent hiccup in our lives.

At the time of our purchase, the surveyor found no evidence of water leakage below. But after we had lived aboard for a few months, we found several places where stains were evident. In spite of that, there were no serious amounts of water . . . yet.

This led to the first complete recaulking, done at the dock under the hot Houston sun in the fall of 1999. Digging out all the old caulk from every seam, cleaning up the mess, and then taping and recaulking the deck with BoatLIFE one-part polyurethane took us a couple of weeks of full-time effort including the help of some unskilled labor we hired. It looked great when we were done and we — naïve new boatowners — thought our deck was watertight forever.

By the time we had reapplied caulk for the third time, it was clear that the teak itself had to be scrapped. By then we were in the Bahamas. It was January 2003. We did a stopgap application of caulk to minimize the leaks while we prepared for the big replacement project. In the course of doing this project, we learned why the water had been pouring in below. The runs for the leaks were sometimes as long as 20 feet between the teak planks and the deck below.

Preparation

A serious weak point in our preparation, due to our cruising itinerary, was the limited access to the Internet and its resources.

Since we were traveling toward the southeastern Caribbean, we attempted to gather the material we would need along the way. We bought the Awlgrip, roughly estimating quantities, and checked our tool inventory for tools to remove the teak. Once we were in Grenada and began working, we realized that we needed major amounts of additional material. Epoxy, sandpaper, non-skid granules . . . the list seemed endless.

A major gap in my preparation was a careful cost workup, using the materials list that I prepared. Had I done that we would have saved some money with better choices and the sticker shock for this job would have been reduced.

The original teak deck was laid down in 1983. Our decision to replace the teak with painted-on non-skid was made easier due to the substantial structure used by the factory. A complete deck had been laid up before the teak was installed. We therefore expected that we would be able to remove the teak, clean and prepare the original deck, and paint it with non-skid. Owning a boat and every project undertaken on it are acts of blind optimism.

The deck composition is a fiberglass underlayment, a mahogany core, and fiberglass with gelcoat applied. Half-inch teak planks were screwed to the deck over a layer of tar bedding. Caulk filled the gaps between the planks. The bronze screws holding the teak planks went well into the core material — the pathway for much of the water that leaked in below. These oddball fasteners looked like stove bolts and had a machine screw thread but were sunk below the deck into the mahogany core. Most of them held for 20 years.

In a journal note, made just prior to ripping off the teak, I wrote, "The boat is stifling hot. It's got to be 90°+ with high humidity tonight. The rain is frequent; we have not had a day yet here in Grenada without a serious shower. Some days have seen drenching rain. We're worried about ripping off our deck and exposing everything underneath to rain damage and getting worse leaks as we progress. We'll cover everything with tarps as the rains appear, but the whole thing could drag out into weeks or months. I'm apprehensive about what we'll find and how long the whole project may take."

Removing hardware and teak

I divided the deck into thirds, literally, using a Dremel tool with a cutting wheel scoring across the teak planking to create three large work areas. That gave us more manageable portions to attack as we set out to remove the teak planking with staggered joints.

All the hardware came off the foredeck quickly although the windlass

Doug removes the last piece of teak, at top. The tar bedding, at right, was removed with diesel fuel.

With the teak and the goo gone, Doug contemplates filling all the holes, at top. The prepared deck awaiting the primer coat, above.

was difficult to remove and the inner forestay mount was worse. As I removed the base plate for the forestay, I found two bolts with no nuts on the underside. A search below, including removal of the V-berth overhead, cleared up the mystery. Of the five mounting bolts, three were doing their job within the limits of a scrap of teak reinforcement block, but two of the bolts were strictly decorative.

As we removed hardware and fittings, we carefully bagged and labeled the items and stowed them below. My wife is the world's most compulsive inventory manager, and it served us well on this project.

"Aha time" came when the bow pulpit was totally removed. One of the four legs showed major leakage underneath. The teak was rotted away, and I pondered the amount of water that must have flowed underneath the teak from this point just behind the anchor roller.

As we removed hardware, we filled the holes that remained with silicone if we planned to use them for remounting these items. Silicone is impervious to epoxy and kept the rainwater out for the duration of the project.

After we carefully backed out the bronze screws from the middle teak plank from the coachroof to the bow, the plank popped up easily, revealing a thick tarry backing. After prying with a wood chisel to get a gap started, we introduced a wrecking bar and gave a careful tug, working along each plank to either pry the screws up or tear the wood off the screws. Each time we had a 50-50 chance, and we didn't care which happened as long as the plank came off. After removing an area of planking, I used the wrecking bar to pull the remaining screws just as if they were nails. They came cleanly away from the fiberglass decking, leaving a tarry mess with hundreds of holes. Occasionally the screws broke off at the surface of the deck, and we had to drive the remainder of the screw below with a nail set in order to backfill every single hole with epoxy.

"After eight days of work, all teak was off, the last hole had been filled, and the deck was relatively rain-tight."

Diesel wipedown

Cleaning the tarry material used by the boat manufacturer to seal under the teak meant a liberal application of diesel fuel and a final wipedown with lacquer thinner to remove the oily residue left from the fuel. Another cruiser suggested Go-Jo hand cleaner, as they had success with that on their Cheoy Lee when removing the same tarry bedding compound, but that would have been a lot more expense. We used about a gallon of diesel to clean the whole deck surface.

We drilled the screw holes out to a larger diameter and beveled them to give a good purchase to the epoxy filler. We took pains with this step, hoping to avoid having the epoxy plugs pop out later.

The holes were backfilled with epoxy mixed with cabosil for extra strength. I overfilled the holes with the initial application and found that almost all of them needed a second layer as the shrinkage was significant.

Working quickly in order to dodge rainstorms, we removed teak and cleaned off the tar, drilled out and beveled the holes, and filled them as fast as possible to keep the work area dry. The messiest aspect of the job was this tar removal. It was about ⅛-inch thick and embedded in the gelcoat in some places. Much of the deck underlayment had crazed or chipped gelcoat. The tar had worked its way underneath the gelcoat.

It was a process of repetitive steps: removing teak, cleaning off tar, filling holes, and moving to the next area. Surprises came often. As we removed the last piece of hardware we found it had been secured with 3M 5200. A large screwdriver worked only if one person pushed down on it while the other turned the shaft with a large crescent wrench to force the bolts to back out. This was a good illustration of why 3M 5200 is a bad choice for mounting anything to a deck.

After eight days of work, all teak was off, the last hole had been filled, and the deck was relatively rain-tight.

Fairing and leveling

In many places the substrate looked like a shattered pane of tempered glass. The gelcoat had flaked off and big patches were crazed. Using a ¼-inch drill with an 80-grit abrasive wheel, I ground away at the gelcoat to remove the loose stuff and allow for removal of the tar that had worked its way underneath the gelcoat.

Our tool kit included an angle grinder, and I resorted to using that in order to strip off the loose gelcoat more rapidly. Once the crazed gelcoat was off we began fairing, using a mixture of epoxy with Microlight (microballoons) additive, which made the filler easier to sand and get to finish grade. (***Note:*** *Microlight is the trademarked name for a West System filler made from thermoplastic. Because the filler is thermoplastic, there are cautions on*

the container about using it under dark-colored decks. Microlight and perhaps similar thermoplastic-based fillers make a relatively weak putty compared to West System 407 and other phenolic microballoon fillers. These phenolic microballoon fillers are still reasonably easy to sand and are a better choice as a fairing putty for this kind of project. Where even greater strength is required, even higher-density fillers should be used, but they will not be as easy to sand fair. ***–Ed.***)

After a last cleaning with lacquer thinner, I applied this fairing mixture in a paste. I troweled it on a bit too heavily remembering, as I later sanded away at the excess, that several thin coats are better than one thick coat.

Hand sanding was required in several places, chiefly around the cleats and stanchion bases. But otherwise we found that a random orbital sander was adequate for most of the sanding except when using the coarse abrasive sanding disc. We washed the deck with water between steps, then vacuumed and wiped it down with acetone.

After that first thin coat of fairing compound, we faired the surface in a rough way. It appeared to be level by eyeball observation. Before applying the second layer of fairing compound, I used a 2-foot-long piece of stainless as a straightedge and went over the whole deck marking the low spots.

Ripples and bumps

Our choice of non-skid material meant that we did not have to have the underlayment surface perfectly smooth. In fact, it still had very evident ripples and bumps after two coats of fairing. I had listened to reports from experienced deck refinishers so I confidently forged ahead. A different type of deck finish might have required a lot more fairing and leveling work.

There were two places, about 4 inches in diameter, with evident delamination. I decided to drill extra holes in these areas and fill them with epoxy mixed with cabosil. Given the amount of leakage we had had, it amazed me how little evidence of structural problems there was to be found in the deck.

A critical structural question was how to improve reinforcement for the inner forestay mounting plate. I had a new backing plate fabricated in a shop out of 5/16-inch stainless with a right-angle bend to allow it to bolt underneath the inner forestay mounting plate and to the bulkhead to give maximum strength to this load-bearing part of the rigging.

The joint along the coachroof needed something to make sure this area would be leak-proof…an unforeseen step. The fiberglass sides of the coachroof were tabbed into the fiberglass underlayment of the deck but, since we had the opportunity, I decided to reinforce that joint and made a plastic tool to create a concave shape of the proper thickness. It required some experimenting to get a medium-density epoxy mixture to the spreadable consistency needed to fill smoothly and yet stiff enough to stay in place.

Another head scratcher, perhaps unique to our Cheoy Lee, was the problem of chainplate trim covers. The chainplates were surrounded by a fiberglass material when they were installed. The teak butted up to these and a stainless plate had been dropped over top of the chainplate to cover the edges of the teak planking. I could have ground all of that material away to make the chainplates flush with the new deck — half an inch lower than the old one. Instead, I opted to keep these little boxes intact and filled with epoxy around the chainplates where the teak previously tucked under the chainplate base covers. The result looks good and keeps water away from the chainplate bases better than before, when the teak was flush with the chainplate bases (see photo on Page 18).

Loosened tabbing

In the course of mounting the new heavy-duty reinforcing plate for the inner forestay, we found that the tabbing that previously held the bulkhead to the underside of the deck had been loosened by the leakage. Repairing this meant applying glass tape with epoxy to strengthen the bulkhead-to-deck joint. This bulkhead connection is monumentally critical to transmit the loadings from the staysail down to the hull of the boat.

We ground the old loose tabbing away with the angle grinder. Then we mixed straight epoxy and thoroughly wet a 2-foot piece of 3-inch-wide glass tape. A shallow tray made out of aluminum foil allowed us to wet the fiberglass tape thoroughly and carry it up to the chain locker. Lying on my back in the chain locker with glove-covered hands, I brought the wet glass up to the crease formed by the bulkhead and the deck and smoothed it into place with a squeegee. We followed with two more layers of glass tape, overlapped slightly.

With two passes, the coachroof joint had been filled with new epoxy mixture and there were two coats of fill around the chainplate bases.

As we had chosen a contrasting

The completed deck with all hardware reinstalled. Perhaps one of the most difficult projects contemplated by sailors, teak removal is a test of commitment to sailing and to a marriage. Doug and Diane won on both counts.

glossy white edging to the gray non-skid, I prepared cardboard templates to use for masking off the stanchion bases and the fill tubes. Using a compass, I traced the shapes onto scratch paper and then transferred the paper cutouts to cardboard.

After 16 working days, the teak removal was complete, and the deck had been sanded and faired. Each of the six chainplate bases also had fill, the coachroof joint had new filler substrate, and we'd completed taping off the toerails and coachroof, preparatory to applying the coatings.

Waterproofing, finish painting

On the advice of another cruiser who'd followed this procedure with good results, we rolled on two coats of epoxy, starting very early in the morning to avoid having it cook off too quickly. Since it was clear, it was hard to tell where I'd applied it, but we had no problems using fast hardener. One coat on each of two successive mornings, and our deck was watertight, albeit ferociously ugly.

After a scuffing with 180-grit sandpaper and a wipedown with acetone, we mixed up the Awlgrip primer and applied a heavy coat without reducer. With some color on the deck, it started to look a bit better.

Early the following morning, we lightly sanded and flushed the deck with water. After a wipedown with acetone, we rolled on the second coat of primer.

Applying white high-gloss Awlgrip to the inside edge of the deck, the outside edge, and the stripes we'd laid out to interrupt the non-skid, we rolled the paint on first with a 3-inch roller and then tipped it lightly with a small varnish-type paintbrush. The results looked excellent. The coating lay down nicely after tipping.

The only serious reversal due to the inclement weather in Grenada came after putting on the second coat of white. We were disappointed to find ugly ridges visible following a rain which fell when the paint was not quite dry. We smoothed the worst of it with 120-grit sandpaper. Then we fine-sanded the rest of the paint. We had enough paint for a third coat, which gave us the results we wanted.

Working with Awlgrip brought challenges. We had days when the temperature and humidity soared … with both above 90 by 10 a.m. Worse was watching the cloud formations to the southeast and wondering how long the paint would take to dry if we applied a coat. The finished rolled and tipped job looks as good as a sprayed-on application, testimony to a quality product. While we were working with the mixed paint, we made minor blunders. Even though we stored it in the freezer, the shelf life for this mixture was two to three days.

The finished deck with its gray non-skid accent. Doug and Diane say it's cooler on bare feet, and the leaks have been (mostly) conquered.

Masking tape problem

Stripping off the first-stage blue masking tape required frequent heavy scraping, due to the length of time it had been exposed. We immediately replaced it to delineate the non-skid areas. I disassembled the windlass and pushed the base down through the mounting holes. Then I used a compass and taped this off to leave the margin of gloss white.

Taping these edging areas defined the exact dimensions of the white gloss, and we decided it would look better to create rounded corners at every intersection of these edges. Using a small round plastic tub, I put masking tape diagonally across at every one of these corners. Then using the upside-down plastic tub, I ticked off with a pencil where the arc would intersect the straight lines of tape that were coming together. Using a sharp utility knife, I cut the arc so the non-skid area would have the rounded corner.

Taping around the fill tubes and stanchion bases, I used a razor knife to cut to the margin we wanted. Then I used the templates in the shape of the stanchion base and a fill tube in order to leave a white 1-inch area to set off the non-skid. We planned to interrupt the non-skid in three places on each side and down the middle of the foredeck to give our eyes a rest.

The first coat of non-skid was a disappointment. I mixed an entire quart of non-skid silica beads with a quart of Awlgrip and a pint of converter with a bit of high temperature retarder thrown in. Big clumps of non-skid cropped up as I rolled it on, even though Diane constantly stirred the mixture in the tray. After about 4 hours of drying time, I scraped off the worst of the clumps and then used a wire brush on those spots.

Skidless compound

Another painful lesson behind us, we put down a second coat of Awlgrip light gray mixed with a Petit brand of skidless compound mixed to the instructions this time. It went on much better and looked acceptable as it was applied, but inspection the next morning showed too much rippling and too many roller strokes. A third coat made all the difference.

By actual count, our deck now had its tenth layer of coating. The finished job is a much lighter color but has no glare. Whisper Gray is the Awlgrip color name. We thought it looked substantially better and felt cooler to walk on. Once we pulled the tape off, the deck looked terrific. The gloss finish to the white edging made a nice contrast to the matte texture of the gray non-skid areas.

Just prior to reinstalling the hardware, I touched up the gray non-skid and attempted to touch up the white edging paint. The gray paint was useable, barely. There were some nervous moments as it almost exploded when I opened the can and found a foaming, gaseous liquid inside. I was able to touch up a few chipped spots before tossing the rest. The white paint, about a week old, but in the freezer the whole time, was completely set up and hard.

Reinstalling hardware

Beginning where we started, we bolted on the bow pulpit bases, first poking out the silicone plugs. They

emerged cleanly. One of us turned the washers and nuts from below while the other held the bolts firmly in place from above to keep the bolt well covered with sealant. The lucky partner down below was usually well covered in white goop by the time we were done. A bit of alcohol and all was well.

After an overnight rest, we tightened the bow pulpit bolts to the final level of tightness. It pays to leave them a bit loose overnight and then do the final tightening after the sealant has had time to harden up a bit.

The trickiest part of the hardware installation was the inner forestay base. Because the new deck is half an inch below the surface of the old deck and the delamination was serious in this area, we had filled these holes and finished the area as though the forestay mount would not be installed. It allowed us to carefully position the new backing plate to sit against the bulkhead so it would bolt securely to that as well as to the underside of the deck.

Measuring above deck carefully from the windlass hole, I located the bulkhead and then used a T-square to mark the spot for the main hole in the backing plate on the deck. After checking these measurements, I drilled a 1¼-inch hole in the deck. Dropping the large stud on the forestay base through the hole put the acid test to it. Was it in the right location for the bulkhead? It was. What a relief!

The next question: would the aft holes for the forestay base fall behind the bulkhead or directly above it? The machine shop did not follow my directions as well as I'd have liked, so the lineup looked doubtful. The bolt holes hit just aft of the bulkhead and required only a little chiseling of the bulkhead. We put a washer and nut on each bolt. The aft two are covered by trim.

Thorough testing

In the course of laying down our 11-foot 6-inch genoa car track, we added 45 new bolts and tightened each one just to snug. The next day we did the final tightening and were blessed by an immediate and thorough testing by a fierce rainstorm. After retightening one bolt, we passed this freshwater test.

I found that reaming out the old bolt holes for the genoa track helped greatly with aligning these bolts so the heads were flush in the track and the cars were able to slide easily. Guess how I found this out? I did not do it on the starboard side, but once the track was bolted in place, with 3M 101 oozing out nicely at every bolt hole, there was no going back. I resorted to using the angle grinder to smooth off the few bolts that peeked up above the track and interfered with the slide of the cars. Before doing the port side, I'd learned my lesson and made sure that the bolt holes were cleaned out thoroughly. Who'd have thought?

"After two full months of constant work, we had the whole thing done and were still talking to one another. The new deck surface was positively watertight and looked great."

All the hardware was reinstalled with new bolts. It added roughly $200 to the project cost and involved a lot of chasing around to find the correct sizes, but it will eliminate future rust smears.

It proved timely that we'd removed some of the components of the boat; in the process of reconnecting the windlass wiring I found major corrosion in one of the 2/0 wire conductors and had to chop about a foot off the positive lead. I carefully cleaned and coated every other connection after reconnecting it.

After two full months of constant work, we had the whole thing done and were still talking to one another. The new deck surface was positively watertight and looked great. As a bonus, the boat felt noticeably cooler belowdecks. In the tropical sun the teak would burn our feet at midday. This doesn't happen with the light gray non-skid surface. And as we did the job ourselves, we know what was done at every step and feel confident that this deck finish will last many years with little or no maintenance required. A special bonus, always notable with do-it-yourself projects, is that we saved money better spent on other items on our cruising checklist.

One small leak

As I write this four months after completion, we've sailed 400 nautical miles. I confess that there is one small area in a galley locker where, in a heavy deluge of rain, a few drops of moisture are evident. It's got to be stanchion bases that need to be re-bedded. It's the only water that makes it belowdecks now, so in relative terms we are hugely satisfied with the result. And I'm happy that I am no longer spending my time caulking the deck and replacing bungs. And yes, we'll rebed those stanchion bases — they're on the list.

A noteworthy side observation: at the end of six weeks of hard toil, the daily toll of which cannot be described, my wife replied, "Yes, definitely" to my question, "Would you do this job again knowing now what's required?" Now there's a woman to take out to sea on an older boat!

We can all do more than we think we can. I suppose it's good to have this tested from time to time; maybe that's what this boat does for me. The relationship with Diane is even more challenging than this old boat; the durability of both was amply proven to me over those two months.

There's a rhythm to boats and boat problems a lot like the sea itself. The wind waves are almost always there: the humdrum minor maintenance and repair items. Halyards fray and stanchions rust. Keeping it all in good repair is the basic stuff of seamanship.

Then there are the bigger swells: the rollers that carry us from gunwale to gunwale if we're not careful. Engines need overhauling, sails blow out, transmissions fail, and still all of this is manageable in the regular procession of events in the life of a cruiser.

I'd compare this deck project, however, with a tsunami or something near to that. If a person ever sees one, he can only hope to live through it.

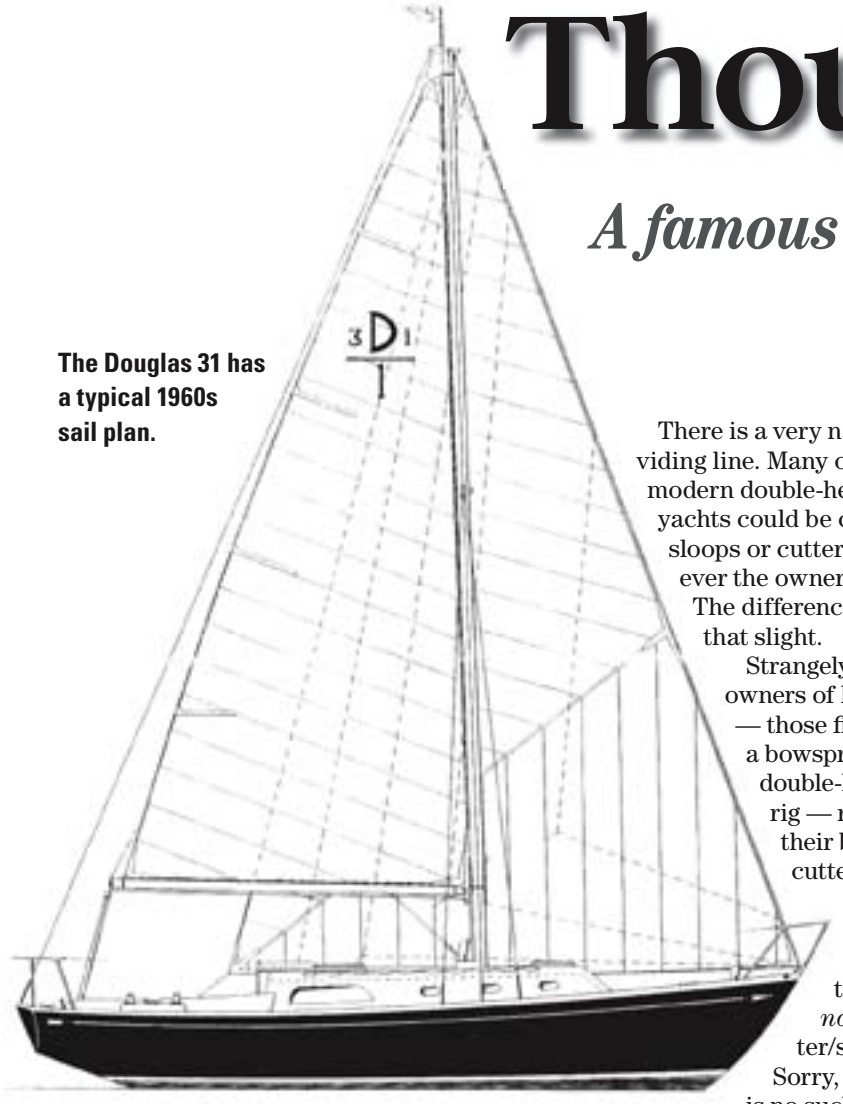
For further reading...

For more on fiberglass and deck repair, refer to *Sailboat Hull and Deck Repair* and *Sailboat Refinishing*. Both books, by Don Casey, are available at <http://www.goodoldboat.com/bookshelf.html> or by calling 763-420-8923.

Thoughts on

A famous designer makes the case

by Ted Brewer



The Douglas 31 has a typical 1960s sail plan.

In the November 2004 issue I touched on the history of the sloops and cutters of two centuries ago and discussed the changes that had been made to those two rigs over the years. Today, it can be difficult to define the sloop or cutter. Many contemporary sloops have the masts placed well aft with large foretriangles and relatively small mainsails, not unlike a cutter. Similarly, many modern cutters are designed without bowsprits, so there is no longer any hard and fast rule as to which is what.

So, for what it's worth, here is the Brewer definition of cutter and sloop. A cutter must have its mast located 35 to 40 percent of the waterline length aft and must have a double- or triple-headsail rig. If the mast is that far aft but the boat has only a single headsail in a large foretriangle, it is a sloop. If the mast is forward of that 35 percent and the boat has a double headsail rig, the boat is a double-headsail sloop.

There is a very narrow dividing line. Many of today's modern double-headsail yachts could be called sloops or cutters, whichever the owners prefer. The differences can be that slight.

Strangely, some owners of ketches — those fitted with a bowsprit and double-headsail rig — refer to their boats as cutter/ketches. It's like calling the *Bluenose* a cutter/schooner. Sorry, but there is no such bird as a cutter/ketch, never has been, never will be. A cutter has one mast; a ketch has two. The ketch with a double-headsail rig — with or without a bowsprit — is a double-headsail ketch. It's that simple.

Unfortunately, too many of our good old boats — particularly those designed between 1950 and 1975 — tend to be somewhat undercanvassed. To a large extent, this was the result of the Cruising Club of America (CCA) rating rule of that era, which allowed a yacht to carry a 150-percent genoa with no sail area penalty. That 150 percent refers to the longest perpendicular (LP) measurement from the luff of a headsail to its clew; the percentage is the LP divided by the J measurement, the distance from the tack to the mast. Thus, a yacht with a 12-foot 6-inch J and a 37-foot 6-inch hoist at the mast, like my 1969 Douglas 31 (shown above), carried a 150-percent genoa with an LP of 18 feet 9 inches and an area of 352 square feet, equal to 76 percent of its total measured mainsail and foretriangle area of 460 square feet.

Low ratings

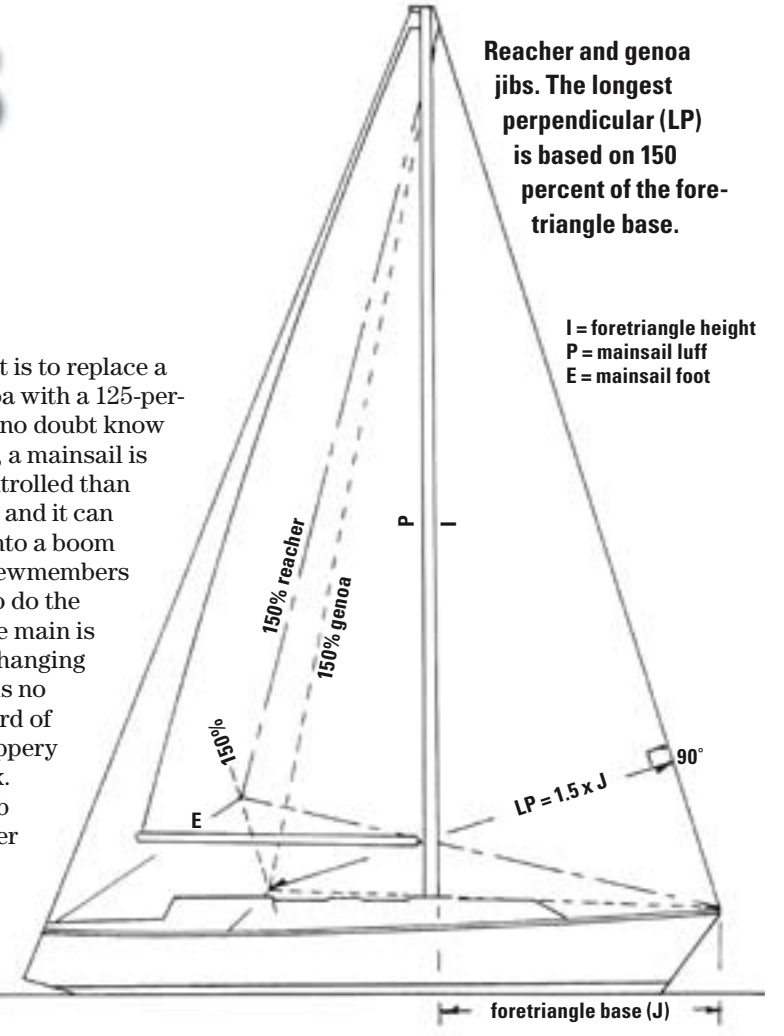
Naturally, many designers (and I'm one of them) chose to undercanvas the standard rig in order to obtain as low a rating as possible for racing and then use those big 150-percent jibs to get the yacht through the lighter breezes. The Douglas 31 has a modest sail area/displacement ratio (SA/D) of 15.8, but even that was higher than many of her contemporaries. For example, the Cape Dory 30 had a SA/D ratio of only 15.1, and the famous *Finisterre*, with her winning ways, had a meager 14.5 SA/D ratio. If I were designing the Douglas 31 today, I'd increase the area to about 500 square feet. Then a smaller genoa would give equal light-air performance to that we now get with that 150-percent jib. The result would be an easier-handled boat. Not having to drag a 20-foot-long genoa around the mast can greatly increase the pleasure of sailing in the typically light-weather summers of the Pacific Northwest, Long Island Sound, and the Chesapeake.

"Unfortunately, too many of our good old boats — particularly those designed in the years of 1950 to 1975 — tend to be somewhat undercanvassed. To a large extent, this was the result of the Cruising Club of America rating rule…"

In any event, the masthead racing rig with its 150-percent genoa is still a very inefficient rig for the total amount of sail that it spreads. The 150-percent

sail plans

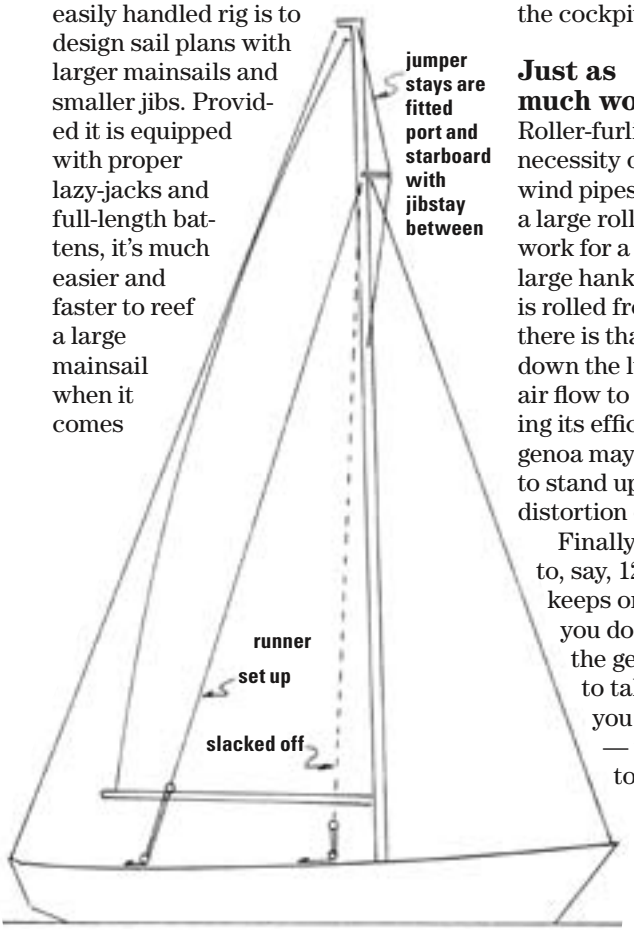
for fractional rigs



Reacher and genoa jibs. The longest perpendicular (LP) is based on 150 percent of the fore-triangle base.

overlapping jib pays its way for racing yachts simply because the overlap area is not included in the sail area; it is "free area," at least as far as the racing rules are concerned. If every square foot of sail area were counted for rating purposes, the result would be boats with small, non-overlapping jibs and large mainsails. This was proven to me in the highly competitive 5.5-Meter class in the 1960s. Designers had the choice of staying with a minimum-size jib and maximum mainsail or increasing the jib overlap and reducing the mainsail area. Once the class settled down, every 5.5 flew the minimum jib and the maximum mainsail as any other distribution of the sail area resulted in a losing boat.

For the coastal cruiser one answer to obtaining greater sail area in an easily handled rig is to design sail plans with larger mainsails and smaller jibs. Provided it is equipped with proper lazy-jacks and full-length battens, it's much easier and faster to reef a large mainsail when it comes on to blow than it is to replace a 150-percent genoa with a 125-percent sail. As you no doubt know from experience, a mainsail is more readily controlled than a flogging genoa, and it can even be locked into a boom gallows while crewmembers take their time to do the work. Reefing the main is also safer than changing a jib since there is no need to go forward of the mast on a slippery heaving foredeck. With modern slab reefing and proper deck layout, it's possible to take in a reef or two without leaving the cockpit.



The fractional rig jibstay can be tensioned by running backstays or jumper stays.

Just as much work

Roller-furling genoas can reduce the necessity of changing sail when the wind pipes up, of course, but tacking a large roller-furling jib is just as much work for a small crew as tacking a large hanked-on jib. And when the sail is rolled from 150 to 125 percent or so, there is that fat lump of rolled cloth down the luff interfering with the air flow to the sail and greatly reducing its efficiency. In addition, a large genoa may be of cloth that is too light to stand up to a stiff breeze without distortion or even damage.

Finally, if you do roll the sail down to, say, 125 percent, and the wind keeps on strengthening, what do you do next? You can't unroll the genoa in half a gale in order to take it down and — unless you have a double headsail rig — there is no stay on which to raise a working jib or a storm jib. (***Note:*** *ATN has come up with a workable solution with its Gale Sail* ***–Ed.***) Adding to the misery is the problem that the small mainsail may not adequately power the yacht by itself. There are answers to the predicament, but none of them is quite as satisfactory or efficient as getting rid of that 150-percent monster when you first need to reduce sail and replacing it with a smaller sail, either hanked on or in a leading-edge foil.

One way to design a sail plan with a large main and a smaller jib is to go with a fractional rig. Fractional rigs, such as ¾ and ⅞ rigs, were popular on cruising yachts in the 1930s and '40s but have been almost completely replaced by the masthead rig in production yachts today. The fractional rig is rarely seen now except on trailersailers, one-design racing classes and, of course, the International Rule yachts such as the 5.5-Meter, 6-Meter, and 12-Meter classes.

One problem with the rig is that it requires either running backstays or jumper stays in order to keep the jibstay taut (see illustration at left),

and neither of these solutions finds favor with cruising sailors these days. It does seem strange that a crew that doesn't object to tacking a huge, overlapping headsail will balk at switching over a backstay runner. Still, for most cruising sailors, the answer is jumper stays, eliminating the need for changing over running backstays with every tack. Jumpers, once common, are also out of style now, yet they make sense. I have used them on coastal cruisers with owners who understood their advantages or were willing to experiment. One of my clients insisted on jumpers rather than running backstays for his 52-foot, double-headsail yawl and managed to sail the oceans for many years with nary a problem.

A better idea

My feeling is that the typical family cruising crew would be better served by a yacht with a well-designed fractional rig — one with a large mainsail and a relatively small jib — rather than the typical production cruiser with its small main and great overlapping genoa. The illustration below shows a typical production yacht with a masthead rig. This is based on an actual rig, not something created solely for this article. Its small 180-square-foot "mainsail" is less than half the area of the 401-square-foot genoa. In truth, this boat's genoa jib is her "main" sail in our usual summer sailing conditions, and that can pose a big problem when the wind strength builds to 25 to 30 knots.

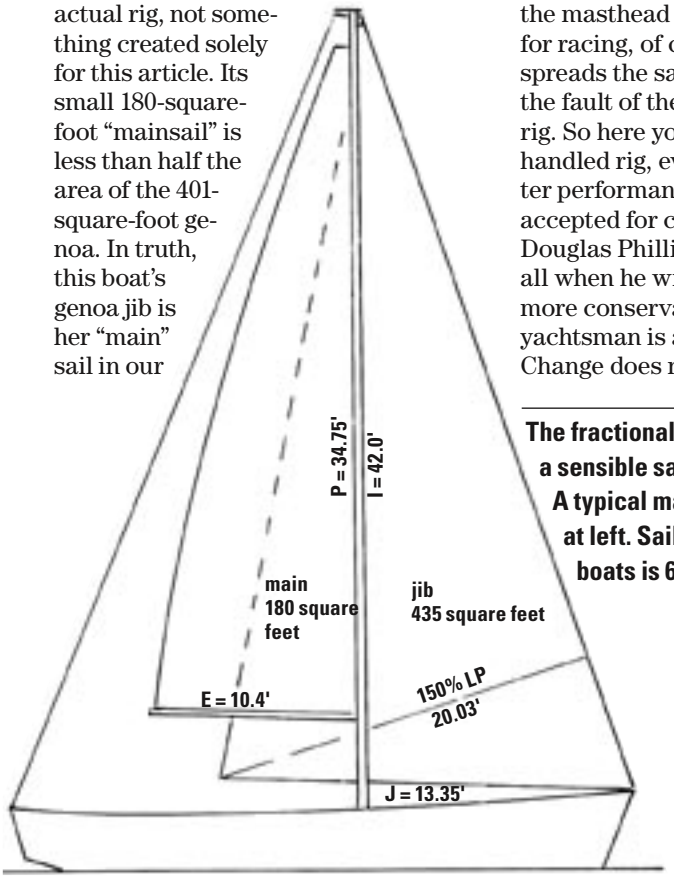
"If every square foot of sail area were counted for rating purposes, the result would be boats with small, non-overlapping jibs and large mainsails."

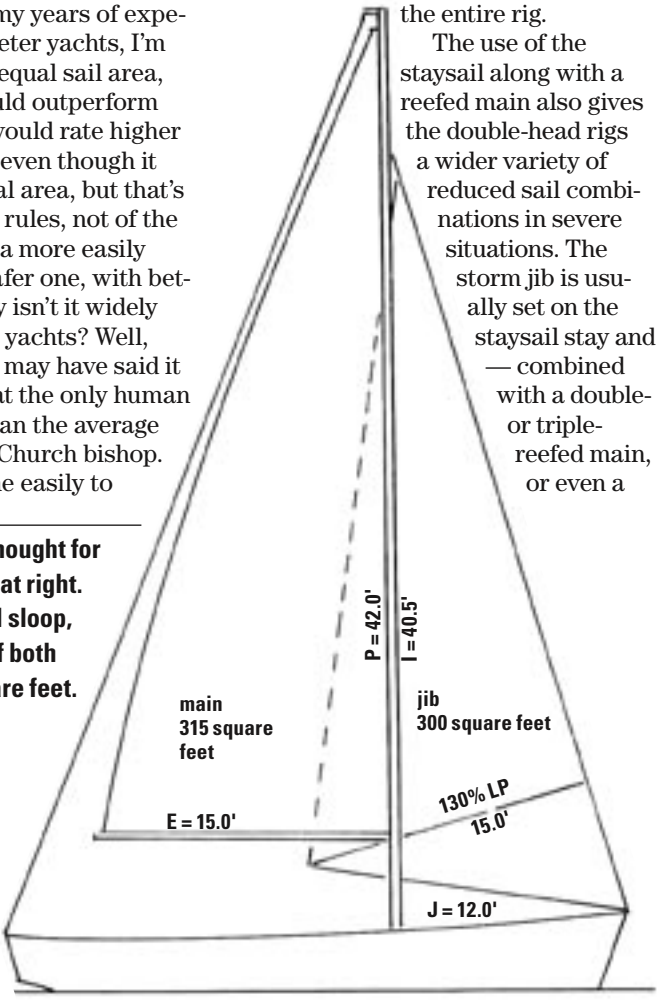
The fractional rig yacht alongside it sets the same sail area as her masthead sister but with a 50-percent larger mainsail and a 25-percent smaller jib. There is no question that the smaller jib will be much easier for a small crew to handle when tacking to weather or reducing sail in a blow. Indeed, the first sail reduction will be to reef the main not to change (or roller furl) the big genoa of the masthead sloop. Furthermore, the mainsail is large enough and far enough forward to power the boat by itself in tight quarters where a big overlapping jib would be a dangerous nuisance.

Finally, based on my years of experience with the 5.5-Meter yachts, I'm confident that, given equal sail area, the fractional rig would outperform the masthead rig. It would rate higher for racing, of course, even though it spreads the same total area, but that's the fault of the rating rules, not of the rig. So here you have a more easily handled rig, even a safer one, with better performance. Why isn't it widely accepted for cruising yachts? Well, Douglas Phillips-Birt may have said it all when he wrote that the only human more conservative than the average yachtsman is a High-Church bishop. Change does not come easily to either and the masthead-sloop rig has been solidly entrenched for well over 50 years now. Obviously, a fractional rig sloop of generous sail area makes good sense for inshore work. It has much to offer in the way of light-air summer cruising convenience and performance over the standard masthead sloop as well as over the cutter for cruising.

Still, the double-headsail sloop and cutter have the advantages of a single-masted rig for deep-water ocean cruising. If fitted with running backstays, they also have the additional safety of the staysail stay (or forestay) forward and are less likely to have a complete rig failure. I know of one of my boats that lost her main backstay while a long way from help, yet the mast stayed up, supported by the running backstays. Sailing with a jury rig of the staysail and reduced main, these sailors were able to get to a port where they could find repairs. A single-headsail sloop would probably have been dismasted completely, and the middle of the Indian Ocean is no place to lose the entire rig.

The use of the staysail along with a reefed main also gives the double-head rigs a wider variety of reduced sail combinations in severe situations. The storm jib is usually set on the staysail stay and — combined with a double- or triple-reefed main, or even a





The fractional rig, a thought for a sensible sail plan, at right. A typical masthead sloop, at left. Sail area of both boats is 615 square feet.

storm trysail — provides a well-balanced rig that can handle very wild conditions indeed.

Better loose-footed

The double-headsail rigs do have a number of disadvantages though. Most cruisers set the staysail on a club so that it is self-tacking, but this can result in a sail that is too flat to be efficient. Where performance is important, it is best to set the staysail loose-footed, but then there are two headsails to tack and, if the boat has running backstays, it becomes unmanageable for a short-handed cruising crew. Too, the staysail alters the airflow in the slot between the main and the jib. If it's not set perfectly, it may reduce performance, rather than add to it.

The ABI forestay release lever, available in several sizes.

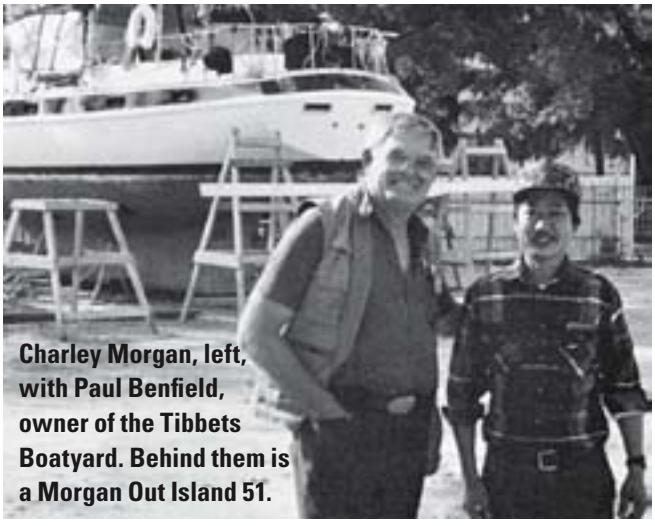
A large Yankee jib is usually a better choice for a double-headsail rig than a deck-sweeping genoa. Visibility forward is much improved, and the high-cut Yankee works better in combination with the staysail. Tacking the jib — whether large Yankee or genoa — through the gap between the headstay and the staysail stay can pose a problem, but it's usually easier to tack a high-cut Yankee through that narrow slot than a deck-sweeping genoa. One option is to drop the jib and sail with staysail and main in crowded waters. However, for most double-headsail cruisers, the better solution is to have the staysail stay set up on a quick-release lever such as the ABI Marine unit shown at left. With the lever in place, the staysail stay can be released, brought aft, and secured to the shrouds. Then the boat can be sailed as a masthead sloop, using only the genoa or the large Yankee as a single headsail to speed tacking. When offshore or in heavier weather, the stay is hooked back up and the staysail set again, of course. Fitting a good staysail-stay release lever can give the singlehander the best of both worlds: the handiness of the masthead sloop in coastal waters along with the safety and the heavy weather sail combinations of the double-head rigs when offshore.

However, for those coastal cruising sailors who have no intention of rounding Cape Horn and heading for Pitcairn Island, the fractional rig sloop, with its large mainsail and small, handy, and efficient jib, deserves serious consideration. I hope other designers will give it some thought as well.

Charley Morgan

He found the best way to win was to build his own boats

by Dan Spurr



Charley Morgan, left, with Paul Benfield, owner of the Tibbets Boatyard. Behind them is a Morgan Out Island 51.

Florida, like California, with its eternally warm weather and friendly skies, is a natural place in which to build boats — and was especially so back in the early days of fiberglass when hulls were cured outdoors using sunlight as the catalyst. A cheap labor pool also was available. Boatbuilders sprang up on both Florida coasts — in Miami and in the Tampa-St. Petersburg area. Many are still there, not on the water where real estate is too expensive but — as in Costa Mesa, California, the Mecca of 1960s fiberglass boatbuilding in this country — inland, back in the dusty, nondescript industrial zones next-door to plumbing and building supplies.

Charles Morgan, born November 17, 1929, in Chicago, now a yacht designer and consultant, hasn't built a sailboat in many years, but during the late 1960s and through the 1970s he was a formidable force in the exploding fiberglass sailboat industry. He was the designer of *Heritage*, a 1970 America's Cup 12-Meter; the designer and builder of *Paper Tiger*, winner of the prestigious Southern Ocean Racing Circuit (SORC); a production boatbuilder of Morgan Yachts; and an independent designer and consultant. He's done it all.

Aeronautical engineer

Charley Morgan grew up on the west coast of Florida messing about in boats and went to college close to home, first to Valencia Junior College in Orlando and then to the University of Tampa, where he planned on being an aeronautical engineer. Following graduation he worked a short time for a telephone company before getting sidetracked by sailing.

"I went queer for boats," he says, explaining why he took a job at Johnson Sails in Tampa and then opened his own loft, Morgan Racing Sails, in 1952 in St. Petersburg.

A colorful, bright, energetic bear of a man, he next taught himself yacht design. His first design and build was called *Brisote*, which is Cuban for squall or fresh breeze. She measured 31 feet 6 inches, had a 22-foot waterline, an 8-foot 6-inch beam, a 5-foot draft, displaced 4,500 pounds, and carried 283 square feet of sail. Charley Morgan and his friend, Charlie Hunt, designed and built her out of plywood with a steel backbone. Initially, she had a Star Boat keel and rudder, a Thistle mainsail, and a modified Penguin sail for a mizzen. Later, Charlie Hunt built a bolt-on fiberglass keel for trailering. Together they entered *Brisote* in the 1957 St. Petersburg-Havana race, but the committee rejected her because she had no engine. Charley protested what he thought was a ridiculous rule and won a reversal. The two went on to take second in class. This success inspired what is probably Charley Morgan's most famous design, the 40-foot *Paper Tiger*, which has a yawl rig like *Brisote*. Charlie Hunt had just shown him an early one-off fiberglass boat called *Rare Aves*, a fixture at the Coral Reef Yacht Club in Miami. After seeing it, Charley decided to give *Paper Tiger* a fiberglass hull too.

Rust, shatter, and rot

Charley built the hull and deck himself, with help from a young aerospace engineer named John Mills. Charley recalls stopping by the local yacht club one day after finishing work at the shop. "The old savants were sitting in the club, and I came in with resin all over me. One of the guys said, 'I understand it's got a steel backbone, wooden decks, and a fiberglass hull; you know, it's gonna rust, shatter, and rot.' "

Clark Mills, designer of the International Optimist Pram and the Windmill, finished *Paper Tiger* for Jack Powell, for whom Charley had designed her. But at first Clark was skeptical. When Charley showed him the boat, Clark hooked his thumbs in his pockets, chewed on his stogie, cocked his head, and said, "Well darn-it, I've built boats from scratch, kits … you name it. But this is the first time someone's brought me a coat of paint and asked me to build a boat inside it."

History will not forget what that "coat of paint" accomplished. In an un-

The one-off *Rare Aves*, the first fiberglass boat Charley ever saw, inspired him to build *Paper Tiger* out of the same new material. *Rare Aves* still sails today from her home port in the Florida Keys.

and the fiberglass factory

At Morgan Yachts' St. Petersburg, Florida, facility, men worked from scaffolding on boats of all sizes. Note how the decks were moved and positioned from overhead beams.

precedented feat, *Paper Tiger* twice took overall SORC honors in 1961 and 1962.

Charley next designed the 28-foot Tiger Cub and began looking for a builder. The search proved futile, so he did the only logical thing he could — he formed Morgan Yachts and built them himself. They were all essentially one-offs, that is, they were not built from the same reusable mold.

The Tiger Cub later became the Columbia 31, but that didn't happen until after Dick Valdes and Vince Lazzara put Charley's 40-foot Sabre into production as the Columbia 40, a generous move by Vince which was intended to help Charley launch his own business.

Lost the Circuit

The speedy centerboarder had nearly won the 1964 SORC and looked to be a good bet for the general market. "We won the Nassau Race and the Lauderdale Race," Charley lamented years later, "and still lost the Circuit, if that's possible."

Also that year he built what he says was then the world's largest fiberglass sailboat, the 60-foot *Maredea*, whose hull form was tank tested. The result: first place in the St. Petersburg-to-Venice, Florida, race.

In 1965 business was so good the company temporarily stopped taking orders. They were building a wide range of boats, from the $995 Windmill to a $44,900 45-footer. Gross that year was $1.7 million. Unlike a lot of builders, Charley handled finances well, once remarking, "Nothing leaves that driveway out there unless and until it's paid for."

Charley's childhood friend, Bruce Bidwell, joined him that year and together they introduced the Morgan 34, which the ads described as "an immediately successful racer/cruiser and an attractive, beamy, keel-centerboarder, CCA-style yacht . . . for families for whom yachting is a way of life."

The Cruising Club of America (CCA) rule attempted to encourage designs that would be safe, comfortable family cruisers as well as decent performers on the racecourse. Notable features included short waterlines (the long overhangs would immerse when heeled to increase sailing length beyond the measured length), large mainsails and small foretriangles (partly because big multispeed winches hadn't been developed yet). These boats were often yawls because the mizzen staysail was essentially unpenalized by the rating rule. A lot of them were centerboarders because shoal draft was important in Charley's native waters of south Florida.

Smaller wetted surface

In the Morgan 24, the rudder was separated from the keel-centerboard — a major step forward in yacht design. Charley wasn't the first to do this, but the Morgan 24's racing record helped to validate the idea. Not only did the emergence of the fin keel help the boat turn more quickly in prestart maneuvers, it also greatly reduced wetted surface area, which meant less friction and, therefore, faster speeds.

The Morgan 24 is still a good performer by today's standards, with moderate displacement and shoal draft. And — priced around $5,000 — it's a terrific value for anyone looking for a boat in this size range.

Other boats to follow included the Morgan 30, 41, and 45, which later was built as the Starrett & Jenks 45. But it was the development of the Out Island series — 28, 33, 36, 41, and 51 — that gave the company a big burst of business.

Charley's interest in racing never waned, though, and he continued to design and build custom boats. One was *Rage*, which he, with Halsey Herreshoff as navigator, took to second place in the 1968 Newport-to-Bermuda race.

The Out Island series

"The Morgan Out Island 41," Charley says, "was the extension of a long study period, where we tried to create a commodious and comfortable tri-cabin arrangement. In 1970 we finally got it worked out — human engineering and ergonomics. We designed and aimed it at cruisers as well as the charter-boat market. We sought input from a lot of companies big and small, including the Moorings and Jack Van Ost [a dentist who became a successful builder of CSY boats for his charter business].

"The boat was designed to compete with the boats being put out by Gulfstar, which were for a new market that Vince Lazzara [who by now had left Columbia in California and started Gulfstar in Florida] had perceived. Our dealers had requested for a long time a boat without a centerboard that was shoal with lots of room; it didn't need to sail like a rocket. It came out at the Annapolis Boat Show and was an instant sellout. We built, in the first calendar year, over $4 million worth — 120 units. Eventually we built those

Charley Morgan's first boat, *Brisote*. Demonstrating considerable resourcefulness, she had a Star Boat keel and rudder, a Thistle mainsail, and a modified Penguin sail for a mizzen.

***Paper Tiger* was perhaps Charley's most famous design. She won the SORC for two consecutive years, in 1961 and 1962.**

Between 1971 and 1984 more than 1,000 Morgan Out Island 41s were built. Later, after Catalina Yachts acquired some Morgan molds, the 41 was resurrected with minor modifications and sold as the Morgan Classic 41.

boats on two lines, with them coming off the combined lines one a day. They number in excess of 1,000."

In all, Morgan Yachts built more than 40 different production models, beginning with Charley's trademark centerboarders, the Out Islands, the Henry Scheel-designed 45/46 (originally built by another builder as the Scheel 45), and a number of boats designed to the International Offshore Rule (IOR), including the Morgan 33 ¾-Ton and Morgan 36 One-Ton. Sailing Kit Craft made a number of designs available in kit form because, as Charley says, "there were so many people who wanted to get a hold of one of our boats who couldn't afford a finished boat." But along with a handful of other 1970s builders, such as Islander and Columbia, Morgan Yachts dropped the practice because many owner-completed boats were poorly finished, reflecting adversely on the manufacturer.

Retirement day

Charley remembers well the day he retired. It was June 6, 1972, he recalls with certainty. It was easy to see that divorcing himself from the company he'd created was a watershed in his career . . . and life. He'd merged the company into Beatrice Foods four years earlier (1968) and had stayed on as chairman of Morgan Yacht Corporation. But for Charley, like many people, working for a large corporation was difficult after he had been in business for himself.

Later, Beatrice Foods sold Morgan Yachts to Thor Industries. Subsequently, in 1984 it was passed along to Frank Butler and Catalina Yachts, which continued to build the Morgan 38 and the Out Island 41 (Classic 41) for a number of years before finally putting them to bed.

Of Morgan Yachts' many accomplishments, one that makes Charley positively beam is the boats he built for Disney World long before it got into the cruise business. "There was a time we built the largest fiberglass boats in the world," he said. "Morgan Yachts designed and built the principal original watercraft for Disney World, a whole fleet of them, the largest of which is around 120 feet — submarines, the jungle cruise boats, the steam launches. In all, more than a hundred. It's exciting the way you can completely create out of glass something that looks like wood; on the submarines we faked the scales and rivets. We created an incredible theatrical appearance for Disney."

"The Morgan 24 is still a good performer by today's standards, with moderate displacement and shoal draft. And — priced around $5,000 — it's a terrific value for anyone looking for a boat in this size range."

Charley also designed motor yachts such as the West Indian 36, a hovercraft, and *Heritage*, the last wooden American 12-Meter (*France II* was the last in wood among all nations). Alas, *Heritage* lost to *Intrepid* in the 1970 defender trials.

Way of measuring

Cindy Goebels, reporting in *Southwinds* magazine, said Charley explained his interest in the America's Cup thus: "It's all just another way of measuring yourself. Competitive men always want to know how big they are in relation to others, how they can perform. Dollars are a way of keeping score. There may be other means in a more mature society. Why this? Well, there's damn little you can justify outside of wanting to keep on breathing." Charley Morgan was always a good interview, seldom mincing words.

Morgan Yachts' St. Petersburg facilities were considered modern and first-class. "We maintained a laboratory and did a lot of outside testing," Charley says. "We were using balsa cores from the beginning. Later I was a great proponent of Airex. Then came Divinycell, Klegecell, carbon fibers, Kevlar, and the utilization of high-modulus materials. Way back in 1965 and 1966 we were researching work done in the aircraft and aerospace industry. But those materials had no place in yacht building in those days because lightness was not the keynote; the economic issues were more important . . . and the ability to have readily available resources."

Charley likes to talk about how the advent of fiberglass changed the face of American boating. "You didn't have to be an extremely wealthy person to think about owning a boat," he says. "The concept of the non-wasting as-

set. You could treat 'em and deal 'em like automobiles. You had an orderly market and the burgeoning charter boat and used-boat market. It just altered completely the brokerage firms. Back in the days after the end of World War II, you could count on your fingers the brokerage firms: S&S, Northrop & Johnson. Bang, bang, in one fell swoop, the tides changed and ripped over us.

Morgan 41

Dramatic change

"The thing that kept coming through to me was the dramatic change that was made by fiberglass and the huge opportunity given to the American boater.

"Look at the Ensenada Race — all the ones going down to Mexico — huge clusters of boats! In the Great Lakes, the Mackinac Race had a few entries before the war, but bang! At the end of the war they started getting some fiberglass boats on the scene — my word! — you're looking at 100-boat fleets or better. It made a major change for Americans who wanted to become part of sailing and yachting. Our ad used to say, 'The past decade's most exciting new construction medium.' How prophetic those words were.

"What sort of disturbs me these days is when they tag the sailing boat people as elitist. I like to say that they're really more dedicated and enthusiastic about their sport and therefore have organized it more so it has the appearance of elitism.

"The only boats I've seen break up are some racing boats that were really lightly built, crossing the Stream or something. I've traced a few of those stories about boats splitting in two — bull! I'm sure there are some examples, but the truth is that fiberglass is marvelous."

And of the strength and longevity of fiberglass?

"I hate to tell you how quickly a wooden boat goes down. We crossed the finish line down in Sarasota after getting chewed up in a nor'wester at the crack of dawn. We could see the committee boat in the murk, saw her lights and the farewell marker at Sarasota Pass. We went zooming by, struck the chute and mizzen staysail, jibed over, cranked up the engine, cleaned up the forward deck and started banging through the slop up toward the pass. Dawn had come. I looked up and yelled, 'Hey, look! There's some spreaders sticking up out of the water.' The committee boat broke its line, blew up on the bar, popped like a cantaloupe, and went straight to the bottom. Pieces floating; heads bobbing around and lifejackets. She went down that fast. You kidding me?

"Yet I saw a whole night when [the fiberglass sailboat] *Inferno* sat over on the bricks at Lucaya [Grand Bahama] banging and slamming and screaming and moaning on those bricks. My heart was going out to that boat…the sea bursting over her. Three days later I saw her hauled out at Spencer's in Palm Beach, and I went over and got up inside the boat, looked at the keel — gnawed up a little bit. Not bad!"

Another company

Guys like Charley Morgan are never really retired, even though they sometimes think they are. In 1975 he started yet another boatbuilding company, the Heritage Yacht Corporation. Perhaps anticipating the trend toward power, this time he built both fiberglass sailboats and trawler motoryachts. That venture wasn't as financially successful, however, and he was forced to seek protection from creditors under Chapter 11 of the federal bankruptcy code. Subsequently, in the early '80s he served for a short time on staff at Chris-Craft, while the remaining assets of Heritage went to Catalina, which had also bought Morgan Yachts from Thor Industries.

Today, Charley keeps a design studio in his home. Recent projects include two long-range motoryachts, one steel, the other aluminum, by Topper Hermanson. But, he says, new design commissions have fallen off considerably since 9/11. He says, "I'd love to do a full-powered steel auxiliary for the right person. Totally self-suf-

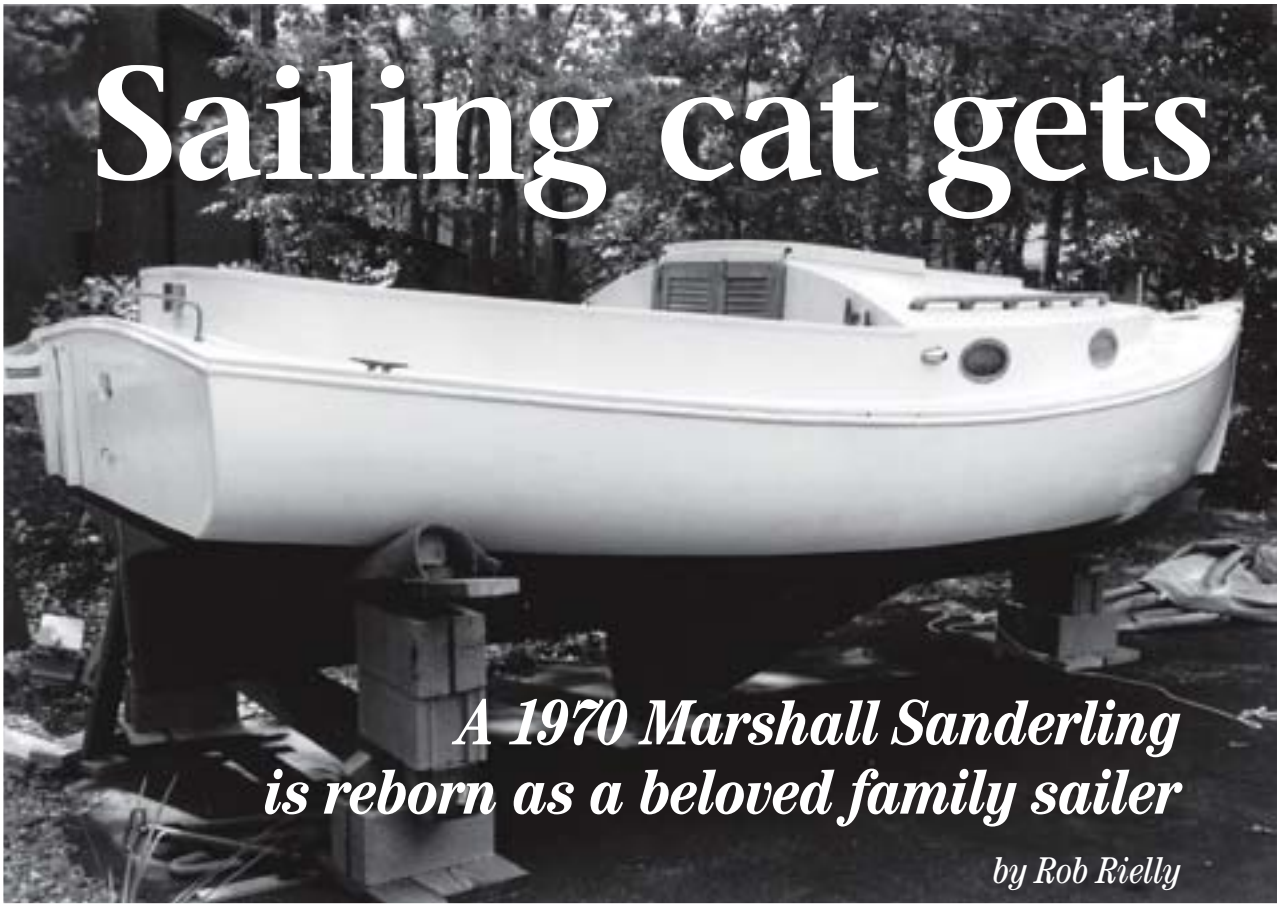
Continued on Page 71

Morgan 22

Morgan 38

Morgan 41

Sailing cat gets



A fleet of 18-foot Marshall Sanderlings caught the attention of Rob and Lucille Rielly, but they wanted a fixer-upper. This one fit the bill nicely. These days Marshall Marine is offering an open-cockpit version of this classic catboat. This earlier standard version had a small cabin.

A 1970 Marshall Sanderling is reborn as a beloved family sailer

by Rob Rielly

We had sailed for about 20 years before putting a halt to our nautical adventures. The necessity of repowering our Pearson Triton and the prospective costs of sending two children to college had made it financially impractical. We moved on to other less costly endeavors.

Our admiration for classic boats had never abated, however, and by happenstance we were brought back to our love for boats. In the summer of 2002 we attended the Green Head Fly Festival, an annual event held at the Tuckerton Seaport Museum, south of our home in Toms River, New Jersey. That afternoon, six Marshall Sanderling catboats made their appearance and tied up at the docks.

As we stood by admiring their classic good looks, I casually asked my wife, "So what do you think, should we buy one?" To my surprise, she responded positively, and we both recalled how we had investigated the purchase of one many years before but found Sanderlings to be out of our price range at the time. Although, with children settled, we could now afford to spend money on a boat in our retirement years, my wife reminded me that I was as enamored of working on boats as I was of sailing them. Our decision was to find a fixer-upper I could play with.

As we looked at Sanderlings in the local boatyards, online, and in the newspapers, it seemed that a decent boat would run about $12,000 to $15,000, depending upon age and condition. Since the frames, deck, and seats were made of wood, I was reluctant to spend the maximum, figuring there would have to be bad wood somewhere in the boat that would require serious work. A piece of bad wood was like the tip of an iceberg, I figured. Where some is visible, there is much more below. I decided the only important thing was a sound glass hull, including the glassed-in plywood transom.

"As we stood by admiring their classic good looks, I casually asked my wife, 'So what do you think, should we buy one?' To my surprise, she responded positively…"

In need of repair

The ideal boat for my purposes appeared in the newspapers. It was a 1970 model, and the owner was asking only $7,000. When I saw her laid up in the yard, it was obvious why the price was so low. The elderly gentleman who owned her had not sailed her in a few years, and she was sadly in need of repair. While the glass was sound, the wood was another matter.

Sanderling cabins have an opening in the aft end near the sole, which allows the placement of ballast under the cockpit sole. I reached under the cockpit and came up with wet, disintegrated wood. In spite of having been on land for a couple of years, the frames under the sole seemed damp. The aft end of the cabin is a plywood bulkhead glassed to the gelcoated and finished exterior. All around the door the wood was soft and rotted. The entire bottom half of the cabin bulkhead was equally soft, indicating that it would need replacement. The hatchway was framed with ancient and split teak, and the louvered teak doors were cracked. Black mildew covered the interior of the cabin. This boat needed a complete redo.

The Sanderling's construction is similar to many glass boats of her size. Most have longitudinal stringers and transverse bulkheads used for stiffening the hull. Water eventually finds its way to the wood and rots it, requiring replacement. The procedures described in this article can be adapted

10th life

to other boats of similar construction.

An exterior survey indicated that most of the gelcoat was sound. There was some crazing in the gelcoat and pits on the toerail where air bubbles had broken through. My plan was to fill in the crazing and any nicks or dings in the hull and deck and repaint it. The hull was white, but the decks, cabintop, and other parts were a faded blue. Buff-colored paint would cover the blue, and the hull and other areas would be painted white. The aluminum mast, boom, and gaff were sound but covered with scrapes and scratches. The coaming caps and rubrail on the older Sanderlings were of vinyl. These would be replaced with teak. Affixed to the transom was an outboard bracket of vintage design and in poor condition. It would be replaced. Wires peeked out from under coamings and floorboards. The running lights were on their last legs. These would all need replacement. I had what I wanted: a sound hull in need of some serious restoration work.

Sloppy work

Discussions with the boatowner revealed that the cockpit sole had been replaced, allegedly with marine plywood, glassed in. The work was sloppy; I could only guess that the owner had wanted to repair the obvious defects to make the boat more saleable. Negotiations were difficult, as the old man had his price, but I managed to get it for $6,000, and within two weeks the Sanderling was sitting in my driveway ready for work.

The first stage involved determining what needed to be replaced and how to proceed. I stripped everything off the boat that was in the way — vinyl rubrails and coaming cap, portlights, chocks, cleats, and miscellaneous hardware. After 30 years, the windows were heavily crazed and cloudy.

"The ideal boat for my purposes appeared in the newspapers. It was a 1970 model, and the owner was asking only $7,000. When I saw her laid up in the yard, it was obvious why the price was so low."

I was concerned that the hull not lose its shape, so I determined that I would have to take the frames out and replace them one by one. I cut an 18-inch square opening in the cockpit sole, aft of the cabin and investigated the first frame (see photo below). The entire frame was wet, as was the one behind it. I decided to replace all of the frames and any other wood I could get my hands on.

This undertaking was not as reckless or bold as you might think since working on boats has been an avocation of mine for many years. Our first boat was a Hartley Trailer-Sailer 21, which I built in our garage from a set of plans. It took about two years to complete, and I enjoyed building it.

Wood rot was evident around the companionway door and bulkhead, below left. Rob fastened new half frames in place with epoxy, below right.

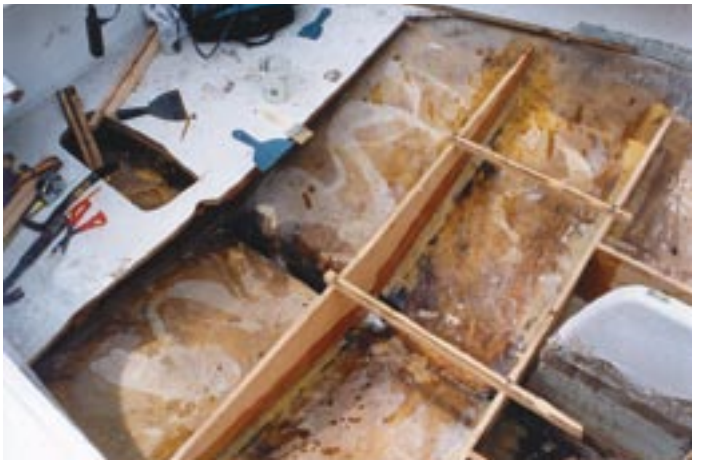
We had that boat for 11 years, and our two kids grew up on it. We cruised with them, and I spent the off-season maintaining it. We outgrew it and purchased a 1964 Pearson Triton sorely in need of work. The only shortcoming was the aged Atomic 4, which eventually led us to sell her after five years.

Years of grime

The work on the Sanderling began with a good cleaning. My wife, Lucille, went after the interior mildew with a vengeance and many bottles of Spray 9 cleaner. She removed years of grime.

To get at the sole and bulkheads it was necessary to remove the seats. With them out of the way (and saved for patterns), I was ready to tackle the sole and frames. Work began on the cabin wall and first frame. The gelcoated glass cabin wall ended about deck level. Beneath it was a ¾-inch plywood bulkhead with a compartment on either side of the centerboard case to hold the ballast. Much of the wood was rotted. I set the depth of the cut on my circular saw to a hair less than one-half inch in order to cut through the half-inch plywood but not score the fiberglass. I removed the rotted wood with a chisel and mallet and pulled the rotted bulkheads free. Next I went over the area with a rotary sander, preparing it for the new glass and plywood.

Fortunately the old bulkheads had come out in one piece. I purchased ¾-inch fir marine plywood and cut bulkheads from it. After careful fitting, it was ready for the next step. To prevent water saturation in the new wood, I rolled two coats of epoxy



resin over the surface of the frame, paying particular attention to the edges of the plywood. It was not my plan to have water in my bilges, but as an experienced boatowner I felt it better to cover all my bases.

No great difference

A note about materials is important. I use only marine-grade plywood. Some builders use exterior-grade plywood, but the difference in cost between a few sheets of marine-grade and exterior plywood is not that great. The major expense in this type of restoration is in man-hours. I would much prefer to finish the job and have confidence that I have used materials that will last as long as possible.

I fastened the two new half frames in place using epoxy resin. Clamps held each in place as it cured. The outboard parts of the frame were clamped using blocks of wood, screwed together, on each side of the wall. In each side, I cut a rectangular hole to allow the placement of ballast under the cabin sole.

I fastened the bulkhead below the cabin wall and the next bulkhead in place using #10 silicon bronze screws and epoxy. Three layers of 6-inch fiberglass tape and epoxy secured all joints. Each of the bulkheads had a notch cut out in the top to take a wide plywood stringer to stiffen the boat and provide a place to secure the two halves of the plywood sole.

I worked from fore to aft in the cockpit area, carefully cutting away the old deck, chiseling out the old glass tape, and sanding it with 60-grit paper on a rotary sander. I then cleaned each area with Interlux Fiberglass Solvent Wash to degrease it. Each bulkhead was secured to the next with temporary battens to keep them aligned. Once the entire sole was removed and each frame securely in place, I ran battens fore and aft in the cabin to make sure there were no high or low spots. Since I had taken care to line things up properly, the tops of the bulkheads needed only some minor planing. After giving each bulkhead two coats of epoxy resin, I glued and screwed the ¾-inch plywood stringer fore and aft to tie them together. At this point most of the nasty work was done. I could begin construction of the cabin sole.

Bulkheads were secured with temporary battens to keep them aligned, above left. Fore and aft stringers tied them together, above right. Because the cockpit sole would not be removable, the installation needed to be impervious to water, below left and right.

Two epoxy coats

The sole was cut from ¾-inch marine plywood and glued and screwed into place. Prior to laying each half down, I rolled two coats of epoxy on the bottom to protect it. Once the sole was in place, there would be no way to check it, so I wanted it to be impervious to water. Because each of the screws had been countersunk, it was necessary to cover the holes and center seam with polyester putty. In order to make a smooth transition from the sole into the hull sides, I filled the space between the edge of the plywood and the hull with fiberglass-reinforced polyester putty. Two layers of 6-inch glass cloth finished all seams and bonded the sole to the sides. This was then sanded smooth so I could cover the sole with glass cloth.

I laid several sections of glass cloth, overlapping by about 6 inches at each joint. Then I rolled on two coats of epoxy resin to fill in the weave. I sanded the edges smooth once it had cured.

Using the old seats as a pattern, I cut new ones from ½-inch marine plywood. For stiffening, I screwed and glued battens made from ¾-inch Phil-

ippine mahogany to the underside, one running along the seat edge and two running perpendicular to it. I gave the entire undersurface of the seats two coats of epoxy resin as a sealer.

I made support battens from ¾-inch mahogany and glued and screwed them to the transom and aft end of the cabin at the appropriate height to support the seats. I planned to make face frames and doors under each seat to enclose the storage spaces. I secured the outer edges of the seat to the hull using two layers of 6-inch cloth and resin, top and bottom. I then covered the entire seat with a single layer of cloth and two coats of epoxy resin. Two coats of paint on the seats and cabin sole finished the job.

Trimmed to size

One of the factory options on the Sanderling is a pretty teak centerboard cap that extends into the cockpit. I purchased one from Marshall Marine and trimmed it to size. Final installation would have to wait until some more basic construction was completed.

A pair of cabin shelves was another option. Since extra storage is always useful, I cut some patterns out of scrap plywood and fashioned the final shelves out of ½-inch marine plywood

and glassed them in place. I covered the surface of each shelf with cloth to make everything consistent. Now painting was necessary before I could install any more teak trim.

Preparation of the surface to be painted is important. A layer of paint is extremely thin and will show up any imperfections beneath it. The hull had numerous dings where 32 years of sailing had taken its toll. It also had many tiny holes in the toerail area, where air bubbles in the layup had worked through. I filled these with polyester putty and sanded them smooth. The non-skid pattern on the deck had worn over the years. One spot was crazed and cracked. Since it was my plan to use non-skid paint there, I scraped out the cracks and loose plastic and filled them with polyester putty. After it hardened, I sanded it smooth. It would provide a good surface for the paint.

I used Interlux paint on the boat hull and deck, painting with two coats of Brightside Polyurethane White. This went nicely with the Sundown Buff color for the deck, cabintop, and other areas. Since the original non-skid surface was quite worn, and two coats of paint would not improve traction, I mixed Interlux No-Skid Compound in the deck paint. This proved to be extremely good, particularly when the deck was wet. I also mixed in the Interlux Flattening Agent so the deck and cabintop would not be too shiny.

The cockpit sole installation is sanded and prepped, above left. The cockpit grate becomes a reality in Rob's workshop, center, and in the cockpit, below left. Coaming caps, at right above, and cabin, below.

Some of the Sanderlings I had seen carried the buff color up the cabin sides. Instead, I masked the walkways carefully and painted just the areas that had originally been blue.

Helpful suggestions

One of the benefits of restoring a boat that is still in production is that many materials are available from the manufacturer. Marshall Marine was helpful in making suggestions and shipping parts that were impractical for me to make. I purchased two teak rubrails, handrails, coaming caps, eyebrow trim, and a pair of teak louvered doors. They were shipped promptly. I could not have purchased the teak for the doors or rubrails for the price I paid for the finished products. Since there was much work to be done on the boat, and I wanted it in the water by spring, this saved time.

The next step was screwing the rubrails into place using 1½-inch #10 stainless screws. Each hole in the teak had to be drilled and countersunk to take teak bungs. Screws were set on 10-inch centers with a couple of extra screws at the forward end of the rail. I gave each hole in the hull a good glob of BoatLIFE caulking. Then I plugged each hole in the teak rail. Since teak is expensive, I always save any scrap. The drill press and a plug cutter provided all the bungs I needed.

Once the rubrails and handrails were on, it was time to do the coaming caps and cabin trim. I ran the trim around the cabin edge first, since producing a fair curve between it and the coaming caps might require some planing. The trim was fastened with 1-inch #10 stainless screws on 10-inch centers. Once the trim reached the edge of the coaming I clamped a long flexible batten in place and marked how much had to be planed off the top part of the coaming so the line would be fair. With this material removed, it was now possible to screw the coaming cap in place. I used bedding compound in the groove under the coaming cap to seal the top edge of the plywood coaming. I then removed the hatch and trimmed it all around with teak.

"One of the benefits of restoring a boat that is still in production is that many materials are available from the manufacturer."

Built-up ring

Sanderlings have a hole in the deck through which the mast is stepped on the stem. On early models, such as mine, it's flush with the deck; on later models there is a nicely built-up ring around the hole to prevent water from entering. I decided to update to a newer type. I cut two rings from ¾-inch teak and glued them together at cross grain using resorcinol glue. After the ring was dry, I gave it a final shaping and sanding and then gave the bottom three coats of Cetol. Once it had dried, I applied a liberal amount of mahogany-colored Sikaflex bedding compound under it and screwed it to the deck. The screw holes were plugged and finish sanded. Then I gave the ring four coats of Cetol.

Next I installed exterior hardware, running lights, and ports. The new Plexiglas was a decided improvement. The next stage would involve some serious customizing of the cockpit. I decided the seat lockers should have three lids. I cut a teak frame about 2½ inches wide on top, bottom, and between the locker lids. The aft end needed to be wider to conform to the rake of the transom. Once the frames were screwed and glued together I screwed them to the underside of the seat and the cockpit sole. Liberal amounts of bedding covered the screw holes in the sole to prevent water from creeping in. I made three lids for each side and fitted these in place using brass hinges and hasps.

New teak trim

The companionway was next. New teak trim strips and entrance framing had to be fashioned from ¾-inch wood. Once the frame had been fitted, I fastened it — along with the centerboard cap — securely in place using screws and bedding material. I installed an Aquameter compass through the port cabin wall.

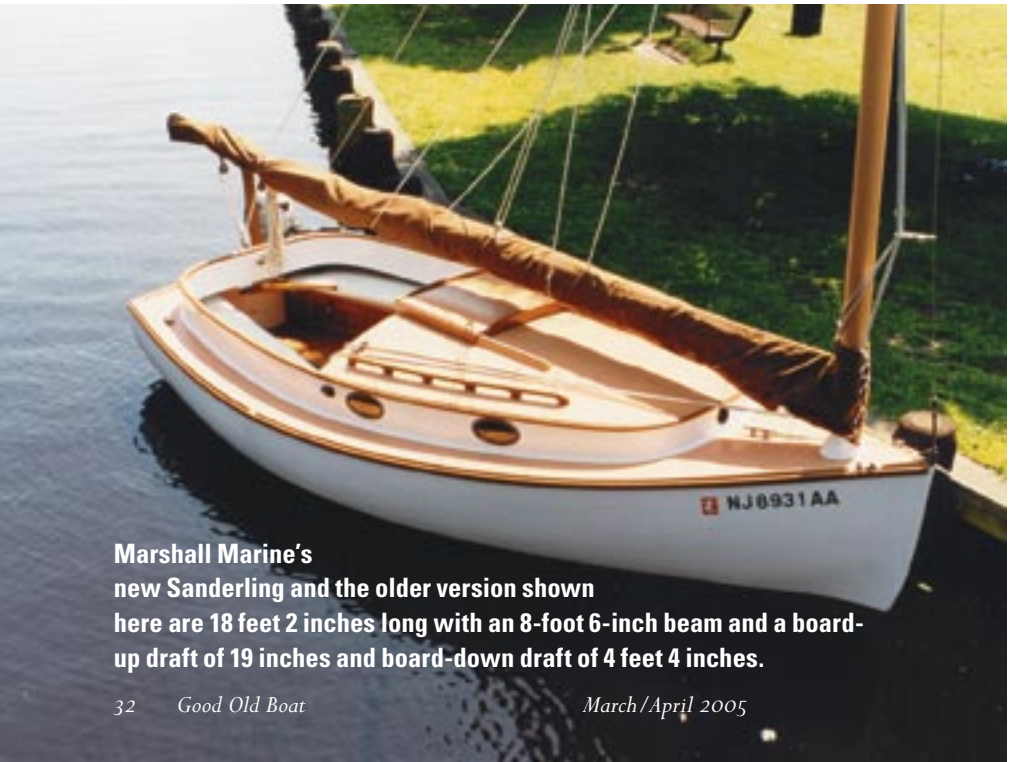
I decided a teak grate would finish the job nicely. I made this in two sections with a strip of teak running down the center of the cockpit sole to keep it in place.

The interior needed some additional work. After carefully painting the overhead, sides, berths, and sole, it was time to install teak trim. I trimmed the shelves with teak and made holders for my VHF, binoculars, and general storage. I placed a teak cap over the centerboard case inside the cabin and installed drop leaves on each side using brass piano hinges.

I gave all teak, inside and out, four coats of Cetol. Teak has oil in the wood that must be prepared before finishing, or the varnish will not hold well. This is countered by sanding and wiping with acetone prior to application of the Cetol.

The original berth cushions were showing signs of deterioration. We had new cushions made to match the paint scheme, threw in some pillows, and we

Continued on Page 70

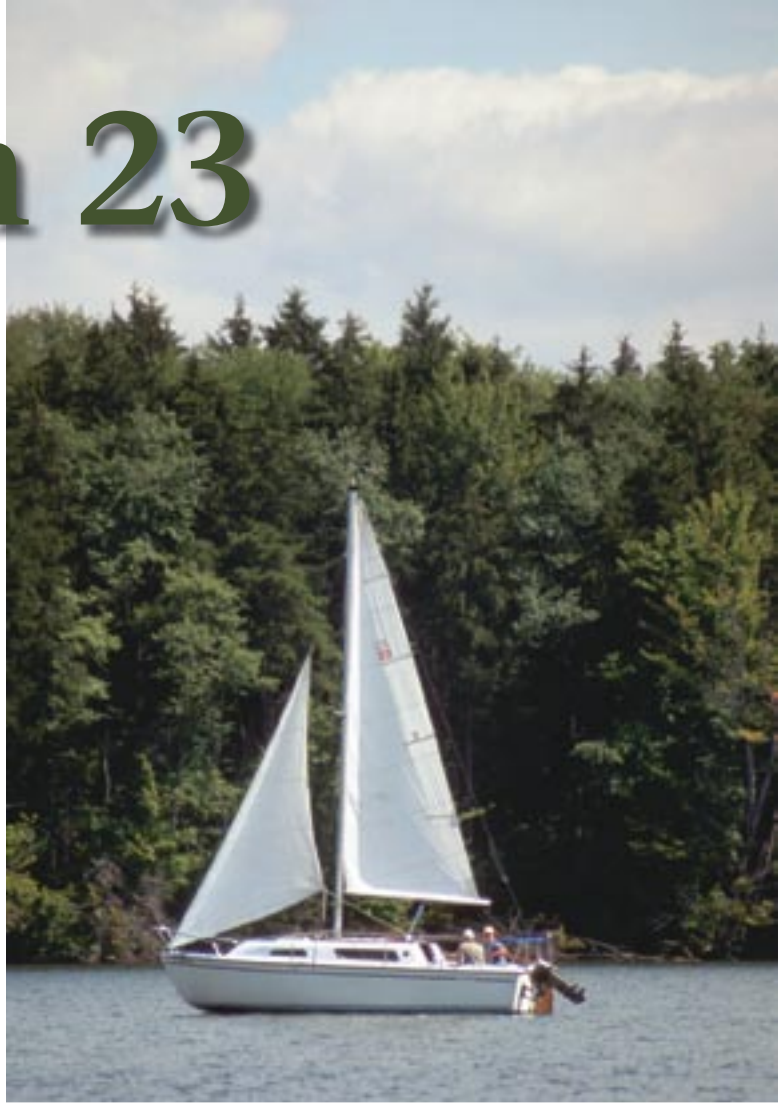


Marshall Marine's new Sanderling and the older version shown here are 18 feet 2 inches long with an 8-foot 6-inch beam and a board-up draft of 19 inches and board-down draft of 4 feet 4 inches.

American 23

The patented hull gives this boat "space appeal"

by Gregg Nestor



***Lazy Daze*, a 1976 American 23, owned by Dan Merkle, enjoys a light and lazy summer day.**

Reinell Boat Works of Marysville, Washington, specialized in fine lapstrake and carvel-planked fishing and pleasure boats from the company's inception in 1928. In 1957 they started using fiberglass as a boatbuilding material, replacing the cedar, mahogany, white oak, and other woods they had been using. Not long after that the company expanded its product line to include sailboats. One of the first offerings was a 26-foot pocket cruiser called the RSC2600.

The hulls used by Reinell Boats for their sailboats were designed and patented by Arthur S. Henry. To achieve more headroom, he patented the concept of extending the sailboat's cabin sole into the keel. This provided Reinell Boats with what they must have thought was a breakthrough marketing edge.

Production of both power- and sailboats continued into the mid-1960s. In 1967, the owner, Nick Reinell, sold the company. Around this same time, or soon after, one of two events took place. Either Reinell decided to quit producing sailboats and sold the molds to the newly formed American Mariner Industries, or Reinell employees purchased the molds, left the company, and formed AMI. No one knows for sure. In 1980, following a series of disruptive management changes, Reinell Boat Works ceased operation and all its assets were auctioned off. This effectively wiped out all documentation of the company's 52-year history.

"To achieve more headroom, he patented the concept of extending the sailboat's cabin sole into the keel. This provided Reinell Boats with what they must have thought was a breakthrough marketing edge."

In 1975 American Mariner Industries of Costa Mesa, California, using the patented Henry molds, introduced its first two sailboats: the American 26 and the American 23. The 26 had a three-year production run; the 23 was manufactured for only two years. However, upgrades and revisions, including name changes, of both models occurred in subsequent years. Eventually the line included sailboats from 20 to 30 feet. After eight years and 14 sailboat models, AMI declared bankruptcy in 1983, and the assets were sold. This bankruptcy case, it should be noted, set a legal precedent. Also interesting to note is that, of the 14 models produced by AMI in its short eight-year history, only three had production runs longer than three years. Most were produced for only one or two years.

While there is much that we don't know about American Mariner Industries, we do know that the American 23 is a first-offering sailboat from AMI sporting the patented Henry keel. It has an overall length of 23 feet, a waterline length of 21 feet, a beam of 7 feet 11¾ inches, and it displaces 3,000 pounds with 900 pounds ballast.

Design and construction

At a glance, the American 23 with its flat sheer, straight bow, plumb stern and long deckhouse looks much bigger than a typical 23-footer. When looking a little closer, Arthur Henry's patented design begins to stand out in several areas. The maximum beam of 7 feet 11¾ inches starts at a point 9 feet from the bow of the boat and extends almost all the way aft, ending at a transom which is 7 feet 6 inches wide. There is also significant freeboard (42 inches at the bow and slowly tapering to 36 inches at the transom). The sides of the hull have a relatively vertical relationship to the bottom of the boat, thus creating a somewhat hard chine with its associated stiffness. The bottom of the boat is flat except for a flat-bottomed, shoal-draft keel approximately half the length

of the boat. True to the patent, this angular relationship between the sides and hull is maintained along a substantial portion of the hull's length. Discounting the rigging and keel, the hull is similar to that of a flat-bottomed motorboat.

Stoutly built, the American 23 is constructed of a hand-laid, solid fiberglass hull with plywood-reinforced laminates in the cabintop, deck, cockpit, and transom. The hull-to-deck joint is bonded with adhesive, mechanically fastened, and covered with a two-piece (aluminum and vinyl) rubrail. The patented stabilizer keel is molded as an integral part of the hull and incorporates 900 pounds of lead ballast bonded in place. This gives the boat a maximum draft of 28 inches, which is great for trailer launching/retrieval and shallow-water cruising. The transom-mounted spade rudder is built entirely of wood and does not kick up. The tiller is varnished ash. Also located on the transom are an outboard motor bracket to port and a stainless-steel swim ladder to starboard.

On deck

With the exception of port and starboard mooring cleats, the foredeck is completely free from clutter, providing a good work platform. Also, the deck, cabintop, cockpit seats, and sole have molded-in non-skid surfaces. The shrouds are outboard of the 9-inch-wide sidedecks, and there is an unusual and somewhat awkward two-piece grabrail along each side of the cabintop. Completing the "on deck safety package" are stainless-steel bow and stern pulpits, 20-inch stanchions, and single lifelines.

Since the boat's beam is so extensive and the sidedecks narrow, forward and aft movement can more easily be accomplished via the broad cabintop. On the cabintop and forward of the mast is a 22-inch-square reinforced hatch, which is strong enough to step on.

The cockpit is 67 inches long, comfortably wide, and surrounded by 13-inch high coamings. What appear to be 6-inch by 22-inch hand bins (one in each coaming) are really the access to long, narrow stowage areas which run the entire length of the coamings. The cockpit is self-bailing but could benefit from a larger-diameter drain.

The boat lacks a bridge deck to help prevent water from a pooped cockpit from cascading into the cabin. Also there is no dedicated space for a remote gas tank. Placing the tank on the cockpit sole beneath the tiller is not the best stowage option, but this is a common practice. Even though there is considerable stowage space beneath the starboard cockpit seat, as well as under the cockpit sole, there is no access to it from the cockpit. No cockpit lockers! One has to enter the main cabin to reach these stowage areas. Brightwork is kept to a minimum and is limited to the companionway, cockpit storage-bin doors, grabrail, and the tiller/rudder.

Belowdecks

Belowdecks is where Arthur Henry's handiwork is most evident in terms of space, most notably headroom. By recessing the inside of the shoal-draft keel and bonding the ballast along its bottom and side surfaces, a 16-inch-deep x 16-inch-wide x 7-foot-long keel sump is created. What would ordinarily be 54 inches of headroom, without the sump, has now become 70 inches of headroom. In addition to the two steps required to enter the cabin's first level from the cockpit, an additional two steps are required to enter the keel sump and achieve this maximum headroom.

AMI used a one-piece, hand-laid molded pan and a similar overhead liner in the construction of all of their

The accommodations aboard the American 23, at left, seem remarkable. Stepping into the keel sump from the V-berth and companionway makes it possible to have 5 feet 10 inches of headroom. Deck layout, on facing page, is free of clutter with a comfortably wide self-bailing cockpit. The deck lacks cockpit lockers, however, and has an awkward grabrail.

boats, including the American 23. While this construction technique adds considerable strength, and at the same time specifies the location of built-in furniture, it makes it very difficult to add or repair any deck or hull fittings without cutting into the liner.

Forward, the V-berth measures 6 feet in length by 6 feet 6 inches maximum width. This area is separated from the rest of the boat by a teak bulkhead. The opening through the bulkhead has no door but could easily be fitted with a curtain for privacy. Just aft and to port is the head, a Porta Potti connected to a deck pumpout. Opposite the head is a hanging locker and stowage. Over this area, providing light and ventilation, is the reinforced 22-inch-square forward hatch.

Another teak bulkhead, this time with a curtain, separates the main cabin from the forward portion of the boat and provides support for the deck-stepped mast. It is at this area that the forward portion of the keel sump begins with two steps down. Immediately to starboard is a 41-inch by 30-inch fiberglass galley unit complete with a stainless-steel single sink with hand pump, two-burner alcohol stove, side-opening icebox, teak dishrack, food preparation area, and plenty of stowage beneath.

"Since the boat's beam is so extensive and the sidedecks narrow, forward and aft movement can more easily be accomplished via the broad cabintop. On the cabintop and forward of the mast is a 22-inch-square reinforced hatch, which is strong enough to step on."

The 20-gallon deck-filled water tank is located forward, under the V-berth. Just aft of the galley is a 32-inch-wide by 36-inch-long settee. Beneath the settee is the battery and additional storage space. The 12-volt electric panel is also conveniently located here next to the icebox. Immediately aft of the starboard settee is access to the cavernous stowage areas beneath the starboard cockpit seat and under the cockpit sole.

Opposite the galley, on the port side, is a 32-inch-wide by 6-foot-long settee/berth. This is immediately followed aft by a quarter berth of similar dimensions. A 4-foot-long by 1-foot-wide rectangular pedestal table can be set-up in front of the port settee, facilitating access to the galley directly across from it. When not in use, the table is stowed beneath the settee. Additional stowage is located under all berths/settees, except the quarter berth.

There are also 6-inch-deep shelves outboard of both settees. Although you stand in the keel sump to use the galley, all the settee/berths are located two steps up, on the cabin's higher level. This arrangement provides for 40 inches of sitting headroom. Natural illumination for the main cabin is provided by four long, oval, non-opening portlights. Two 12-volt fluorescent overhead lights adequately light up the main cabin, with two incandescents brightening up the V-berth and head areas. The overhead and sides of the boat's interior are gelcoated, and the entire cabin sole is carpeted.

"By recessing the inside of the shoal-draft keel and bonding the ballast along its bottom and side surfaces, a 16-inch-deep x 16-inch-wide x 7-foot-long keel sump is created. What would ordinarily be 54 inches of headroom, without the sump, has now become 70 inches of headroom."

The rig

The American 23 is a sloop with a deck-stepped mast. Mast and boom are both anodized aluminum. The standing rigging is stainless steel and consists of a headstay, a single spreader, upper and lower shrouds, and a single backstay. It's a fractional rig, with a total sail area of 220 square feet, consisting of a 100-square-foot mainsail and a 120-square-foot working jib. The mainsail comes standard with four battens and a single reef point.

Both the external mainsail and jib halyards are wire-to-rope and are cleated at the base of the mast. The 9-foot boom is controlled via mid-boom sheeting, located on the aft portion of the cabintop. This is a triangular affair running from port to the boom, then to starboard and back. It is cleated off on the port side of the cabintop. While this setup keeps the cockpit clear of main sheet, it's a bit awkward in actual operation. Twenty-four-inch headsail tracks with jib leads are located on the sidedecks outboard of the cockpit coamings. On the coamings are Barlow #16 winches and cleats to handle the jib sheets.

Under way

The boat's maximum beam starts well forward and continues virtually all the way aft. This is not the shape of speed. It is most definitely a cruising boat. Add its hard chine to this, and you have a very stable sailing platform. The high freeboard and lack of a centerboard contribute to the boat's tendency to make noticeable leeway. The sheeting angles are too wide to enable the boat to be very close winded. For its weight and amount of wetted surface, the boat might be considered just adequately canvassed, if not a bit underpowered. The American 23 responds well to its rudder. However, the boat tends to oversteer when tacking. With a little practice, this condition can be easily dealt with.

Things to check out

Sound out the deck, cabintop, cockpit, and transom for signs of water migration through the plywood core. Deterioration of this core material will sound like a dull thud when struck with a plastic hammer or the handle of a screwdriver. Even though the bulkhead separating the main cabin from the forward portion of the boat provides some support for the mast, it is not located directly under the mast, but rather a foot or so forward. Look for signs of mast compression including cracks in the fiberglass or a noticeable depression beneath the mast.

Since the rudder is made entirely of wood, examine it carefully. The boat originally came with wire-to-rope halyards. If they have been replaced with all-rope halyards, make sure that the sheaves were also replaced. Like many boats that utilize an overhead liner, access to deck fittings is impossible without cutting holes in the liner. Ask about any holes that have been cut.

Summing up

The overall construction of the American 23 is above average, and its rigging and sail controls are adequate. It's perfect for inland lakes and reservoirs. It's not a bluewater sailer and was not intended to be used for crossing oceans. The patented hull gives the boat space appeal, especially the standing headroom, and makes it most definitely a cruiser.

Problems with a used American 23 will most likely be attributed to age and/or neglect. Other than those areas noted previously, there are no known major flaws.

Like many trailerable boats of this vintage, its manufacturer is no longer in business. However, there is a dedicated owners association happy to answer questions and provide support. It can be reached at <http://www.amiyachts.com>.

The American 23 was only produced for two years. The extent of the production run is unknown, but suspected to be small, hence there aren't many boats on the market at any one time. Expect to pay between $2,500 and $4,000 for an American 23 in average condition.

American 23

Designer: Arthur Henry
LOA: 23 feet
LWL: 21 feet
Beam: 7 feet 11¾ inches
Draft: 28 inches
Displacement: 3,000 pounds
Sail area: 220 square feet
Ballast: 900 pounds
Headroom: 70 inches

Adding a deck wash

Spray away and be the envy of the anchorage

by Don Casey

Don Casey puts his deck-wash system to good use after the anchor is hauled, above. The on-deck portion of the system, on Page 38, consists of a short hose and a small deck fitting.

At the bow of our boat is a silver-dollar-sized fitting with a screw-on cap that evokes envy from fellow sailors almost every time we put it in use. It is a male hose connector. Belowdecks it connects to a high-pressure pump plumbed to a through-hull fitting. At the flick of a switch, it spouts a powerful and virtually unlimited jet of water.

We use our deck-wash system mostly to blast clinging mud from our retrieved rodes and anchors so they come aboard clean. The bucket-on-a-rope method we used before is infinitely inferior, not only because of the physical effort required but also because the mud is already aboard. Sluicing carries it the length of the boat, invariably leaving grit in corners and crevices.

In addition to repatriating bottom muck, a high-pressure water hose is great for rinsing air- and foot-borne pollution from the deck and for expelling the slime of fishing success or conch cleaning. It can provide a bracing seawater shower. After I scrub weed from the hull (bottom painting doesn't always happen on a calendar schedule when cruising), I typically stand in the dinghy and spray-evict sea critters that have taken refuge on my body and in my clothes.

"In addition to repatriating bottom muck, a high-pressure water hose is great for rinsing air- and foot-borne pollution from the deck and for expelling the slime of fishing success or conch cleaning."

In an emergency, a deck-wash pump can serve as an additional bilge pump. With a little ingenuity, it can even get you home when the raw-water pump on your inboard engine fails. In short, a deck-wash pump makes a fine addition to almost any boat, and equipping your boat with one is neither difficult nor expensive.

The pump

The safest course is to buy a pump marketed as a washdown pump. These will have internal components suitable for saltwater use. My preference is for a positive-displacement diaphragm pump, which tends to pass small debris without ill effect. Flexible impeller or rigid vane pumps can also serve. What you do *not* want is a centrifugal pump, which can move a lot of water but is not very good at lifting it. Your bilge pump is probably a centrifugal pump.

Washdown pumps include reverse-flow check valves and (typically) an internal pressure switch. Operating pressure can be up to 50 pounds per square inch (psi); the higher the pressure, the more powerful the spray. Screw-on hose barbs are usually included with a washdown pump, which simplifies plumbing. If the pump will be installed belowdecks, there is little need to pay extra for a "wet location" pump.

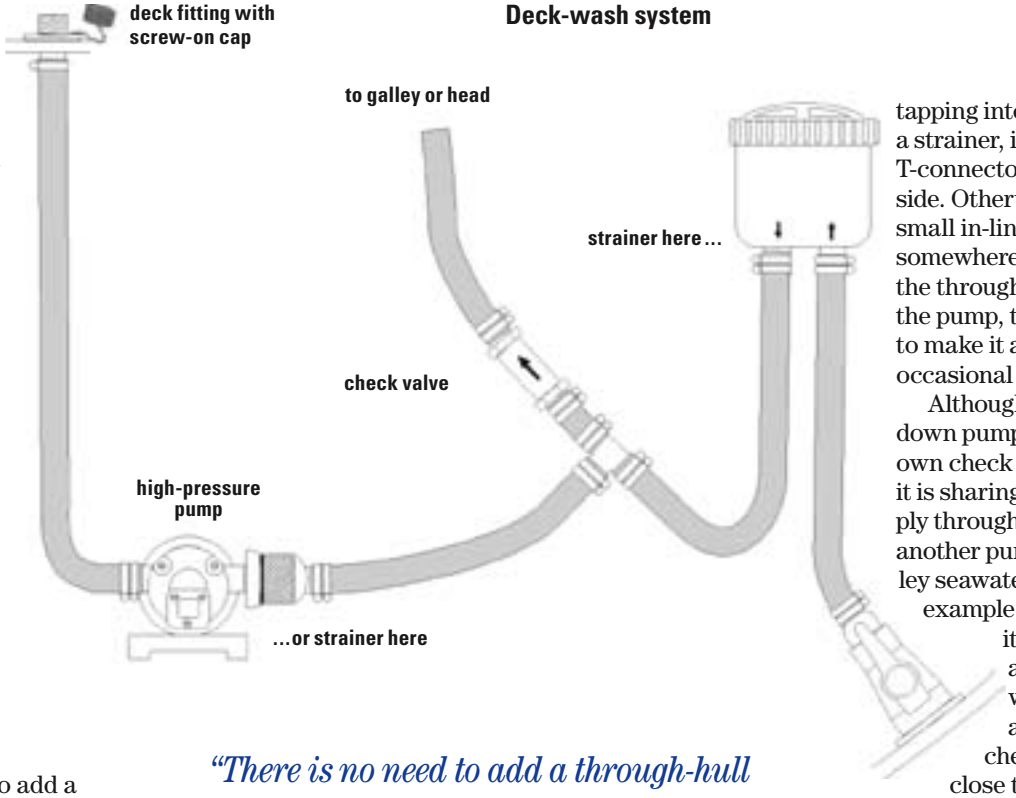
Mounting

Almost all deck-wash pumps have four feet with rubber grommets. Screws or bolts through the grommets fasten the pump to any rigid part of the boat. Pumps can be mounted horizontally to an appropriate platform — not directly to the hull (duh!) — or they can be mounted vertically to a bulkhead. For quieter operation, through-bolt the pump to the walls of two short lengths of heavy-duty rubber hose, then screw the hose to the boat.

In accordance with American Boat and Yacht Council (ABYC) guidelines, the recommended placement for all diaphragm pumps plumbed to a through-hull fitting is above the waterline.

Most pumps will specify how much of a lift they can deal with on the suction side. Stay well below that specification. Many washdown pumps will self-prime only a foot or less, and they may not do that as they get older. If the specific pump installation instructions allow it, mounting the pump below the waterline will avoid priming problems.

Deck-wash system



Plumbing

There is no need to add a through-hull fitting for a deck-wash pump. Use an existing through-hull fitting for the galley or head, supplying the deck-wash pump by the insertion of a simple T-connector. Do not use the raw-water intake for the engine. This puts the engine and the washdown pump in competition for the available flow. Worse, a check-valve failure in the wash-down pump could cause the engine pump to lose prime.

"There is no need to add a through-hull fitting for a deck-wash pump. Use an existing through-hull fitting for the galley or head, supplying the deck-wash pump by the insertion of a simple T-connector."

The hose from the T-connector to the intake side of the pump must be suction hose with spiral wire reinforcing to keep it from collapsing. On the output side you will need reinforced hose rated for at least 50 psi. You can use clear reinforced hose, but the greenhouse effect of clear hose gives rise to odiferous growth. The better choice is reinforced black water hose (automotive heater hose).

Your deck-wash pump must have a strainer in the supply line. Failure to include this essential component dooms your pump to a premature death. If the raw-water line you are tapping into already has a strainer, install the T-connector on its outlet side. Otherwise, add a small in-line strainer somewhere between the through-hull and the pump, taking care to make it accessible for occasional cleaning.

Although the wash-down pump has its own check valves, if it is sharing the supply through-hull with another pump — a galley seawater pump, for example — and/or if it is mounted above the waterline, an additional check-valve close to the T-connector will help prevent prime problems. Suitable small check valves are available for around $5 from most home supply and hardware stores.

The appropriate deck fitting is a capped male hose connector. A line-and-toe-snagging spigot is not needed because water flow is normally controlled by a nozzle on a hose with the pump switched off electrically when not in use. The integral pressure switch controls the pump when the switch is on.

On cruising boats, a short hose — long enough to spray off the anchor rode — normally stays attached to the bow deck fitting. A longer hose may be stowed away for other uses. If you are so inclined, there is no reason why you cannot plumb more than one deck fitting from the same pump. An outlet aft can be most convenient for cockpit showering or fish cleaning. A T-connector on the output side, a run of hose, an additional deck fitting, and a few hose clamps are all that are required.

Wiring

Most washdown pumps are supplied with a pair of protruding insulated wires for connecting to a 12-volt power supply. The electrical connections should be unambiguous — positive (red) to positive (red) and negative (yellow or black) to negative (yellow or black). You can crimp on ring connectors and connect the two pump wires to a small terminal block mounted nearby, bringing your supply wires to the same block.

However, I favor waterproof wiring near pumps, so I recommend connecting the pump wires directly to the supply wire with crimp butt connectors. Use adhesive-lined heat-shrink waterproof butt connectors or waterproof regular connectors with lengths of heat-shrink tubing. Secure the wiring with nylon cable clamps to avoid the possibility of wire strain.

"If you are so inclined, there is no reason why you cannot plumb more than one deck fitting from the same pump. An outlet aft can be most convenient for cockpit showering or fish cleaning."

Do not pick up the power for the pump from the nearest pair of wires. The wiring for a lighting circuit is likely to be of inadequate size to supply the substantial draw of a washdown pump. This is bad for the pump and potentially dangerous for the wiring. Plan on installing a dedicated circuit for the pump with a new fuse or breaker in the main electrical panel. A breaker can also serve as the On-Off switch, or you can insert a switch into the positive side of the circuit. Mounting the switch where you can reach it from the deck — just inside the forward hatch, for example — can prove convenient.

Do not scrimp on wire size. This will reduce the water flow and shorten the life of the pump. Follow the instructions provided with the pump. These instructions should detail the fuse or breaker size, the wire gauge as a function of length of the wire, and if the fuse needs to be a slow-blow type.

Typical instructions for wire length might say: if the one-way wire distance from the electrical panel to the pump is not more than 15 feet, use 12-gauge wire for a 6-amp pump, 10-gauge if the pump draws 10 amps. If the pump is farther from the panel — up to around 30 feet — use 10- and 8-gauge wire respectively. Motors may draw three to six times their running current when they start, so the wire sizing for motors is larger than for other loads.

Keeping your boat looking her best is a lot easier with a washdown pump, particularly when you will be away from the dock for long periods.

Just the cachet of hosing the deck in the middle of the anchorage will repay the installation.

The belowdecks portion of Don Casey's deck-wash system, is shown here. Note that the washdown pump intake, at top, shares a through-hull with another system but never with the engine. The pump intake, below, must be filtered.

For further reading...

Other books by Don Casey: *Sailboat Electrics Simplified* and *This Old Boat*, available at <http://www.goodoldboat.com/bookshelf.html> or by calling 763-420-8923.

The cardboard tubes inside the hose clamps, shown at top, must remain in place until the hose clamp is used. The original test setup, middle, and the salvaged test with a stainless-steel clamp, above. This test also failed.

Heat-shrink hose clamps

These new clamps have potential, but failed our test

by Bill Sandifer

The editors of *Good Old Boat* asked me to evaluate some new hose clamps made by Gates Rubber Company and marketed as Power Grip heat-shrink hose clamps. When the samples arrived there were four sizes: from ½ inch to 11⁄16 inch; from 11⁄16 inch to 13⁄16 inch; from 15⁄16 inch to 1 1⁄16 inches; and finally from 1½ inches to 1¾ inches. All sizes were to fit the outside diameter of the hose.

I chose to test the 15⁄16- to 1 1⁄16-inch hose clamps. There were four samples. The outside diameter of the hose I chose to make up as the test specimen was 1 1⁄16 inches. It had an interior diameter of ¾ inch, and I had the appropriate pipe and hose barbs for the test.

I used a piece of water hose from my boat as being representative of a hose aboard ship. This was a clear vinyl food-grade hose. I made up the section of hose with barbed hose connectors, male and female at the ends, clamped by the heat-shrink hose clamps. I cut the hose in the middle and inserted a piece of smooth but sanded PVC pipe with a heat-shrink hose clamp on each end of the pipe such as I might use to transition from flexible hose to a rigid water pipe.

Applying the heat-shrink hose clamps was interesting. I used a heat gun with two settings, one for 500 watts and one for 1,500 watts. I tried the heat gun on an unused heat-shrink hose clamp and determined the lower setting was better, as the higher setting can melt the hose clamp if you're not careful. I did melt one of the larger hose clamps just to see what happened. The answer was nothing: no fire, no smoke. The hose clamp simply melted.

No way to tell

One of the difficulties I encountered in applying the hose clamps is that there is no way to tell when you have shrunk the hose clamp to the maximum shrinkage or maximum tightness. I eyeballed the hose clamps as I worked and shrank them until the hose they were applied to began to be squeezed by the clamp. I kept the heat on a little beyond this point just to be sure they were at maximum tightness.

"One of the difficulties I encountered in applying the hose clamps is that there is no way to tell when you have shrunk the hose clamp to the maximum shrinkage or maximum tightness."

The samples came with a cardboard tube inside each hose clamp and instructions to keep them on the cardboard tubes until ready to apply. When you are ready to apply the clamps, the cardboard tube should be removed by sliding the clamp off of the tube or crunching the cardboard tube and removing the clamp. I found out the hard way why the cardboard is important. The final hose clamp was not applied for a day. I had removed the cardboard tube earlier and then was interrupted. In the short time I had the

Photos by Jim Schmitt

Bill Sandifer heats the hose clamp to prepare for his test, at left. The final leak, at right. Our rather wet tester, below right.

clamp out of the tube and in ambient temperatures, it shrank enough to be hard to position over the pipe. These things are *really* heat sensitive.

My test procedure was to attach the female end of the test section to a regular garden hose attached to the city water supply. No pressure reducer was inserted as I wanted to see if the test section would stand up to normal dockside water pressure (about 50 psi). I screwed a nozzle on the male end of the test section to provide a way to release the pressure when the test was completed. The test would be simple: turn on the water and see if the heat-shrink hose clamps held. If there were no leaks, they passed the test.

Fully assembled

The test section was fully assembled, the photographer was ready to record the event, and the hose was connected. I closed the nozzle as I wanted to try a full-pressure test as one would in real life.

Action, camera, water! Did I get *wet!* The hose clamp applied to the pipe section blew off. Not good. I salvaged the test by using a cork and a stainless-steel hose clamp to seal up the end of the test section.

Encore! Action, camera, water! I got soaked again. This time the *other* end of the pipe blew off. I then used a stainless-steel hose clamp and a cork to seal off the remaining end of the test section. I turned on the water and it held . . . but not for long. This time the hose clamp just leaked but did not blow off because it was over the barbed section of the female fitting. It was a little leak this time but not one you would like on your boat.

Conclusions

First, the hose clamps are closed cylinders and therefore must be fitted over the end of a hose, as opposed to a metal clamp which can be opened and placed over an existing hose which is already hooked up. This would be a detriment on most boats.

Second, the process requires a 110-volt electrical source in order to operate the heat gun. In addition, you need to heat the hose clamp evenly around 360 degrees of its diameter, something which is not always feasible if the hose is located in an awkward spot. If you cannot evenly heat it, it will surely leak.

Third, there is no indicator to tell if the clamp still needs to be heated or if you've heated it too much. Lots of trial and error here.

Fourth, the clamps either blew off or leaked. Enough said.

Fifth, these are a one-time use item. They are tough enough; I cut one with a serrated knife and will vouch for their toughness. If you had one installed onboard, it would take some time to remove it when necessary. Perhaps you could use a soldering iron to melt it, but you would need 110-volt power or a 12-volt soldering iron.

I'm sure the manufacturer, in controlled conditions, can make up a non-leaking test section, but I could not do so in the field.

For those reasons, it is my opinion that this concept is not ready for use on any boat with which I'm associated.

Electronic charts offer choices for every budget

by Don Launer

The typical chart plotter consists of a display unit, either black-and-white or color, and a GPS. The plotter displays your boat's position as a symbol superimposed on an electronic chart. This symbol is frequently boat-shaped with a small dot in the center. That dot shows your position.

Electronic chart plotters come in a wide range of sizes, options, and prices and are available as either hand-held or fixed-mount. While some systems' sole function is to provide an electronic chart, the majority are integrated with a GPS receiver. Sometimes an external GPS is interfaced with the dedicated plotter, using NMEA protocol. More often, since there are no universally accepted standards for the chart display, most manufacturers of chart plotters use a proprietary electronic format. Thus, your choice of a manufacturer determines the type of chart cartridges that can be used, the software, and the display options.

Some of the basic requirements of GPS chart plotters are that there should be a fast processor and at least a 12-channel GPS receiver with WAAS, which should provide a repeatable accuracy of location within about 10 feet. The GPS antenna should be located out in the open as much as possible, since the short wavelengths and low power of the GPS signals don't easily pass through metal, fiberglass, or people.

The LCD raster display should be easily viewable in direct sunlight, and the chart display should be capable of being oriented in "north up" or "course up." Although units with color displays are considerably more expensive than monochrome, they provide substantially better apparent resolution and, because of the color differences, it is easier to differentiate between land, navigable water, and shoal water.

The typical GPS satellite-receiving antenna associated with a chart plotter is about the size and shape of a doorknob.

Most units feature automatic track plotting, so a track is saved on your outbound and return voyages. At night or during inclement weather, the outbound track can be followed for a safe return.

Hand-held plotters are often able to save more than 20 routes and 50 waypoints. Fixed units usually can store more than 1,000 waypoints. Variable scaling, or the ability to zoom in and out, should also include a scale showing distance in miles, nautical miles, or kilometers. When heading for a waypoint, distance, direction, speed, and estimated time of arrival should be prominently displayed. The ability to measure range and bearing to any point on the chart is also important.

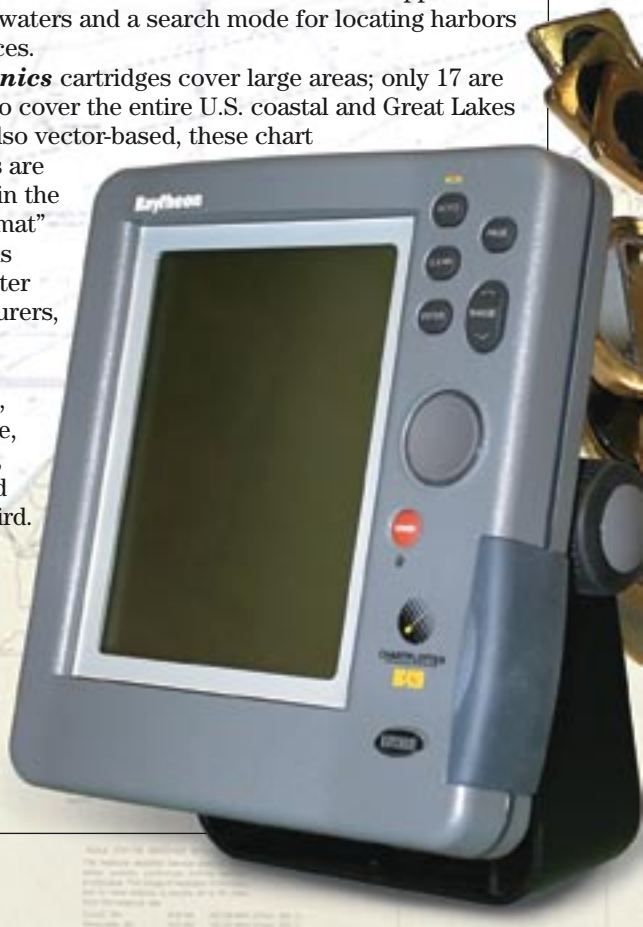
There are basically two forms of electronic charts, *raster charts* and *vector charts*. Raster charts are scanned images of NOAA government paper charts and, as a result, have some limitations in their electronic capabilities. Vector charts start as scanned images of the NOAA charts, but the data is stored in "layers," giving the user options in eliminating specific data layers that are not of interest.

In the recreational boating electronic industry, three software formats have come to dominate the chart-plotter market: Garmin BlueChart, C-Map, and Navionics.

Garmin BlueChart chips provide a display that looks very similar to paper charts, but with a single keystroke additional information on marinas, tides, and hazards is available. The operator can also overlay and store waypoints in the chart display. These vector-based BlueChart charts are available on a CD and can be downloaded into a fixed or hand-held plotter from a laptop or desktop computer.

C-Map is a vector-based chart system that provides such features as an alarm when the vessel is approaching shoal waters and a search mode for locating harbors and services.

Navionics cartridges cover large areas; only 17 are required to cover the entire U.S. coastal and Great Lakes waters. Also vector-based, these chart cartridges are available in the "Gold format" for various chart-plotter manufacturers, including Furuno, Lawrence, Raymarine, Northstar, Eagle, and Humminbird.



Layout by Ted Tollefson

Dedicated chart plotters feature only the chart and GPS displays. They are high-resolution LCD displays in either black-and-white or color with the vessel's position superimposed on the chart.

Combination chart plotters, made by several manufacturers, also give the chart and GPS fix, but may also offer more than one service on the same screen. These additional displays might include a fishfinder, depthsounder, and radar. Some manufacturers have the capability of displaying the picture from an external video camera or even your favorite movie. In some combination chart plotters the display can also be routed to a remote monitor. Many of these combination chart plotters have the ability to include expanded coverage for future accessories.

Laptop or desktop computers on board can use a variety of computer programs to display charts with excellent resolution onto a screen larger than that available with cockpit chart plotters. Their disadvantage is that, with a few expensive exceptions, they are not resistant to spray, are not easily mounted in place, often cannot be comfortably viewed in direct sunlight, and can rarely be seen by the helmsman. For the on-board computer, there are software chart packages available in various formats. Several options are available, such as Offshore Navigator's interface that allows your computer to drive your autopilot.

Prices of chart plotters vary between about $600 for a black-and-white low-end unit and about $18,000 for a top-of-the-line combination-display model.

Wireless technology and solar power for navigational instruments is now expanding in the marketplace. By using radio-frequency signals and built-in solar panels, these new instruments can be installed as either primary or remote monitors with no cables whatsoever.

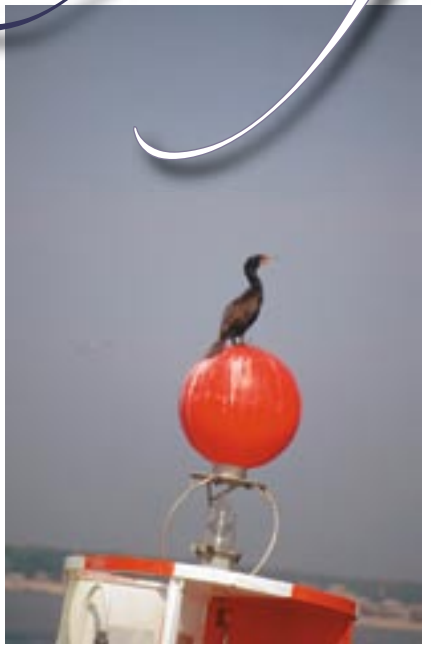
Chart plotter showing chart display

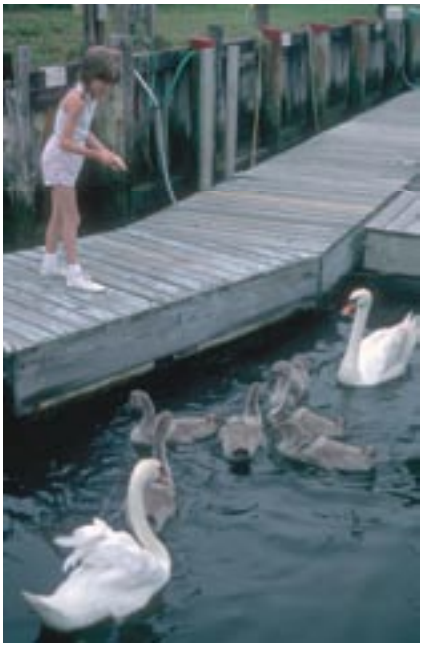
Chart plotter display, showing a sky view of the available satellites, with bar-graph of each satellite's receiving strength

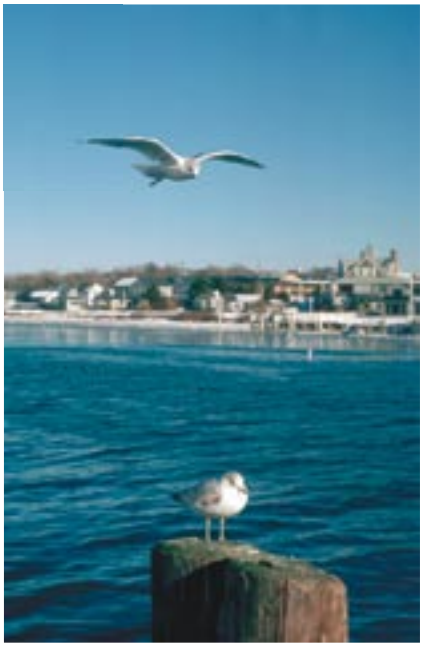
Chart plotter with graphical picture of tides, along with a listing of the times of high and low tides for the date selected

The chart chip is easily accessible, and changing it takes only a few seconds

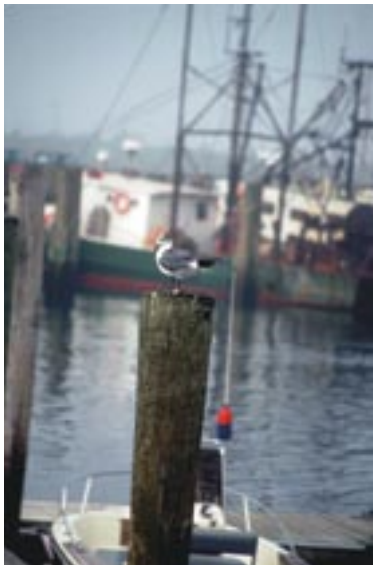
feathered friends

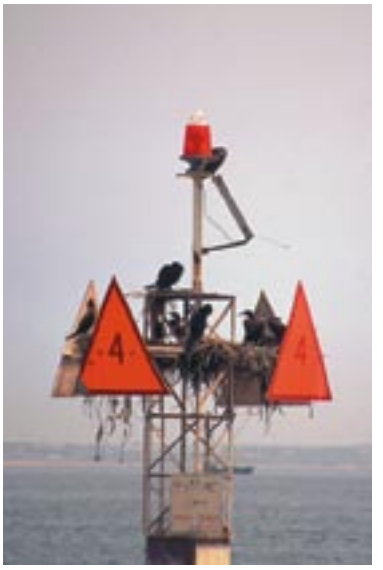




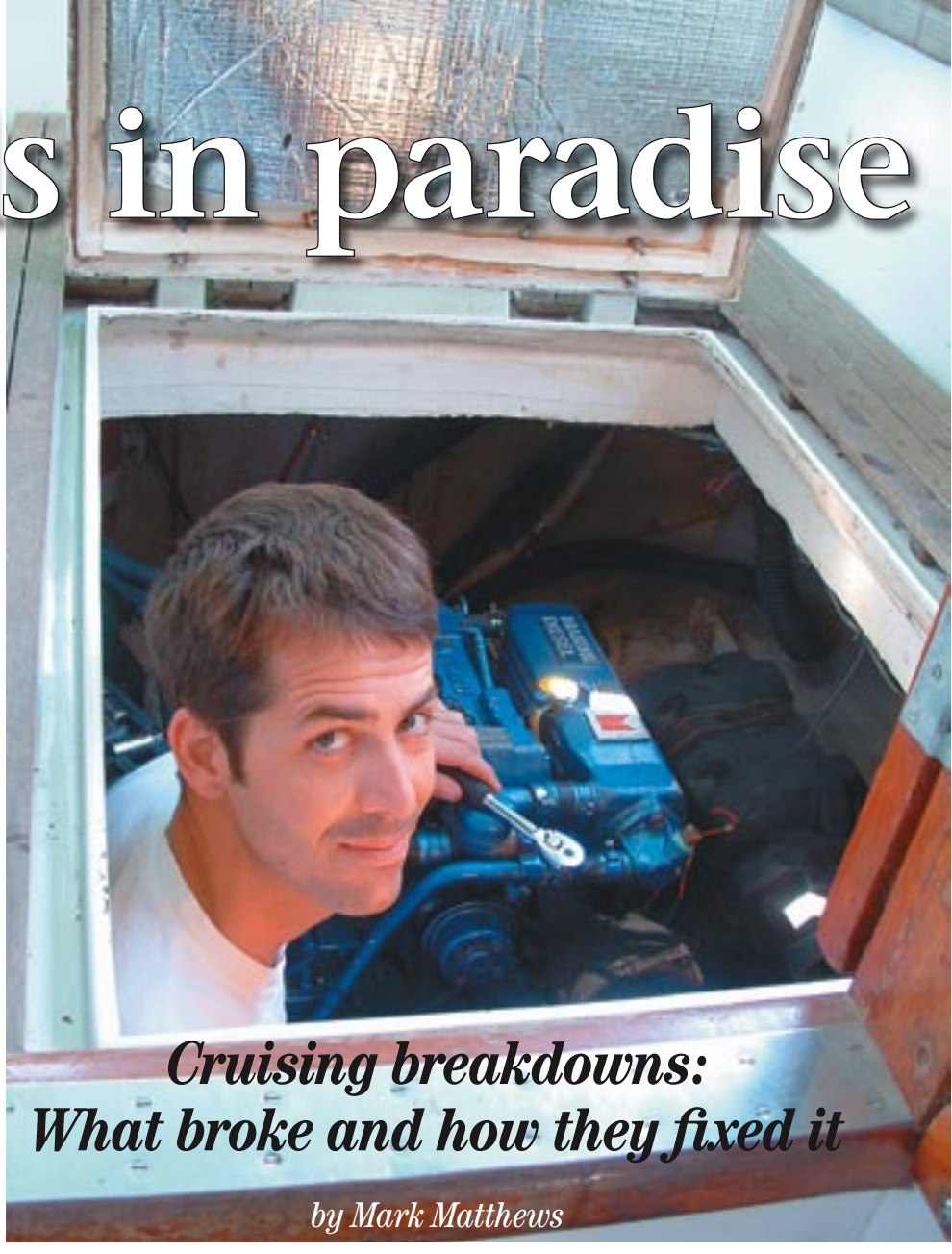


by Mary Jane Hayes





Pitfalls in paradise



Cruising breakdowns: What broke and how they fixed it

by Mark Matthews

In the last six years of my life I've been fortunate enough to experience two cruises on two different 1960s-era boats. The first voyage was on a 1969 26-foot Westerly Centaur, traveling south along the coast of California, through Central America and the Canal, then north through the western Caribbean and up the East Coast.

After that it was time to go back to the grind for two years before upgrading to a 1964 35-foot Sparkman & Stephens-designed Chris-Craft for a cruise through the eastern Caribbean, Venezuela, back through the Canal, and the return to California.

"The whole engine, a Volvo MD2B, returned to its dormant state off the coast of southern Mexico. A series of sharp reports from the engine compartment brought the engine to a standstill, and sailorly curses filled the air."

While there's no disputing that older boats need love, attention, and know-how, both trips proved that, with a little elbow grease and sweat equity, most things can be fixed. There have been more than a few boat projects along the way. Some have taken place on beaches, many in the cockpit or the odd pier, and a few even in the rare luxury of a boatyard. Because there's no way to expect the unexpected, any trip over the horizon is bound to throw a couple of curve balls your way.

Engine woes

The biggest heartache on an older boat invariably rises from the piece of iron humming or clunking away in the recesses of the engine compartment. Part of this stems from the fact that sailors go sailing to be in tune with nature's elements, working with prevailing winds and currents to get from one point to the next.

Contorting over a hot engine with a mysterious problem in a bouncy sea is about as far away from this kind of freedom as you can get. I found out the hard way that I get seasick *only* when I'm upside-down working on a hot engine, periodically being sprayed with diesel fuel.

Our Westerly had a diesel engine that took a fair bit of tinkering to coax it back to life after we bought it. Replacing the 30-year-old diesel with a brand-new Yanmar would have been the optimal solution, but the engine alone would have been worth more than the price of the boat, and we'd probably still be at the dock paying for it.

While I'd cruised a fair bit before this trip, including a trip from New York to Greece across the Atlantic, I had somewhere along the way reacquired romantic notions of using the engine only for getting in and out of port. Suffice it to say that this engine was particularly hands-on. In Baja the regulator quit — this engine had a strange animal called a Dynastart, a combination starter motor and generator — and we could no longer use the starter button to turn the engine on.

But we could still hand-crank it, a feature not common on today's engines. A small solar panel kept the batteries up with the minimal energy demands of our Tillerpilot, tricolor light, and cabin lights.

Sharp reports

The whole engine, a Volvo MD2B, returned to its dormant state off the coast of southern Mexico. A series of sharp reports from the engine compartment brought the engine to a standstill, and sailorly curses filled the air. We'd blown a head gasket. We

sailed 150 miles to the next port — experiencing a calm en route that had us spinning in circles at times, completing one of the slowest mileage runs of our trip: 12 miles in 12 hours.

My mechanical skills at this point were fledgling at best, but with each new daunting boat project comes a new bit of knowledge that can be built upon. Rather than pay a local mechanic of dubious skill the inflated prices that usually accompany a breakdown in paradise, and then still not know how things on the boat work, it's nearly always better to do the work yourself. If you're really out of your league, you can hope to find another cruiser who knows more than you do.

One of the great things about cruising is the camaraderie — no one knows everything about the mysterious innards of engines, alternators, regulators, and the like, but get enough cruisers together, and anything can be fixed.

Soon we had made friends with a South African cruiser/mechanic who just happened to be ordering parts that day. With a new push rod, head gasket, and valve spring, we were back in business. There was also a field valve job, spinning the valve stem in a cordless drill with grinding paste to his careful specifications — a crude but effective fix that lasted the whole way back to the States and was still working the day we sold the Westerly.

I can still see the engine parts strewn across the galley and the Ziploc-bagged and labeled screws and bolts. An entire day was spent with denatured alcohol and a razor blade cleaning the old gaskets off engine surfaces and getting the engine parts clean again for reassembly. We made gaskets out of gasket paper and used RTV gasket maker for the exhaust manifold. Then out came the torque wrench with strict instructions to re-torque the head bolts after the next oil change. It was a happy day when the engine came back to life. We'd learned a lot by doing it ourselves, and down the road we ended up helping mechanically stricken cruisers who crossed our path with their own tales of mechanical woe.

Through-hull blues

In a calm and beautiful anchorage in Costa Rica I was cleaning the bottom of the boat. Merrily scraping away with a paint scraper, I watched barnacled carcasses float downward as brilliantly colored tropical fish gathered for a free lunch. That's when I noticed it — a perfect circle of blindingly white gelcoat. It took my brain several moments to comprehend what I was seeing: this white circle had previously been covered by the outer flange of a bronze through-hull, the *only* one I hadn't replaced before leaving. It had simply flaked off like a barnacle. If there ever was a time to panic, it was now.

"One of the great things about cruising is the camaraderie — no one knows everything about the mysterious innards of engines, alternators, regulators, and the like, but get enough cruisers together, and anything can be fixed."

After hopping quickly aboard, I learned that there was some good news. We weren't sinking. The through-hull and its backing plate were fiberglassed over and not likely to be going anywhere anytime soon — another thing you won't see on a modern production boat.

The bad news was that we'd just had a hard lesson in the dangers of electrolysis. We'd left the boat in a marina in northern Costa Rica for four months. The marina was one rickety dock whose structural integrity was created largely by the cruising boats Med moored to it. Electrical wires and shorepower cords ran along the dock and dangled in the water.

The zinc on the prop was gone — eroded to a nub over the four months we'd been gone. That should have been the first red flag. Fortunately, because our boat was a bilge-keeler, we were able to beach it to change out the through-hull. Finding a new through-hull was another matter. After some hot walks around town, we found out that we could have a bronze one machined nearby at an approximate cost of $100, or we could buy one in Panama City, several hundred miles away for about $50.

Then we noticed a neighboring French boat whose through-hulls were all nylon. With misgivings we changed the through-hull to nylon (I believe you should be able to hit a through-hull with a sledgehammer). To its credit, this one never gave us any problems for the rest of the trip back to the States, where it was replaced during our first haulout.

Rudder problems

Water has been called the universal solvent. If there's a chance for it to get into anything, it will. A boat's rudder is a prime spot for water ingress. The lateral forces on a rudder in a seaway

Wrench in hand, Mark Matthews attests that every cruiser will eventually find him- or herself wrapped around a dormant engine with a mysterious problem, facing page. A 35-foot Chris-Craft, at right, replaced the Westerly Centaur. The new boat was already equipped for cruising, but Mark and Laurie still had much to do to make it theirs.

Mark is neither the first nor the last to fix a rudder while cruising. He and Laurie learned some new Spanish words like *soldadura* (welder) and *inoxidable* (stainless, as in stainless steel).

can be immense. The weakness, especially on a boat 40 years old, is where the shaft enters the rudder.

And so it was on another dive that I noticed the top part of the rudder had begun to delaminate and water was making its way inside. My better half, Laurie, held the tiller in the cockpit. My worst fears were confirmed when I moved the rudder in the water, and it flexed back and forth. Fortunately, we had another rudder: our windvane had an external rudder with a trim tab, so we could still steer the boat should we need to.

The other plus was that we could pull the rudder out of the boat without hauling out or beaching the boat. One of the benefits of cruising on a smaller boat is that major repairs are a little bit more manageable . . . or so we told ourselves. Once the set-screw was removed and a little coaxing applied from the water, the rudder simply slipped out of the rudder tube. I had securely fastened the rudder to the boat, thinking it would sink under the weight of the stainless-steel shaft. But I was pleasantly surprised to find that the rudder floated.

Under a shady grove of palm trees, we began our island-style repair, using a chisel and mini sledgehammer to cut the rudder into two clamshell pieces. (See a similar *Good Old Boat* article about a rudder repair in Mexico in the May 2001 issue).

Corroded webbing

This revealed another problem. The stainless-steel webbing welded to the shaft inside the rudder had corroded away. The original design had long, skinny pieces of stainless steel fiberglassed to tapered teak blocks that were rotten and also going to need to be replaced.

There was some good news: the fishing community at this particular outpost of civilization used polyester resin to repair their own boats, so we'd be able to find additional supplies to add to what we had aboard.

Laurie and I walked around town with the shaft and the stainless-steel webbing, looking for a *soldadura*, or welder. Once we found one, the other key word was *inoxidable* for stainless steel. Incredibly, in only an hour the work was done — probably faster than if we had been in the States — and we began to put things back together. The other good news was that we had two-part expanding foam in our shipboard stores. If you've never had the chance to work with this stuff, it's pretty crazy; a little goes a long, long way.

We cut new blocks of wood, fiberglassed them to the inside of one half, then glassed the stainless-steel webbing over that before starting to put the rudder back together again. The idea was to fill the rudder completely with foam, drilling relief holes here and there to have a visual means of checking that foam had filled that part of the rudder. We seam-taped the two halves together using polyester resin, sheathed it, filled, faired, sanded, painted, and reinstalled the rudder to get back on our merry way. The other useful motto when cruising is "Where there's a will, there's a way."

A "new" boat

Our current vessel, which replaced the Centaur, is a 1964 35-foot Chris-Craft. We were ready for more storage and faster passages and bought the boat from friends with whom we had cruised in tandem from Panama to the East Coast. The difference between buying an older boat that had been previously cruised and getting an older boat ready to go is immense in terms of the amount of work, gear, and equipment to purchase. Not that there wasn't work to do. In the six months before we were ready to cruise again we replaced the standing rigging, the lifelines, and running rigging. We installed an inverter and an SSB radio and had the life raft repacked. But on the whole, a previously cruised boat has a lot of the glitches already ironed out.

Autopilot mysteries

Even if you switch boats, though, invariably the quirks and idiosyncrasies catch up with you. We'd left the world of the tiller slave behind and now had hydraulic steering, complete with a fancy autopilot that rivaled Hercules. But when the unit was activated, the wheel turned a little this way and a little that way. Then an alarm sounded and "Actuator Failure" flashed on the screen.

"Another little bit of idiosyncratic charm the new boat had was that every 15 or 20 times the key was turned, a faint click came from the starter solenoid, and that was that."

After flipping through the manual several times, we decided that it sounded serious enough to call the manufacturer. A knowledgeable and patient representative talked me through reprogramming the brain of the unit — a 20-minute production that revealed everything working as it should be. But when the autopilot was turned on again, the same error flashed. I began to steel myself for some serious squirming in the lazarette to remove the autopilot.

By chance, while traveling down mind-numbing section after mind-numbing section of the Intracoastal Waterway — prime territory for our autopilot — we happened to cross paths with our friend, the previous owner of our boat. When I told him about the problem with the autopilot, he looked at me quizzically and asked, "Do you have the wheel locked off?"

I had thought that the autopilot would make the wheel spin when it was working. It turns out that without the wheel stopped, the hydraulic pump was simply circulating hydraulic fluid through the hoses. With the wheel locked off, we went merrily on our way. My only consolation was that the tech-support guy overlooked the obvious as well. Whatever the case, I'll take looking silly for a simple fix any day.

Starter challenges

Another little bit of idiosyncratic charm the new boat had was that every 15 or 20 times the key was turned, a faint click came from the starter solenoid, and that was that. Ordinarily such a click would mean a low battery. But the voltage was fine. The previous owner had told me about this endearing little feature. His solution was to turn the flywheel a quarter turn and try again. For some reason that eluded both of us, this seemed to work. At least initially. But by and by, a curveball every 15 or 20 attempts became every 5 or 10. Out came the starter, in went a new solenoid . . . with the same results.

A mechanic was consulted. It was suggested that what could be happening was that the teeth on the flywheel were wearing off. The engine was stopping in the same place, and the teeth that the starter engaged in that area were being worn down.

He suggested taking the coupler apart, taking the transmission off, heating the gear on the flywheel with a torch, and flipping it . . . basically a mechanical nightmare.

Clearly, it was time for more sleuthing. The starter came out, went on the bench, and passed with flying colors. Although previous probing with the voltmeter revealed everything was getting the voltage it should, I began running new wires from the ignition to the solenoid. After replacing one yellow wire in particular I noticed that I had started the engine and stopped it and started it again some 15 times in a row. Another head of the hydra had been slain. (***Note:*** *Treat the circuit from the key switch to the solenoid as a 30-amp circuit. Use 12- or 10-gauge wire to prevent this problem.* ***–Ed.***)

Pop rivets and trade winds

Once you're out of the lee of the many Caribbean islands, 20- to 25-knot winds are pretty much the norm. Much of the trip south from Florida to St. Barts is close-hauled against it. On our trip through the eastern Caribbean, we took on fuel once in the British Virgin Islands and didn't take on any more until Panama. There is no shortage of wind.

But over time the wind can take its toll on sail-handling gear. As we approached Tortola for the first time, marveling at the gazillion sailboats tacking back and forth against the towering headlands and amazed that we had reached one of sailing's prime destinations, there came an innocuous-sounding "ping" from somewhere.

My first concern was that some critical fastener holding the mast had given way. Looking up, though, I couldn't find anything. A bit more sleuthing revealed that eight of 10 rivets holding our outhaul track down to the boom had given way, and the remaining two could go at any point. We reefed the sail and, at the end of the day's sail, riveted the piece back in place with larger rivets. These are still there and seem to be up for the task. They had quite a workout on the uphill climb off the coast of Baja as we made our way back to the States.

Bottom line

The sea, the wind, the salt, the sun . . . these are unstoppable forces guaranteed to break something on even the best-found vessels. You can either do the work at the dock and never leave or accept the fact that the cruising life is a hands-on affair rife with triumphs and pitfalls. For us, each new project helped gain insight into the workings of the physical world, and a sense of how to refine things. The more you can fix yourself, the better you'll know your boat, and the more self-sufficient you'll become. That's the real joy of cruising.

The colorful bulgur with greens and cheese (see recipe on Page 54), shown at left and on Page 54, cooks on the bow of *Isle of Skye*, an Islander 30 owned by Heather and Jeff Ilse.

Solar cooking

"Does that thing really work?" they all ask

by Heather Ilse

While dockside, I suspect that sailors get a fair share of peepers: dockwalkers fascinated by the curiosities inherent in sailboats. One of my favorite pastimes while down below is eavesdropping as others stop to comment on the features of my boat. When the sailing bug bit us three years ago most folks marveled at the size of our 1969 Columbia Challenger (the tiniest boat in the marina), especially when they learned two adults and an infant spent every summer weekend and more anchored out on it in the Apostle Islands wilderness.

Since then we have graduated to a 1974 Islander 30 with a bit more living space. These days, the feature that attracts the most attention is not part of the boat at all, but rather our solar cooker. This being one of my most beloved boat gadgets, I'm usually inclined to pop through the companionway and develop a conversation with commenting visitors.

Some of these conversations become more animated and involved than others, but they usually begin with, "Does that thing really work?" pointing at the trapezoidal black box. "It sure does," I respond, glancing at the thermometer. "See, it's up to 200 now." Degrees Fahrenheit, that is. Then I explain that typical cooking temps are around 220°F. "What can you cook in there?" Just about anything, though I find the cooker is best suited to grain-based casseroles. Anything you might prepare in a slow cooker or pressure cooker would be a good candidate for a solar meal, and we have even enjoyed such delicacies as solar pizza and solar s'mores. Solar-cooked food is more nutritious and naturally flavorful because the slow and gentle process retains more vitamins and minerals, and the tender result is easier to digest.

Mission work

Sometimes, the visitors' stories are more interesting than ours. We ran into a friendly National Park Service volunteer who had used the same cooker model while doing mission work in South America. A dockwalker shared a tale of how Roman soldiers used parabolic lenses to cook their food because they couldn't carry enough fuel for the gigantic military's culinary requirements. Usually, though, it is I who blather on about my adoration of the cooker and, if my audience is held captive long enough, I might offer a smell or a taste as I check on my concoction.

"One quick trip to the Solar Oven Society's office and about $100 later, I was the owner of a lightweight, durable SOS Sport. Cooking on the boat never felt so good."

Sailors are already familiar with the concept of harnessing free energy for their own benefit. To them, using solar energy to cook food ought to be a no-brainer, and it explains why fellow sailors are drawn to the black box atop our deck. I became aware of commercial solar cookers long before I became a sailor, and I have friends in southerly areas of the United States who use them regularly.

I dreamed of experimenting with solar cooking at my Minnesota home. Ever the DIY wannabe, I was determined to construct my own solar cooker based on Joseph Radabaugh's design described in his book *Heaven's Flame*. But life (and sailing) got in the way, and my solar cooker never materialized.

I met the folks from the Solar Oven Society in 1999 at a renewable energy fair. I saw their simple, low-cost cooker on display and learned about their mission to spread solar cooking to developing countries where the use of cooking fires has led to deforestation and contributes to health problems. But it wasn't until I began spending a good portion of every summer weekend hunched over a flame in my tiny humid galley that I connected the dots. One quick trip to the Solar Oven Society's office and about $100 later, I was the owner of a lightweight, durable SOS Sport. Cooking on the boat never felt so good.

When the dockwalkers ask how it works, I tell them it's simple: put the food into the black pot, set the pot in-

side the cooker, clip the lid, and point it at the sun. The principle is the same with any solar "box-style" cooker design. The sunlight that is transferred through the clear lid and absorbed by the black interior and dark pots is converted to heat energy. The longer heat rays are unable to pass back through the clear lid, and insulation in the box walls increases retention of heat in the oven. Think about your car on a sunny day in an asphalt parking lot.

Benefits

Here are some benefits of the SOS Sport design:

Weather resistance. The SOS Sport is more suitable for boating than the cardboard cooker I once considered building. The lightweight plastic housing, made from post-consumer recycled soft-drink bottles, stands up to a beating that would turn a homemade cooker to mush. I have left the cooker out in the rain and, since the closed-cell foam insulation does not absorb moisture, all it takes is a few minutes turned on its side to drain. Before our cooker became a permanent fixture on the boat, we carted it back and forth between Lake Superior and Minneapolis, tied to our roof rack. Although stowage could be a bit cumbersome if you are short on space, we have a locker that perfectly contains the cooker. I sewed a quilted, elasticized cover to protect the lid from scratches.

Freedom for the chef. Unlike most other commercially manufactured solar cookers, the SOS Sport does not use reflectors (shiny trapezoidal attachments that focus more of the sun's energy into the box). This design ensures the temperature will remain low enough to avoid burning and scorching. It also allows for leeway in cooker orientation. If you set the cooker out in the morning and point it in the direction of noonday sun, you can return in the evening without having to make any adjustments. (Baked goods are an exception. Baking is best done in the middle of the day in a preheated oven. Breads, cakes, and cookies can dry out more than desired if left too long.)

Convenience. The Sport comes ready to use, equipped with two black enamelware pots, an oven thermometer, a water pasteurization indicator, and an informative cookbooklet to get you started.

"Anything you might prepare in a slow cooker or pressure cooker would be a good candidate for a solar meal, and we have even enjoyed such delicacies as solar pizza and solar s'mores."

Cooking guidelines

The novice solar chef should adhere to the modern adage to "just do it." Get some food into the sunshine and see what happens. After a meal or two, you'll be hooked. If you don't already have a favorite grain-based casserole recipe, start with a single grain or small pasta. Some of the fluffiest, most tender rice that ever graced my buds came from my solar cooker with almost zero effort or attention.

Pre-cooked rice can be used as a base for fried rice or topped with stir-fried or sautéed vegetables that have been cooked over a flame. Small pastas like couscous or orzo can be stirred into salads. If nothing else, fill a pot with water and pre-heat it for soup or pasta. Anything you can do to reduce the amount of cooking heat in your cabin on a hot day will make for happier campers. (Although you could cook larger pastas in the solar box, the inattentive solar chef faces the risk of passing through al dente into the realm of bloated-noodleland.)

Use dark pots and tight-fitting lids. Black, green, brown, and blue absorb more energy. Food-safe flat black grill paint can be used if your pot or jar is not already black. Pots that have been blackened over a campfire may be a good choice. Lids should fit securely to contain moisture. Water vapor that escapes the pot may condense on the clear lid of the cooker, reducing the amount of solar radiation that can be transferred into the cooker.

Incidentally, add less water. Plain vegetables, fruits, and meats do not need additional water. They already contain plenty of moisture for the gentle cooking of a solar oven. Less water is needed for cooking beans or grains than the typical stovetop method. When converting a conventional soup or stew recipe, try using about 20 percent less liquid. For plain (pre-soaked) beans, start with just enough water to cover them, and add more later if necessary. For plain grains, I generally have good results using pressure-cooker guidelines recommended by Lorna Sass. She includes handy reference charts in her cookbook, *Great Vegetarian Cooking Under Pressure.*

Mornings are better

Start early in the day. Unless you are in an arid or semi-arid climate, the morning hours are generally better cooking hours than afternoon hours. Dew and humidity evaporation throughout the morning often result in afternoon clouds. Also, during the morning hours the cooker will be exposed to increasing energy as the sun rises in the sky, as opposed to decreasing energy as the sun sets.

I find it is advantageous to prepare the day's meals in the morning, when my energy is high and my crew (a moody toddler) is generally in good spirits. After an exhausting day of sailing or playing on the beach, it is a relief to pop the lid off the cooker and enjoy a warm meal with minimal effort.

Keep an eye on the sky and the thermometer. When sailing, if the wind isn't blowing, you either start the motor or drift. When cooking, if the sun isn't shining, you should finish off with a flame or risk bacterial contamination. If weather conditions allow the oven to cool off below 150°F, there is the danger of bacterial growth, and food may not be safe to eat. This is true for all methods of food preparation and is not unique to solar cooking. Food left in this temperature range for two hours or longer can incubate bacteria. But don't let safety concerns scare you

Another Ilse family favorite, solar pizza, shown below. Foods that work well for a slow cooker or pressure cooker are perfect for a solar cooker.

Heather notes that cooking at anchor is a bit more challenging than at the dock. Her SOS Sport, shown here, weighs only 11 pounds with a 17 x 28-inch footprint.

away. Sailors, who weigh many risks while under way, are capable of solar cooking. If the food has cooled off to unsafe temperatures, reheat the food over a flame to kill off any bacterial contamination.

Played loosely

I admit to having played these rules quite loosely. Where we sail, a morning that makes a partly cloudy appearance often turns out to be an overall sunny day. I have learned that *not* putting the cooker out in the face of a cloudy morning means risking a lost solar dinner opportunity. At the edges of the Great Lakes sailing season, when nighttime temperatures dip to near 40°F, there have been stretches when I left an unfinished dish on deck in the cooker overnight and through the next cloudy day before I gave up and simmered it on the flame. Since we follow a macrobiotic diet free of most animal products, I don't need to worry quite as much about contamination. If meat, fish, or eggs were on the menu, I would adjust my practices. Use your common sense and concern for the safety of the people you feed to judge your solar-cooking choices. One trick to take advantage of even the slightest possibility of sunshine is to set the cooker out with a pot of water. If the sun appears and the cooker heats up, you can add the remaining soup/stew ingredients later, or you can use the pre-heated water for a stovetop version or make coffee, tea, or cocoa instead.

Cooking in port

Cooking at the dock or marina is much the same as cooking at home in the yard. However, at the edge of a dock, the wind may play a more significant role in cooking time. Wind carries heat away from the cooker, diminishing performance. It is important to handle the lid carefully and remember to clip it on — whether at dock, at anchor, or under way — as the wind can easily lift it off the housing. When you're checking food, the lightweight lid has enough windage to be torn from your hands and blown overboard in high winds. Curious or hungry wildlife may be another reason for keeping the lid clipped on. If we are in an area where bear-safe practices are encouraged, I never leave the cooker unattended. Keep sunglasses, hotpads, stirrers, and extra seasonings handy near the cooker. The more time you spend with the lid off and the pot uncovered, the more time your meal will need to cook.

Cooking under way

"Stay on the boat" is our first rule of crew safety, and it applies to the solar cooker as well. We keep the cooker on

the boat by securing it with bungees. We have considered installing a grill mount and constructing some sort of table to which we could attach and rotate the cooker. This would keep it off the deck and out of the way. But we have found that having it on deck is not an imposition, and the flexibility of the bungee system allows us to follow the second rule of solar cooking under way.

The second rule is, "Keep the cooker in the sun." We can move the cooker about the deck as necessary and almost always find a toerail or something to which the bungee will connect. Typically we strap the cooker forward or to either side of the companionway hatch, switching sides as we tack if the sun is forward or abeam. If tacking is frequent and the sky is clear, the cooker often retains enough heat on the shady tack to avoid moving it at all.

The third rule is, "Keep the contents in the pot." The heeling motion of a sailboat offers a unique challenge to solar chefs. If the pot leans enough to leak, the moisture will condense on

Resources for solar cooking

To purchase an SOS Sport or to learn more about the work of the Solar Oven Society, visit <http://www.solarovens.org> or call 612-623-4700. The cookbooklet that comes with the Sport serves as a handy guide to getting started.

The Solar Cooking Archive, sponsored by Solar Cookers International, provides a wealth of information on solar cooker designs and solar cooking. It also offers an email discussion board, <http://www.solarcooking.org>.

Golden Sun Living, home of solar-cooking guru Greg Lynch, offers classes and workshops on solar cooking and self-sufficiency. Visit <http://www.goldensunliving.com> or call Greg at 763-785-1938.

Home Power, the landlubber's equivalent of *Good Old Boat*, has many solar cooker articles in its archives. Kathleen Jarschke-Schultze's "Home and Heart" column frequently discusses solar cooking. Their store carries *Heaven's Flame* (the book referred to on Page 50), <http://www.homepower.com>.

A few solar cookbooks are available. *The Morning Hill Solar Cookery Book* by Jennifer Stein Barker is one favorite I referred to frequently as a beginner. In addition to tasty recipes and helpful hints, it also has some delightful essays. Ordering information is available at <http://www.highdesertnet.com/morninghill/solarcook.htm>. I've found that the pressure-cooker recipes from two of my favorite cookbook authors make excellent one-pot solar meals. Check out *Cooking the Whole Foods Way* by Christina Pirello as well as *Great Vegetarian Cooking under Pressure* and *Recipes from an Ecological Kitchen* by Lorna Sass. I encourage you to find your own way by pulling something tried and true from your recipe files and experimenting with it a few times, adjusting the liquid to find the right balance.

May the wind fill your sails, and may the sun shine on your cooker!

and fog up the clear lid. This will reduce the amount of solar radiation that can reach the interior of the cooker. I have toyed with the idea of fabricating some sort of clamp for the Sport's enamelware pots, similar to what you see on the glass jars that hold fancy scented candles. I have also considered painting a couple of old pressure-cooker pots black, as they have gasketed lids that close securely. But for now, we crisscross two tiny bungee cords over the lid, and it usually works just fine, coupled with a little supervision when the boat is severely heeled.

Cooking at anchor

Swinging on the rode provides the greatest challenge to the nautical solar chef. If conditions are such that the boat follows a wide arc, it can be difficult to orient the cooker so it faces the sun more than 50 percent of the time. You might have better luck if you can stabilize the boat with a riding sail, but that won't help in the case of a wind shift. Solar cooking at anchor requires a more attentive chef. Unfortunately, the anchorage is where chefs are more likely to be absent, participating in adventures ashore. It's best to plan for quick-cooking meals that can be easily finished at the stovetop if necessary.

Approximate cooking times

Easy to cook (2 hours or less): Eggs, rice, fruit, vegetables (above ground), fish, and chicken.

Medium (3-4 hours): Potatoes, root vegetables, lentils and some other beans, most meat, and bread.

Hard to cook (5-8 hours): Large roasts, soups and stews, and most dried beans.

Three solar recipes

Solar-cooked chicken breasts with tomatoes, olives, and capers

This dish showcases how a solar oven infuses the flavors of the ingredients with the meat. It cooks quickly in 45 minutes to 75 minutes in good sun.

Ingredients:

- 4 boneless, skinless chicken breasts, about 2 pounds, packed in oil. Wash and dry the breasts on paper towels. Rub each piece with olive oil.

Sauce:

- 1 sprig fresh basil, chopped
- 4 ounces pitted, sliced kalamata olives
- 2 ounces capers, drained
- salt and fresh-ground pepper to taste
- 14 ounces fresh or petite diced canned tomatoes, minced
- 8 tablespoons olive oil

Preparation:

Place 2 tablespoons of olive oil in the bottoms of each of the two cookpots and coat the bottoms. Add 2 breasts to each pot, divide the sauce ingredients between them, and add salt and pepper to taste. Pour 2 more tablespoons of olive oil over the ingredients in each pot. Mix the contents of each pot well. Cover the pots and place in solar oven. Clip the clear oven cover in place, face the oven toward the sun with the shadow directly behind the oven. Do not open the oven until 45 minutes have passed. This dish will be done in 45 minutes to 1 hour and 15 minutes, depending on the sun strength. Serve at once. Serves 4.

Bulgur with greens and cheese

(From *Morning Hill Solar Cookery Book*, by Jennifer Stein Barker.)

Author's note: *Bulgur is a cooked and coarsly ground wheat. Since eliminating animal products from our diet, I stopped adding the cheese to this dish. We have found it to be just as tasty without. Alternatively, Melissa's brand Soy Shred can be added, though I find it melts less easily and yields better results if added before the greens, possibly with a bit more time in the sun. Tender green veggies should always be added at the end of cooking or they will turn brown. Any tender greens work well; I have used spinach, kale, and beet greens interchangeably.*

Ingredients:

- 1½ cups bulgur, washed
- 3¼ cups water
- 3 cloves garlic, minced
- ½ teaspoon minced ginger root
- 1 medium carrot, grated coarsely
- 1½ tablespoons tamari soy sauce
- 2 cups loosely packed tender greens, shredded, or ¼ cup chopped fresh herbs (basil, oregano)
- 3 ounces jack cheese, diced ¼-inch (optional)

Preparation:

In a 2-liter or larger casserole, combine the bulgur, water, garlic, gingerroot, tamari, and carrot. Bake, covered, in solar cooker until the water is absorbed. Remove from the cooker, stir in the shredded greens or herbs and replace the cover until the greens are wilted (do not put back in the sun). Stir in the diced cheese immediately before serving. Serves 2-3.

Rice Pilaf

(Adapted from *Cooking the Whole Foods Way*, by Christina Pirello.)

Author's note: *I consider it optional to pre-cook the almonds and veggies in oil. To eliminate this step, just layer the veggies in the pot before adding the grains.*

Ingredients:

- 1 teaspoon light sesame oil (optional)
- 1 onion, diced
- sea salt
- 2 tablespoons slivered almonds
- 1 cup thinly sliced button mushrooms, brushed clean
- 1 cup fresh corn kernels
- 1 carrot, diced
- 1 cup long-grain brown rice
- ¼ cup wild rice
- 2 cups spring or filtered water
- parsley sprigs, for garnish

Preparation:

In a 3-quart pot, heat the oil over a medium flame. Add the onion and a pinch of salt and cook until fragrant, 2 to 3 minutes. Add the almonds and cook, stirring, until coated with oil. Stir in the mushrooms, corn, carrot, and a pinch of salt and cook 1 to 2 minutes more. Spread the vegetables evenly over the bottom of the pot and top with the rices. Gently add the water and 1 or 2 pinches of salt. Bake, covered, in solar cooker until the water is absorbed. Remove from the cooker and stir well. Garnish with parsley. Serves 4-5.

Dinette conversion

A beneficial alteration that keeps those feet out of the passageway

by Tom Young

My friend, Jack Higgins, never stops smiling. He has owned a Cheoy Lee Offshore 31 for better than 20 years. He can sail her with his eyes closed, and he makes *Sunrise* fly. He uses his boat as a coastal cruiser around Penobscot Bay and the New England coast.

When we met Jack, we were sailing our trusty Cape Dory 28, *Reliant*, which had some modifications, including a dinette built on the starboard side. Jack liked that modification and asked if I thought this feature might work in *Sunrise*.

A dinette has a lot of appeal in a 30-foot boat. On our 28-footer, the dinette served us well as a couple. Even as we evolved into a family of four, the arrangement kept us happy. A friend with a slightly smaller boat once remarked that he rarely went below on his boat. "There isn't one good seat down there for me," he lamented as he daysailed his more-than-adequate coastal cruiser. For 13 years we spent many summer weekends, long vacations, and more than a year living aboard our CD28 as we cruised the Bahamas, Exumas, and the East Coast to Maine. There were always enough comfortable seats aboard.

"Jack's biggest complaint was too many feet in the saloon, making it tough to move around. I realized the dinette made moving around a small boat much easier since most legs were out of the center passageway."

Our dinette, as small as it was, served as a navigation station while under way. The outboard edge of the table had a high fiddle to restrain charts, books, and navigation tools. This stout fiddle was also a good grab bar in the middle of the cabin. I mounted the trusty Loran within easy reach of the aft seat. From here I did most of my chartwork. It also served as the workbench and extra galley space due to the table's raised height, which was just perfect when standing in the passageway of the boat.

It's true that using our dinette on a starboard tack was a little tricky. We kept several pillows around; I would stuff one under my rear on this tack to keep me at the nav station. Overall, the vast benefits far outweighed this small drawback.

A bench-style settee, at left, becomes a dinette, below. In making the change Jack Higgins eliminated the gaggle of feet normally found in the passageway on *Sunrise*, his Cheoy Lee Offshore 31. He also created comfortable seating for his family and (wonder of wonders!) found some hidden storage space.

Kids squeezed in

At anchor, the two of us would lounge and dine at the dinette. Someone was always reading there. When we became four, the kids could squeeze in with us for meals, games, and reading. Many a morning at anchor I would quietly get out of the V-berth and head for the coffee. As the water boiled I spent time at the dinette reading, enjoying those quiet early-morning hours on the water. Now, on our larger boat, I sometimes miss that comfortable seat.

Our 28-foot Cape Dory was very innovative on the port side as well. When two sleeping berths were needed, an upper pilot and lower extension berth served well, similar to the stock layout

on the boat. By day or when the pilot berth wasn't needed, we could release two barrel bolts on the pilot berth and slide the berth outboard along simple teak tracks on the bulkheads at each end of the berth. With the barrel bolts refastened, this upper shelf served to hold tons of bags and stuff by day (see illustrations below). When our kids were babies, this shelf was a snug, 12-inch pilot berth for them. Both berths had lee cloths as well.

The lower berth then became a couch of sorts with a backrest, the half filler removed from the pilot berth. You could even slide the lower extension berth out for a family-sized lounging area. And there was good dry storage in cave lockers outboard. Not only a better arrangement for our family than the stock plan's 5 berths, this visually opened up the 28-footer so it felt like a bigger boat. Many an evening was spent with our family on that couch, a Force 10 heater glowing on the bulkhead as a crisp Maine evening descended around our boat. In spite of being just 28 feet, *Reliant* was a great, comfortable cruiser. Those conversions had required careful planning and design.

Too many feet

Similarly, on *Sunrise* Jack and Susan and their daughter, Abey, often had one or two more kids in their company. Jack's biggest complaint was too many feet in the saloon, making it tough to move around. I realized the dinette made moving around a small boat much easier since most legs were out of the center passageway.

***Sunrise*, Jack and Susan Higgins' Cheoy Lee Offshore 31 is usually crewed by their daughter, Abey, and one or two friends.**

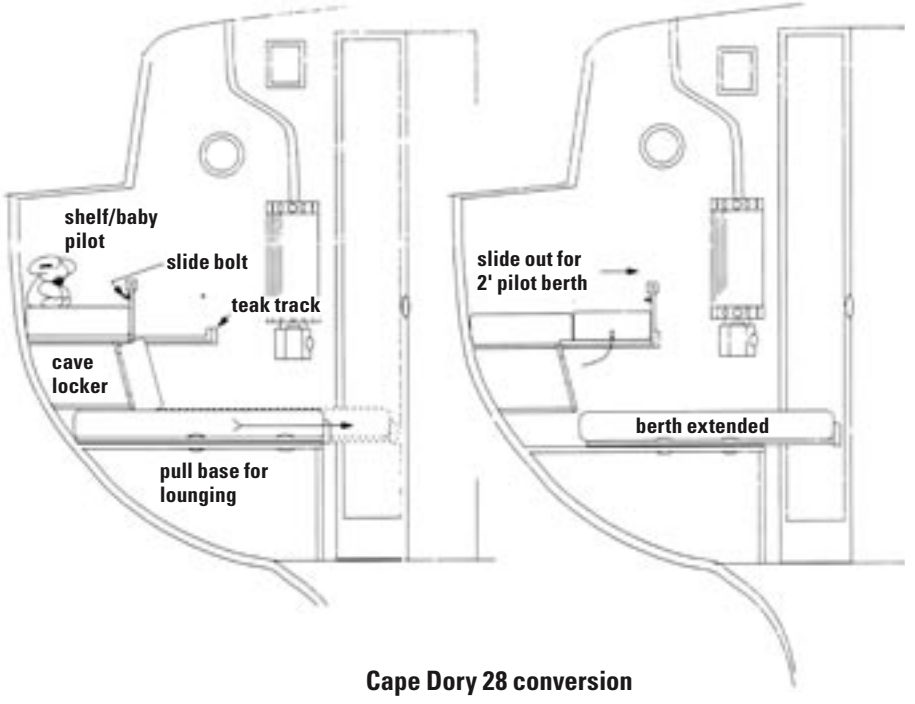
Jack and I discussed putting a dinette in *Sunrise*. A boat interior is a game of inches and a bit more complicated than a room in a home. Feet, seats, elbows, knees, and heads have a lot of things working against them in a small boat. Before reaching for a Sawzall, we drew a cross-section of *Sunrise* in order to design a dinette that would suit Jack and his family. It wasn't all that hard and saved a lot of trial and error.

First we needed a vertical centerline in the proposed dinette area. We measured the centerline on the sole between the bunks and the overhead between the cabin sides. Next, we cut a straight board to fit tightly between the sole and overhead and located its edge on our center marks. With some screws and scrap, we secured it for our measurements.

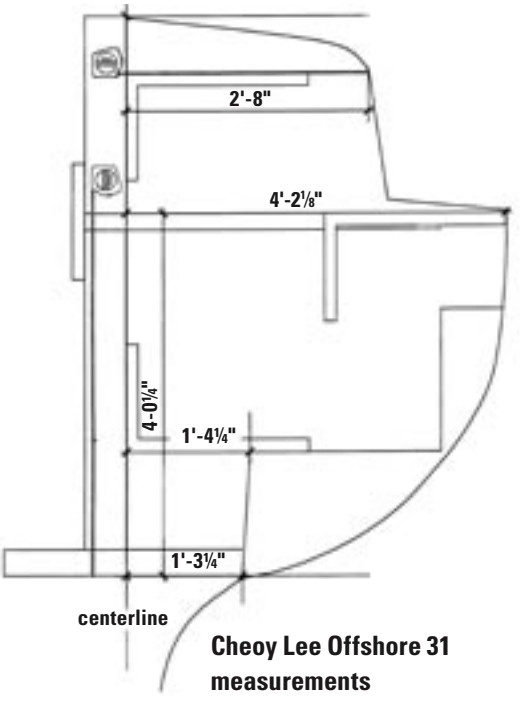
With a rigid centerline established, it was easy to take measurements. We took points of the hull as well as the furniture. Using a 2-foot framing square, a 4-foot T-square, a few straight pieces of scrap wood, and a tape measure, we started at the sole. The board on the centerline gave us a straight edge to run our squares up and down. It is essential that these measurements be at 90 degrees, or perpendicular to the centerline, to get an accurate cross-section.

Careful measurements

Each point consisted of two measurements. First, the horizontal/perpendicular measurement from the centerline on the board. Second, the distance up from the sole along the centerline. We penciled these right on the board. We took these in the area of the boat that would be generally in the middle, fore, and aft of the future



Cape Dory 28 conversion



Cheoy Lee Offshore 31 measurements

dinette table. You could take these at more areas for more accuracy.

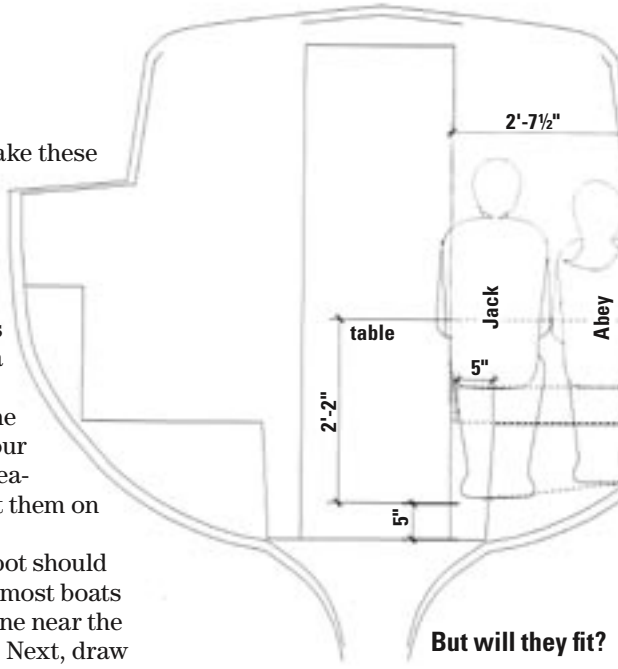
With these measurements it's easy to draw a scale cross-section of the interior of your boat. This section will be of the area you have measured, as if you had sawed through the boat at this point. With your horizontal and vertical measurements, it's time to put them on paper.

A scale of 1 inch to 1 foot should work on most paper with most boats of this size. Draw a baseline near the bottom for the cabin sole. Next, draw the perpendicular centerline of your boat. Start from the bottom, measure to scale . . . up your centerline to your first mark. Next, extend your perpendicular measurement out, again to scale, for your first mark. Then place your second mark up, and so on. Place all your measurements to scale on your paper in this way.

Now connect those marks but not in a straight line. If you have enough marks, draw what would be considered a fair line by a boatbuilder. It isn't difficult; use some curved objects (a French curve or similar) until it looks like half a boat.

A computer helps

There is an easier way. I work on a CAD program, but even a simple computer drawing program makes short work of this. I just set a scale of 1 inch equals 1 foot and, with the measurement tool, moved my marks horizontally then vertically to their correct location.



But will they fit?

Next I clicked a drawing tool and drew between the marks. After a few tries, the lines started to look right. For our purposes, I knew we were within an inch or less of the interior of the hull, and that was all we needed. As an added plus, I merely used the mirror and duplicate tool. This took a copy of this half of the hull, turned it over, and placed it right on the centerline making a full cross-section of *Sunrise*. I measured from the hull-to-deck area across the boat, added an inch for the hull thickness, and the measurement was within an inch of the boat's beam. That's close enough.

Now the fun begins. We measured Jack and his daughter, Abey, while each was sitting in a comfortable chair. Susan's measurements would fall somewhere in between. Jack wanted to wind up with at least two adult seats that worked, rather than four uncomfortable compromises. I scaled their body measurements into unflattering blocks and dragged them (digitally) into the cabin. From there it was a simple matter of establishing some important points.

The human blocks held the relationships of head height, shoulder height and width, seat height, and foot height and showed how they related to the interior of *Sunrise*.

Moving the Higgins family human blocks around the screen, we found we had more space than we thought. We knew from our experience on *Reliant* that we needed to raise the floor. But how much? Abey seemed to fit on a bench with Jack. *Sunrise* has a wide center aisle. We experimented with pulling the seats into the passageway a bit, and this really helped. The people blocks began to find good space. We found nearly enough space for two adults without closing the passageway in. The outboard cabinetry would stay for storage and as a place to attach the new dinette table.

Very comfortable seats

After some experimenting, we agreed that pulling the seat into the aisle 5 inches would accommodate two adults and two good-sized kids or four adults who know and like each other. Primarily, though, two very

The dinette with seating, at left, and with table added, at right. After making computerized drawings of the available space, there is still a chance for modifications to the table height and floor level at this point. A trial is a good idea, using real people rather than digital representations.

Author Tom Young's daughter, Mary Jane, at left, visits Jack's daughter, Abey, seated next to her, and her friend, Hilary Gordon, aboard *Sunrise*. The new dinette table works well for the three girls and one adult.

comfortable seats with a good-sized table would really enhance life aboard *Sunrise*. The port settee would seat two more.

We ended up with a seat height and deducted for compressed 4-inch foam for the top of the seat base. We also ended up with a floor height for feet. Finally we drew in the table at the height we found most comfortable. It would work well when standing in the passageway as well.

What an improvement over the tangle of legs that Jack used to negotiate! After locating the seat height, we drew a table in. It was a good fit on paper.

Jack took it from there with confidence that the modified arrangement would be a big plus. He cut out the area in the middle of the bunk, not a structural bulkhead, and started rebuilding from there. Once the cutout ends were finished, he built the dinette seats of plywood and mahogany to the correct height. He even found additional dry storage space under the seats.

Next, he built a floor at the correct height and angle that worked best on the drawing. He decided he wanted the table to drop and form a berth as well. A simple addition, this became the best berth on the boat. Hinges would hold the table to the outboard bulkhead; the table leg would be removable. He built his table of plywood, mahogany trim, and Formica.

A local canvas shop took measurements; Jack finished and varnished the new parts. When it all went together, the change was dramatic. Jack is pleased with the conversion. During several raft-ups this summer, *Sunrise* always had a bunch of kids and adults enjoying the comfortable dinette seating.

On a fine Maine morning last August I looked back at *Sunrise*, sharing a secluded anchorage with us on Dix Island in Penobscot Bay. Jack, Susan, and Abey were making good use of the new dinette. The Higgins family was having breakfast together, I assumed, since *Sunrise* was listing just slightly to starboard. It's a lot of fun to make a great boat even better.

Good Old Boat

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Half-Zip Fleece Sweatshirt
Available in blue (as shown) and red.
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Summer-weight, long-sleeved.
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Available in red (as shown) and blue.
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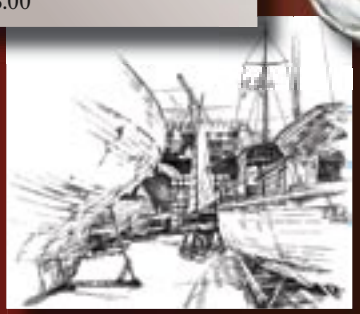
$26.75

Boat Museum T-Shirt
Off-white, 100% cotton, preshrunk, high-quality fabric.
Sizes: M, L, XL, XXL
$18.00



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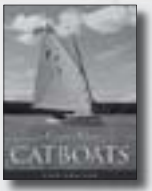

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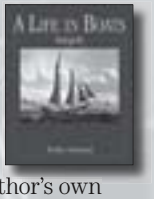

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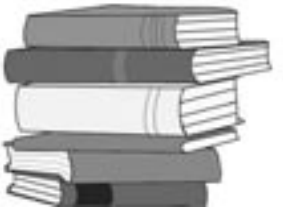

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Sanderling cat, Continued from Page 32

were finished. We had cockpit cushions custom made for us.

I installed a new outboard bracket on the transom. The engine that came with the boat was a 10-year-old Johnson 9.9 long shaft. Although it was in good condition, I purchased a Honda 9.9 four-cycle. The feature that interested me most was the generator, which meant that I would not have to continually remove my battery for recharging every week or two.

Obvious choice

The choice of a name was easy, as our first grandchild, Meghan, had just been born. I took a look at various nameboards at a nearby boatyard and came up with a design. I cut it from ¾-inch teak and carved the letters. Then I gave it four coats of Cetol with gold paint on selected areas between the third and fourth coats. Its curve matched that of the transom, and the *Meg* was officially named.

The rig was the last thing to be tackled. I took the fittings off the original aluminum mast and cleaned it with Interlux Solvent Wash. Then I gave it a coat of Interlux Viny-Lux Primewash Base, followed by Brightside Primer and three coats of Sundown Buff. I painted the top of the mast and the ends of the boom and gaff white. I purchased new mast hoops. The gaff saddle had no cushioning on the inside and was sure to scratch the new paint. I cemented a piece of naugahyde inside the saddle.

The old sail had several tears in it. I purchased a new sail with two rows of reef points. Marshall Marine had brown sail and tiller covers made for me to match the paint scheme.

Resources

Marshall Marine
508-994-0414
<http://www.marshallcat.com>

Ready to go

After some final attention to the boot stripe and bottom paint, *Meg* was ready to go. Our local boat hauler took her out of our driveway and deposited her in Forked River at the Tall Oaks Marina May 8, 2003. People ask me if she is a new boat and are surprised to hear that she is 33 years old. She has been a pleasure to sail. We have adjusted to the catboat rig.

This rebuild took nine months and wasn't necessarily cheap. I have about $16,000 invested in the boat, including the purchase price, along with the new sail and motor. I could have found a boat in good condition for that price, but it is likely that I would have had to replace the sole or some other wooden parts. In addition, it would not have come with the cockpit grate, cabinets, and other things I added. The time and money invested have given us a boat that is truly ours and a bit unique as far as the class is concerned. With more grandchildren on the way, we have many good days of family boating pleasure ahead of us.

Charley Morgan, Continued from Page 27

ficient with watermakers, air-conditioning, whatever they want." Like a lot of other people in the industry, he sees his aging followers taking an interest in the comforts of motoryachts, but not all want to go to sea without some sort of stick overhead.

To fill his time, Charley is teaching himself painting, taking after, in a reverse sort of way, his son and daughter, who are both artists.

And, of course, he still finds time for sailing. He was active in the local Star fleet until his wife became ill six years ago; he nursed her until her death in February 2001.

But, he says, he'll do his yacht club's Mexico race this year, and there's always the Morgan Invasion, a rendezvous for owners, in which he participates.

Last October, the 19th annual Invasion was held at the Treasure Island Tennis and Yacht Club in Treasure Island, Florida. The event coincided with Charley's 75th birthday. More than 100 boats participated. Nothing makes a designer or builder happier than seeing his boats still going strong and his owners happy. One of his favorites, *Paper Tiger*, recently resurfaced in the West Indies. "You can see her on my website <http://www.charleymorgan.com>," he says with pride. "And she's till honkin'."

So, too, one might add, is Charley Morgan.

For further reading...

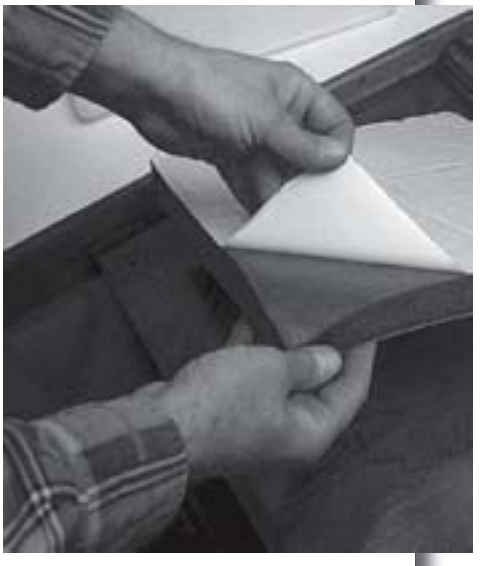
This article is a revised version of information included in *Heart of Glass: Fiberglass Boats and the Men Who Made Them*, by Dan Spurr, available at <http://www.goodoldboat.com/bookshelf.html> or by calling 763-420-8923.

Quieting the iron beast

Using sound-deadening tiles on the mechanical jib

by Michael Facius

The soundproofing tiles are 12 inches square with a metallic cover over a dense vinyl material about 1 inch thick. The back side is adhesive protected by a waxy paper.



Our 2QM15 Yanmar diesel is a hard-working and reliable iron jib. But it tends to be a bit loud. You know the type: give them a little juice, and you can't get them to shut up. We knew we would love it if our engine's sound level were lower, so when Nick Cancro of Sailor's Solutions asked if I would be interested in testing his SPM soundproofing tiles, I jumped at the chance.

When I mentioned the test to Jerry Powlas, *Good Old Boat's* technical editor, his response was to "be as scientific as possible." He said, "Get a sound-level measuring device, and document the level before and after under the same conditions."

I work at a video-production company that has a sound engineer on staff so I was able to borrow a digital sound-level meter that can measure from 50 to 126 decibels in 10-decibel increments.

My Internet research turned up some interesting information about sound levels. The human ear has the ability to sense a very wide range of sound, which is described as a pressure and is measured in pascals. The human ear begins to sense sound at about 20 micropascals and experiences pain from sound at 100,000,000 micropascals. The ratio between these pressures is five million to one. Because the human ear perceives pressure changes logarithmically over a large range, sound pressure level is measured in decibels (dB).

The decibel is logarithmic in relation to sound pressure, giving us a more manageable scale. Normal conversation is approximately 60 dBs or 20,000 to 30,000 micropascals, while a rock concert is 120 dBs or 20,000,000 to 45,000,000 micropascals. One of the lessons is that conventional linear math can't be used. For example, if you have two 60-dB sound sources, the overall sound level will be 63 dB, not 120 dB. While a 3-dB change is generally perceptible, a 10-dB change, either up or down, is approximately twice or half as loud.

Our C&C 30 would require about 20 tiles to completely cover the inside of the engine compartment according to Nick. He was right. The actual installation was easy. My wife, Patty, and I had planned to install the tiles on a Saturday morning while at anchor. The night before we carefully cleaned all the surfaces that were to receive the tiles, according to the supplied instructions.

The tiles are 12 inches square, about an inch thick and weigh 19 ounces each. The surface that faces the engine is a shiny metallic over a dense vinyl material. Between that side and the side that sticks to the walls of the engine room is soft foam. The adhesive side is covered with a waxy paper that protects the sticky surface until you are ready to apply it.

Cutting the tiles to fit is easy. Have measuring tools, straightedges, and a thin-pointed indelible pen to mark the cut lines. I found that the adhesive would stick to the blades after a few cuts but some acetone removed it quickly. The whole process took us a little over two hours. After we cleaned up and made some lunch, it was time to turn the Yanmar on and listen to what we had accomplished.

The sound level in the cabin at idle had been 79 dB, and at 5 knots it had been 80 dB. With the tiles installed, we cut the level by 3 dBs. The sound level at idle now is 76 dB, and at 5 knots it has improved even more to 74 dB.

We can now talk to each other instead of yelling. While the Yanmar is still a strong presence, it's much quieter than it was before. As an added bonus, the inside of our engine compartment looks great.

Resources

Sailor's Solutions
631-754-1945; <http:www.sailorssolutions.com>

Basic toggle hitch

The toggle hitch

A remote control for short-handed sailors

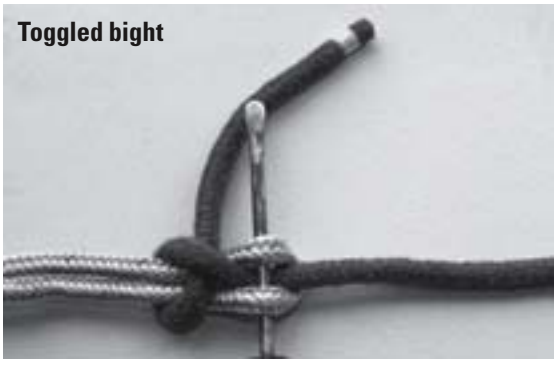
by Jim Martin

Among the myriad of knots available to the sailor, one is most conspicuous by its absence. I cannot recall seeing a toggle hitch in use on any boat other than our own. This hitch has so many uses, where no other knot can be substituted, that a review might be in order.

The toggle hitch is basically a means of joining two lines with eyes in the end. These eyes can be formed by having splices or knots. The photo above illustrates the basic hitch. If the lines are different sizes, the eye in the larger line is passed through the eye in the smaller one. A bight of the smaller one is then pulled up through the eye in the larger, and the toggle inserted. A toggled bight is shown on Page 74. It uses one line with an eye and one line without an eye. (***Note:*** *It would be tempting to try two straight lines, but you really need at least one loop to have a stable hitch –****Ed.***)

What is the toggle? Almost anything, from a tree branch on up. I use a 12-inch round-shanked screwdriver with the tip smoothed and a ½-inch hole drilled in the handle. The strain on the toggle is a very small fraction of the strain on the line. The hole in the handle allows for a loop of bungee cord and for a toggle line, which is used when you need to undo the hitch from a distance.

While the hitch is very secure, belt-and-suspenders types may wish to add to the security. A loop of bungee cord, fastened through the hole in the handle, can be pulled over the end of the toggle. The length of a loop should be a few inches short of the end of the toggle so the toggle cannot self-withdraw but can be withdrawn by tugging firmly on the toggle line. The bungee cord should


Toggled bight


Securing with a bungee for safety

be pulled around the back of the hitch so it bears on the outer line, not the inner one (see bottom photo).

The benefits of the toggle hitch are in its ability to be instantly disengaged and to be disengaged from a distance.

Laying out an anchor

When it is necessary to lay out a second anchor or to put out a breast anchor from any pier mooring, the toggle hitch really shines (see anchor photo on facing page, top). An appropriately sized line with eyes in each end — spliced or knotted or a loop of line — is passed through the head of the anchor and around an appropriately sized fender. On top, a toggle hitch is fastened. The anchor/fender is lowered over the side by the rode, with a line from the fender and a toggle line led to the dinghy. The anchor is then rowed or motored out to its chosen location and the toggle pulled out of the hitch. The anchor drops in place, and the fender is recovered into the dinghy. No scratches, dings, or dents. In fact, using the fender and a toggle hitch, the anchor can be swum out without difficulty.

Towing

When your boat is towing or being towed, immediate disengagement can be critical. You may have only a few seconds to cast off a towed boat or to free yourself from a tow. The use of the toggle hitch provides you with the ability to react instantaneously. Towing is best done with a bridle. One way to make a bridle suitable for towing or being towed involves splicing an eye in each end of a line appropriate to the size of your boat and in finished length twice the distance between your stern cleats. If you don't have a line made up with eye splices, bowlines will do.

Make the eyes large enough to go over your stern cleats and over your bow cleat or cleats. Hook them together over a post or cleat, pull out the tension, and mark with tape the exact center of the bridle. An error here will cause towing to be offset and will place the entire towing load on only one line. Once

you have your bridle ready, tie a bowline on a bight in the bridle with the tape exactly centered as illustrated. Make the bowline eyes 12 inches long.

When towing – If yours is the towing vessel, place the spliced eyes over your stern cleats, clear of all rigging and stanchions, and rig the toggle hitch with a bungee for safety in the bowline in your towing bridle. If the towed vessel gives you a plain line, put a bowline in it. Take the end of the toggle release line and fasten it loosely to the backstay, where you can reach it. With the bungee wrapped around the hitch, the toggle will not come out by accident, but a firm pull on the toggle line will immediately disengage it and the tow.

When being towed – Use the same bridle when under tow. Lead each end on opposite sides of the headstay, through the chocks, if so equipped, and to the bow cleats. Or lead both to the midships cleat, if your boat is rigged that way. Using a bowline or spliced eye on your end of the towing bridle, fasten the toggle hitch and lead the toggle release line to the headstay, high enough to keep it clear but within reach. If you should notice the towing vessel is a shallower draft vessel and about to go over a shoal which is fine for his boat but not for yours (or need to disengage for any other reason), a quick tug on the toggle will allow you to choose your own place to go aground. He would have your towrope, but you would have your keel.


With an anchor


Towing bridle


Bridle with toggle release

Other uses

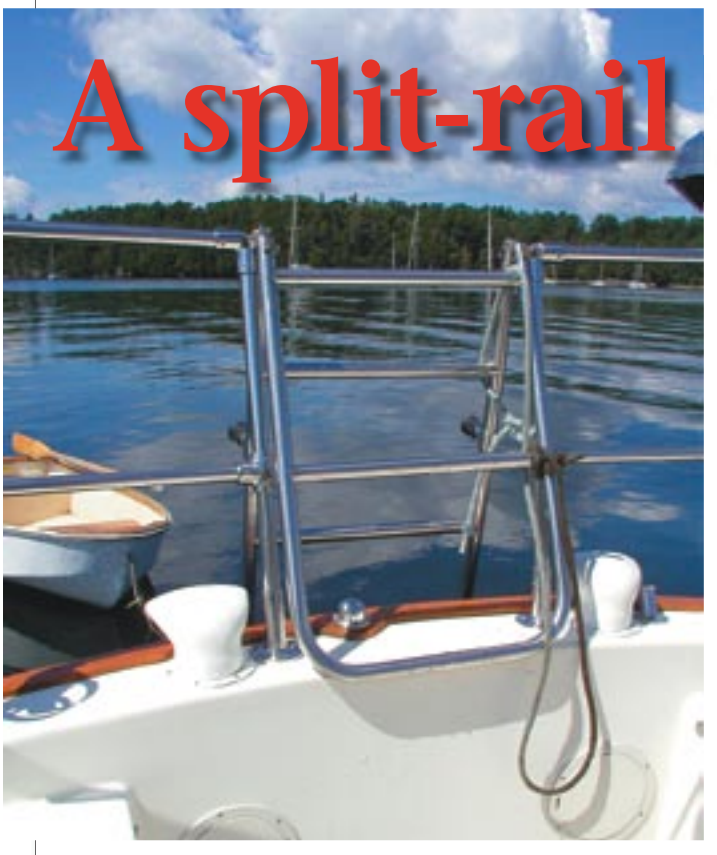
You can use the toggle hitch to quickly release a boat moored near shore with a line to a rock or tree and an anchor off the bow. Other uses will present themselves once you add this knot to your repertoire.

We have used the toggle hitch for years, and consider it an important part of our knot inventory. All our crewmembers learn it. I would not recommend that the toggle hitch be taught to sailors before the bowline, clove hitch, or buntline hitch, but it is a worthwhile hitch to have in your repertoire.

A split-rail fence

Cutting away the stern pulpit eases the boarding problem

by Andrew Wormer



Echo's **new stern ladder allows access without requiring ninja-like agility. Andrew says the new stanchions at the opening were the major expense in the project, but they match the existing boat hardware better. Notice the round access ports in the transom of this C&C 29.**

With a stern-mounted ladder and a continuous stern pulpit, climbing aboard our 1977 C&C 29, *Echo*, from a dinghy meant climbing up and over the rear rail, a task that required ninja-like agility. Most new boat designs solve this problem by splitting the rail, scooping out the transom, and building in a swim platform. Swim platforms are nice, but I figured that modifying the rail would satisfy both the tiniest and oldest members of my crew.

First I contacted a welder to get a price for cutting out an opening in the rail. This certainly might be a logical course for those looking to minimize the appearance of the joints, but browsing through the catalogs of a few marine suppliers made me realize that I could do the same thing with a few standard rail fittings and a length of 1-inch-diameter rail without having to remove the rail and take it to the welder. After all, I was only going to cut out an opening in the rail the width of the stern ladder, terminate the cut ends with elbow and tee-fittings, and run the new vertical legs of the rail down to new stanchion bases.

The first thing I did was to check how much cant the stanchion bases would require to match the angle of the rail. Stock stanchion bases have around 4 or 5 degrees of cant, but I needed stanchion bases that angled out 12 degrees. I used a scrap 24-inch length of 1 x 1-inch pine held against the railing, traced the angle across the bottom, cut the wood to the angle, and double-checked the fit. When it looked right, I used an adjustable drafting protractor to determine the angle I had made. At approximately three times the price of stock stanchion bases, these custom bases added considerably to the project's overall cost, but they matched the existing boat hardware better.

Would they fit?

The next order of business was to see if I could coax the right-sized opening out of the limited space available on the stern. The existing ladder predetermined where everything should go; the question was, would the stanchion bases fit? They did, but not with much room to spare. I had planned to leave about an inch or so between the top elbow fitting and the ladder when it was folded in the up position and then figure out some hardware configuration that could be used to securely attach the ladder to the rail when it wasn't being used. But the vents on the stern prevented this. The opening turned out to be — by necessity — exactly the width of the ladder. This was actually a blessing, because the ladder hangs over the opening with the lower end draping slightly inside the stern pulpit. The friction fit keeps it from rattling around. It's nice not to have to tie it when we leave our mooring or an anchorage.

Andrew's C&C 29 awaits the return of the Wormer family in the dinghy.

I got the parts from Bo'sun Supplies after doing a quick bit of research on the Internet and making a few phone calls. The parts included two custom stanchion bases, two 90-degree rail fittings, two 90-degree tee fittings, and 4 feet of 1-inch outside-diameter stainless-steel tubing to make up the two new vertical legs.

Before cutting, I placed the new fittings against the existing railing to verify where the cuts should be made. Then I used a hacksaw to cut out the approximately 16-inch-wide center sections of the upper and lower rails. I should note here that the lower rail section was smaller in diameter than the 1-inch diameter of the rest of the railings. Fortunately, I found that a sleeve cut from the 1-inch-diameter rail fit perfectly over the skinnier rail, so I could insert the sleeve in the tee fitting and then insert the end of the lower rail into the sleeve for a snug fit.

Plywood backing

After checking the fit and verifying the stanchion base locations, I marked where the holes should be drilled in the stern. After drilling the holes, I cut out backing plates from ¾-in plywood. My boat has access ports that allowed me to reach the area underneath the deck where I was mounting the backing plates for the stanchions. After trimming the backing plates to fit and extending the holes drilled through the deck on through the backing plates, I mixed up a batch of epoxy and put the plates in position. Next I mounted the stanchion bases, using the through-bolts to hold the plates in place as the epoxy cured.

Then it was time to assemble the pieces. My initial concerns about the rigidity of the new railing were groundless. There's a solid feel to it when we use it as a handhold when entering or leaving the boat. It looks reasonably good too. At a little less than $250 for parts and a few hours of labor, it's probably been one of the most cost-effective improvements I've made on the boat.

Resources

Bo'sun Supplies
888-433-3484; <http://www.bosunsupplies.com>

Screening out the bugs

A welcome use for scrap mahogany

by Frank Nowak

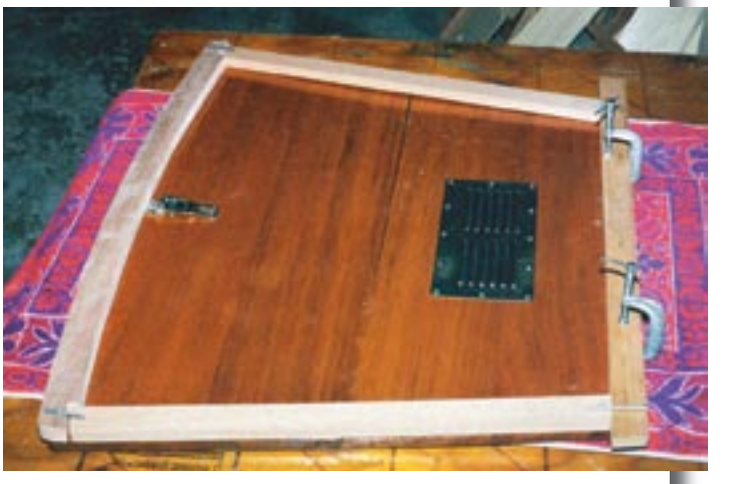
Our 1982 Hunter 27 had plywood hatchboards that were in desperate need of replacement. St. Angelo Hardwoods in Bristol, Rhode Island, had some nice teak, but being frugal (read cheap!) we went with their mahogany at half the price. After mating two 7-inch by 8-foot boards on edge using a friend's biscuit joiner, I cut new boards using the old ones as patterns. One coat of Cetol Marine with three follow-up coats of Cetol Marine Gloss made some pretty good-looking boards.

Then I noticed the scrap mahogany lying around and thought, "I wonder what we could use these for; they're too expensive for kindling." A frame for a bug screen would be just the thing. They were already planed down to the 9/16-inch width needed to fit in the companionway slides; it was a simple matter of trimming the scrap wood to make a screen frame using the boards I had just completed as a guide.

First I made a template of a screen sized to fit the entire set of three companionway boards, thinking that we would end up with a nice-sized bug screen. But when I took it below to see where we could stow a full-sized hatchboard, it was simply too large to stow. So we eliminated the screen from the bottom board and came up with a bug screen that was equal in size to the two top boards. This could fit below with no problem.

The frame was glued and screwed at the corners. We cut ordinary wood screen strip from the lumber yard to fit and gave the frame and strips the same Cetol coatings as the new hatchboards. We pre-drilled pilot holes in the strips and then screwed them down over the stretched-out screen material with 5/8-inch stainless-steel hardware. We used plastic coated fiberglass screening, which was cheap and will not corrode. Then we added 2-inch galvanized corner braces.

Now we are secure below at night with plenty of ventilation and ***no bugs***!



Frank Nowak created a 2/3-sized hatch screen, at top, for his Hunter because a full-sized screen was difficult to stow. He made the screen frame from mahogany left over from making a new set of hatchboards, shown in center photos installed and as a pattern for the screen frame. A close-up view of the screen frame and screen attachment, bottom photo.

Simplifying

Warm water without the usual hassle

by David Satter

HERE'S A SHOWER IDEA I INCORPORATED INTO THE UPDATING of our 1973 Bristol 30. Since I was building new galley counters, I installed a 3-gallon Todd water tank under the countertop.

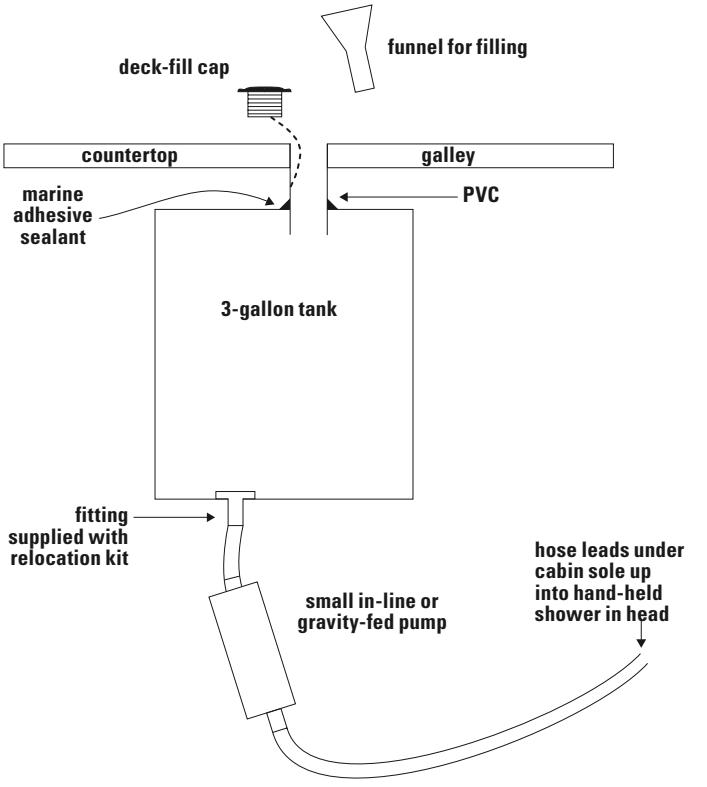
Using the relocation kit available from most marine outfitters (Todd #902218), I was able to move and plug the fitting holes. After installing the small outlet and hose in the bottom of the tank, I found a piece of PVC at the hardware store which had threads that matched a plastic deck-fill cap. The PVC was installed through the top of the tank, then sealed with marine adhesive sealant. The top of the PVC finished flush with the top of the countertop for the deck-fill cap (now a counter-fill cap). Support the tank with stainless straps or a plywood shelf.

the shower

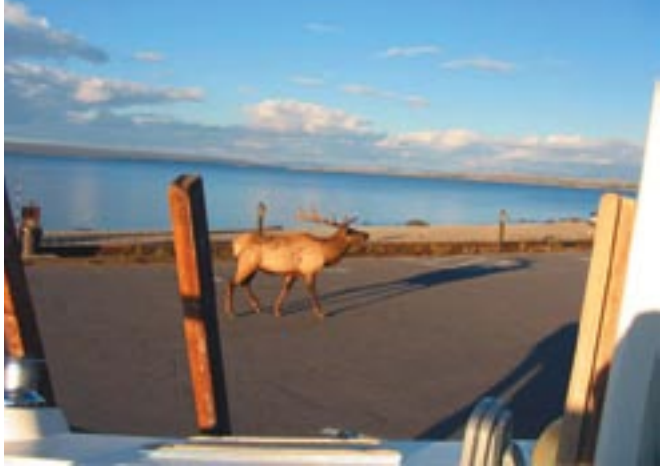
The hose runs from the bottom of the tank under the cabin sole to an on-demand pump or a small in-line gravity-fed pump, then up into the head to a hand-held shower. The shower drains through a screen filter into the bilge to be pumped out or into a sump, if you have room for one.

You simply fill the tank with a kettle of hot water from the stove and a kettle or two of cold. Then you step into a warm shower. The fill cap should be left ajar for venting when in use.

It may be hard to fit a small water tank under your boat's counter, but if you have a head without a shower, it's well worth a try. There's no carrying extra containers or hoses for portable showers. You may be able to free up some space when you replace that old icebox, but that's another project for another day.



A small deck-fill cap, shown with funnel, at far left on facing page, and with cap removed, at left on facing page, is the only visible change in the galley. David's modification called for a water tank in unused space below the counter. With the addition of warm water, this tank supplies a shower in the nearby head.



Unusual boat photo

Here's an unusual photo taken from the cockpit. We couldn't resist this photo of an elk taken by Kirk Thurman from his Balboa 26 soon after hauling the boat out of Yellowstone Lake.

Editors

One polite correction

Thank you for the nice review of the ClampTite Tool in the November 2004 issue. My father, Ray Silvey, was the inventor. The tool was Dad's 37th and last patent. He started in business in 1965 and is well known in the logging industry for many inventions which made loggers' lives easier and more profitable. Before his death in April 2002, he signed the company and the patent over to me. I'm trying hard to follow in Dad's footsteps, improve this tool, continue to build this business, and make Mom proud.

Dad fathered five girls, so we grew up in the machine shop. We thought everyone had a machine shop in their backyard and that other dads could do anything or build anything, like our dad. We also grew up looking at everything in the light of how to change it and make it better. Dad taught us that everything could be streamlined and improved upon, even things he had invented. For more information about the CalmpTite Tool, call 800-962-2901.

Your article says a ClampTite distributor had contributed to many changes in the tool. Since that part of the article was a bit misleading, I wanted to clarify. A ClampTite distributor spoke to rigger Brion Toss, and at Brion's suggestion the tool was modified with the addition of a lanyard connection.

Senora Early
ClampTite–Ray Silvey Company

Whoops! Depends on who's counting

In your January 2005 issue you had an article on the CS 36 in which the author claimed there was only one of its kind sailing on Long Island Sound. I'm here to say that we have three in our club alone at the Duck Island Yacht Club in Westbrook, Conn. <http://www.DIYC.com>. Come out our way to see three fine examples of the boat. One in particular is being made ready for some extended cruising.

George Van Drasek
Avon, Conn.

Irwin and Endeavour similarity

I'd like to fill in a little information about the Irwin 32 [which could have been included in Ted Brewer's Cheoy Lee 32 comparison in the January 2005 issue]. I own a 1971 model. The Irwin 32 was in production from 1970 through 1972. There might have been a few 1973 models. The 1972 models were considerably upgraded in cabin furnishings and ports. A yawl rig was an option; I've run across at least one. The boat was available as a keel/centerboarder as well as fixed keel. The dimensions given in the comparison article for the Endeavour are all roughly the same as the Irwin, but I believe the Irwin has a longer boom and another 30 square feet of sail area.

The significance for *Good Old Boat* readers is the Irwin brand is much cheaper than Endeavour. My 32 was a fixer-upper. For someone trying to find a nice cruising boat really cheaply, the Irwin is the one to look for.

By the way, the 32 is probably the most obscure Irwin model, since the Irwin 32.5 center-cockpit cruiser was produced at the same time, and later there was the Irwin Citation 32. On the SailNet list we call it the Classic 32 to distinguish it from the other models. The following URL has downloadable pages and drawings from Irwin 32 brochures. There's also a picture of my boat sailing in the Patapsco River, with the Francis Scott Key Bridge and downtown Baltimore in the background <ftp://ftp.sailnet.com/irwin/Irwin%2032/Classic%2032/>.

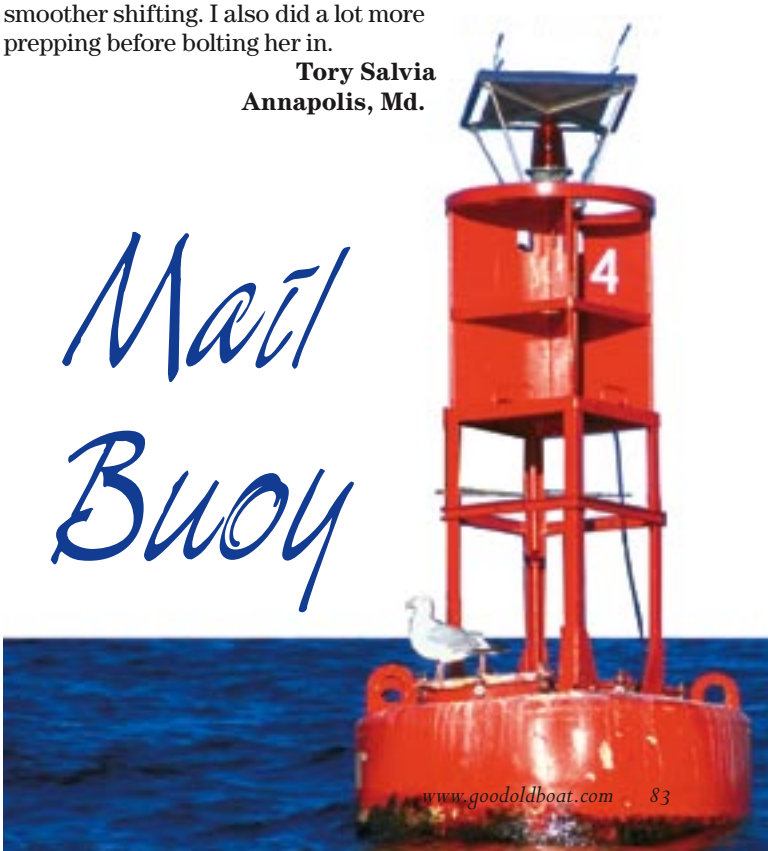
Stephen Hendry
Baltimore, Md.

Neshuma's old engine lives

The 1984 5444 Universal diesel that came out of Sonny Furman's Pedrick 41 ("Poor man's Hinckley," January 2005) now lives quite happily in my vessel. Sonny served as my mentor through the purchase and beginning refit of *Sparkle Plenty*, my 1980 Mariner (New Hampshire) 36 sloop. I assisted Sonny with moving engines off and on *Neshuma* (I took the engine photos that appear in the article) and subsequently purchased the Universal. It had low hours (around 600). It made an excellent replacement for my aging 1980 Universal 5432. The two engines are very similar; the 44 bolted right into the same holes on the stringers. It also mated just fine with my Hurth HBW 10-2R transmission. Before installation Sonny helped replace the old automotive-type spring clutch plate with a new R&D Marine linear damper for smoother shifting. I also did a lot more prepping before bolting her in.

Tory Salvia
Annapolis, Md.

Mail Buoy



Mail Buoy

Awlgrip problems

I have a 27-foot C&C which was repainted in 1992 with Awlgrip. In the last year the clear coat on top has started to peel off in a number of places around the boat. In the last 10 years of our ownership the surface was only washed with warm water and has done beautifully. Now we have four to five pieces of the clear lacquer-type finish peeling off the boat. These pieces are more than a foot in size. Have you heard of anyone else having problems of this type with this product? How do I fix it without spending thousands of dollars?

Harvey Hall
Nanaimo, British Columbia

An expert responds

Awlgrip recommends clearcoating over metallics to prevent fading and discoloration. They do not make a recommendation regarding clearcoating over solid colors. And they discourage clearcoating over whites and pastels. The reason clearcoating is done is that some think it enhances the depth-of-image, resulting in higher gloss. It also makes repairs more difficult.

Unfortunately, there is no quick or inexpensive fix. Without knowing exactly what products were used and at what stage in the painting process the clear coat was applied, I can only make general statements and recommendations.

The best time to apply clear coat is as part of the initial painting process when the clear coat is applied over uncured Awlgrip as the last coat of a multi-coat spray application. The clear coat chemically bonds to the layer below, and you will almost never see delamination of the clear coat as you are describing. The second best way to apply clear coat is after 24 hours but before the paint has fully cured, within approximately seven days. This requires light sanding of the applied paint to enhance the mechanical bond (adhesion) of the clear coat. The fact that the paint has not fully cured allows for some chemical bonding. The worst way to apply clear coat is to a fully cured paint surface. The only bonding is entirely mechanical and, according to Awlgrip's technical department, their urethane-based paint was designed to best adhere to their epoxy primers, not to cured urethanes.

Most likely the clear coat on your boat will continue to fail and delaminate. The only way to guarantee a long-term fix is to repaint the boat after fully sanding the surface to ensure that the failing topcoat has been removed. The surface should be cleaned and re-primed and then the Awlgrip topcoat applied.

Doug McEneany, rivboat@pressenter.com
Riverside Boatworks

To this, Harvey responded: "Thank you so much for looking further into this for us. Not really what we wanted to hear, but we were in denial. As with all good old boats, it is our baby." We know, Harvey, we know.

No dinghy dilemma at all

Perhaps I am overly sensitive to the issue, but it is becoming all to obvious to me [after reading "The dinghy dilemma" in the January 2005 issue] that there is a subtle editorial undercurrent supporting inflatable boat bashing. I would suggest that you do yourselves and your great mag a disservice, as the fact remains the vast majority of us have and are absolutely unwilling to let go of our trusty inflatables. There is not a more versatile, stable platform on the water.

The "inflatables don't row myth" is about as relevant as saying "GPS is just a fad." Inflatables will row just as well as a hard dink. Those conditions where you would not be able to row, you also would not want to row a hard dinghy. As for powering, an inflatable will go farther faster than a hard dink with a comparable outboard. The issue of wear and tear is also over-exaggerated. I know people who are still zipping around in 18- and 20-year-old inflatables. Dozens of

folks agree that repairing their boats is very easy. It's nothing to add a D-ring or grip anywhere you want in minutes.

Rather than bashing, you might want to approach an expert and get some helpful, ongoing articles about all the fantastic modifications and repair work possible on inflatables to create the Perfect Dinghy. I am not against hard dinghies; in fact, I have an 8-foot pram, an old lapstrake rowing dinghy, and a Livingston twin-hull, but the whole family prefers the good old inflatable every time.

Jeff Jelten
Corvallis, Ore.

Jeff, the undercurrent wasn't intentional. We didn't change Silver Donald Cameron's remarks in the January 2005 issue, for example, but we didn't remove them either. It's true that we have run more articles about unusual dinghies, since we figured that everyone already knows all there is to know about the usual ones (that'd be the inflatables).

Fog for the rest of us

Rick Postal sent lovely photos of good old boats in a foggy Chetco Cove Yacht Club race near Brookings, Oregon. We simply had to share a couple of them. Above left is *Momentum*, a Mariner 32, owned by Mike and Polly Blank. To the right is *Spindrift*, a 32-foot Gulf, owned by Mel and Betty Githens.

Editors

Dripless packing

In his "Shaft Log 101" article in the January 2005 issue, Don Launer mentions, "A clay-like compound is inserted in the stuffing box and compressed by rings of conventional packing material and adjusted so there are no more drips. Although more expensive than conventional packing, after initial adjustment this system rarely needs readjustment." Sound like a winner to me. What's it called and where do you get it? Any tricks to using it?

Jim Young
Mollusk, Va.

Don Launer responds

The stuffing box dripless, moldable material you asked about is a unique clay-like substance that is packed inside the stuffing box and uses a ring of normal square flax packing as a retainer ring. This material has low-friction compounds and lubricants that don't require water passage for cooling or lubrication, and it completely seals from the intrusion of outside water. Unlike flax stuffing rings, which break down from heat, friction, and water seepage, this packing will last for many years without attention and is suitable for sailboats or powerboats, except those "performance powerboats" that have extremely fast shaft rotation.

If your propeller shaft is very old, it's probable that the shaft is scored from sediments inside the stuffing box. In this case, neither regular flax stuffing nor this new material will be completely satisfactory. The product is sold by West Marine and is called Drip-Less Moldable Packing Kit. The kit does not include the flax packing, since the size of that packing is determined by each boat's particular stuffing box. The price of the kit is several times that of conventional flax packing. Look for "Stuffing" in the catalog index. The West Marine catalog also has a formula so that owners of "performance boats" can determine if the product can be used on their boats.

Don Launer
Forked River, N.J.

Steak, not sizzle!

I really hope *Good Old Boat* is doing well for you. It is often mentioned as one of the essential magazines by posters on the *Cruising World* bulletin board who are disillusioned with more

Mail Buoy

mainstream magazines. Like the builder of my first good old boat might have said, "They are selling the sizzle, *Good Old Boat* is selling the steak!"

Garry Prater
Seneca, S.C.

Rudder modifications

I have a 1989 Irwin 38CC. The rudder is 8 inches longer then the wing keel. From what I can find out online, the wing keel was made in 1988. But Irwin never changed the rudder from the standard fin keel. I have heard horror stories of breaking off the bottom of the rudder when running aground. I would think it is better to hit the keel, rather than the rudder.

My rudder is soft and delaminated. I plan on constructing a new one. I have another rudder post and blade (the previous owner ran aground and broke the rudder). I can do this over the winter and swap it out in the spring when the boat is lifted up. Can I lop off 9 inches from the rudder? Do I need to add the "wetted surface" to the trailing edge? Is it just a matter of square inches or is the shape critical? I have been walking around the yard this winter. I have seen some pretty big boats with some really small rudders! I have also seen some ***big*** rudders. Is there a formula?

Chester Punicki
Bohemia, N.Y.

Ted Brewer responds

My suggestion would be to cut it off, parallel to the LWL, about 1 to 2 inches shoaler than your fin. Try it out and, if you feel you've lost too much area, it is a relatively simple job to add an inch or two down the trailing edge.

Ted Brewer
Gabriola Island, British Columbia

An exceptional mother-in-law

I must be one of the luckiest husbands alive. My mother-in-law is enclosing the renewal check for the next year's subscription. But then she is exceptional, as is your magazine. She always listens intently when I rattle on about how your staff seems to anticipate just what needs to be addressed next in the ongoing restoration and maintenance of our 1977 Norstar Flicka. For example, I'm imbued with confidence from Steven Alexander's article, "Spiffing up the spars" in the January 2005 issue. I can now proceed to spiff up my own. Perhaps putting your magazine in my hands is the best way "mi suegrita" knows of insuring her daughter's safe return.

Bill Ronstadt
Tucson, Ariz.

Bill, like mother, like daughter. We bet your wife's a gem also.

Not independently wealthy?

Got the sample issues you sent me. There finally is a magazine for those of us who aren't independently wealthy. Subscription check is in the mail. Really great publication.

Al Cash
North Eastham, Mass.

Send questions and comments to Good Old Boat, *7340 Niagara Lane North, Maple Grove, MN 55311-2655, or by email to jerry@goodold boat.com. Please limit messages to 150 or fewer words. We reserve the right to edit.*

Standing headroom

Grouching about crouching — it's the height problem again

by Karen Larson

Being tall may be overrated as a social asset. As a taller female, I've never been convinced of the advantages. First, many of the interesting boys were too short. Later, after I waited for their height to catch up with mine, many of the interesting men weren't quite tall enough either, by my standards of the time. It took a while longer before I realized that there are more important criteria for a lasting partnership.

As a sailor, this height problem strikes me again and again. (Right in the noggin sometimes, in fact.) *Mystic*, our C&C 30, has standing headroom in the main cabin, although you can't stand up exactly straight when working in the galley where the floor slopes up and the overhead slopes down. We manage to overlook that, however. The real problem is the overhead beam at the bulkhead by the head and hanging locker. This is a beam that can take our heads off time after time . . . in spite of owning this boat for more than a decade. I have a funky little macramé hanging suspended from that beam. It's usually in our line of vision and (particularly when we're not wearing caps with visors) saves us from many hard knocks.

That macramé hanging (we'll call it ropework since I did refer to *Ashley's Book of Knots* when I set to work on this project so long ago) looked tacky after a couple of years. We figured we could do without it. After all, we'd been trained, surely, hadn't we, after several years on the boat? Not so. The ropework was retrieved from the trash and went right back up. It's been there ever since.

Once you've passed beyond the bulkhead and its overhead beam (without incident, we'll presume), you are in a space that looks at the V-berth, head, and hanging locker. And you're no longer standing up straight. At least I'm not. And Jerry's not either. We're not all that tall really. I'm 5 feet 9 inches and shrinking. Jerry's 5 feet 10 inches and shrinking.

Hunching headroom

What we've got in the head is what we call hunching headroom. We can't stand up straight to brush our teeth, sort through the hanging locker or the tool bins that are stored there, or change clothes in the only privacy afforded by a C&C 30 if company is aboard. There. That explains at least *part* of our reluctance to those friends and relatives who'd like to be invited to come along more often than once in a blue moon!

But *Mystic* is our large boat! We have a trailerable boat in the backyard . . . the one not yet sailed . . . the project boat . . . our Mega 30, also designed and built by C&C. Jerry justified buying a 30-foot trailerable because it offered at least a little standing headroom. (I'll admit that it's rumored to be as quick as the wind, and he's more than a little excited about that possibility.) But standing headroom is hard to come by in trailerables. Trailerable boats offer a lot of flexibility in terms of sailing destinations. As it turns out, however, you have to be very flexible yourself, or very young, or very short, in order to reap the rewards. We are none of these.

So it's a game of inches. The only possible standing space in the Mega 30 is under a bubble top, which means that, at least on this boat, you can stand up straight to do the cooking or the dishes. But more would be better, so the first thing we removed was the tired overhead panel. We got back an inch or two under the bubble top that way. Now I'm eyeing the floor grating. It must be an inch thick or a bit more. Surely there's half an inch to be had there . . .

"Now I'm eyeing the floor grating. It must be an inch thick or a bit more. Surely there's half an inch to be had there . . ."

To make up for the benefit of actually standing at the sink, the Mega sailor is nearly doubled over when moving around in any other part of the boat. And to make matters worse, that sailor has to double over and crouch sideways in a crablike maneuver. The main passageway has a massive obstruction: the daggerboard trunk. We have to love the daggerboard trunk. It will allow this boat to go where others fear to tread. It allows for trailerability. But it's smack dab in the middle of the living space!

Since we don't seem to be shrinking fast enough to fit our boats and there doesn't seem to be any cosmetic surgery offered for too-tall sailors, the best thing to do is spend most of our time in the cockpits of our sailing vessels. So that's where you'll find us in all but the worst conditions. For the taller sailors among us, it's really the safest place to be!

Soon! Real soon!

Skunk, damp mud? Yes! Spring is in the air!

by Wayne Gagnon

The days are getting longer. It's light out when I leave the house for my walk after supper, and there's more than just a hint of the sunset when I return an hour later. There's a good month of ice fishing yet, and the robins are still a way off, but there's the faint odor of fresh mud in the dampness every once in a while. And any day now there'll be the lingering scent of a road-killed skunk, a sure harbinger of spring.

It seems like the last sail of the season was just a few weeks ago. It was too cold and windy to hoist the sails, and it looked like it was going to rain any minute, so we pulled the sails and got them bagged up and into the truck before we fired up the iron spinnaker, cast off, and headed down the river. My passengers were willing, but since neither had been sailing much they were a bit apprehensive about the whole experience. The small-craft warnings they'd heard on the marine radio didn't do anything to assuage their fears, but they put their trust in me. I had told them that I didn't want anyone on my boat to get so scared or seasick that they wouldn't go again. This was my chance to prove it.

We poked our nose out into the big lake and went out about a quarter of a mile. The wind was blowing offshore, so the further out we got, the rougher it was. We puttered around for about 20 minutes, made a quick stop at the fuel dock to top off the tank for the winter, and headed back to the slip.

" 'You're certainly in your element!' was the comment that reassured me that all was well. If I could hear that after my first season, I guess I must be doing something right."

Tense moments

There were a few tense moments when the engine stalled under the drawbridge, but quick movements, and the fact that I managed to hide the rising panic, reinforced my overall image as captain. "You're certainly in your element!" was the comment that reassured me that all was well. If I could hear that after my first season, I guess I must be doing something right. But I'm sure there'll come a time when I'll question that statement. Mustn't get too cocky, you know.

That was the better part of five months ago. Five months from now we'll be in the thick of another season. In the meantime there'll be a few more snowstorms, the thermometer will come close to the zero mark, and we'll have to let the car warm up before heading off to work. But we're starting to get things ready. We're making checklists, repairing equipment, deciding what new gadgets we need. Before we know it, we'll be able to cast off and head for open water. We'll feel the gentle rolling of the swell; sense the boat as she stiffens; hear the wind in the wires; see the spray flying across the bow. Yes, this will all happen! Soon! Real soon!