

www.goodoldboat.com

Issue 103 July/August 2015





PLEASE DON'T STEAL OUR FILES!

We make our living selling good content to fellow sailors. If you give our files to others, you are stealing that content from Good Old Boat. Don't think of it as "sharing." It is theft.

> We try to be fair and honest in all things we do on your behalf. We hope you'll treat us fairly and honestly in return.

> > Our issues are copyrighted. Please respect that.

©2015 by Partnership for Excellence, Inc. All Rights Reserved. Reproducing in whole or part is forbidden except by permission of the publisher.



HAMILTON MARINE

BOATERS' STORE

FREE 2015 CATALOG! Get your copy today! Our 376 page catalog is chock full of the things boaters love. Pick up a catalog in any of our five stores or request one online or call 800-639-2715.





800-639-2715 • hamiltonmarine.com

Typographical errors are unintentional and subject to correction.

GOODOLDBOAT

JULY/AUGUST 2015

CONTENTS

ISSUE 103





Feature boat

18

10 Yellowbird, a Chris-Craft Sail Yacht 35

A pedigreed early center-cockpit design BY BILL JACOBS

Boat comparison

14 The Chris-Craft 35 ...

... and center-cockpit contemporaries BY ROB MAZZA

Design considerations

16 Something gained, something lost Two Chris-Craft 35s illustrate the designer's dilemma BY ROB MAZZA

Refit boat

20 Saved from extinction

A Pacific 30 — possibly the last one — sails again BY PETER THELIN

Review boat

58 Cape Dory Typhoon

An ever-popular daysailer approaches 50 BY WAYNE CANNING

Speaking seriously

Sailboats 101

18 The Gunter Rig 101 A handy sailing rig for dinghies and small trailerables BY DON LAUNER

Sail loft

24 Why sails fail Nature and lack of nurture take their toll BY LESLIE LINKKILA AND PHILIP DINUOVO

Cruising designs

27 Keel evolution, part 2 Separation achieved BY ROB MAZZA

Making your own

30 Nurdle's new centerboard A foil made with fiberglass, foam, and ingenuity

BY JOHN CHURCHILL

Interior improvements

48 Head makeover

Imagination, a little paint, and a few pennies go a long way BY CLIFF MOORE



Spotlight on ...

Electronic wizardry

34 Electrical connections

Proven procedures keep the juice flowing BY DAVID LYNN

38 AIS for the rest of us

See, be seen, and talk about it BY ED ZACKO

44 Inverter essentials

Silent power for home comforts afloat BY WAYNE CANNING





ISSUE 103

JULY/AUGUST 2015



Just for fun

Learning experience

51 That sinking feeling A first cruise that might have been the last BY SUSAN PETERSON GATELEY

Sailing life

56 There's no hiding added weight ...

... but extra pounds bring peace of mind BY CLIFF MOORE



www.audioseastories.com

On the cover ...

Wanderlust, Joe Duehmig's 1978 Ericson Cruising 36, looked good enough to fellow sailor Roy Schneider for him to pull out his camera as she sailed north out of Milwaukee Bay, Wisconsin. We're very pleased he did. She looks good to us too.

What's more

5 Web sightings

CONTENTS

Words for writers; know a boat by its stripes; know a boat by its sails; download reviews

13 NY 3932 FZ

The view from here 7 Slippery slope

The ever-narrowing gap twixt cup and lip BY KAREN LARSON

Mail buoy

8 Truck painters, door openings, and small world

68 Product launchings

Charts for iOS, lantern and device charger, Li-ion jump-starter

Simple solutions

63 Battery Catch 22

mm

Chargers that work only with a charge BY JIM HEUMANN

Quick and easy

64 Continuous rope loop

A non-splicer has it all sewn up BY FERMAN WARDELL

NY 6802 DF

65 Night light

An inexpensive LED shows the way BY ALLEN PENTICOFF

70 Good old classifieds

Reflections

77 Meeting Pendragon's liveaboards

Former owners reach out across the years BY LEONARD SKINNER

Archive eXtractions

Articles compiled for you from the Good Old Boat archives



25 – 27 footers Small keelboats to sail anywhere



Boatbuilders The boatbuilders and companies that launched today's good old boats

Boat Reviews



28 – 30 footers The ubiquitous 28- to 30-footers





31 – 36 footers 33 wonderful review boats



Boat Designers The creators who drew the lines of the good old boats we value today

today's good old boats Available from of the good old boats we we have a second second boats we have a second second boats we have a second se

Also available from www.AudioSeaStories.com: back issues, audiobooks, music, and eBooks in PDF format



Explore this unique collection of sailing knowledge and stories today! www.AudioSeaStories.com

GOOD OLD BOAT

FOUNDER/EDITOR Karen Larson karen@goodoldboat.com FOUNDER/TECHNICAL EDITOR Jerry Powlas

jerry@goodoldboat.com PUBLISHER/ADVERTISING SALES DIRECTOR

Michael Facius michael@goodoldboat.com • 612-605-8319

> SENIOR EDITOR Jeremy McGeary MANAGING EDITOR

Tim Bauernfeind timb@goodoldboat.com

ASSOCIATE EDITOR

Pat Morris

RESEARCH EDITOR Dan Spurr

CONTRIBUTING EDITORS

Donald Launer | David Lynn | Rob Mazza Gregg Nestor | Allen Penticoff | Bill Sandifer Richard Smith | Tom Wells | Ed Zacko

d Smith | Iom Wells | E DESIGN DIRECTOR Nancy Koucky

CLASSIFIED ADS AND FINANCIAL MANAGER Karla Sandness

karla@goodoldboat.com • 701-952-9433 DIRECTOR OF CIRCULATION/RETAIL

Mark Busta mark@goodoldboat.com • 701-952-9433

WEBMASTER Jerry Stearns

www.goodoldboat.com TROUBADOUR Tom Wells

103 - VOLUME 18, NUMBER 4 GOOD OLD BOAT (ISSN 1099-6354; USPS 019327) PUBLISHED BIMONTHLY BY Partnership for Excellence, Inc. EDITORIAL OFFICE:

7340 Niagara Ln. N. | Maple Grove, MN 55311-2655 Phone: 701-952-9433 | Fax: 701-952-9434

BUSINESS OFFICE: 1300 Evergreen Dr. N.W. | Jamestown, ND 58401-2204 Phone: 701-952-9433 | Fax: 701-952-9434 www.goodoldboat.com

> Periodicals postage paid at Osseo, MN 55369, AND AT ADDITIONAL MAILING OFFICES. POSTMASTER: SEND ADDRESS CHANGES TO: Good Old Boat 8810 27th Street Ct. N. Lake Elmo, MN 55042-9473

© 2015 BY PARTNERSHIP FOR EXCELLENCE, INC. All rights reserved. Reprinting in whole or part forbidden except by permission of the publisher. Printed in the USA.

Editorial contributions are handled with care, but no liability is accepted. Opinions expressed by the writers are not necessarily those of *Good Old Boat* magazine.

SUBSCRIPTION RATES (1, 2, 3 YEARS): U.S. AND CANADA – \$39.95/\$74.95/\$110us OVERSEAS – \$49.95/\$95.95us



News from our websites

GoodOldBoat.com

You say you want to write? Have you been struck lately by the urge to write about your current boat project? Here's where we've published everything you want to know about submitting articles to



Good Old Boat: types of stories we're looking for, payment rates, and the rest of the who, what, where, and how: www.goodoldboat.com/ writers guidelines.

Know that boat!

This summer when you're walking the docks, wouldn't it be nice to identify a Pearson or a Sabre or a Westerly by its cove stripe and other identifying marks? Our page on boat identifiers will help. What's more, if you find a boat you can identify that's not on our list, please take photos for us and let us know. Our list was compiled by good old sailors like you: www.goodoldboat.com/ resources_for_sailors/boat_identifiers.



AudioSeaStories.com



What if you're out there sailing and see a sail insignia you can't identify? We have you covered. Check out the free stuff we've posted for downloading at: www.audioseastories.com/ free-downloads-for-sailors.html. What's there? A 26-page booklet of alphabetized sail insignia. You'll also find two tools (an Excel sheet with comparison formulas and a 12-page boat-audit checklist) to help you choose a sailboat the next

More boat identification help

time you're in the market.

Boat reviews for downloading

We've mentioned the collections of articles called Archive eXtractions, but did you know there's a collection of boat reviews including boats of 25 to 27 feet, another one of boats of 28 to 30 feet, and a third of boats from 31 to 36 feet? Each collection has between 25 and 30 boats we've reviewed in previous issues. These Archive eXtractions are \$25 each, downloadable in PDF format at www.audioseastories.com.



GOOD OLD BOAT

What every Good Old Boat subscriber knows: it's a magazine • it's about sailing it's about trailersailers and globe girdlers it's about daysailers and coastal cruisers it's about fixer-uppers and all-fixed-uppers it's about the people who love, cherish, and baby their boats it's about doing stuff yourself to the boat you own it's a resource it's a community of sailors it's everything a sailboat owner needs!

it's Good Old Boat

For your **FREE** copy, go to: http://tinyurl.com/GOB-Poster Spread the word! Please post this page at your marina.





search on the Internet would have you believe that the term "slippery slope" has been in use since 1951. In the grimmest of definitions, it is a downward path on which, once you have made a start, there is no return.

Having wine aboard our boat has been like that, although the path was perhaps not quite so grim. We bought *Mystic* in 1992. At the time we were teetotalers. With a young son in the house, we were trying to set a good example. A few years passed and it was clear that we were no longer role models for our teenager. So why, exactly, were *we* abstaining? Herewith the story of the slippery slope. It's our story and we're sticking to it.

It starts innocently enough. Once free of that responsibility, we drank wine occasionally at home: holidays, other special occasions, and times when we invited friends over for dinner. But wine did not appear on our table on a daily basis. It *never* went to our boat with us. We were convinced — and remain so — that weather can change and unforeseen situations can arise quickly. One must, absolutely must, have all his wits about him whenever he is on a boat, whether tied to a dock or at anchor. We did not drink aboard.

Other sailors did, though, and occasionally we'd have a glass — just a glass mind you — when aboard their boats for dinner or cocktails. And we'd have a glass in our own cockpit — just a glass — if they brought a bottle when they came to our boat for dinner. After all, you never know when the circumstances might change from mellow to mayhem. We wanted to be clearheaded if they did.



You already see this coming. We did too. One thing leads to another. Well, perhaps just a glass when tied to the dock is acceptable. After all, what can possibly happen when you're tied securely from all corners? But we would never, never have a glass at anchor. There are way too many variables then. We had seen too many instances of midnight fire drills when someone dragged down upon us, too many times when we hauled up the anchors in the dark and moved to a more protected spot. We knew. We wanted to be fully alert at every waking moment and easily aroused at the slightest change when asleep.

By this time, we were sure to have a glass of wine around 5 p.m. at home and certainly another one with dinner. Our house was well stocked with bottles and our favorite box wine. We never ran out.

It was only natural that we'd make sure the boat was stocked, too, for those times when it was safe — absolutely safe — to have a glass aboard. Other sailors could drop by unexpectedly. One must be prepared, you know. But what had been a very clear dividing line — always in this situation but never in that situation — had become just the slightest bit blurred with "sometimes" and "occasionally."

Once the boat is stocked with wine, it remains stocked whether you spend the night in your slip or hanging on the anchor. So there it is: the wine is available and the night looks so calm. What could happen? Perhaps only one glass each, then? Or maybe one when the sun goes over the yardarm and another with dinner?

Since we always anchor with two anchors for extra security, we were able to convince ourselves (it wasn't very hard really) that we were unlikely to drag and much more secure that way, so a little wine would be OK. In fact, a little Scotch for the skipper surely couldn't hurt, could it? His appreciation for Scotch has been mentioned many times in these pages. I wouldn't call it legendary, but he certainly is devoted to a wee dram at 5 p.m. while I make sure the wine doesn't spoil.

That's where things stand at this moment. We have pretty much slipped to the bottom of the slope over the past 20-some years we've sailed together. Over those years, we were aware of the trend and referred to the slippery slope often. Imagine our surprise in the small town of Warkworth, on New Zealand's North Island, when we saw the sign warning us of the downward path from which there is no return. How did they know?



Truck painters can paint your boat

When our Nonsuch 26, *Mariner's Cat*, was in need of a new paint job, I researched paints of a similar chemistry — Awlgrip, Imron, and Alexseal. I chose Alexseal, then got quotes from marine shops. They started at \$10,000 just to do the topsides, not including the boot or cove stripes.

I looked at rolling and tipping it myself (Alexseal sells converters expressly for this purpose) but there are a few drawbacks. The weather window for me is, at best, three weeks in April, and I would be painting outside alongside 40 other boats being worked on in a yard located next to a busy road — too many variables.

I then went to a local body shop that repairs cars and trucks. The key fact is they paint trucks. These days, trucks and cars have lots of surface materials that require painting and repair: plastic, aluminum, steel, carbon fiber, and many the larger boat painters will see in a year.

They fixed all the dings and then sprayed three coats. They did an excellent job, and in less than a week from in to out. The final price was just under \$2,000 plus paint and trucking. The paint cost \$700 and the charge for delivering the boat 15 miles each way between the marina and the shop was \$400. These prices are in Canadian dollars.

You can see the end result in the photo. If you're considering painting, it is well worth looking at a painter who does large vehicles and can accommodate our 12-foot beams. For these businesses, painting a boat is simple compared to the complexities of working with steel, aluminium, plastic, and vinyl on a garbage truck or concrete truck. For them, painting a pleasure boat is work that is not time-sensitive, so they can fit it in between painting projects on commercial vehicles.

-Thor Powell, Brighton, Mich.



New England sailor Brent Putnam's favorite light (and there are many to choose from!) is Nobska Light, which marks the entrance to the Vineyard Sound side of the Woods Hole passage between the sound and Buzzards Bay. Brent took this shot from his 1973 Marshall 22 catboat, *Cranberry*. Send karen@goodoldboat.com a high-resolution photo of your favorite aid to navigation. If we publish it, we'll send you a Good Old Boat cap or T-shirt.

door openings, and small world

A door to opportunity

They say that when one door closes, another door opens. I was hoping that was true when my summer landscaping

job ended. As a teacher and father of three, I needed a summer job. I wrote to the Ocean City Yacht Club in Ocean City, New Jersey, inquiring about a job as a sailing instructor. I knew





no one at the yacht club, but hoped my years of experience as a middle school teacher and my love of sailing would be enough of an introduction.

Later, I got a call. To promote the sport of sailing, some yacht club-affiliated sailors were starting a new sailing school, open to anyone at affordable prices. Was I interested in helping out? A door had just opened.

That first summer, in 2007, the Ocean City Sailing Foundation provided lessons for 110 individuals. We had four plastic Oppis and a 14-foot Hunter sloop with at most 6 inches of freeboard. Every powerboat wake was a threat. Our chase boat was a used inflatable from Argentina. Sometimes the engine worked.

Our first season was a total success and the foundation has grown each year since. I became the director and spent six days a week each summer with some of the best people on the planet while working as a sailing teacher and administrator. When problems arose, generous and talented people from the sailing community appeared magically to help us out of our jam. They loaned us boats, fixed outboards, offered VHF radios, and helped secure our growing fleet when storms

threatened.

Now in our ninth season, we have two 18-foot sloops, half a dozen 420s, and more than a dozen Oppis and Optis plus three chase boats. Our staff has increased from two to eight instructors. We will teach more than 300 people of all ages to sail this summer. Our website has all the latest information — www.ocsailingfoundation.org. Should you find yourself in South Jersey this summer, please drop by or sign up the grandkids online.

-David Jackson, Linwood, N.J.

Small world!

I was quite surprised while reading the article "Roadside Seduction" (July 2014), when I came to the builder's name: Dale Denning. Dale is the husband of a friend my wife and I have known since high school. Dale and Vesta met over the purchase of an Oxford Dinghy for use with Vesta's family sailboat, one that her 8-year-old daughter could sail. This daughter had her captain's license by age 19. Vesta and her husband became casual friends with Dale and his wife. Fastforward decades to a time when Vesta is single and Dale's wife has died of cancer. They reconnect and marry.

During his boatbuilding years, Dale summered in Oxford, Maryland, and wintered in Marathon, Florida. He and Vesta lived aboard a couple of different sailboats and then a Sparkman & Stephens custom-designed trawler that Dale built himself over a period of four years. The boats were docked at his shop in Maryland and at a small house they bought in order to have a dock and guesthouse in Marathon.

In March, we visited with Vesta and Dale in Marathon. He is a very active 85-year-old. Though he no longer builds boats, he has an enviable woodworking shop and stays busy with many projects. Though no longer a liveaboard, he still makes the seasonal journey between his home in Marathon and his home now in Virginia Beach.

I scanned the Oxford Dinghy article and sent it to him when I read it. He had not been aware of it and was quite pleased to read it. By the way, Vesta's daughter, now in California, still has that Oxford Dinghy purchased for her when she was 8. I wonder if you might send Dale a copy of the July 2014 issue.

-Mike Montesinos, Bayfield, Wis.

continued on page 66

9

78

alypso music played in my head as I photographed *Yellowbird*, a 1972 banana-colored Chris-Craft Sail Yacht 35. Abeam of the photo boat, her hull created golden rippling reflections in the turquoise waters of Charlotte Harbor ... a shimmering tropical scene on the west coast of Florida just four days before record-breaking cold swept the entire United States.

fellowbird,

- "Yellow bird, up high in banana tree Yellow bird, you sit all alone like me
- Did your lady friend leave the nest again?
- That is very sad, makes me feel so bad

You can fly away, in the sky away You're more lucky than me" —Alan & Marilyn Bergman

The Chris-Craft Sail Yacht 35 was the first of several sailboats built by the highly respected powerboat builder. The project was initiated when an investment firm led by famous sailing yachtsman Cornelius Shields

A pedigreed early center-cockpit design

BY BILL JACOBS

Chris * Craft

a Chris-Craft Sail Yacht 35

purchased a majority stake in Chris-Craft Corporation in 1962. Legend has it that company staff members were "as contemptuous of sailing yachts as Corny Shields was of 'stinkpots'." Altogether, 62 Sail Yacht 35s were produced. The boat was designed by Sparkman & Stephens, as were nine other Chris-Craft sailboat models ranging from 26 to 42 feet.

The 35's hull, deck, and cockpit are built of solid fiberglass-reinforced polyester while the cabinhouse is constructed of mahogany. The hullto-deck joint is bonded with FRP and mechanically fastened with bolts.

An extensive review by Theodore Jones in the July 1963 issue of *Popular Boating* concluded: "What will surprise most sailors, as it did me, is the excellent performance of this boat. She sails beautifully. She is stiff in a breeze, balances well, has an easy motion, and appears to move like a racehorse on the home stretch."

John Foster, *Yellowbird*'s owner, related the same impressions to me. John had dreamed of owning a Chris-Craft 35 as far back as 1999. At the time, he was living alone on a 27-foot wooden sharpie powerboat in Boca Grande, Florida. He was attracted to the 35 for a variety of reasons: the nice spring to its sheer, a large deep center cockpit, a fixed windshield, a separate sleeping cabin aft, a forward cabin containing an enclosed head, galley, and saloon. In addition, it was designed by Sparkman & Stephens and built by the legendary Chris-Craft. The design was ahead of its time in many ways, as not many center-cockpit sailboats were built in the '60s. By modern standards, however, her long overhangs and narrow beam limit the amount of room inside. Also, there is no room under her low deck profile for an interior passageway between the cabins: going from one cabin to another entails passing through the cockpit. (See "Atelier" in the May 2015 issue for another example of the Sail Yacht 35.)

Longtime liveaboard

An experienced boat owner, builder, marine mechanic, and electrician, John was born and bred on the water. His skills are legendary on the small island of Gasparilla on Florida's west coast. Its relatively isolated location makes it a popular destination for all manner of cruising vessels. When they arrive with a boat problem at any of the limited number of marinas — and they range from the most sophisticated to the most rustic — John is the man on call. He also maintains, and sometimes captains, many of the vessels that call the small town of Boca Grande their home port.

After living on the sharpie for 17 years, he purchased an older Gulfstar

35 trawler so he could have more space. After he met his partner, Terry, who was interested in sailing, the two began thinking about a sailboat.

Yellowbird, a Chris-Craft Sail Yacht 35, upper left, owned by John Foster and his partner, Terry, keeps up a tradition in both name and color. Her center cockpit protected by a fixed windshield, lower left, was a rare feature in the 1960s. The results of some of John's restoration efforts are visible in the colorful cushions and brightwork in the saloon and galley, at right. They looked at a number of boats but weren't too enthusiastic about any of them. Then a broker told them about a Chris-Craft 35 weathering away in a slip in Longboat Key, about 50 miles north. When they went to look at the boat, John was shocked to find two Chris-Craft 35s located in the same





John replaced or refinished all of the hardware on deck, near right. Much of it has acquired antique status, including the wire-reel halyard winch, far right.



small canal; one was the very boat that had intrigued him many years before. The boat that was for sale was in rough shape. The engine would barely run, the mahogany cabin trunk had dry rot in places, most of the electrical system did not work, the head was leaking, and much of the rigging looked questionable.

John and Terry negotiated a fair price based on the poor condition of the boat. They were able to get her home to Boca Grande by temporarily mounting an 18-horsepower outboard on the transom.

Showing her age

After some basic repairs to the rigging, hull, and engine, the boat was good enough for a few daysails, but each time they went out, it seemed that another problem popped up. Chief among them was that the engine was marginal and quit on a few occasions. John eventually replaced the original engine with a used Mercedes 220 DP diesel rated at 55 horsepower.

On another outing, the forestay broke, but the wind was light enough that the luff wire in the jib allowed them to jury-rig support with a couple of halyards and return home without losing the mast

Upon careful inspection, John noticed a slight bend in the stainlesssteel compression post under the mast. He reinforced it by cutting a steel pipe in half lengthwise, drilling and tapping the post, and fastening the two halves around it with machine screws. Confident in the additional support, he enclosed the reinforced post in a varnished teak column that complements the interior finish of the boat. The cabin trunk is made of wood and John found rot in significant portions of it. He cut out the rot and installed new pieces of plywood to fill the holes. After carefully sanding the patches, he sealed them with epoxy. Then, because of the extent of the repairs to the mahogany sides, he painted all the surfaces.

Steady work

For the next two and a half years, John and Terry lived aboard his trawler while he worked on *Yellowbird* from dawn to dusk almost every day. With the help of a jury-rigged collapsible workbench, John was able to work next to his boat right there on the ancient dock.

Both boats were docked at the historic Whidden's Marina in Boca Grande, where little has changed since Sam Whidden built it in 1926. The buildings and grounds are well worn by time, weather, and the comings and goings of family members, who have lived there and operated the marina ever since. Anyone interested in one of the few remnants of "Old Florida" should pay a visit.

John replaced all the standing and running rigging and removed every piece of deck hardware, including the lifelines and stanchions, either refinishing or replacing each item. He spent almost six full weeks refinishing and repainting the hull while the boat was in the water. He painted the hull down to the waterline from a dinghy and a homemade float, using an industrial linear-polyurethane paint, Mothane, from BLP Mobile Paints. They chose the yellow hull color and the name for sentimental reasons, as Terry's father had owned a number of sailboats



named *Yellowbird*. They then had the boat hauled at a nearby yard where they could redo the bottom and boot stripe.

John fitted *Yellowbird* with new sails and custom canvas from Knighton Sailmakers (now UK Sailmakers) in Sarasota. The Bimini top attaches to the fixed windshield and extends well beyond the cockpit to provide shade to the aft cabin. In foul weather, the cockpit can be enclosed with removable side curtains.

Making do and making better

John reports that the fixed windshield has both positive and negative aspects. Because the cockpit is quite far forward and relatively close to the water compared with later center-cockpit designs, the boat can be wet in windy conditions. The fixed windshield, and the side curtains when needed, can provide a great deal of protection from spray. On the other hand, the fixed windshield limits the amount of fresh breeze in the cockpit when the weather is hot and sultry. John has considered modifying the windshield with a center opening, but has not yet found the right hardware.

The work on *Yellowbird* has continued, with John adding a CPT autopilot, Engel cold-plate refrigeration, a composting toilet, and an antique ship's bell from an old ferryboat. The bell, mounted on the forward bulkhead



During most of Yellowbird's restoration, John and Terry kept her at Whidden's Marina, a remnant of "Old Florida" in Boca Grande. She certainly adds to the picturesque scene.

of the cockpit, adds a uniquely decorative but functional flair.

The split cabin, one of the attractions of the boat, needed some further modification. When John installed the composting toilet in the main head, he removed the original marine manual toilet that was located in the aft cabin between the two bunks. He felt it was not worth retaining it in this unlikely and annoying location. He converted the space to a nightstand with storage beneath. The obvious disadvantage is that using the main head means climbing up the ladder into the cockpit and then back down the main companionway.

The forward cabin contains the galley, the enclosed head, and the saloon. John eliminated the upper bunks in favor of a cluster of enclosed cabinets that provide multiple storage spaces. All the cushions have been reupholstered and a folding table swings down from the mast enclosure. All the work John has performed over the past seven years has been to the highest standard. His versatility and experience as a craftsman are evident throughout the vessel.

Sailing is the reward

Once John had completed the basic work, he and Terry began daysailing more frequently in the excellent sailing waters of Charlotte Harbor. They have made more than a half dozen trips

through the Florida Keys and one crossing to the Bahamas.

Now that the work is complete if work on a boat is ever complete — John and Terry have moved Yellowbird a short distance away to a small private marina. The protection is better and the amount of boat traffic is drastically less than at Whidden's Marina. My guess is that sooner or later John will need a new project.

Seeing this extensive renovation of a Chris-Craft Sail Yacht 35 and her like-new condition transported my mind back to the 1970s and a simpler world. Yellowbird's classic lines and pleasing proportions suggest a time when market forces did not drive the quest for living room-like spaces aboard cruising sailboats. Instead, it was left to designers to create boats that would combine good seakeeping and adequate performance with creature comforts sufficient for cruising. And if that design resonates with a contemporary owner like John, the result may even be a full-time residence floating in a tropical lagoon within a stylish island called Gasparilla.

Bill Jacobs has been racing and cruising for 50 years and writing about boats for the last 10. He currently sails a Cape Dory Typhoon in Baileys Harbor, Wisconsin, and spends winters in Sarasota, Florida, sailing a 55-year-old wooden Luzier 27.



price. We carry a full line of analog and digital instruments.

SPEED • LOG • DEPTH • APPARENT WIND • WINDSPEED

11 models to choose from Prices start at around \$195. Call for a complete line Catalog.

Electronics, Inc. 95 Dorothy St. Buffalo, NY 14206 1-800-876-4971 or 716-821-5304 www.moorelectronics.com

The Chris-Craft 35

... and center-cockpit contemporaries

BY ROB MAZZA

Chris-Craft 35

Nicholson 38

he center-cockpit layout creates an ideal accommodation plan for cruising, especially for those cruising with another couple or kids. Each couple has its own private living area, people aren't crawling over each other, and individuals can retire to their own spaces but meet in the middle for cocktails and conversation. The two configurations of the Chris-Craft 35, designed by Sparkman & Stephens, offer two approaches to this layout.

The real difference between these approaches is the height of the cockpit or, more specifically, on what surface the cockpit coaming sits. In the first configuration built, the Sail Yacht, the cockpit coamings sit on the sidedecks; in the later one, the Caribbean, they sit on top of the house (see "Something Gained, Something Lost," page 16).

Wanting two full-keel boats to compare with the Chris-Craft Sail Yacht 35, I have chosen the Hallberg-Rassy 35 and the Nicholson 38, both of which have "low" center cockpits and coamings at deck level. All three boats also have fixed windshields, rather than removable canvas and isinglass dodgers, with the Nicholson going one step further and including a fixed hardtop over the cockpit supported by the windshield at its forward end. All three also have full keels with rudders attached and props in apertures. Note that the British-built Nicholson was designed by the John G. Alden office, although Alden himself died in 1962.

At 38 feet LOA, the Nicholson is 3 feet longer than the other two boats but is only 27 feet on the waterline, that is, a foot shorter than the Hallberg-Rassy and a foot and a half shorter than the Chris-Craft. The Nicholson also is yawl-rigged, typical of the CCA designs of the period, while the Chris-Craft and Hallberg-Rassy are sloop-rigged.



		Hallberg-Rassy	
	Chris-Craft 35	Rasmus 35	Nicholson 38
LOA	35'	36' 6"	37' 10"
LWL	28' 6"	28' 1"	27' 0"
Beam	11' 0"	10' 0"	10' 6"
Draft	4' 8"	4' 3"	5' 2"
Displacement	18,112 lb	12,125 lb	15,904 lb
Ballast	5,000 lb	5,500 lb	5,922 lb
LOA/LWL	1.23	1.30	1.40
Beam/LWL	.39	.36	.39
Disp./LWL	349	244	361
Bal./Disp.	.28	.45	.37
Sail Area (100%)	563 sq. ft.	450 sq. ft.	662 sq. ft.
SA/Disp.	13.1	13.6	16.7
Capsize Number	1.7	1.7	1.7
Comfort Ratio	38	29	36
Years built	1963-1985	1967-1978	1966-1975
Designer	Sparkman & Stephens	Olle Enderlein	John G. Alden & Assoc.
Builder	Chris-Craft	Hallberg-Rassy	Camper & Nicholsons

At first glance, the 12,125-pound displacement of the Hallberg-Rassy seems suspicious, and past readers know how skeptical I am of published displacements. However, comparing it to the C&C 35 Mk I from the same period, which displaces 11,000 pounds on a 27-foot 6-inch waterline, and the later C&C 35 Mk II that underwent a similar "update" at 13,800 pounds on a 30-foot 2-inch waterline, it is actually the Chris-Craft's displacement

at 18,112 pounds that seems out of whack. It's possible it represents conservative "overkill" in the laminates of the first fiberglass hull Chris-Craft had ever built.

These are not race-oriented boats, so comparing their performance around a hypothetical racecourse may be misleading. This is especially true when considering their reduced rig size with each being shown generally with smaller headsails. Having said that,

there is no question that the Hallberg-Rassy with a displacement/length (D/L) ratio of a very competitive 244 compared to a hefty 349 and 361 for the Chris-Craft and Nicholson - certainly has an advantage in most conditions. However, with a sail area of only 450 square feet, resulting in a low sail area/ displacement (SA/D) ratio of 13.6, she will suffer in light air. The Chris-Craft at 13.1, even with a sail area of 563 square feet, would not be much better.

In light air, therefore, the nod has to go to the Nicholson with a total sail area of 662 square feet, resulting in a respectable SA/D ratio of 16.7. Although the mizzen of the yawl rig may not be very effective, particularly upwind, that is still a lot of sail area for reaching and running, especially when the mizzen staysail is set.

Despite these three similar boats having a wide range in displacements, the ballast weights are quite consistent at 5,000, 5,500, and 5,922 pounds respectively. This results in ballast/ displacement ratios of only 28 percent for the Chris-Craft, 37 percent for the Nicholson, and a respectable 45 percent for the Hallberg-Rassy. This, combined with her low D/L ratio and moderate SA/D ratio, would make her the better boat upwind in light to moderate conditions. The slightly longer waterline of the Chris-Craft, combined with the larger displacement, would certainly come into effect upwind in stronger breezes where her low SA/D ratio would no longer be a liability.

Capsize numbers for all three are substantially less than 2, reflecting relatively narrow beam and higher

displacements, and comfort ratios are also quite acceptable, with the Hallberg-Rassy having the lowest due to her lighter displacement.

We have here three very similar center-cockpit/full-keel concepts with a wide range in displacements. My preference for sailing would be the lighter-weight Hallberg-Rassy for its more sprightly performance, despite a dearth of sail area but, my goodness, the Chris-Craft Sail Yacht is still an extremely attractive boat! \varDelta

Rob Mazza is a Good Old Boat contributing editor who, in his long career with C&C and in other design offices, designed many boats that are now good and old and thus contributed enormously to the enjoyment of those who sail and own them today.



CDI Cruising Design, Inc.

Is now offering an affordably priced MAINSAIL REEFING system and a patented SPINNAKER FURLING system as well as the proven, reliable, FLEXIBLE FURLER jib reefing system. You can spend more, but you can't buy a better.

more reliable, lower maintenance reefing system. Let us prove to you the CDI product is the BEST you can buy. Contact us for more information or ask a CDI roller reefing owner.

Cruising Design, Inc. 44 James Street Homer, NY 13077 Tel: 607-749-4599, fax: 607-749-4604 Sailcdi@verizon.net; www.sailcdi.com



Twin Arm Gin Pole with Winch



218-547-1188 fleetsails12@att.net

stainless steel shackles, a 600lb capacity winch, 2" strap and hook. MSR \$525 (subject to change)



Bottom Siders

2305 Bay Avenue

Hoquiam, WA 98550

Email:cushions@bottomsiders.com Fax: 360-533-4474

Save Your Aft!

Using one of our 1400+ patterns, or vour pattern, let our craftsmen create a comfortable, durable, and stylish set of all-weather cushions for your cockpit. Find your custom, closed cell foam cushions at www.bottomsiders.com or call us toll free at 800-438-0633 for more info.



Something gained,

Two Chris-Craft 35s illustrate the designer's dilemma

BY ROB MAZZA

When doing design comparisons for our feature boat articles, it's important to find the proper variation of the model in question, since a lot of boats from the same manufacturer go through production "upgrades" or are offered with a number of rig, keel, and interior options. In the case of the Chris-Craft 35, there were two variations of this hull. The feature boat, *Yellowbird*, is the original Chris-Craft Sail Yacht 35. Introduced in 1963, it was the first sailboat and the first fiberglass hull that Chris-Craft built. The story of Chris-Craft's entry into the fiberglass sailboat market is well documented in Dan Spurr's book, *Heart of Glass*.

Of equal interest to me is the second variation of this hull, introduced by Chris-Craft in 1965 as the Caribbean 35. In my time with C&C, Mark Ellis Design, and Hunter Marine, it was not uncommon to periodically "update" a production model to add new features, adapt the hull and rig to the current rating rule, or introduce a new variant to the market on the assumption that the older model was approaching the end of its production life. This usually involved using a modified version of the existing hull and adding a new deck and interior. The Caribbean 35 is a good example of this phenomenon. However, in most cases, when the new model was introduced the older one was discontinued. That was not the case with Chris-Craft; the Sail Yacht is listed as having a longer production life than the newer Caribbean configuration.

What's fascinating to me about these two versions of the Chris-Craft is the marketing decisions at work with the introduction of the newer model. There had obviously been feedback that indicated customers were looking for more interior amenities in a 35-foot center-cockpit model than the Sail Yacht provided. There is no question that the Sparkman & Stephens-designed Sail Yacht is an exceptionally handsome



boat. Her relatively low freeboard, pronounced sheer, and low house are very reminiscent of the designs of L. Francis Herreshoff, especially boats like his Rozinante.

Looks vs. amenities

However, the elements creating this classically good-looking profile severely compromise the interior, especially in a center-cockpit configuration. Moving the cockpit from its traditional aft position to a center location certainly creates space for an aft cabin, but the forward cabin is robbed of that space: there's no longer room forward for a V-berth, so the saloon now provides the primary berths. There is a small enclosed head in the forward cabin, but the aft cabin has to settle for a head under a folding seat between the two berths! It comes as no surprise that, to increase the usable volume,



something lost



the owners of the Sail Yacht 35, *Atelier*, chose to enclose the center cockpit, essentially creating a pilothouse (see "*Atelier*" in the May 2015 issue).

When Chris-Craft addressed these shortcomings with the new Caribbean 35, the first thing the designers did was increase freeboard while at the same time flattening the sheer, so most of the gain in height is amidships. They raised the cockpit and located it farther aft, where it's partially over the aft cabin, and increased headroom amidships by incorporating a pronounced doghouse (almost a pilothouse) forward of the cockpit. This allowed the sole to be raised so the engine could be placed beneath it, opening up this area.

Increased room amidships allowed the creation of a dinette to starboard with a larger galley to port. A step down

forward led to a private cabin with a V-berth, an enclosed head accessible from both the main cabin and the forward cabin, and generous hanging lockers. Raising the freeboard, cockpit, and house height aft created room in the aft cabin for its own enclosed head and increased locker space. The result was a true two-cabin layout. This design introduced what would soon become the standard center-cockpit configuration in the market. Indeed, when C&C introduced a center-cockpit layout in the Landfall 39 and 43, it adopted the Caribbean concept.

Amenities vs. performance

This increased interior volume is not achieved without a price, and that price has to be sailing performance. The higher freeboard, deck, and cockpit and the additional crew weight will have a detrimental effect on stability and an increase in windage. The higher center of gravity will be partially offset by the increase in displacement that this much more elaborate interior creates. Oddly, the published displacement of these two models is almost identical. This is unrealistic and makes a numerical comparison of sailing performance difficult.

To my eye at least, the newer configuration is not as good-looking as the previous design. Gone is that spring in the sheer and that delicately attractive profile. However, there is no disputing the substantial increase in accommodations and amenities below. Considering that, from this time onward, the majority of the center-cockpit layouts followed the Caribbean concept (which tells you what the marketing departments thought), looking at the two configurations, which would you choose?

Rob Mazza's bio is on page 15.



The Gunter Rig 101

A handy sailing rig for dinghies and small trailerables

clew

BY DON LAUNER

The gunter rig was developed by Edmund Gunter in the late 1700s. It has always been popular in Europe and, during the age of whaling, it was often the rig of choice for the small whaleboats carried aboard whaling ships.

The gunter is a fore-and-aft sailing rig consisting of a short mast, boom, and yard (sometimes called a gaff or spar). When raised, the yard is vertical or nearly vertical and becomes, in effect, an extension of the mast. With the yard raised into position, the sail looks similar to a Marconi or Bermuda sail, and its efficiency and ability to point to windward are comparable.

In its early days, the gunter rig was used on a variety of cutters and schooners and other medium-sized craft. Today it's found primarily on small boats, such as sailing canoes and dinghies.

Short spars

The gunter rig's spars — the mast, boom, and yard — are all short, about the same length as the boat itself, and can often be stowed within the boat. This is a great advantage for trailerable boats and tenders. The short mast also simplifies stepping the mast and reduces the weight aloft.

The rigging variations for the gunter rig are almost limitless: the sail can be loose-footed with no boom, loose-footed with its clew attached to a boom, or arranged so the foot of the sail is attached along the length of the boom. The lower part of the luff can be loose, attached to the mast only at the tack, or it can be bent on using hoops, a track, lacing, or robands (short lengths of line). In nearly all its variations, the upper portion of the luff of the sail is laced to the yard. The yard is commonly, but not always, attached to the mast with jaws.

Several methods are used to raise the yard and sail, with the most common being the sliding-line gunter, the parrel gunter, and the simple gunter. The sail can be reefed using typical slab reefing or by easing off on the halyard or halyards and lowering the yard down the mast while keeping it vertical.

The sliding-line gunter

The sliding-line gunter has two halyards. One leads over a turning block at the top of the mast and down to the bottom of the yard or the jaw. This halyard is used to hoist the yard up the mast. The second halyard also leads over a block at the top of the mast but is attached to a line or wire running from one end of the yard to the other using a small block or shackle that slides along that line. This halyard is used to raise the yard into a vertical position.



The parrel gunter

A parrel is a set of wooden or plastic beads, usually about an inch in diameter, threaded on a line. These rolling beads allow a sail or yard to remain attached to the mast while sliding up and down it with little friction. In the parrel gunter, the yard is secured vertically against the mast by a number of parrel loops (or by other suitable means) so it is free to slide up and down the mast. A halyard attached to the jaw or bottom of the yard is used to hoist it up the mast. A disadvantage of this arrangement is that the yard, attached to the mast in the vertical position, adds weight aloft when not under sail unless the rig is disassembled.

The simple gunter

This rig uses a single halyard that goes around a turning block at the top of the mast and is attached to the yard at a fixed point. The bottom portion of the luff of the sail is attached to the mast using a mast track, parrels, mast hoops, or lacing. As the yard is raised, the sail is pulled up until the luff of the lower portion of the sail is taut. As with nearly all gunter rigs, the upper portion of the luff of the sail is permanently fastened to the yard, usually by lacing. When the lower luff of the sail (between the jaw of the yard and the tack of the sail) is taut, further tensioning the halyard pulls the yard into its near-vertical position against the mast.

In another variation, the yard, when raised into a vertical position, goes into a clip at the top of the mast that prevents it from sagging to leeward when close-hauled in strong winds. This is done to prevent a slight loss of efficiency.

When a dinghy is fitted with a sliding-line or simple gunter rig, it can be rowed by binding the boom, sail, and yard together with shock cords and using the yard halyard to raise this bundle up to about a 45-degree angle and out of the way of the rower.

No matter what arrangement is used in a gunter rig, it is an interesting rig to see and to sail. \square

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





When the boat is sailing close-hauled, the yard of a gunter rig tends to fall to leeward. It can be brought more vertical with a little more tension on the halyard.

www.audioseastories.com

Saved from extinction

A Pacific 30 — possibly the last one — sails again

BY PETER THELIN



very marina has a few neglected boats. Their owners, enthusiastic at first but now distracted by daily life, have left these forgotten or ignored once-proud vessels to rot.

A few years back, I watched as this decaying process happened to a Pacific 30 in our marina. Dust turned to dirt and mildew transformed into lichen. Bird droppings and broken mussel shells teemed with insect life. Sailcovers, sails, and running rigging degraded in the sun and eventually vanished completely. White plastic fenders yellowed, deflated, and disappeared as their lines rotted. One spring, I noticed a sapling growing on the boat. A few days later, I spotted a neighbor watering the little tree. She smiled and said at least the boat was finally getting some attention.

living aboard, building, and maintaining - for more than 25 years and tend to spot project boats. These have run the range from a Columbia 45, a Bolger Storm Petrel, a Catfisher 28, a Seafarer 24, and a San Francisco Super Pelican, to a Bluenose 23, and a couple of hovercraft. I like challenges.

My wife, Sue,

The Pacific 30 was one of those challenges. I first noticed the striking red low and narrow hull when we moved to the marina. It was docked less than 100 yards from our new floating home. The boat was in awful shape. but I was drawn to her classic lines: the spoon bow, counter stern transom, and long low cockpit. I'd sold my last boat, a Bluenose 23, to afford the floating home, but I was feeling the itch again. I asked our harbormaster about the red boat. She said it had been years since

his last visit, but the owner still paid the slip fees and wasn't interested in selling.

P

15

I turned my attention to a down-onits-luck Seafarer 24, but now and then I'd ask about the Pacific 30. After a year of tinkering, I sold the Seafarer to a group of young sailors from Berkeley and swore to Sue that I was done with rescuing boats.

That oath lasted a year. On craigslist, I stumbled on the "largest SF Pelican ever made," a 20-foot Super Pelican located in Oregon. Sue and I towed Dowser back from Eugene and I spent the next summer rebuilding her before growing disenchanted with her ability to point (sorry proud Pelican owners). I swore once again I was through with boats ... this time forever!

But I continued cruising the classifieds. I seriously considered an overpriced Ericson Scorpion made from the same mold as the Columbia Sabre and even took a 12-foot Livingston for a test ride when, out of

Seeing Ramona today, at top, who would think she was the same boat as the sad, moldering (but still elegant) hulk, inset, Peter found in his home marina?

the blue, our harbormaster told me the Pacific 30 owner had decided it was time to let her go. I called him immediately, generously offering to take over slip payments. He thought every boat was worth something, so we agreed on \$500 and the Pacific 30 was mine.

Grunge, grime, and guano

To start with, the owner hadn't sailed, cleaned, or hauled the boat in more than 10 years. It may have been longer; the quantity of guano, mildew, and lichen was substantial. The sad sapling had been joined by other small plants that I chose not to water. Secondly, the Pacific 30 had sunk — more than

once — following a couple of wet winters when the scuppers and cockpit drains were plugged. The interior had filled

with a combination of water, oil, and battery acid that created a terrarium atmosphere that cultivated a lush forest of brown and black mold.

Blistered wiring, bloated batteries, rusted mechanicals, and peeling paint filled every nook and cranny. Corroded soda cans and tins of tuna combined to create an interesting aroma. Needless to say, I wouldn't let Sue look inside until the cabin had been completely cleaned, sanded, and repainted. It was the least I could do since I was "done with rescuing boats forever!" You're probably wondering about the previous owner's choice of red portlights. I had meant to replace them, but even Sue agreed that they actually grow on you. Not unlike lichen.

After pumping out the bilge and removing bags and bags of trash from the cabin, I donned a Tyvek bunny suit, gloves, ear protection, and respirator and took an orbital sander with 40-grit sandpaper to the interior. The old, mildewed paint hung in sticky sheets and the softened epoxy paint loaded up disc after disc; sometimes it was better to use a scraper. It took a couple of intensive weeks to get down to the bare fiberglass. After that, removing the

Corroded soda cans and tins of tuna combined to create an interesting aroma.

peeling decorative laminates, sanding and varnishing the woodwork, changing out the wiring and lighting, and cleaning the upholstery made a big difference. Finally, Rust-Oleum Topside white brightened up the interior significantly.

On deck, I took a stack of scouring pads, Formula 409, and Clorox to uncover the gelcoat. Next, I sanded the woodwork and applied Sikkens Cetol. Epoxy and C-clamps bonded the split handrails back together. Then I replaced the faded running rigging, rotted spreaders, and threadbare mainsail cover and Sue made the beautiful tiller cover. I scored a deal on a used stainless-steel hatch from Blue Pelican in Alameda to get some air and daylight down below.

Engine conundrum

The engine proved to be a major challenge. The previous owner told me the boat was equipped with a saildrive unit that had rusted solid long ago. On inspection, however, I found it was actually something I hadn't encountered before; a Baldwin 9.5. This was an Evinrude 9.5 outboard modified to be mounted inboard with a proper prop shaft coupled to the lower unit.

> The Baldwin uses a remote water pump for cooling and a separate exhaust system. It's a nifty idea, with none of the

corrosion issues of a saildrive.

The engine gurus at the Outboard Motor Shop in Oakland knew all about Baldwins and advised me to replace it, rather than rebuild. When I chose to ignore their advice, they sold me a couple of old Evinrude 9.5 powerheads to replace the corroded one. I also bought a new Jabsco water pump and had Metal Magic in Oakland fabricate a new stainless-steel exhaust system.

The day after Thanksgiving, I motorsailed through heavy fog to the Berkeley Marine Center for a haulout



The motor in the Pacific 30, at left, turned out to be a Baldwin — an Evinrude outboard modified to drive a conventional prop shaft. Peter had it working with a new (old) powerhead but eventually replaced it with a Briggs & Stratton air-cooled lawn mower engine, at right.



A great variety of wildlife, from fungus to plants and from insects to birds, had colonized the boat as it sat untended, at left. Undaunted, Peter, with his vast experience restoring boats of all sorts, set to with cleaners, sandpaper, and paint. The result, at right, is spectacular.

and spent the next few weeks sanding off all the old paint, filling little blisters, and shimming the rudder post to eliminate a rattle. I also replaced the through-hull fittings and running lights and reglassed the rudder. I painted the bottom and had the yard spray the hull a luscious deep red. The Pacific 30 was becoming the center of attention.

As the guys at the Outboard Motor Shop predicted, the Baldwin drive proved to be a constant headache. I couldn't keep the engine from hydrolocking. The problem was that the unit — originally designed to hang above the water off the back of a boat — was now below the waterline. Water always manages to find its level, which coincided with the cylinders.

Despite my trying various resilient gaskets (the best turned out to be a ¼-inch sheet of lead) and filling problematic cooling passages with epoxy, the motor always eventually hydro-locked. I was set on yanking the Baldwin out and mounting an outboard, but the Pacific 30's long counter stern made that location extremely awkward. I considered cutting a big motor-well hole in the lazarette behind the cockpit (ouch!) and debated the efficacy of a side-mount bracket (but the motor would be under water when heeled).

I liked the idea of using the lower unit of the Evinrude to drive the boat, but how to power it? An expensive diesel? An electric motor? Then it occurred to me that an air-cooled lawn mower engine — about the same size, weight, and power as the Evinrude — could work. Was there precedent? I found many online discussions on the subject, most extremely negative . . . except for one fellow who had tried it and said it worked like a charm. He sent pictures of his installation.

Most responses in online discussions were along the lines of "I'd rather drill a hole in my head than listen to a lawn mower engine in my boat," as one sailor wrote. But the 10-horsepower unit (thanks to BrandNewEngines.com) is actually quieter than the old Evinrude due to the inboard boat exhaust system. I kept the Jabsco water pump - chaindriven off the driveshaft --- to cool the exhaust and installed some ceramic tiles above and behind the exhaust to handle the heat. I also incorporated a bronze check valve to keep the cooling water from backing into the engine through the exhaust, though in practice that hasn't been a problem.

The engine sits atop two sections from a Lexus 300 rear aluminum bumper — sans vinyl — and uses a Lovejoy shaft coupler to connect the engine crankshaft to the Evinrude driveshaft. Venting is a concern, so I made



Belowdecks it was the same story, at left. The unusual tinge is from the red-glazed deadlights in the cabin sides. They had been due for replacement, but by the time the cabin was refitted and refurnished, at right, Peter and Sue had become accustomed to the glow.

large louvered holes around the compartment and installed a pair of bilge blowers to vent out the rear deck. The Briggs feels more powerful than the Evinrude.

Updates inside and out

New cushions from Foam Creations of Albany, California, perk up the interior and I found a table at the Berkeley Yacht Club Marine Flea Market that was the perfect size.

To make singlehanding easier, I bought a Hood 800SL roller furler on eBay and even managed to install it without completely removing the headstay — not a task for the faint of heart! This requires accurate headstay measurements, disconnecting the headstay from the stemhead, shoving the extrusions and roller assembly up the headstay with one hand while holding the cable taut with the other and, finally, reattaching the whole thing to the stemhead without everything sliding back off into the water.

Pineapple Sails of Alameda made a 100 percent jib for the new furler. Maybe next year I'll spring for a new mainsail too.

I think lifelines provide a false sense of security on small boats so *Ramona*

has none. Instead, everyone wears a life jacket/harness and uses a tether when going forward. I also kludged together a retrieval system for the horseshoe buoy.

I decided to rename the Pacific 30 after my late mother, Ramona. Since Sue does boat lettering — her company is AlphaboatGraphics — she supplied the lettering to go on the stern.

Provenance unproven

The name "Pacific 30" was originally stenciled on each side of the hull. There is a



P30 insignia on the mainsail and the title states that the boat is a Pacific 30. Yet despite extensive research, my boat is the only example I've been able to find. There's a "15" on the mainsail indicating, one would guess, that there should be 14 more Pacific 30s in existence, but I've yet to see one. The title lists the builder as SPCN, which is a DMV term for "homebuilt", but who was the designer?

A friend pointed out that *Ramona* bears a strong resemblance to an earlier boat of mine, a Bluenose 23, whose designer, William J. Roué, did design a 30-footer called the Roué 20 because it was his 20th design. The Roué 20 is very similar and has all the same specs. The only differences are that the Pacific 30 is a masthead-rigged boat and the Roué 20 is fractionally

rigged. In addition, the rudder on the Roué 20 is attached to the keel. Nor does the Roué have an inboard; it uses a motor well in the transom lazarette.

I spoke to David Sadler of Halifax, the builder of all of the fiberglass Roué 20s. He had never heard of the Pacific 30 but agreed that the resemblance is striking. He also said he had considered using a balanced rudder on his

boats. Maybe my boat is a variation in which the inclusion of the inboard engine necessitated the repositioning of the rudder.

A refit with dividends

Ramona is a dream to sail: very responsive and tacks on a dime. She sails easily with just fingertips on the tiller and with a little traveler adjustment she'll mostly sail herself. She does well in light air, is reliable in stays, and can easily bury the rails when the wind picks up, yet she feels reassuringly stiff in a blow. There's a little flutter from the tiller that leads me to think I need to shave the edges of the rudder.

For just \$500 for the boat, another couple thousand for engines, sails, furler, plumbing, metalwork, electrics, sandpaper, paint, eBay sailcovers, a lot

> of marine flea market stuff, plus the boatyard fees, and a lot of elbow grease, I've got a very sweet sailboat. Sue and I look forward to many more happy voyages around San Francisco Bay.

Peter Thelin was raised in the Northeast before moving to San Francisco to work for the federal government. A master optician, he runs the Lawrence Livermore National Laboratory Optical Shop. He has owned, restored, and lived on a number of boats before settling into a floating home.



Ramona has the appearance of a boat from an era when grace and good manners under sail trumped creature comforts for the crew.

Why sails fail

e had just crossed the equator northbound on passage from the Solomon Islands to Micronesia when we saw a squall approaching from the east. We studied the squall's profile on radar and decided it was typical of what we had already endured a dozen times over the last few days and also that it would likely pass behind us. Our mainsail was already deeply reefed, so we rolled in about half of the genoa, closed the companionway, and waited.

In an instant, the wind direction shifted dramatically and the squall was upon us, bringing deafening wind, blinding rain, and sea spray. Carina heeled over, came up, and rocketed into the darkness with her port side deck immersed to the portlights as waves rushed aboard. When Leslie released the sheets, the mainsail and boom fell violently against the leeward running backstay. Carina still heeled dangerously while Leslie cranked furiously on the furling line as sails and lines flogged violently in the gale. By the time things were under control, the squall had moved on and we were flopping around in steep square waves, soaked and exhausted. Trade winds filled in behind the squall as if in slow

motion and, as we prepared to get under way once again, we noticed *Carina*'s mainsail had lost a batten and its aging leech was rapidly unraveling. Suddenly we were facing a journey of hundreds of ocean miles sailing to windward without a mainsail.

This was just one more lesson for us in how the very nature of sailing is hard on boats and their gear, and especially on sails.

The materials used to make modern cruising sails are all plastics, and plastics are polymers, meaning they are composed of small organic molecules (monomers) chemically bonded together to form very large, very strong molecules. If the bonds are broken, the polymers break down and the materials fall apart. (The monomers, and hence their polymers, are called organic chemicals because they contain carbon.)

Dacron, used to make sailcloth, thread, and webbing is a polyester. Nylon, used for webbing and light-air sails, is a polyamide. Spectra is an ultrahigh-molecular-weight polyethylene. Sunbrella, a solution-dyed acrylic fabric, is a polyacrylate. Damage to these organic polymers can occur from physical, chemical, radiation, and biological sources.



Physical damage

Physical damage occurs when sails slat against wire rope rigging in light wind or are tacked across standing rigging. They can chafe against lifelines and bow pulpits. They can collapse and then suddenly fill with a gust of wind. Sails may be allowed to flog or flutter along their edges.

In heavy winds, leech flutter, however minor, will rapidly turn a sail's edge into confetti. Once a leech tape is compromised, the leech line is exposed and can become snagged on rigging. When this happens, the leech tape will rip open end-to-end.

Chafe or the abrading of the sailcloth, stitching, or webbing can occur wherever a headsail contacts a part of the boat such as spreaders, pulpit, or



Sailcovers are intended to protect sails from the ultraviolet light in sunshine. This one, top of page, is not being allowed to do its job. Sails suffer physical damage from many causes, above left, center, and upper right. If not repaired promptly it only gets worse, above right.

Nature and lack of nurture take their toll

shrouds. Lazy-jacks, with or without a stackpack-type sailcover, cause mainsail chafe. A better alternative are lazy-jacks that stow away alongside the mast and boom, such as EZ-Jax. Chafe also occurs where a sail is attached to the vessel — at the hoist and tack shackles — and at the clew where constant movement of sheets can chafe the sailcloth and unprotected webbing.

Chemical damage

Chemical damage can occur when degrading hardware leaves a residue that stains and attacks fabric by breaking down the polymer molecules. Hanks and pressed-in rings are common culprits.

Despite the aesthetics, we prefer to not attempt to remove stains if the method necessary to do so is harsh and might further damage the cloth. We prefer to remove the contaminating element, wash the area with warm soapy water, rinse it thoroughly, and let it dry. If the sailcloth has actually been breached by the chemicals in the stain, we repair it by applying a patch.





One of the more visible causes of chemical damage to sails is rust, which might arise from stowing a wet sail, upper image, or from corrosion of sail hardware, above.

Radiation damage

Exposure to ultraviolet radiation is the cause of the greatest damage we have seen while repairing cruising sails. Sails are exposed to UV while in use, but many headsails also are vulnerable to UV damage when furled. The same is true for mainsails. Stackpack covers have become popular and it's common to see a mainsail sitting for days in a sailcover of this type that has not been properly closed and secured. In short, if you want your sail to last, no key load-bearing webbing, stitching, or any amount of Dacron sailcloth of a sail should see the light of day when the sail is not in use.

Most sails are protected from UV radiation using shade cloth. Sunbrella is the most widely used, though there are others, such as Solacryl. Darker colors provide better UV protection than light colors because the dyes used to make them absorb light. Darker-colored shade cloth lasts longer too.

Sunbrella has two disadvantages as a shade material: weight and poor abrasion resistance. For working jibs and genoas on a cruising sailboat, the weight is generally not a problem, though many opt for UV-coated Dacron which, in our experience, does not last as long or protect the sail as well as dark shade cloth. The bottom line: dark-colored shade cloth such as Sunbrella provides the best protection from UV for cruising sails.

Along the exposed foot and leech edges of a furling genoa or staysail, light can sneak in while a sail is furled, so whatever UV-protective material is used should wrap around the inside of the foot and leech to the full width of the sail tape (approximately 1½ to 2 inches for sails on the average cruising yacht).

At headsail corners, there are two issues: light leakage (as with edges) and webbing damage. Light leakage can be mitigated by incorporating a patch of UV-protective material in the inside of a roller-furling sail at all three corners.

Protecting webbing attachment points is even more important. Webbing connections on all corners of a headsail should be protected from exposure to UV radiation. Better sailmakers use tubular polyester webbing inside of tubular Spectra webbing for head and tack corners and then go on to sew a leather cover over this webbing assembly. The clew-corner webbing should also be protected from UV (and chafe) by leather. Thus, all sail corner connections are both UV- and chafeprotected on these better-made sails. This type of protection lasts a long





UV light from the sun is an unrelenting cause of sail damage, degrading everything from stitching, upper image, to the webbing seizings on sail slides, above.

Resources

Canvaswork & Sail Repair by Don Casey, International Marine, 1996

The Sailmaker's Apprentice by Emiliano Marino, International Marine, 2001

The Complete Guide to Sail Care and Repair by Dan Neri, Beowulf Press, 2002

The Art & Science of Sails: A Guide to Modern Materials, Construction, Aerodynamics, Upkeep, and Use by Tom Whidden, St. Martin's Press, 1990



Mildew, which often appears as black specks, degrades sailcloth biologically.

time, years in fact, before the leather degrades and must be replaced. In the interim, the load-bearing webbing is protected, retains its strength, and lasts indefinitely.

Biological damage

Creatures such as birds, bats, geckos, cockroaches, mud wasps, and the more insidious microbes can leave biochemical residue that damages sails. Salt crystals and mildew abrade sails, but the growth of mildew also rots sailcloth by breaking down the fabric's polymeric organic molecules. This is, after all, the role of fungus in nature.

Clean, dry sails will not mildew, whereas sails that are wet or salty (and therefore continuously wet) provide a comfy place for fungus to reproduce. Mildewed sails plague sailors in temperate and tropical climates alike.

New Sunbrella shade cloth sheds water, but this property decreases with age and UV exposure. As Sunbrella ages, it begins to absorb moisture and stay wet longer, promoting the growth of mildew on the sail it is meant to protect. In rainy climates, stackpack-type mainsail covers left open can trap water and promote the growth of fungus on the wet mainsail.

For killing established mildew, there are many recommended cocktails of water, bleach, vinegar, or baking soda followed by sunlight. Proceed with caution when applying any harsh chemical agents to your sailcloth.

Modern sails are made of highperformance plastic materials that are damaged by physical, chemical, radiation, or biological sources. By specifying sail design features when purchasing and by learning how to care for your sails, you can mitigate such damage and keep your sails pulling longer. This is especially important if you plan to cruise to distant shores where there is no sailmaker.

Leslie Linkkila and Philip DiNuovo came to cruising and boat ownership as adults and quickly developed a passion for small-boat travel. In 2003, they quit their professional jobs and left the Pacific Northwest behind to cruise the South Pacific in their Mason 33, Carina. In April of this year, Carina was in the midst of a refit in the Philippines. Catch up with them at http://sv-carina.org.



A. Layered webbing protects primary load-bearing webbing from UV exposure. B. Covering layered webbing with leather can further protect it from chafe and UV exposure. C. Jib clews take a beating, but leather over the clew webbing and along the adjacent tack and foot offer protection from UV and sheet chafe. D. Shade cloth on the inside of a sail corner further protects the webbing against damaging radiation "leaking" around the edges. E. Patches of extra fabric protect a Sunbrella sun cover from chafe against the spreader and the radome. F. Chafe and UV radiation weaken sail corners. G. In the absence of a protective cover of shade cloth, UV radiation will damage Dacron sailcloth on the inside of the hoist of a roller-furling sail. H. An unreinforced pressed-in clew ring shows deterioration from chafe.

Cruising designs

KEEL EVOLUTION, PART 2

Separation achieved

BY ROB MAZZA



In part 1 of this series about the evolution of keels (May 2015), we looked at the early use of external ballast let into the keel timbers of early British and American cutters and the evolution of fin and bulb keels under the design genius of Nathanael Herreshoff. We also saw how the trend, considered to be unhealthy, toward light-displacement fin-keelers was thwarted by more restrictive design rules, such as the Universal Rule, that quashed departures from the norm. This led to very conservative and predictable hulls, once the basic dimensions had been established. While this had the desirable effect of not quickly obsoleting older boats, it did stifle innovation and design experiments.



In the 1920s — especially after the success of international racing in 6-Metres for the Scandinavian Gold Cup, the British-American Challenge Series, and the Seawanhaka Cup — the Universal Rule soon gave way to the International Rule for "small boat" racing. The 6-, 8-, and 12-Metre classes dominated in this period with only the America's Cup retaining the Universal Rule for J-Class designs. The International Rule still embodied the girth-difference factor that in the early version of the International Rule led to dramatic reductions in measured draft at the point amidships where the girth measurements were taken. This resulted in marked "drag" to the keel as seen in the 1926 6-Metre design.

The CCA years

As noted previously, new rules often promote new designers, and one of the first new American designers to find fame in designing 6-Metres was the young Olin Stephens. It was not long before he built on his success in the 6-Metre class in the design of his first ocean racer under the CCA Rule, which became the dominant rule in North America until the 1970s.



His 1931 *Dorade* incorporated the same "drag" in the keel, with the profile line a continuous convex curve from stem to rudder tip, as well as the narrow beam of his successful 6-Metre designs, even though the rule did not require or promote these features. In this design, the keel was again merged with the hull. This is reminiscent of "lifting body" concepts that came to the fore five decades later in the design of space shuttle re-entry shapes, where the fuselage and small integrated wings, rather than the wings alone, formed the lifting surface. That is, the fuselage and the small

The 1939 John Alden-designed CCA racer, *White Wings*, top of page, shows the "classic" lines dating from *Britannia* of the 1890s. The pronounced "drag" to the keel on the 6-Metre *Merenneito*, seen here hauled at City Island, New York, in 1928, above left, is a result of the use of girth measurements in the International Rule.



wings worked together to generate lift by shedding large vortices from the combined leading edge.

Olin Stephens was not alone in de-emphasizing the keel as a unique lifting surface, as illustrated by the profile of the famous offshore racing schooner, *Nina*, designed by Starling Burgess in 1928. As with *Dorade*, *Nina*'s profile is a continuous convex curve from stem to rudder, with the cast-lead ballast let into the backbone just as it had been done in *Yolanda* 50 years previously.

One rationale for this de-emphasis on the distinctiveness of the keel may be that, as ocean racers, these boats were not designed specifically for a racecourse guaranteed to have a high percentage of upwind work. But that is only speculation.



By the time Olin Stephens designed *Stormy Weather* in 1934, he was using substantially greater beam but, just as significant, he introduced a slight deflection in the profile curve to start a modest differentiation of the keel. Up to this time, the ballast casting, although merged with the wooden keel, was still only a portion of the keel. It certainly had not yet become a foil in its own right.

This continuous profile, or at most a slight deflection in the profile at the keel — combined with wineglass hull sections, slack bilges with generous keel fillets, and cast-lead

References

Traditions and Memories of American Yachting by W.P. Stephens

Heart of Glass by Dan Spurr

Archives of the Royal Canadian Yacht Club by C.H.J. Snider

History of Yachting by Douglas Phillips-Birt

All This and Sailing Too by Olin Stephens II

A Life in Boats by Waldo Howland

Yacht Design Explained by Steve Killing and Doug Hunter



ballast let into the deadwood of the keel — would remain the norm throughout the 1930s and '40s and well into the '50s and even '60s. Ray Hunt's Concordia yawl of 1938 and Phil Rhodes' Bounty II of 1956 (one of the first fiberglass hulls built) are excellent examples, and each bears a marked resemblance to the *Britannia* "ideal" of 1893! So much for progress.

Well-known designers of the time stuck with these shapes, including Sparkman & Stephens and Carl Alberg, who employed them in designs for Pearson and Whitby Boat Works and never really departed far from them. S&S, though, did begin to make the transition to separate keel and rudder in their racing and production boats, most notably with the 1967 America's Cup 12-Metre, *Intrepid.* However, boats like the Concordia yawl, the Bounty, and the Albergs certainly are beautiful examples of the art of yacht design, if not the science.

By 1963, the young Canadian designer George Cuthbertson and his design associate, George Cassian, had already established a growing business in the design of wooden and aluminum racing sailboats under the CCA Rule. That year they were approached by Gordon Fisher to design a larger replacement for his precious Cuthbertson & Cassiandesigned *La Mouette*, built in strip-planked cedar at Metro Marine in Bronte, Ontario.



The new boat, named *Thermopylae* after the famous British tea clipper, was also built in strip-planked cedar by Metro Marine and when launched in 1964 represented the highest level of racing-yacht design and construction in the country, if not on the continent. Compared to the accepted norm of the time as exemplified by the Bounty, she had flatter bilges (fewer wineglass sections) and tighter and smaller keel fillets, but still a full keel and attached rudder with inset cast-lead ballast. The rudder was an extension of the keel, but it had a slightly more vertical stock, and the hull profile was still very reminiscent of *Britannia* and the Bounty, except for the change in rudder shape.



Fin-keel revival

Herreshoff's 1891 vision of the light-displacement fin-keeler was about to make its second debut on the racing scene in 1963, when the Bill Lapworth-designed Cal 40 was launched in California. Like *Dilemma* 72 years previously, the lightweight Cal 40 sported a separate keel and rudder. Although not a true fin-keeler — it didn't have a flat-plate fin and torpedo-shaped bulb — the Cal 40 did eliminate all the useless deadwood between the keel and rudder, creating two independent and much more efficient foils, one for control and the other for lift. The success of the Cal 40 in Trans Pac, SORC, and Bermuda racing in the mid-1960s essentially obsoleted everything that existed previously. However, the cast-lead ballast was still only a segment of the total fiberglass fin and was not cast as the entire fin.



Although the Cal 40 drew attention back to the fin-keel configuration on the international stage, George Hinterhoeller had already designed and launched his little 24-foot Shark one-design in 1959 in Niagara-on-the-Lake, Ontario. (The following year he converted his construction from cold-molded plywood to fiberglass.) Like the Cal 40 that would soon follow, the Shark was light displacement, but with a small cast-iron keel modeled after the Uffa Fox 1947 Flying Fifteen design with the iron fin and ballast a single casting that was bolted directly to the hull. This concept of a one-piece casting would soon become the norm. The Shark could compete boat for boat with 50-foot ocean racers, especially on a heavy-air reach or run.

The success of the Shark and Cal 40 did not go unnoticed. The separated keel and rudder, after considerable tank testing, were applied by George Cuthbertson to the design of *Red Jacket* for Perry Connolly in 1966. While they have similar bow and keel profiles and hull sections, the biggest difference between the 1964 *Thermopylae* and the 1967 *Red Jacket* is the cutting away of the deadwood aft, creating a separate keel and rudder. *Red Jacket* won her division in the SORC in 1967 and the SORC overall in 1968. Her success led to the creation of C&C Yachts in 1969. She was to become the shape of yacht design for many years, at least until the introduction of the IOR Rule in 1973.



By 1970, the separate keel and rudder was the norm in performance-oriented boats. However, even with the keels on the Cal 40 and on *Red Jacket*, the cast-lead ballast was only a portion of the fin. The rest was occupied by a molded-fiber-glass sump or welded-aluminum water tank. The next step would be a one-piece ballast fin that was bolted to a separate "canoe body." The only thing connecting them was a molded sump and fillet and this, too, would soon disappear. This is not to say that the more traditional Bounty-type hull would no longer be produced. Rather, it was now relegated to cruising and club racing, not the competitive racecourse.

Rob Mazza's bio is on page 15.

Part 3 of this series, in the September issue, continues the evolution of the keel with bites, fins, bulbs, winglets, and more.



On the George Cuthbertson-designed *Red Jacket*, seen here at her launching in the spring of 1967, the keel has finally become a distinct appendage in its own right, although it would be another year before the keel and ballast became a single entity. *Red Jacket*'s builder, Erich Bruckmann, is holding the tag line behind the crane.

Nurdle's new





ne of the appealing things about Nurdle, my Bristol 35.5, is that she has a centerboard. I knew this would be an ongoing maintenance item when I bought her. In fact, the centerboard pendant was broken at the time of purchase. After replacing the stainless-steel cable with a Dyneema line, I hoped my problems were over for a while. Little did I know that a raging thunderstorm, a broken jib-furling line, and a lee shore would soon conspire to have me replacing the entire centerboard. When we fell off a wave while being nearly driven ashore, the board struck bottom and broke. The pendant went slack shortly thereafter.

Diving on the boat the following day confirmed the damage. Only about 2 feet of the 7½-foot-long centerboard remained. Fortunately, a remnant of the pendant was still in the trunk and there was plenty of length left on the reel winch. I later made an effort to retrieve the broken section from the sea floor, but was unable to locate it. I had



hoped to use that section as a model for a new board. I had no expectations of piecing the parts back together since I didn't think a simple repair would be strong enough.

Since I was unable to locate the lost piece and could not retrieve the broken part with the boat afloat, I had to design a new board from scratch. Daily boatyard fees in my area are quite expensive, so my plan was to build a new board as accurately as possible and have it ready when the boat was hauled. A few phone calls confirmed that a professionally made board was not readily available. The expected cost for a custom-made board was hard to nail down, but seemed prohibitive at a guesstimated \$3,500 or more. The pros also wanted detailed plans.



A foil made with fiberglass, foam, and ingenuity

BY JOHN CHURCHILL

Diving for dimensions

I contacted Dieter Empacher, who had designed my boat at Ted Hood's office. He provided a scale profile view that gave me a good start. The owner of another Bristol 35.5 that had been featured in *Good Old Boat* magazine sent a number of photographs taken with the board down when her boat was hauled out. With this information in hand, I needed some real-world dimensions of the centerboard trunk to be sure it would fit.

I dove under the boat with a mask, snorkel, and weight belt. As a tape measure would not work well under water, I used a piece of stiff wire. I was able to probe the depth of the trunk, then bend the wire at the bottom of the keel, so I could confirm the measurements once I was out of the water. I took similar measurements of the width of the trunk both forward and aft. There was a small taper toward the rear in width and depth. As my biggest fear was of drowning with my arm stuck



For his calculations, John drew a diagram of the airfoil using a 2x scale for thickness and a ½x scale for width, top left. On the profile view, top right, he marked how he would cut the foam core to allow for the laminate thickness. He drew it on the foam, above left, then cut the foam and contoured it, above center. The first laminates included carbon fiber (black) and Kevlar (yellow), above right.

centerboard



inside the trunk, I used a rectangular bent piece to confirm that the sides were parallel.

Based upon these parameters, I designed the replacement board. At the forward end, the board was approximately 24 inches wide and 2³/₈ inches thick. The first foot and a half is always contained within the centerboard trunk and it would be flat and square-edged for maximum bearing on the trunk walls. The remainder would be an airfoil shape.

The 10:1 chord-to-thickness ratio brought to mind the NACA 0010 foil I had used previously for a self-steering trim tab. I obtained a diagram of thickness offsets from John Letcher's *Self-Steering for Sailing Craft*, but the foil shapes are in the public domain and are available online at Airfoiltools.com.

The NACA 0010 is a symmetrical foil with good lift and stall characteristics. It is suitable for low-speed applications and is a commonly used pattern for keels, rudders, and centerboards. I also found diagrammatic information at the Duckworks website that gave the thickness of the airfoil at various points along the chord, allowing me to proceed with the design.

Laminate weight and thickness

The original board had been built in halves inside female molds and joined together with scrap fiberglass between the two shells. For my one-off fabrication, I elected to use a Divinycell foam core with a laid-up fiberglass/polyester resin skin.

I was concerned that the lightweight core would make it too buoyant. As I could not locate volume specifications for the airfoil shape, I used the



thickness specifications to determine an average thickness of the board. I then multiplied this by the surface area in profile and got an estimate of the total volume of the board. Using 64 pounds per cubic foot (the density of seawater), I calculated the displacement in pounds of the fully submerged centerboard.

I was able to find the density of fiberglass laminates in *Skene's Elements of Yacht Design*. Working backward, dividing the board area by the laminate density gave me an estimate of the needed laminate thickness. I ignored the weight of the foam. I wanted the board to be heavier than its displacement so it would sink, but not be so heavy as to overload the pendant. This yielded two layers of ⁵/₈-inch foam with a ¹/₂-inch-thick fiberglass shell, allowing a bit for fairing and paint.

My estimate gave me a weight of approximately 15 pounds greater than



John wrapped Kevlar around the leading edge of the board for reinforcement, at left. After belt-sanding smooth the bigger bumps, he faired the board with polyester putty, at right.





John did some interim rough shaping, far left, before laying up the final skins, after which he checked the thickness with a plywood gauge, at left. The Kevlar reinforces the hinge-pin area. Roving whiskers help secure the ballast, at top (the extra slugs go in a recess). He set the ballast in a resin syrup, above, then glassed over it.

the displacement, and I planned to add 25 pounds of lead to help the board sink. This would give an overall specific gravity of 1.33, which I hoped would be sufficient, particularly with the ballast at the lower tip.

From tables I found online at Fiber Glass Industries, I calculated the number of layers required to achieve the desired thickness using Fabmat 2415, a hybrid fiberglass product of woven roving and mat stitched together. It has a glass weight of 38 ounces per yard. (*Fiber Glass*



Industries has since ceased operations -Eds.) A small test laminate confirmed my weight and thickness calculations. The project required 20 yards of 50-inch cloth and 8.7 gallons of resin. I sourced the glass, resin, and foam locally at Marine Trading Post, a vendor that





With the boat hauled and blocked, at top, John removed the stub of the broken board to use as a pattern for locating the tube for the pivot pin, above. He then test-fitted the new board, below. Dyneema does not hold knots well, so John tied in the pendant with an anchor hitch/bowline variant and seized the bitter end with wire ties, at bottom.



supplies Florida boatbuilders. The price was better than online when I took shipping into consideration. The total cost of all the materials and supplies was about \$850.

Construction begins

Shaping the foam was a minor challenge. I had envisioned it as being easy to abrade with a rasp, but the foam proved to be much more resilient than I anticipated. It eventually yielded to a belt sander and 36-grit paper. The center section of the airfoil is relatively flat and the trailing portion is a fairly straight line. I planned to build up the thickness on the flatter sections by using different widths of fiberglass.

I wanted the thin part of the trailing edge to be solid fiberglass for strength, so I terminated the foam at the point where the total thickness tapered to 1 inch and would be made up with the thickness of the two ½-inch skins. Drawing the outline on the surface of the foam, I shaped the two halves separately, then laid one on top of a polyethylene sheet spread out on the flattest part of the garage floor.

I applied the initial layers of the fiberglass skin to the first foam half, extending the trailing-edge fiberglass onto the flat surface beyond the outline to be trimmed later. Rather than making the usual feather-thin edge, I planned to grind it down to about ½ inch for durability.

The initial layup was three layers. I added Kevlar reinforcing tape in the area surrounding the pivot pin and along the area around the attachment point for the pendant. I next added a 6-inch-wide strip of carbon-fiber tape for additional stiffness. I sourced the Kevlar and carbon from eBay.

Once this skin hardened, I turned it over so the foam core faced up. It was quite rigid, but I made sure it was straight and true before applying a layer of mat to the exposed core and bonding the other half of the foam in place. I then laid up three layers of fiberglass on this surface, as I had done on the other side, and bonded the two sides together at the trailing edge.

The leading edge had roughened areas where the two halves joined and the fiberglass cloth overlapped. A belt sander made short work of this, resulting in a nice airfoil shape, and I also used the sander to smooth the rough spots in preparation for the final layers. I trimmed the trailing edge to the correct outline and added the remaining layers, one side at a time.

One unexpected challenge was the heat generated by the successive layers. As the laminate got thicker and started hardening, my working time became shorter with each additional layer. I did not come up with a good solution to this. I used less catalyst and tried to work really fast. Fortunately, I had precut all the glass before starting to apply the resin. After flipping the board over, I did the identical thing on the reverse side, then added material to the flatter center section of the board to build up the contour.

Adding the ballast

Before doing the final finishing, I made the lead ballast weight. Since it would be replacing a section of the 1¹/₄-inchthick foam core, I was able to calculate the diameter of the piece I needed. Using a propane torch (and wearing the appropriate protective gear), I melted scrap lead in a 6-inch saucepan I found at the thrift store (not in my wife's cupboard!). This yielded a lead pancake 1¹/₄ inches thick.

I cut a 6-inch-diameter hole on one surface toward the bottom of the board and removed the core. For good measure, I added some lead slugs in a side pocket. I drilled holes in the sides of the ballast and placed roving in it to help bond it in place, then put the pancake in the hole and filled the gaps with catalyzed resin syrup before replacing the skin cover.

Once the patch had hardened, I feathered the edges along the cut and laid mat over the cut surface for strength. Finally, I added Kevlar tape to the leading and bottom edges for abrasion and impact resistance.

I weighed the roughly completed board and found it to be satisfyingly heavier than my calculations, probably due to generous use of resin. I used a plywood thickness gauge to make certain the board would not jam in the trunk. The new centerboard was now extremely rigid, but had a textured surface from the fiberglass Fabmat. I removed the worst of the lumps and bumps and faired it roughly with a belt sander, then used polyester filler (aka Bondo) as a fairing compound to achieve a smooth surface. This took several cycles of application and sanding and is an important step for the optimum airfoil performance of the board, although the NACA 0010 foil tolerates roughness well.

On completion, I checked the thickness once again, then drilled the hole for the pendant, rounded the edges, and smoothed the contours. The board was now ready for the final fitting as soon as the boat came out of the water.

Board meets boat

In preparation for the haulout, I found some information at the Bristol owners' online forum regarding the arrangement of the centerboard pivot pin. Unlike on some boats, this pin goes directly through the solid portion of the internal ballast keel and the ends of the pin are fiberglassed over.

One unexpected challenge was getting the cooperation of the boatyard, as I needed the boat blocked in a way that allowed access to the trunk. I explained the need for the bottom of the keel to be a little over 2 feet off the ground and the entire bottom of the trunk exposed. I alleviated their concerns about placing excessive weight on the thinner aft end of the keel by showing them photos of a sister ship similarly supported. Their reservations about the increased height of the boat above the ground were reduced when I pointed out that Nurdle would sit no higher than if she had a 6-foot draft so common on other boats.

With the boat out of the water and appropriately blocked, I was able to

Resources

Airfoil Tools www.airfoiltools.com

Duckworks

www.duckworksmagazine.com/06/ howto/foils/rudder-daggerboard.pdf

Marine Trading Post www.marinetradingpost.com

Bristol owners' online forum groups.yahoo.com/neo/groups/ bristolboatowners/info

Books

Self-Steering for Sailing Craft by John Letcher (out of print) Skene's Elements of Yacht Design by Francis S. Kinney The pin is prevented from moving in or out by large fender washers secured by machine screws threaded into each end of the pin. After exposing the fender washers, I was able to remove the machine screws and slide the pin out easily.

I pulled out the broken portion of the board and slid the new board into place. PVC tube rollers and a floor jack made for easy singlehanded maneuvering. The new board fit surprisingly well, just a little loose like the original. It required only minimal grinding in a couple of areas where it was a bit too thick.

I took the original piece and the new board home to install the pivot-pin tunnel. I used the old piece to make sure it was correctly located. The original board had a 1¹/₄-inch pin riding in a 1³/₈-inch fiberglass tube built into the board. As a 3-inch-long section of fiberglass tube was not readily available, I built one. One-inch PVC pipe has an outside diameter of 15/16 inch. I built this up with layers of waxed paper and laid up fiberglass cloth until the tube "looked right" in thickness. I fitted this into a slightly oversized hole in the correct location in the board, using resin to fill the gaps. I took care to make sure it was in place squarely.

After a final sanding, I applied several layers of bottom paint. After carefully attaching the pendant, I slid the board into the trunk and installed the pin. When I tightened the pendant, the board pivoted smoothly, and I was pleased to see that it retracted completely. My pin showed only minor wear and corrosion after 35 years so I reused it. I used new wide-headed machine screws called sidewalk bolts to secure the fender washers and covered the ends with additional layers of fiberglass. Once this had hardened, I faired and painted it.

When the boat was launched, I was able to drop and raise the new centerboard just as I had done with the original. I consider the new centerboard to have been completed successfully and *Nurdle* is ready to sail in shoal waters once again. \varDelta





The recess in the keel is for the fender washer that locks in the pin, at top. The board is painted and in place, above. After inserting the pin, below, John glassed over the washers and sidewalk bolts, at bottom.





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

Proven procedures keep the juice flowing

BY DAVID LYNN

Joined the Navy right out of high school many years ago and they saw fit to teach me to be an electronics technician. Throughout my first two years of training, one thing that was continually emphasized was the importance of good electrical connections. Make a good electrical connection and it will last decades under even the most adverse conditions. Cut corners and it will soon cause problems, most likely at the worst possible moment.

After my original enlistment period was up, I went on to become an electrical engineer, but the early lessons I learned in the Navy stayed with me. An electrical connection should be strong mechanically, have a low electrical resistance, have the capacity to conduct the intended current, and be protected from corrosion. It is not very difficult to make a connection that meets all these criteria.

Splices

There are several methods for making a splice to join wires together. Wire nuts are commonly used in household electrical circuits, but are totally unsuitable for marine applications. Likewise, household-type crimp connectors should not be used on a boat. A better method is to use marine-grade crimp butt connectors. Most automotive-grade crimp connectors use zinc-plated steel for the barrel, which will corrode in a marine environment. Marinegrade connectors use tinned copper. Using butt connectors with adhesive-lined shrink tubing will make the connection watertight.

Crimp connectors are color-coded: red for wire sizes AWG 18-22, blue for sizes AWG 14-16, and yellow for sizes AWG 10-12. It's important to use the right connector for the size of the wire being spliced. Thus, a limitation of crimp butt connectors is that if two different sizes of wire are being spliced, it is quite likely the butt connector will not be the right size for both wires. (See "Marine Electrical Wire 101," July 2014.)

In my opinion, nothing beats a good solder connection. If properly made and insulated, it will last many decades. To make a good solder connection, I first



slide a length of adhesive-lined heatshrink tubing onto one of the wires. The tubing should be about twice the diameter of the insulated wire. Then I wrap the two wires together (see illustration, above). Wrapping the wires in this way makes a good mechanical connection and the result is less bulky than twisting the wires together in a pigtail. I heat and tin the soldering iron, hold it against the connection until the wire is hot enough to melt the solder, and let the



Wire nuts and household-type crimp connections are not suitable for splicing wires together on a boat, at left. Marine-grade crimp butt connectors make a better and more reliable splice, center, but the best ways to join two wires, at right, are with a crimp butt connector sealed with heat-shrink insulation (upper wire) or a soldered connection sealed with marine-grade heat-shrink tubing (lower wire).



solder flow into the connection. After it has cooled, I slide the heat shrink into place and heat the tubing with a heat gun or lighter until it shrinks to size. Ideally, a small amount of adhesive will ooze out of each end of the tubing. (See "Electrical Soldering," May 2015, for a more detailed look at soldering.)

Friction-type connectors are often used to splice wires for equipment that's disconnected periodically. The most common of these are quickdisconnect crimp terminals. The female half of this type of connector can be purchased with insulation covering only the crimp portion of the connector or with full insulation. Choose connectors that are fully insulated. Snap plugs and sockets are another friction-type connector similar to quick-disconnect terminals except they are round instead of flat. As with butt crimp connectors, friction-type crimp terminals are colorcoded for wire size. Since friction-type

connectors must meet a number of criteria in order to be acceptable for use on a boat, it is best to purchase marine-grade connectors made by a reputable manufacturer such as Ancor.

A number of other splice connectors are intended for the

marine market. I'm somewhat skeptical of the long-term reliability of these connectors despite manufacturers' claims, but I have very little firsthand experience with them.

Screw-terminal connections

There are several methods of connecting a wire to a screw terminal and some are better than others. In a household circuit, where solid wire is used and the wiring is not subject to movement, it's acceptable to secure the wire directly with the screw head. On a boat, this is a poor way to make the connection. A flat forked terminal is only slightly better, as it is quite likely to come free if the screw loosens the least bit.

A much better method is to use ring terminals or captive-fork terminals. If the screw loosens, the wire will stay in place, although the connection might be intermittent. The best method is to use a crimp ring terminal with adhesive-lined, heatshrink insulation.

Even better, I use an uninsulated ring terminal and crimp the wire in place. Then I solder the wire to the terminal, and finally seal it with heat-shrink tubing.

Observe the following points to ensure reliable connections:

- Screws, nuts, and washers used with these terminals should be corrosion-resistant and galvanically compatible with the conductor and terminal. For example, aluminum or unplated steel are not suitable.
- No more than four wires should be connected to a single terminal screw.
- Ring and fork terminals should be sized correctly for both the wire and the screw diameter.

Friction terminal connections

Many electrical components on a boat — such as breakers, switches, and relays — use blade-type terminals for the electrical connections. These blade terminals are intended to be used with female quick-disconnect crimp connectors. Marine-grade connectors will be more resistant to corrosion and will fit tightly enough to stay put. Unless the connection is for a ground circuit, the connector should be insulated. The connector should be the correct size for both the blade and the wire being used.



Wrapping the wire around the screw or using a flat forked terminal are poor ways to make connections, at left. Ring terminals or captivefork terminals, center, are better as the wire will stay in place if the screw loosens. Ring terminals, at right, make the best connections, either those with heat-shrink insulation or connections that are crimped and soldered in place and then sealed with heat-shrink tubing.

Setscrew connections

In another type of screw terminal, a setscrew bears down on the wire to hold it in place (see illustration, below). The wire makes the electrical connection. There are a few considerations with this type of connector:

- The connector is usually suitable for a range of wire sizes, and only wire within this specified range should be used.
- An indirect-bearing type is preferable to a direct-bearing type.
- If the terminal is a direct-bearing type, the connection may be more secure and reliable if the strands of the wire are first soldered together.

Insulation

An electrical connection in the marine environment should be insulated to prevent shorts and to seal out moisture. Insulating a connection with plastic electrical tape doesn't work well on a boat as it will inevitably unwind, leaving a sticky, uninsulated mess. There are other, much better methods.

Heat-shrink tubing – Slide this tubing over the wire before making the connection. Once you have completed the connection, slide the tubing back over the connection, then heat it, so it shrinks and forms a tight fit over the wire and connection. The better tubing, such as Ancor marine-grade, will shrink to a third or less of its original size and has an adhesive lining. The heat causes the adhesive to melt and, once the tubing has shrunk and cooled, the adhesive will create a watertight seal. Using the right size of tubing is important. If it's too large, it won't shrink enough to form a good seal. If it's too small, you won't be able to slide it back over the connection or terminal.

Heat-shrink tape – Wrap this tape tightly around a connection so each wrap overlaps the one before it by about 50 percent. Hold it in place temporarily with a couple of cable ties, then heat it. As it becomes warm, the tape shrinks and each layer fuses with the one beneath, forming a tight, waterproof seal. Its advantage over tubing is that the tape will conform to a connection or wire of just about any size and can be added after a connection is made. The disadvantages are that it is expensive and somewhat difficult to work with.

Self-amalgamating tape – This is

a non-sticky silicone-rubber tape (usually black, gray, or white) that, when stretched and wrapped around an electrical connection, melds itself into a strong, seamless, waterproof

The direct-bearing setscrew terminal, at left, has some uses on board but the indirectbearing type, at right, is preferable, especially for work with wires of smaller diameter. layer. Self-amalgamating tape is sold in rolls and has a plastic backing that is removed as it is applied. The backing prevents the tape from melding to itself while on the roll. It is UV- and weatherresistant. It remains soft and pliable, is relatively easy to remove, and leaves no residue. The only shortcoming of self-amalgamating tape is that it isn't very resistant to chafe or abrasion. I use this type of tape for insulating and weatherproofing outside connections or just about any connection for which I can't use heat-shrink tubing.

Tools

Unless you will be doing considerable electrical work on your boat, you needn't invest a lot in specialized tools, but you should have the basics. For much less than the cost of an hour of an electrician's time you can buy all the tools you will need for doing most of your own work. If you will be doing a lot of electrical work, invest in better tools.

Electrician's multi-tool – Versions of this tool, which can cut, crimp, and strip, can be found in every chandlery, automotive parts store, and hardware store. It is the essential electrical tool every boat owner should have. The price will range from less than \$10 to \$30. I have

Resources

Sources for heat-shrink tape Cable Organizer: www.cableorganizer.com

Nelco Products: www.nelcoproducts.com

an inexpensive model that has seen a lot of use over the years. It works well for stripping wire and crimping terminals. In my experience, however, the cutting blades become dull and useless after only a few cuts.

Wire cutters – I have several wire cutters intended for use with wire ranging in size from tiny AWG 30 wire to %-inch stainless-steel rigging wire. My favorite and most-used wire cutter, however, is my 8-inch wire cutter. This works well for the most common wire sizes.

Wire shears – To cut larger wire than AWG 8, you can use a hacksaw or rotary tool with a cut-off wheel, but wire shears will do a faster and cleaner job. These are more expensive than normal cutters but can be used for a wider range of wire and produce a better cut. Tools the onboard electrican should have include, from left, a basic wire cutter, stripper, and crimper; a ratcheting crimper; and a heavy-duty crimper (plus a hammer to strike it with).

Ratcheting crimper – I do a lot of electrical work and have invested in a ratcheting crimper. The advantage of this tool is that it will not release until the terminal has

been crimped the correct amount. These range in price from \$20 to \$75. I bought a double-crimping model that crimps both the barrel and the sleeve.

Heavy-cable crimping tool – For

making heavy cables, such as battery, starter, or windlass cables, I use a larger, heavy-duty crimper. There are several types available that make the crimp when squeezed in a vice or struck with a hammer.

Soldering tool – I have several soldering irons, guns, and torches I use for various applications. If I had to choose just one, it would be my butane soldering kit. It has tips and settings that make it useful for everything from shrinking heat-shrink tubing to soldering AWG 8 wire on a windy day. Plus, I can take it up the mast or solder a connection when boat power is low. *Heat gun* – A heat gun is by far the best way to shrink heat-shrink tubing and tape. Hair dryers don't get hot enough, and lighters and torches may melt the insulation on the wire. (Heat guns are also great for removing varnish and paint before refinishing.) The downside is that they take a lot of power, so I only use ours when on shorepower.

Wire quality

I can use the best terminals, attach them using the best tools, and fully insulate them, but if the wire I start out with is corroded, the connection will soon fail. The wire should be bright and shiny. A small amount of verdigris can be cleaned off, but if the wire is heavily corroded, it should be replaced. \varDelta

David Lynn was an electronics technician in the U.S. Navy for six years before getting his BS and MS in electrical engineering. He and his wife, Marcie, have lived aboard Nine of Cups, their 1986 Liberty 458 cutter, since purchasing her in Kemah, Texas, in 2000. They have sailed her more than 80,000 nautical miles and have just completed their rather meandering circumnavigation around the five great capes. They are currently en route from Cape Town to the U.S. Find them on their website at www. nineofcups.com or their daily blog at www.justalittlefurther.com.

See, be seen, and talk about it

BY ED ZACKO

66 This is sailing vessel *Entr'acte* WYR 3025 — at latitude 24 degrees 16 minutes north, longitude 97 degrees 14 minutes west — calling the cargo vessel astern. Do you see us? Over."

Silence.

The sun has just set. *Entr'acte* is running dead downwind in a moderate sea making 6 knots, genoa poled out to port, main to starboard, boom vang set, and preventers in place. Rolling along without a care, we now have a "situation." A large container ship has just appeared among the waves some distance astern and to port. Her lights indicate an almost parallel course, overtaking and possibly converging. Continuous bearings appear to remain constant but there's so much motion, it's hard to be certain. She might pass well to port and safely ahead but we just ... don't ... know!

OMERA QUEEN

SA

With the radio silent, we have no idea what he's thinking or if he even knows we are here, so it's up to us to remain clear... but how? Crossing her bow is out of the question. It's dark and any other move will involve a lot of foredeck work and lost time. We call again: "This is sailing vessel *Entr'acte*... blah, blah, blah."

More silence. The only safe decision is to jibe the main, lower the pole, come onto the wind and sail off on a course perpendicular to the ship's track.

Two hours later, sails re-set, we are safely back on our course, but Ellen's off-watch rest has been destroyed. With a little more information, our actions might not have been necessary.

These days, thanks to the Automatic Identification System (AIS), such scenarios are becoming less common. AIS is an anti-collision tracking system

AIS for the rest of us

a radar display. Thus it is sometimes referred to as AIS radar.

Class A is for commercial vessels. Since 2002, all commercial international vessels exceeding 300 gross tons, non-international vessels exceeding 500 tons, and all vessels carrying passengers for hire regardless of size, must be fitted with Class A transponders. Class A is the most expensive because it transmits at a higher power and more frequently (every 2 to 10 seconds when under way depending on speed and every 3 minutes at anchor). It has all of the functionality the law requires of commercial vessels and requires operator intervention during use.

Class B is for the average boater who does not carry passengers for hire. Introduced in 2006, Class B transponders are fully functional but less complicated, far less expensive, and within reach of the average pleasure boater. Class B units transmit at lower power and do not require or allow user intervention. Once initially programmed, they're fully automatic, broadcasting every 3 minutes when the boat's speed is less than 2 knots and every 30 seconds at greater speeds. Class B is not inferior or lacking functionality in any way. Many transponders now include WiFi to connect with computers, tablets, and other iOS devices.

Receive-only units, the simplest and least expensive, are available as stand-alone units with screens or as "little black boxes" minus screens that fit almost anywhere and connect to your chart plotter or computer charting program through NMEA 183 or NMEA 2000. Some VHF radios now include an AIS receiver. Older single-channel units see only Class A targets. Newer multi-channel units process both Class A and B vessels plus a wide selection of other available targets. Since you want to see everyone who is transmitting, regardless of class, check specifications carefully before you buy, especially if buying a secondhand unit!

Using AIS

AIS targets appear as icons on the display. When you place a cursor on a target, a text box shows the vessel's name, MMSI number (an ID number unique to that vessel), type (pleasure,

A stand-alone receive-only AIS display, above, shows headings of transmitting vessels and their relative positions, taking much of the stress out of close encounters at sea.

that locates vessels electronically and exchanges navigational information between vessels. A simple, continuously transmitted VHF radio message shares critical navigational info about each transmitting vessel.

Be seen or see only

There are three basic forms of AIS: Class A and Class B transponder units, which send and receive information, and receive-only units with no class designation. AIS receivers display contacts (called targets) on a screen with your boat in the center, much like

Electronic wizardry | AIS for the rest of us

On an AIS display, all targets are ranked by proximity, at left. Selecting a target brings up the information page for that vessel, at right, which includes the critical CPA and TCPA.

sail, or cargo), course, speed, destination, and the two important figures: closest point of approach (CPA) and time to closest point of approach (TCPA). Press a button to see a target list of every vessel within range, usually ranked according to proximity.

If AIS does nothing more, it gives you a vessel's name to hail. This eliminates the need to transmit coordinates, which can be confusing. English may be the international language for navigation, but it is usually the second or even third language spoken on board. Those on the ship's bridge can communicate in English "face to face," but over the radio the more words spoken the greater the chance of confusion and of being ignored, so come right to the point: "Da Vinci, Da Vinci, this is sailing vessel Entracte. Over." We have never hailed a ship by name and not received a response.

If your VHF has Digital Selective Calling (DSC) capability (in the U.S., that's any non-handheld VHF radio sold since 2000), you can send a DSC priority call directly to the vessel's MMSI number. You will get a response ... and fast!

With AIS, however, if the ship appears on your screen at a range of 15 miles, you have plenty of time to adjust your course and probably won't need the radio at all. Many times, the less said the better.

AIS is not just for world-cruising yachts. A click on www.vesselfinder.com

shows that just about every body of water in the world is covered with AIS targets. Zoom in and the number of targets multiplies. If your boating activities put you into contact with large ships, ferries, or day-charter boats — basically any large commercial vessels — your life will be easier and safer if you can at least *receive* AIS.

In the opening scenario, even if we'd had receive-only capability and nothing more, we would have seen the ship on screen an hour before visual observation and would have been relieved to know the CPA would occur 10 minutes after he had overtaken and safely passed us one mile to port and a mile ahead of us. We could have maintained course and speed or changed course slightly to open CPA even more while watching the CPA closely and planning well in advance of problems.

Whenever you're dealing with multiple vessels, this information will reduce tension. You immediately know which targets are dangerous and which are not. The dangerous target is not always the closest one. You no longer have to spend tedious hours trying to dodge a ship that poses no threat at all.

On rivers, you won't be surprised by a tug towing six barges rocketing suddenly from behind a headland down-current toward you. Your proximity alarm will warn you well in advance of a visual so you can position your vessel to remain clear.

AIS aids navigation

In addition to ships, AIS also receives signals from Aid to Navigation beacons. AtoN beacons broadcast AIS signals showing their position on

In the old days, the scene unfolding at left would have been extremely stressful. With all of the motion of a small boat, it's difficult to judge the situation accurately by eye. Even though the AIS showed we had an acceptable CPA of .25 nautical miles, prudence dictated that we alter course to port and increase our margin of safety. The danger is not always obvious, center. Despite how it looks, only one of the many targets posed a collision risk. WiFi capability gives the added advantage of using AIS AtoN beacons for navigation, at right.

Before AIS this would have been a heart-stopper. It does not look like it but *Botswana*, on the right, is at CPA (1.7 nautical miles). We saw both of these vessels on screen one hour before we saw them visually. We knew who they were and that we would be able to cross in safety while watching carefully for any changes.

Even if you can't see that lighthouse due to fog or a malfunctioning light, you will see it as a magenta diamond on your electronic chart and a target contact on your plotter screen and target list. You'll also have its range, bearing, CPA, and TCPA. We receive AtoNs at 200 miles. Pretty cool! Now we have a fighting chance to avoid those large fishnet areas.

AIS and MOB

AIS can serve as a man-overboard locating device. Several manufacturers, such as McMurdo, offer personal strobe/locators that attach to a lifejacket or safety harness and transmit AIS. In the event a wearer goes overboard, the strobe will flash and the unit will transmit an AIS signal. The person in the water will appear on screen as an actual AIS ship target, visible on any vessel with an AIS receiver.

The nuts and bolts

Costs – AIS is affordable. The technology changes almost daily resulting in more units with more features at lower prices than ever before. Our original black box receiver and antenna splitter cost less than \$300. Our new transponder/splitter with built-in WiFi network for iPad connectivity cost less than \$900.

Antenna splitter – AIS is a VHF signal just like that from your ship's radio. The effective range is determined by the quality of your antenna and its height above the water. Since two masthead antennas will interfere with each other, the antenna splitter was developed. This small box allows your VHF radio and AIS unit to share one masthead antenna. It works seamlessly in the background and automatically connects the proper device as needed.

It's important to be aware that a particular antenna splitter might not be universally compatible with all devices. A splitter that works with a receiver may not work with a transponder. Do your research. *Licensing* – For a recreational vessel in U.S. waters, no FCC license is required to install or use a VHF radio or AIS receiver. However, if you wish to install a transponder and do not require a license, you still must obtain an MMSI number. Without formally applying for an FCC radio license you can obtain this all-important number through the BoatU.S. website (see "Resources" on page 43). An MMSI obtained through BoatU.S., however, is not valid for use outside U.S. waters.

For international travel, including to Canada, Mexico, or the Bahamas, you must have a station license for

Entr'acte's first AIS, a receive-only Digital Yacht "black box," at left, was simple and inexpensive. Entr'acte's new transponder, above, transmits, as well as receiving Class A and B vessel signals and AtoN beacons. It has built-in WiFi and GPS and it connects to chart plotters and computers via NMEA and/or USB and to iOS devices via WiFi. your boat. This license assigns to your vessel (not to an individual) a call sign and MMSI number that cover your VHF, EPIRB, SSB, and AIS transponder should you choose one that transmits. There is no exam. Complete the paperwork, pay the fee (\$155 for a 10-year license), and you're done.

Programming – Transponders must be programmed with your vessel's length, beam, and MMSI number. In the United States, it is illegal for end-users to program AIS transponders. Before buying our Class B transponder, we had to complete a form listing all our vessel's particulars and provide documentation of our MMSI. Our new Vesper XB-8000 transponder arrived pre-programmed, tested, and ready to use. If you purchase a used unit, it

112 201	AIS Target Query	- 🗆 🗙	-
	ENTRACTE w	YR3025	
	MMSI 367350870	Class B	
	Sailing Vessel 10m x 2m		
Non a contraction	Position 37 22.2260 N 005 59.5959 W	Report Age 4min 09s	
	Speed Course 0.00 Kts 261°	Heading 	
	Range Bearing 52 m 346°	Turn Rate	
	CPA 38 m in 7min 11s		2
Carlos and	ОК]	39
05	5 59.5870 W SOG 0.12 kt	s COG 254°	37 22.2074 N 005
Ż	OpenCPN 3.2.2		

Entr'acte's vessel information as it appears on the display on a large passenger vessel.

will be programmed with the former vessel's MMSI. Before installation, you must have the unit reprogrammed with your vessel's number. Check with the manufacturer to determine how this can be done and at what cost.

AIS filtering?

Filtering is the Pandora's Box of AIS. Do the big boys filter out Class B signals? If yes, then why install a Class B transponder?

The rationale for filtering is to de-clutter the screen while entering or leaving a harbor where speed is low, everyone is exceedingly careful, and all threats are plainly visible and easily avoided. Theoretically, the filter would be turned off when entering open water. However, even a filtered target will appear if it enters the Danger of Collision Zone. When I asked the captain of the container ship, *Matisse*, if he filtered Class B targets, he looked at me in amazement and said, "Why would the captain of any ship do something so stupid? It would destroy his career!"

We have personally experienced the confusion and annoyance of entering a harbor and being overwhelmed by targets and alarms from ships and yachts that are left to transmit continuously while hanging on moorings, at anchor, and in marina slips. The screen became so cluttered and the alarms so distracting that we finally shut down the AIS so we could see the chart. Some units can now be set to automatically filter out targets that pose no danger of collision (more than a mile away) to reduce screen clutter.

As I write this, it has been six months since we installed our Class B transponder. We have been sailing daily along the north coast of Morocco and the southern coast of Spain as well as in, near to, and through the Strait of Gibraltar, one of the most heavily trafficked areas in the world. We have seen no evidence whatever that we were filtered out and not seen. Quite the contrary. In our encounters with ships, we routinely see definite course corrections of perhaps only 2 or 3 degrees but enough to increase the CPA. This shows that the ship has seen us. One ship captain congratulated us for installing the transponder.

To see an ongoing discussion about filtering, visit the Panbo website, which is a trove of information about all aspects of marine electronics: www.panbo.com/archives/2010/04/the_class_b_ais_filtering_myth_revisited_arrrrgh.html.

If you live outside the U.S. and purchase an unprogrammed transponder and program it yourself, beware! You get only one chance to input the MMSI. If you err, you must, in most cases, return the unit to the manufacturer, not the dealer, to have it corrected.

Transmit or receive-only?

Does a small yacht need an AIS transponder or is receive-only good enough? Our encounter with *Argos*, a 130-foot superyacht, got us thinking about this.

We were 8 miles from an entrance buoy to a reef passage in 25 knots with large seas. Our receive-only AIS alarm alerted us to "a dangerous target" barely visible among the waves. *Argos* was making 14 knots and our CPA and TCPA indicated that we would arrive at the buoy simultaneously.

"Argos, Argos, this is Entr'acte."

Despite our two radar reflectors, *Argos* had not seen us visually or on radar. Even before we signed off, however, our readout showed that she had slowed to 12 knots, enough to increase CPA and allow us both to enter in safety. Had *Entr'acte* been transmitting AIS, *Argos* would have received a solid contact, seen our destination, and reduced speed.

As passengers on a recent transatlantic crossing aboard the 1,000-foot container ship, *Matisse*, we each stood two proper 4-hour watches for 12 days and had ample opportunity to observe the crew and study the ins and outs of AIS reception. We saw firsthand how our boats appear to these big boys. It was not encouraging, except for those yachts that transmitted AIS.

While radar contacts vary with the size of the vessel and sea conditions, AIS target icons are identical regardless of the size of the vessel. The contact icons for a 5-foot rowboat, the 27-foot *Entr'acte*, and a 1,000-foot container ship are all the same size, a comforting thought! AIS greatly enhances your "electronic footprint."

AIS feeds the contact to your chart plotter. A "dangerous target" triggers an alarm followed by a target query. CPA and TCPA determine the action required.

Unfortunately, the maximum AIS threat alarm zone for chart plotters and charting programs varies considerably. On open CPN, the threat alarm zone can be set at 20 miles or more, but my Garmin plotter's maximum threat zone is only 2 miles. In low visibility with only a 2-mile warning, you will never get out of the way in time.

For the singlehander, an AIS transponder can save a life ... mine! We were almost

run down by a singlehander who was sleeping. An AIS transponder is like having an extra crewmember constantly announcing your presence.

As of this writing, several countries (such as Singapore) are beginning to mandate that all vessels transmit AIS. The UK is also making noises along these lines.

The bottom line

The latest receive-only units will receive signals from both Class A and Class B transponders.

If you install a Class B transponder, your signal and information will show up on both Class A and Class B receivers. In short, you will both see and be seen by the big boys.

The catch

There is one snag: the lag between the rapidly evolving AIS technology and the capability of existing GPS units. Ship transmissions are slightly different from AtoN transmissions, and even though AtoNs are received by your AIS unit and relayed both over WiFi and NMEA, your chart plotter might not process them. There are 26 different types of AIS sentences (signals), each one slightly different and each serving a specific purpose (ship, AtoN, MOB, and so on). While the latest AIS units will process most of them, your chart plotter may not. For example, our Vesper transponder receives and processes ship, AtoN, and MOB sentences. We read them easily

The AIS transponder and antenna splitter are compact devices and both fit neatly and easily even in *Entr'acte's* navigation station.

on Open CPN and on the iPad, but our Garmin chart plotter will only display Class A and B ship targets. If you plan to use AtoNs, you may want a WiFicapable unit connected to a computer or iPad. According to McMurdo, their MOB device will show on a plotter, but as a ship contact rather than an MOB. To be certain, check with the manufacturer of your particular device.

AIS is not perfect

We should never rely on just one navigational device. Do not blindly assume that because you are transmitting and receiving AIS, you no longer have to keep a good watch. That would be a tragic mistake. Nothing replaces a good pair of eyes and sound judgment. Never assume the "other guy" is alert and conforming to the law. We are the little guys and, "right of way" notwithstanding, our survival dictates that we keep out of their way.

Throughout this season we have been continually impressed by, and have found new ways to employ, this great new technology. With AIS, good sense, and reasonable care, your navigation and encounters with the big boys will be far less tense. Forewarned is forearmed. \varDelta

More online ... Ed has added further technical information about purchasing, installing, and powering AIS devices at www. goodoldboat.com/reader_services/ more_online/AIS.php

Ed Zacko is a Good Old Boat contributing editor. He and Ellen met while playing in the orchestra of a Broadway musical. They built their Nor'Sea 27, Entr'acte, from a bare hull and since 1980 have made four transatlantic crossings and one across the Pacific. Entr'acte is now based in Seville. Spain. where Ellen and Ed are happily sailing in and around the Mediterranean and playing in the jazz clubs of Spain, France, and Morocco. Follow them on www.enezacko.com.

The author is grateful to Jeff Robbins at Vesper Marine, Doug Miller at Milltech Marine, Paul Sumpner at Digital Yacht, Captain John Wolstenholme, and Deborah Ray for providing technical information and clarification.

Resources

AIS basics

www.vesselfinder.com www.vespermarine.com/virtual-beacon/ virtual-ais-beacon.html www.amsa.gov.au/forms-andpublications/Fact-Sheets/AISB_Fact.pdf

Devices

www.milltechmarine.com digitalyacht.co.uk www.vespermarine.com gcaptain.com/overboard-sarts-devices www.mcmurdomarine.com/ais-mobdevices (Personal MOB device)

Licensing

www.fcc.gov www.offshoreblue.com/ communications/fcc-license.php www.offshoreblue.com/ communications/radio-station.php

MMSI Number

www.boatus.com/mmsi/instruct.asp www.boatus.com/mmsi

Compatibility of devices

www.panbo.com/archives/2012/06/ ais_over_nmea_2000_the_shame_sheet. html

Inverter essentials

Silent power for home comforts afloat

BY WAYNE CANNING

A properly installed inverter, at top, is wired with a fuse (in the foreground) and a disconnect switch (to the right). The inverter transfer switch on this panel, center, allows the full load of both shore legs — as much as 60 amps — to be placed on the inverter, a load that far exceeds the inverter's capacity. The control panel for an inverter, above, should be located near the main panel. here are only two practical ways to get AC power on board when not plugged into shorepower: with a generator or with an inverter. Although inverters are not capable of running high-demand appliances such as air conditioning or heating — they require a generator — they are great for low-power uses such as computers, televisions, and small appliances. Having the ability to chill out in a quiet anchorage and still use your computer and perhaps a blender without a generator rumbling in the background is a nice thing indeed.

Inverters operate by converting DC power from the ship's batteries to 120 VAC power, so their use is limited by battery capacity. They are relatively maintenance-free and can provide years of reliable service. However, for the sake of good performance and onboard safety, an inverter must be properly installed.

As a marine surveyor, I see many inverter installations. Surprisingly, very few are correctly done, even when done by professionals. I don't think this is due to lack of care on the part of the installers but, rather, to some common misunderstandings about how an inverter should be installed to be both safe and reliable.

Installing an inverter is something many boat owners would be comfortable doing themselves. This can reduce the cost of installation, but it's important to understand how they operate and how they should be installed to be safe. Even if you already have an inverter on your boat, it pays to know what a safe, dependable installation looks like so you can inspect yours to make sure it was carried out properly.

At first thought, installing an inverter would seem pretty straightforward: hook it up to the batteries, plug in an appliance, and it's ready to go. Of course, nothing is that easy on a boat. Connecting a single-supply inverter to power a single appliance or outlet can be pretty simple as long as a few basic safety considerations are followed. It gets a bit more involved when a larger inverter is connected to the ship's AC power panel.

Portable inverter

Smaller inverters that deliver less than 100 watts can be plugged into a 12-volt cigarette-lighter socket, now commonly referred to as a power outlet. These power outlets can be very handy, but even the best are designed for a maximum of only 15 amps DC, and often will not be able to maintain a full 15-amp draw for extended periods without overheating. A 15-amp outlet can power a 150-watt inverter at the maximum, and only for short periods.

Before going this route, make sure the wiring for your power outlet is capable of handling the current. Many builders and aftermarket installers do not use heavy enough wire when

also important to make sure the outlet has the correct-sized breaker or fuse at its power source. If you only intend to use a small inverter for light loads, such as charging cell phones and small tablets, this should not be a problem, but be careful about adding heavier loads. Even a small 100-watt inverter can draw 8 amps DC or more, which will stress this type of outlet.

Stand-alone inverter

For any AC needs above 150 watts or so you'll want a permanently wired inverter. This requires the DC side to have its own dedicated wiring and circuit protection. There are a couple of choices for how to install the inverter, depending on your needs and what devices you would like powered from the inverter.

If the plan is to power just a couple of small appliances, one option is to get an inverter with built-in outlets and plug the devices directly into the inverter. Keep in mind, though, that those outlets should be GFIC or ground-fault protected — American Boat & Yacht Council (ABYC) standards require this on marine devices. With this option, the installation is fairly easy as there is no AC wiring to worry about.

Try to locate the inverter near the batteries as well as near the appliances it will be powering. The controls and outlets should be readily accessible and the unit should be securely mounted in a dry location with good ventilation. Avoid the use of extension cords when plugging into the AC outlets.

Integrated inverter

Consider the physical location of the inverter before installing it. A larger unit that will be connected to the ship's AC wiring is best mounted near the batteries to minimize voltage drop in the battery cables.

An inverter produces a fair amount of heat when operating. Good ventilation is necessary to keep it cool, so the engine compartment is not a recommended location due to the ambient temperature when running the engine. It is of course important to make sure no water gets into or on the inverter. This means installing it in a dry location away from possible deck leaks or leaks from plumbing.

Follow the manufacturer's recommendations for wire size based on load and distance from the batteries. In addition, install a Class T fuse (faster acting) on the positive conductor at the power source (battery or panel) to protect both the inverter and the power conductors. This fuse should be located as close to the power source as practical. ABYC recommends 7 inches, but anything less than a foot should suffice.

You should also have a disconnect switch as close to the power source as practical after the fuse. There are two reasons for this.

First, you must be able to quickly disconnect power to the inverter in the event of a fault that does not blow the fuse. Second, some inverters have a sleep mode from which they "wake up" when a load is applied. When in sleep mode, many inverters will give a false "no voltage" reading on a meter. While a voltmeter might not draw enough to turn it on, a person contacting the output wires would easily cause it to come on with potentially lethal consequences. You therefore must have a way to fully disconnect power to the inverter when working on any AC circuits it supplies.

Most marine inverters will come with a remote panel, or it will be offered as an option. When a remote panel is used, locate it at or very near the AC panel so anyone using the panel or working on the AC system will be able to control the inverter at the same time. This is important for the safety of anyone working on the AC system. I've seen some installations where the inverter remote was mounted in a hidden location and someone working on the system might not be aware that an inverter was online.

ABYC requires a warning label to be fixed to the main AC panel to indicate that the boat is equipped with an inverter. This label is required to be shipped with new inverters, but it is up to the installer to put the label on the panel.

AC output side

Once the DC power supply is set up it's time to think about the AC side of the system. This is where it can get a bit more complicated.

All inverters, except portable units with built-in outlets, will require AC output wiring. A common mistake is to simply connect the inverter output to the AC panel input. There are several reasons not to do this, the biggest of which is that it will allow the inverter to be overloaded.

Many boaters tell me they "manage" the power and remember to turn off the high-load appliances when disconnecting from shorepower, but this leaves open the possibility of making mistakes. Besides, a crewmember who does not understand the system might end up switching something on that should not be on.

Some inverters have an automatic transfer switch or relay to transfer output power to the inverter should input power be lost from shorepower or a generator. This feature allows the inverter to be a backup power source. However, a power outage ashore could cause the power on the dock to be lost while you are away from the boat. If your inverter has automatic transfer, it could end up being overloaded by circuits that are supposed to be serviced only by shorepower, and it will drain the batteries.

Most inverters will shut down under low input voltage or overload, but why take the chance of damaging

The power rating label indicates that this inverter draws up to 200 amps DC.

your equipment? The best solution is to separate those circuits that will run off the inverter (outlets and other light loads) from the heavy loads (air conditioning and water heater). This isn't hard to do and prevents the heavier loads from being placed on the inverter by accident.

On most 120-volt panels, lighter loads such as outlets are often grouped together, making this task easier. Often, separating these groups can be as simple as cutting the power bus bar on the back of the breakers.

Another reason to separate the inverter loads is the requirement that each power source, in this case the inverter and shorepower, must have its own separate neutral bus to prevent

The virtues of "marine" quality

Many sailors wonder why they need to use a "marine" inverter when an inverter of the same size can be purchased at big-box stores for half the price. The reason is safety. Marine inverters are built to UL and ABYC safety standards.

Inverter power can be every bit as dangerous as shorepower, and a marine-rated unit will have the required features and circuits built in to ensure safe operation. These include isolation of the AC output from the DC supply circuit.

Quality is another factor that separates cheaper inverters from marine units. Quality is not just in the durability of the unit, but in the power it produces. Marine inverters are required to meet UL standards for frequency and voltage regulation. Although more costly, marine inverters will operate more safely and last longer. back-feeding in the event of a short in the wiring or in an appliance.

Another option is to add a small branch circuit or sub-panel that will allow the inverter to power a few 120-volt outlets. This is a simple approach but keep in mind that you still need to use breakers for each circuit. Any inverter-supplied outlets should also be GFIC type or on a GFICprotected circuit.

Take care when purchasing and installing GFIC outlets, as not all GFIC outlets will work with all inverters. Check with the inverter manufacturer regarding the use of GFIC outlets, use the type or brand recommended, and be sure to test that they work properly once they are installed.

If the inverter does not have an automatic transfer switch, you'll need to fit a manual transfer switch like those used with a generator. This is required to prevent back-feeding of power to either the inverter or the shore cord.

Inverter/chargers

Inverter/chargers will charge your batteries when shorepower is available. These devices, and any inverter with an automatic transfer switch, will require an AC input power supply as well as AC output wiring. The input power supply should originate at the main AC panel and be a heavy enough gauge wire to handle the full inverter or charger load as well as any load that might pass through the inverter.

If the inverter is an inverter/charger, a fuse or circuit breaker should be installed at the inverter side as well. Most inverter/chargers will have this built in, but check your unit.

Additionally this power supply must have a double-pole breaker at the power source. If this supply to the inverter is off the main panel after the main shorepower breaker, a single-pole breaker on the hot lead will suffice. The green ground wire is run directly to the inverter and should never have a switch, fuse, or breaker in it. If a ground isolator is used, this would be on the shorepower side and should not affect the inverter or its ground.

Water lines close to an inverter, above left, could leak onto it. Also, the ground wire to the case is undersized. A properly sized case ground, above right, will safely carry a DC fault. Wire nuts and Romex (white cable) should never be used on a boat, below. In this installation, the bulky connections are exposed. The wiring connections should be inside the inverter and protected by the cover plate.

Wiring protocols

Another essential is a ground wire to the inverter case. Even small inverters that are plugged into a DC power outlet need a separate ground from the inverter case to an earth ground to eliminate or mitigate shock hazards.

In most installations I see, this ground wire, if installed at all, is the same size as the AC ground wire, but ABYC wants this wire to be the same size as the DC negative wire supplying the inverter. This is so it will handle a DC fault, and its potentially much higher current, as well as an AC fault. This ground should ideally be run directly to the batteries or engine ground. In some cases it might be shorter to run it to a ground bus, but make sure the ground bus is fed by a wire of at least the same size or larger.

It is also important to have the AC neutrals (white wires) for each power source separated from the other power-source neutrals. This is a common error in many installations.

As an example, if you have two shore cords, each cord or inlet will have a separate neutral bus bar and only circuits powered from that shore cord or inlet would be tied to its neutral bus. Adding an inverter would be like adding a third inlet in that it would also have a separate neutral bus for just the inverter loads. This is done to prevent faults from back-feeding through the neutral bus to other power supplies and equipment. The neutral wires are normally tied to their bus bars at or near the main AC panel.

Any loads being powered by or through the inverter should likewise have their own neutral bus separated from the other power source neutral

buses. It is important to do this for safety as well as to prevent problems with possible galvanic corrosion.

An inverter/charger that will charge your batteries when shorepower (or a generator) is available is handy to have, but some of these chargers are capable of supplying 200 amps or more to the batteries at 12 VDC. This translates into 2,400 watts, or 20 amps AC. On a 30-amp shorepower supply this would amount to two-thirds of the available power.

When you return from a day's sailing, the battery charger will be drawing full power right at the same time you may want to use the water heater and air conditioning. All this equipment operating at the same time will easily exceed the available 30 amps, placing a heavy load on the AC wiring and shorepower cord. Truth be told, most 30-amp plugs are good for no more than 20 amps or so continuously and 30 amps only for a short duration.

The high charge rate going to the batteries requires a wire size sufficient to carry it. Depending on the length of the run, this would likely be at least an AWG 10 or AWG 8 wire, but calculate this based on the length of the run and potential loads (see "Marine Electrical Wire 101," July 2014).

Good connections

It's essential that all the wiring be capable of handling the expected loads, including surge loads. Follow basic ABYC and marine practices for electrical wiring and use good-quality crimp-type connectors (see "Electrical Connections," page 34). Never use the screw-on wire nuts commonly found in houses. Use properly sized ring terminals for screw connections and make sure all connections are tight and protected from shorting. Use good-quality marine wire and secure all wires so they cannot be damaged by stowed equipment. Never use solid Romex-type AC wire or welding cable on the DC side.

Although some of the procedures described may seem a bit complicated or even overkill, they really are not. It's important to understand the hazards when operating any AC power supply, but inverters can trick you into a false sense of security due to their simplicity and quiet operation. Once an inverter is set up correctly, following these guidelines as well as the inverter manufacturer's instructions, it should give many years of maintenance-free and safe service and add to your boating enjoyment. \mathcal{A}

Wayne Canning lives on his Irwin 40, Vayu, in Fort Myers, Florida. A marine professional for more than 35 years, and accredited marine surveyor, he's now a full-time surveyor, freelance writer, and consultant/project manager on major repairs. He also runs websites for those restoring project boats. For more information, visit www.4ABetterBoat.com and www.projectboatzen.com.

Interior improvements

Head makeover

Imagination, a little paint, and a few pennies go a long way

was sitting on the head in my Paceship 26, *Pelorus*, when I realized that everything in that small space was a shade of brown. The bulkheads were some kind of brown teak-faced plywood or maybe they were fake teak Formica. Who could tell? They just cleared my elbows fore and aft and they were depressing to look at. Even the toilet was resting on a piece of brown-painted plywood.

Across from the head it was the same: plenty of brown teak trim and the locker doors were a brown plywood. It brought to mind Oscar Wilde's final words as he lay dying in a cheap Parisian hotel room, staring at the ugly, faded, stained wallpaper: "One of us has to go."

It begins

That winter, I removed the toilet and pulled up the plywood. Under it lay

pristine, glossy fiberglass, like new, a thing of beauty. Right off, the smell improved. That plywood had been installed by the previous owner (who liked the color brown well enough that even the boot stripe had been painted brown) and had absorbed more than 33 years of splatters and spills.

Now that the space under the toilet was nice and shiny, the salt-stained and scratched bulkheads looked like hell in comparison. A friend had painted his main cabin bulkheads a few years ago and they looked pretty nice, so I thought I might do the same. He used Rust-Oleum primer and topcoat, which he swore by, but I had some leftover polyurethane primer and most of a quart of gloss topcoat.

First, I pulled all the fittings off the bulkhead on the port side by the toilet and across to starboard by the countertop and sink. It made an impressive pile: fire extinguishers, granny bars and handholds, mirrors, hatchboards, oil-change pump and tank for the engine, spare foul weather jacket, toothbrush and soap holders, light fixtures, and various other gear had all been jammed in there.

I sanded the entire bulkhead surface and filled in all the dings and scars and screw holes with wood putty. Next, I gave it a coat of primer and two coats of gloss off-white topcoat. I painted the locker doors a nice contrasting light gray. The white really brightened things up.

A dark, dreary head compartment doesn't bear contemplating, top left, but with paint, tiles, and a little brass polish, Cliff turned his into a closet fit for a throne, top right.

Gaining momentum

Now, by comparison, the countertop looked like hell. I had never really noticed before, but it was scratched and rust-stained and had 34 years' worth of crud encrusted in the corners. This would take more than a coat of paint. But I had an idea.

I had watched a mason tiling a shower stall in a piece on TV. About the same time, I found in a big-box store some flexible sheets of mosaic tile, each about 12 inches square and backed with mesh. The tiles came in different sizes and patterns, but the ones that caught

my eye were about ½-inchsquare tiles of varied colors and patterns on a single sheet. Although it turned out I only need four sheets, I bought five, at about \$10 each. The individual pieces of tile were of slightly different colors randomly placed, but overall they were a shade of pale green.

I also bought a can of adhesive, a can of grout, and a sponge, altogether about \$65. The grout is available in different colors and shades to match or contrast with the tile, depending on the desired finished look.

After removing the pump, I carefully released the tabs under the sink — a circular stainless-steel item as old as the boat — and removed it. I placed the tiles on the countertop, marked the sheets with a Magic Marker, and used a box cutter to cut away the mesh where the sink and pump would be located.

After sanding the countertop, I applied the tile adhesive, which was like thinned concrete. At first I thought it might be a solvent-based glue and possibly toxic but, happily, the stuff cleaned up with water. I carefully laid down the sheets of mosaic tile, making sure the holes in the mosaic-tile grid lined up with the holes in the countertop.

After waiting overnight, I applied the grout, which was also water-based. Grout is a kind of thin concrete with sand in it that fills the spaces between the tiles and makes them watertight once it sets up. The trick is to lay it in with a flexible scraper, making sure to force out any air bubbles, then to wipe it off the surface of the tile with a damp sponge as quickly as possible. It looked

absolutely terrific.

I waited a few days while the grout set up (it only needed overnight to set up, but I have to go to work sometime) then prepared to reinstall the old sink and pump. But now the old pump, a corroded bronze affair with lots of gravitas and a big handle on the side, looked like hell. I polished it before reinstalling it — a job that took more time than it took to grout the tile. It looked great, but I wasn't happy yet.

After removing the sink and the water pump, center, Cliff cleaned the countertop. He laid the sheets of mosaic on the counter, at left, marked from beneath the cutouts for the sink and pump, and cut the scrim to remove the tiles. The final steps were to glue and grout the tiles, at right.

Cliff used cedar strips to protect the new paint on the head bulkhead where he stores the hatchboards, above left. He secures the boards in place with a line and a jam cleat, above center. A magnet on a strap on the bulkhead and another fastened to the toilet seat hold the seat up when needed, at right.

Further refinements

The hatchboards had been stowed against the bulkhead by the toilet, where they were out of the way. If I put them back there, they would scratch the new paint, so I installed strips of cedar planks about 2 inches wide by $\frac{3}{8}$ inch thick (sold as storage-box liners) on the forward bulkhead alongside the toilet. I screwed them on in a vertical pattern, with each one separated by a few inches from its neighbor.

I found a small plastic cheek block and a jam cleat in my box of extra parts

and used them with a length of parachute cord to secure the hatchboards against the cedar planks to protect the paint on the bulkhead.

But I still wasn't done. I secured a rare-earth magnet to the underside of the toilet seat with superglue and used a magnet on a length of nylon strap secured to the locker door to keep the seat up when the boat is on a port tack. That was the grand finale.

Now the head smells more like a gerbil cage than a Parisian pissoir but, as Borat says, "very nice, very nice." \varDelta

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

That sinking feeling

A first cruise that might have been the last

BY SUSAN PETERSON GATELEY

hough it's not the ocean, Lake Ontario demands a certain amount of respect. My husband, Chris, and I were reminded of this not too long ago during the maiden voyage of our "new" 22-foot trailersailer. Despite our collective seven decades of sailing here, we needed reminding and were humbled by the reminder.

The new boat's name, until we come up with something better, is *LC*. (This stands for Little Craft, and is pronounced Elsie). She's a 1965 Seafarer Kestrel 22. We liked her fullkeel centerboard design and her traditional lines when we viewed her on craigslist. We already were owned by a 32-foot Chris-Craft Cherokee and a 47-foot wooden Tancook schooner when we decided to add *LC* to the fleet. "She'll be our retirement boat," we declared. With her shoal draft, she's trailerable and we can go canal cruising on upstate New York's Erie or Canada's Rideau or maybe even do the Trent Severn and Georgian Bay, once we finally get rid of all the ridiculously labor-intensive big boats.

Our evaluation on a hot sticky Sunday afternoon in July revealed a few issues, among them a very mushy 47-year-old balsa-cored cabintop and sidedecks where poorly bedded hardware had taken its toll over the years. But my spouse has saved three boats from the landfill over the last 20 years and didn't seem too worried about redoing a deck. We figured fixing up a 22-footer would be a piece of cake after the two-year refit of the 47-foot woodie we had just finished. So \$600 exchanged hands and we took possession of the little sloop, sails, and 6-horsepower outboard motor.

The Seafarer was located at the east end of Oneida Lake about 60 miles by water from our homeport of Fair Haven on Little Sodus Bay. Much of the trip would be on the New York canal system, though we faced stretches of open water at the start and conclusion of our passage.

Oneida Lake is a good-sized but shallow body of water in central New York. It's quite capable of kicking up a Chesapeake Bay-style chop of 3- to 4-foot waves with "corners" on them in a very short time. The canal crawlers treat it with respect. Our early-morning transit, however, was over mirror-smooth water and the unproven boat and her elderly outboard performed flawlessly... much to our relief.

We anchored in a cove at the lake's west end, lowered the deck-stepped mast with our pivoting A-frame made of two Sunfish booms lashed to the chainplates, and proceeded into the canal.

New York's 500-plus-mile canal system is unique. It follows the route of the old Erie from Albany to Buffalo with side trips to Lakes Ontario, Champlain, Seneca, and Cayuga.

If Susan and Chris's two good old boats appear to have similar lines, that's because they are related. The 32-foot 1968 Chris-Craft Cherokee, *Titania*, and the 22-foot 1965 Seafarer Kestrel, *LC*, are both designs from the board of Olin Stephens.

Learning experience | That sinking feeling

For lifting and dropping *LC*'s mast, Susan and Chris devised a pivoting gin-pole from two Sunfish booms connected as an A-frame. When disconnected, the booms stow on deck. They modified one boom to serve as a boathook for snagging lines in the canal locks.

Once clear of the harbor, we raised sail, eager to see how our little boat would behave. A cat's-paw darkened the waters around us and she accelerated and scampered off across the wavelets with a will: light helm, quick and lively but steady and solid for a 22-footer in the puffs. This was grand! We knew we had

We traveled a short but scenic portion on the Seneca and Oswego rivers for one day. You could easily spend a summer here exploring backwaters, villages, and wide-water interludes. The secluded oxbows and quiet coves with wading great blue herons, colorful pickerelweed, loosestrife, tall pink joe-pye weed, and white boneset tempted us, as did the deep shade of the forested shorelines. But we had a schedule and so buzzed on under outboard motor through the blaze of a hot July afternoon.

We spent the night at the old canal city of Fulton and locked down the next day to Oswego, where the lake's wide blue waters welcomed us. We raised the mast and considered our options. We had planned previously that, if the forecast called for wind and waves, we would wait it out with our untried vessel. But the boat and motor had performed well during our canal passage. Home was just 10 miles away and the forecast was for offshore winds.

Chancing the weather

True, it was predicted to build to 10 to 20 knots in the afternoon and there was a slight chance of thunderstorms. But it was still morning. We could be home in time for a late lunch. The lake should be pretty flat with a southwest wind and we'd stay close to shore. We decided to take a chance. We both should have known better.

ourselves a winner. We were delighted with our mannerly little \$600 boat and it was sweet to sail again after a long hot stretch of motoring on narrow waters.

By the time we got to the Oswego steam station, a mile or so from the harbor, however, it was pretty obvious that we had more wind than we wanted and it had just enough west in it to push us well offshore as we sailed close-hauled on a port tack. As the lee rail began kissing the water, we were already more than a mile out. We said this is *not* what we should be doing with an unknown boat and a mushy deck. But we kept going.

Ford Shoals lurks 4 miles west of Oswego and, shoal draft notwithstanding, we decided to go outside the buoy. This took us well offshore and *LC* was soon vaulting over a short steep 1- to 2-foot chop pounding along close-hauled with a will. "Ouch!" I thought as she smacked into another wave. "Hope everything holds together. Wonder how those chainplates are." I peered below and stared hard at them, but I saw no signs of movement. Our little craft was a bit overpowered.

"Maybe we should reef," I said.

"We're doing fine," said my spouse. We charged on.

Ominous signs

Perhaps 20 minutes later I thought, "Boy, those lee shrouds sure are loose, I don't remember that much slop in them

Susan and Chris strongly suspect the chainplate attachments on *LC* were not original. After removing them, they jacked the cabintop back to its proper position, at left, and installed a compression post, at right, along with beefed-up knees. They moved the chainplates to the outside of the boat to avoid deck penetrations and the chance of rot hiding underneath fiberglass, veneer, or anywhere else in the future.

when we set the mast up." I looked aft as we heeled to another gust. The backstay was pretty loose too. I pointed this out to my spouse. We sailed on. A worm of fear began crawling around in my stomach. I was growing increasingly concerned that something wasn't right. Suddenly the lake felt very wide and empty without another boat in sight anywhere.

"Let's take a tack and work inshore," I suggested.

"Then we won't be going toward Fair Haven," he said.

"But it won't be as rough in there," I argued. Eventually we tacked. It was calmer, but also very gusty.

"We should reef," I said. A couple of really hard gusts came along. We reefed. But still I felt uneasy and fretted, watching the leeward shrouds flop around. "Man, you could tie a knot in them," I thought. Then I looked below.

A disturbing discovery

Was that crack in the fiberglass covering the chainplate attachment there before? Something about the glassed-in reinforcing knee that ran between the sidedeck and the hull looked different. Then I noticed another crack. And it was showing movement.

"Hey!" I said, pointing below, "I *know* that crack wasn't there before!" My spouse went below and looked. He came back up after about 10 seconds.

"It's worse than you think," he said. "Better get the jib down."

"No it's not," I thought, as I crawled forward to pull the sail down. "I *knew* it was bad."

We realized now the painfully obvious fact: the entire mushy foredeck of our new boat had begun to cave in as the compression thrust of the mast buckled the rotten reinforcing knees the chainplates were attached to. Like wet cardboard, the knees were folding and the cabintop — with no compression post under the mast — was sinking. It was just a matter of time before a catastrophic failure occurred and we were left dismasted, quite possibly holed by the mast butt, and maybe sunk with a strong wind blowing us offshore. Could we hang on to the beer cooler long enough to make it to Canada? We were in deep doo doo now.

Belatedly, we put on our life jackets, started the 6-horsepower motor and headed inshore, motorsailing against the wind with the reefed main. Once we got into smoother water within swimming distance of the beach and began working west again, I dared to peer below at The Crack. It had closed up noticeably with the reduction of sail. Maybe if the motor kept going, we'd be OK. At any rate, if she did fall apart, we knew we could get ourselves ashore.

Racing a cloud

Then I looked up at the horizon and noted the thunderhead out to the west that I'd been watching earlier. It definitely looked bigger. It was developing a real nice anvil top on it too. "I wonder how fast that Bad Boy is coming down the lake," I mused out loud.

The tech department got out his smart phone and checked the radar. "Looks like it'll get here about 5 p.m.,"

he announced. We were halfway to Fair Haven and the little motor was buzzing along pushing us at 4 knots. We would be at the channel by 3. *If* we didn't run out of gas.

Sure enough, as the thunderhead filled the entire western sky, we were motoring down the channel. As the sun disappeared behind it, we picked up our mooring and stowed the sails of our poor little broken boat. We rowed ashore under an intensely dark sky and began loading the car, pausing to watch the moored boats swing into the wind shift.

Then the blast hit. A couple of the shade umbrellas on the restaurant deck by the parking lot took flight. Probably 50 knots.

The faithful Johnson had saved our boat and maybe us too. Two "old salts" with 70-some years of collective experience had learned a little lesson that day. We had gotten overconfident, if not downright cocky. This time the lake cut us a little slack. Next time might be different. \mathcal{A}

Susan Peterson Gateley writes and sails on Lake Ontario. Find her books, including Living on the Edge With Sara B: A Sailing Memoir and Maritime Tales of Lake Ontario on sale at www.chimneybluff.com.

DENIM SHIRT WITH LOGO

MEDIUM-WEIGHT, LONG-SLEEVED S, M, L, XL, XXL \$35.00

GOOD OLD BOAT BALL CAPS STURDY AND DURABLE

DEEP BLUE \$18.00

denim \$16.75

HOODED ZIP-FRONT SWEATSHIRT

enw

7.75 OZ. 50/50 COTTON POLYESTER BLEND. FRONT POUCH POCKETS. STRETCHY ATHLETIC RIBBED CUFFS AND WAISTBAND. AVAILABLE IN RED, ROYAL BLUE, AND BLACK

GOOD OLD BOAT

S, M, L, XL, XXL \$45.00

To order Good Old Boat gear, call 701-952-9433 or visit www.goodoldboat.com

54 Good Old Boat

July/August 2015

1

www.goodoldboat.com

There's no

BY CLIFF MOORE

To oward the end of my summer cruise I happened to anchor for the weekend in Sag Harbor, New York, just east of the breakwater in 12 feet of water. As I was clearing away lines and covering the sails, a small sailboat passed close by. The man at the tiller was inspecting my boat in an odd way. "What's that about?" I wondered. Although these days a 26-foot boat is one of the smallest in most places I anchor, it's not all that unusual. He picked up a mooring just inshore of me and cleared off before we could talk. However, I passed his boat, *Serenity Now*, several times on dinghy trips into town.

On one of those trips past *Serenity Now* I realized we both had Paceship PY26s built by AMF during the 1980s, when the company was diversifying from making bowling balls and pinsetters. (You're right, what *was* AMF thinking?) Still, they made a lot of them, along with 22- and 30-foot versions. It's a nice boat, reasonably well designed and built, and has served me well.

My boat, *Pelorus*, was named after Hannibal's navigator (look it up in Julius Caesar's history of the Second Punic War). She was built in 1980 and first splashed in 1981. Despite suffering several unscheduled alterations and repairs thanks to Hurricane Bob in 1990 (new bow, starboard railing and hull-to-deck joint, bow and stern pulpits, and shrouds) and once more courtesy of Hurricane Sandy in 2012 (fiberglass damage, mostly to the starboard side and transom, and a twisted stern-pulpit swim ladder), *Pelorus* was, I thought, pretty much the same boat I bought from the original owner in 1990 after Hurricane Bob. Well, I did swap out the engine in 2008.

The "other" boat, *Serenity Now,* a Paceship 26 like Cliff's *Pelorus,* does not appear heavily laden, at top. She floats high in the water, which is particularly noticeable at the transom.

Down on her lines

I sometimes think of myself as weighing the same 145 pounds I did when I graduated from high school in 1966. That was a clue. At first I noticed only that *Serenity Now* was powered by a rather large outboard and had a different paint scheme. Then I saw it: she floated higher in the water than *Pelorus* (it was especially obvious at the transom). "Why?" I wondered. "And what difference would it make?"

For one thing, because *Serenity Now* was higher in the water, she had less wetted surface and thus would be faster than my boat under most conditions. Also, because she was lighter, she would accelerate faster in a gust. That appeals to racers. I was on a racing boat once. It had a 3-pound dinghy anchor and a mud bucket for the head. Some people like it light.

But why was *Pelorus* so different? The short answer is that she has more stuff in her. The other boat didn't have a VHF antenna at the masthead, so her owner saved weight from the radio, wiring, and antenna. Even a little weight at the masthead causes the boat to be more tender. Nor was there any sign of a GPS antenna. Maybe his GPS was on his cell phone.

On the other hand, I had just finished adding a tile counter in the head (see "Head Makeover," page 48) and although it is a joy to look at and use — it must have added 3 or 4 pounds. Even though the other boat had an outboard hanging over the stern with all its levering force, *Pelorus* has a Yanmar diesel inboard, a bronze prop shaft, strut, prop, full fuel tank, and a full 5-gallon jerrycan of spare fuel taking up space in the cockpit.

I had a 5-gallon jerrycan filled with water, another full of gas for my dinghy's motor, a 10-gallon main water tank, an icebox with three blocks of ice, and a week's worth of food, both fresh and canned. Not to mention spare sails, cockpit cover and struts, two #27 12-volt batteries, a hard dodger, 80 watts' worth of solar panels, electric charging and monitoring equipment, a bilge full of tools (everything from a miniature screwdriver to a torque wrench for the engine), Yanmar and Honda engine spare parts (including two replacement freshwater cooling pumps for the Yanmar), boxes of screws, nuts and bolts (bronze and stainless steel), a two-burner LPG cooker, a 10-pound LPG tank, clothing, bedding, the rigid dodger and frame, two spare anchors, chain and rode, the head, an 18-gallon holding tank, bottles of cleaning products, and God-knows-what-all. I can't forget the folding bicycle, with a design weight of 27 pounds but a godsend on places like Block Island. I once carried a folding dinghy that I stowed in the V-berth, but as my family grew, it became too small so I replaced it with a Bolger Cartopper that trails

hiding added weight.

... but extra pounds bring peace of mind

everywhere behind me, thus saving about 25 pounds in the forepeak. Oddly, that's about what the folding bike weighs.

It adds up and pushes down

My boat's designed displacement is 6,500 pounds, but there's more than a thousand pounds of stuff aboard. It reminds me of one of the late, great Bill Mauldin's WW II Willie and Joe cartoons. During the worst of the fighting, Willie and Joe, two American soldiers, are soaking wet and slogging through mud up to their ankles in a pouring rain in the mountains of Italy. Both have fully loaded packs, rifles, a machine gun, and ammo. Willie's pack has everything but the kitchen sink and maybe that too. Joe says, "Willie, you're carrying too much junk. Better throw away the joker in your deck of cards."

By now I've probably shed 10 pounds in rust from the iron keel. I suppose I could shed a couple hundred pounds by emptying out all my tanks and tossing away the spare anchors and chain. But I can't imagine that the result would be more fun for me. What would happen when, not if, something breaks? How would I be able to double up my anchor in a blow?

Maybe I need a bigger boat. It seems to be a rule in life, however, that the amount of stuff would swell proportionately and fill the extra space.

After giving it some consideration, I think I'll keep my good old boat. \mathcal{A}

Cliff Moore's bio is on page 50.

Pelorus carries a lot more gear on deck than **Serenity Now**, upper photo and, Cliff surmises, even more below. She floats deeper on her lines so that the tip of her transom is immersed, above.

Cape Dory Typhoon

An ever-popular daysailer approaches 50

BY WAYNE CANNING

et's face it, some boats just tug at a sailor's heartstrings at first glance. Call it love at first sight if you will, but some designs just have that "look" that no true sailor can help falling for. The Cape Dory Typhoon, designed by Swedish-born Carl Alberg, has always been such a boat for me: neither glamorous nor fancy yet with simple flowing lines that hint at an easy nature and make me want to get to know her better. Cape Dory Yachts built more than 2,000 Typhoons between 1967 and 1986, making it one of the company's most successful models. Although small in stature, these charming little boats offer a yacht "feel" in a daysailer package.

For this review, I met John Bremer, who berths his Typhoon at my marina. Together we spent a pleasant afternoon aboard his *Misty*.

Design

Several popular New England boatbuilders, including Pearson, Bristol Yachts and, of course, Cape Dory, built many boats to Carl Alberg's designs. While he is perhaps best known for his Alberg 30 and Pearson Triton, the little Typhoon remains one of his most successful designs and brings a larger feel to a small boat.

The Typhoon, often referred to as "America's littlest yacht," was offered in three models, the most popular being the 18-foot 6-inch Weekender, of which more than 1,800 were built. Similar to the Weekender was the Daysailer, using the same hull but with a larger cockpit. The Typhoon Senior, a larger cousin at 22 feet 5 inches, was not as popular and only 60 or so were built.

The Weekender and the Daysailer measure 18 feet 6 inches LOA, with a beam of 6 feet 3 inches, a draft of 2 feet 7 inches, and a waterline of 13 feet 11 inches. Displacements of 2,000 pounds for the Weekender and 1,900 pounds for the Daysailer do not make them the most dainty ladies in the harbor, but they carry their weight well.

A full-keel boat with a displacement/ length ratio of 331, the Typhoon is not likely to win any races against today's similarly sized boats, but neither will she work you as hard to get around the marks. But then, that is not the point of the Typhoon. Carl Alberg once wrote, "In my designs I go for a boat that you can sail upright without scaring the life out of your family or friends." This is certainly true of the Typhoon.

The Typhoon's sweeping sheer, long overhangs, and gently curved transom are reminiscent of a time when designers understood that form and function were closely related. Interior space and speed alone were not as important as comfort and grace under sail. Her full keel with its 900 pounds of ballast enables the hull to carry her sail well even in a bit of a blow. The rudder, hung from the keel, gives the helmsman just enough weather helm and feel to sense her moods and react to them. Unlike many daysailers of this size, the Typhoon does not require the helmsman to maintain a death grip on the mainsheet, ready to pay out with every gust. Her stability and forgiveness make her the perfect boat for both new sailors and old salts wanting a relaxed ride.

Deck and interior

The Daysailer and the Weekender can be quickly told apart from a distance by the Weekender's distinctive round ports in her petite cabinhouse. The Daysailer, with its larger cockpit and smaller cabin, does not have these ports. A few Daysailers were built without the little cabinhouse and are open all the way to the foredeck. These open boats have a molded cockpit with teak-slat seats where the Daysailer has only molded seat structures. The Daysailer's little cabin or cuddy is primarily used as stowage for sails and gear, but some are fitted with a head or portable toilet.

The Daysailer's cockpit drains into the bilge, so a good bilge pump is needed. Although it's not as safe as a self-bailing cockpit, the boat's stiffness under sail makes up for this drawback.

In the Weekender, as the name implies, there was an effort to create a sleeping cabin. This model has a V-berth and two quarter berths under the cockpit seats. The thought of four people sleeping on this boat is a bit

scary, but a young couple with small kids could get by in camping fashion. The small cabin does, however, provide a private head and has plenty of room for gear. It is also a place to duck into during a passing rain shower. The ventilation is a bit limited but the addition of a fan or two will help. Many owners have fitted a boom tent to extend the livable space when overnighting.

Very early Weekenders had a wooden cabin bulkhead and cockpit similar to the Daysailer. Most have a molded self-bailing cockpit, which is a safer setup in the event of a knockdown.

Both models have large cockpits with plenty of room for four people. You do not sit on her, as you would many boats this size, but rather in her, which further adds to the small yacht feel. Although the seats are not the most comfortable, the cockpit proportions allowed me to brace myself with my feet while the boat heeled without feeling cramped.

In Cape Dory tradition, there is just enough teak on the deck — toerail, cockpit coaming, and some accent trim — to lend character without becoming a maintenance headache. Another feature that adds to her saltiness is the distinctive bronze hardware. Most of this hardware was custom-made by Cape Dory's spinoff company Spartan Metals. Whether polished bright or left with a green patina, the bronze fittings add a feel of yacht quality not found in most other boats of this size.

The sail-handling lines all lead aft to the cockpit. This was a bit of an innovation at the time and makes sailing her easy, even when singlehanding. Tracks are mounted on the cabintop for a working jib and additional tracks are fitted on the toerails for a larger headsail. The sheet winches are mounted along the teak coamings with bronze supports. While they are really more practical as snubber winches, they sure do look good. The end of the

> boom is aft of the tiller so the mainsheet is close to the helmsman.

Rig

Both the Weekender and the Daysailer came with an aluminum mast and boom. A tabernacle mast step on the cabintop allows the mast to be lowered for trailering. Although neither model was shipped with a compression post, many owners have fitted them to prevent the deck from

The Cape Dory Typhoon, facing page, has the gentle, flattish sheer favored by designer Carl Alberg as well as generous overhangs, low freeboard, and a full keel. Our review boat, John Bremer's Weekender model, *Misty*, which he keeps in Fort Myers, has a robust deck-mounted cast-bronze articulating mount for the 6-horsepower outboard, above center. The Typhoon has just enough teak on deck that varnishing it is not too daunting, above left. The compression post in the cabin has been added to keep the deck from flexing. Just inside the companionway, above right, John installed shelves to stow a few essential items, like a hand-bearing compass, GPS, and knife.

sagging. The Weekender came with a fractional rig while the Daysailer has a masthead rig. Their sail areas are almost identical, with the Weekender having 155 square feet and the Daysailer 157 square feet. The mast height on the Daysailer is slightly greater at 25 feet 2 inches than the Weekender's 23 feet 9½ inches. Halyards are internal and led aft to the cockpit. The chainplates for can shrouds and

chainplates for cap shrouds and lower shrouds are through-bolted to the deck. A forestay and backstay complete the standing rigging.

Although the rig is fairly simple and easy to sail, many owners have fitted roller furling for the jib. The boats originally had boom roller reefing for the mainsail but, as this system never was satisfactory, most have been converted to slab reefing.

Construction

The Typhoon was likely overbuilt for a vessel of its size. The traditional hand layup of mat and woven roving exceeds the scantlings of many modern 30-footers. The deck is set on an inward-facing flange with bonding resin and screwed in place. More fasteners are added with the installation of the teak toerail. The deck has a balsa core with plywood reinforcing in highload areas, such as under cleats and chainplates. The ballast is internal, cast into place with low-shrink resin and then glassed over, so there are no keel bolts to worry about. Glassed-in floor members provide additional support and stiffening. The fiberglass rudder is built in two halves with a foam core and welded metal frame.

Under way

The day we took John's *Misty* out for a jaunt across Charlotte Harbor it was blowing a pleasant 5 to 10 knots with a small chop of 1 foot or less. We easily motored the short distance to the bay with his 6-horsepower Yamaha 4-cycle outboard. This is about the size of motor most owners report is needed for the Typhoon.

Cape Dory Typhoon Weekender

Designer Carl Alberg LOA: 18 feet 6 inches LWL: 13 feet 11 inches 6 feet 3 inches Beam: Draft: 2 feet 7 inches Displacement: 2,000 pounds Ballast: 900 pounds Sail area: 155 square feet Sail area/disp. ratio: 15.6 Disp./LWL ratio: 331

The circular port in the small, delicately proportioned cabin trunk is characteristic of the Typhoon Weekender.

Once out of the channel, we quickly set the sails and *Misty* set off on a gentle tack a bit off the wind.

Although by no means a sport boat, the Typhoon is still a fun boat to sail and can handle wind and waves

that would keep other boats her size in port. This does not mean she cannot go out in light air as well. Her weight can be an asset in light and heavier air as she will carry her way through waves that would stop many boats of her size in their tracks. She does not point as high as some, about 50 degrees or so off the wind, and with her full keel needs some way on before you round up and tack, but she is forgiving of a helmsman's inattention on most points of sail. You can feel a little weather helm but not so much as to make you work to keep her from rounding up. Set right she will even sail herself. Downwind she tracks well and, again, will almost sail herself; a beam reach will require just a bit of pressure on the tiller.

John enjoys sailing *Misty* solo and has made a few modifications, including roller furling on the jib, to make this easier. John likes knowing that he can take her out in weather that would keep many at the dock. He describes her as a cork on the waves. *Misty* is not just a heavy-air boat, he says, but also does well in lighter air. For a small boat she is surprisingly comfortable and that, after all, is what Carl Alberg wanted.

Resources

Cape Dory Sailboat Owners Association is an excellent source of support for owners and fans of all Cape Dory models. www.capedory.org

Typhoon Fleet Communications For Typhoon-specific information: Ned Crockett nedshirleyc@verizon.net

What to look for

Anyone thinking of owning one of these little yachts should be aware of a few things to watch out for when shopping. The biggest issue would be the balsa core in the deck. Core rot is a problem on many boats of this vintage and the Typhoon is not immune. Sounding with a surveyor's hammer or a moisture

meter will help. Also, the gelcoat may be in poor condition and this is particularly true on the deck. Look for stress cracking around high-load areas such as the chainplates. If the boat has been outside most of its life, the decks may need painting. The chainplates should be inspected for looseness, damage, and corrosion, and the rigging may need

Comments from owners of the Cape Dory Typhoon

"I carried an Igloo cooler that doubled as a honeymoon insert for the V-berth, a 4-horsepower Johnson that stowed under the cockpit sole when not mounted on a sturdy bronze stern bracket, a one-burner camping stove, and the ever-popular red bucket.

"She was stiff in a breeze, rode well in a sea, pointed acceptably well for a low-aspect rig, and featured a long comfortable cockpit. I had a sailmaker construct a tent-like rig to extend the cabin into the cockpit.

"Things to watch out for: the tiller attached to the rudderpost with a cap that relied on compression. A setscrew should absolutely be added. The two small portholes were fitted into the deckhouse without satisfactory flanges; these should be retrofitted. And if you intend to take her in harm's way, consider installing pads under the deck to through-bolt cleats, winches, pad-eyes, etc."

-Andrew Grainger, Pemaguid Harbor, Maine

"The worst thing about this boat is the trailering aspect. You'll want a stout vehicle, a trailer with extender tongue, and a good boat ramp. The mast is fairly easy to rig, however, and two people can set her up in about 15 minutes. Buyers should check the cabintop on the Weekender model for cabin sag at the mast step. I classed in an oak beam on the cabin overhead and installed a compression post

below it to prevent sag when the rig is loaded. If the original gate valves for the cockpit drains are still there, replace them with seacocks. The rudder stock where it passes through hull and cockpit sole should also be checked for wear or leaks."

> -Paul Danicic. Minneapolis, Minnesota

"My only complaint was we had to balance the load because a small amount of water would very often come up through the scuppers if everyone was sitting in the cockpit."

-Steve Tille, Omena, Michigan

"She was kind of poky in light air. Setting a 130 percent genoa or cruising spinnaker in a sock answered well in those situations. However, when it got snotty and all the other boats had run for cover, she gave us what Mr. Alberg intended, streaking along, shrugging off the big gusts, and thrilling us to the core."

-William Ronstadt, Tucson, Arizona

"One thing I never appreciated was the outboard hanging on the transom. Had I kept the boat, I seriously think I would have looked into converting to a miniature diesel inboard."

-Rick Weiland, Door County, Wisconsin

replacing. Check the cabintop for signs of deflection under the mast step. When checking below the waterline, be sure to look carefully at the rudder and its fittings for signs of damage or swelling.

Typhoons currently sell for as little as \$1,500 to as much as \$12,000, depending on condition and whether a trailer is included.

Conclusion

The Typhoon's graceful lines and timeless beauty will please the eye of a landlubber and will melt the saltencrusted heart of a hardened sailor. If you are looking for a small boat to introduce your family to sailing or a boat on which you can enjoy some easy relaxed time, the Typhoon may just be your lady. \mathcal{A}

Wayne Canning's bio is on page 47.

Phone 607-749-3165 • Fax 607-749-4604

performance.props@verizon.net www.performancepropellers.com Spyderco Salt Series folders and fixed blades are made with H-1, a nitrogen based, non-rusting blade steel.

See your local dealer or visit us at www.spyderco.com

Σρυσετο • 800.525.7770 • 820 Spyderco Way, Golden, CO 80403

0

Custom Fabrications

- * Stainless stem plates/anchor rollers to replace worn out aluminum castings
- Stainless davit systems, radar masts, wind generator and solar panel posts
- Stainless platforms to upgrade your sailboat
- Custom fabrications using our new waterjet capabilities

We take pride in using only North American raw materials.

STAINLESS OUTFITTERS 800-268-0395

SPYDERCO

S WE SHIP ANYWHERE IN THE US AND CANADA www.stainlessoutfitters.com

BoatLIFE

LIFE-CALK® TWO-PART POLYSULFIDE SEALANT Long lasting, permanently flexible. Excellent resistance to teak oils, gasoline & diesel fuel. Fast curing. Can be sanded.

www.goodoldboat.com

Battery Catch 22

Chargers that work only with a charge

e turn the key to try to start the engine and ... nothing. This might not have been so bad, but our Pacific Seacraft Dana 24, *Sockdolager*, was bashing around, partially in the water, still in her cradle, hanging from a giant crane off the side of a container ship in Oakland harbor. Both of our 100-amp-hour batteries were flat dead.

After two years spent cruising from Port Townsend, Washington, to New Zealand, we had shipped our boat across the Pacific to San Francisco Bay. We would sail home from there. The batteries were dead because the boat had been stowed in the hold rather than on deck where the solar panel would have worked. All the little LED lights and displays on the various electronic devices used enough power in 19 days to drain the batteries to less than 5 volts.

The plan for retrieving the boat from the container ship was for friends with another Dana 24 to deliver us to our boat as she was lowered into the water. We would go aboard, start the engine, and motor to our temporary berth 6 miles up the estuary in Alameda.

The first part of that plan went fine. The rest was a fire drill of getting lines attached, signaling the crane operator to drop the cradle out from under us, being pulled from in between the two big cables on each side, waving goodbye to the ship's crew and the stevedores, and being towed away by our long-suffering friends.

At least it was a sunny day, so I immediately checked the battery monitor to see how many volts were flowing in from the solar panel. I was hoping for 14-plus. But the number was zero. Actually, not even zero since the display was blank. That was curious, as it had been working just fine before *Sockdolager* went on the ship. But I had hope that, after a little while in the bright sun, charging would commence.

A couple of hours later we were at our berth and the display was still blank. No problem! We'd borrow a power cord and charge with the Magnum inverter/charger.

I plugged it in, switched on the breaker, and went below with high hopes only to find the display *still* blank. This was even more curious. Could both chargers have broken at the same time?

A puzzling discovery

Time to read the manuals. First, a complete read-through of the Morningstar SunSaver MPPT Solar Controller manual revealed nothing helpful; it should be working. Now it was time to call Morningstar's tech support. A helpful and knowledgeable person there seemed surprised that I didn't know that my batteries would first need a charge in order for the charge controller to work.

"No sir," he said, "that controller is not designed to charge a dead battery."

On to plan B. I read the manual for the Magnum inverter/ charger. Again, nothing seemed obviously wrong. Time to call their tech support. You guessed it: same story.

"No sir, that charger is not designed to charge a dead battery."

I was flabbergasted. Both of our battery chargers need the batteries to have a charge in order for them to be able to charge the batteries.

So as things stood, we had two dead batteries and two chargers that were working as designed and would not charge them. What next?

We needed to get some voltage into the system so the chargers would wake up and do their jobs. At an auto parts store, I bought one of those batteries used to jump-start a car engine. It didn't have enough juice to start the boat's engine, but it did provide enough voltage to get both chargers to come alive. After 15 minutes with the Magnum charger running, I could remove the jumper battery and all was well. Both chargers worked fine thereafter.

I'm puzzled as to why neither charger could use incoming power to allow it to charge when the batteries were dead. Whatever the reasons, I just wish that both companies had clarified their products' capabilities in their marketing materials and user manuals.

Next I'm going to make sure the fridge doesn't need to be cold before I turn it on. $\mathcal A$

Jim Heumann, a Dana 24 sailor, met Karen Sullivan, also a Dana 24 sailor. They joined forces, sold one Dana 24, and sailed their Dana 24, Sockdolager, from Port Townsend, Washington, to New Zealand from 2011 to 2013. Read about their travels at: http://karenandjimsexcellentadventure. blogspot.com.

mmm

Continuous rope loop

Ferman taped and pulled back the outer sheath, exposing the core.
 He sewed the two core pieces together with two runs (i.e., up and back).
 He whipped the ends and middle tightly.
 Ferman discovered that covering the connection with ½-inch heat-shrink tubing resulted in a stiff section of line.
 Wrapping with silicone Stretch & Seal tape gave him the more flexible result he needed for use with his furler.

A non-splicer has it all sewn up

BY FERMAN WARDELL

or all of us out there happily sailing about with Hood Seafurl LD headsail-furling systems that have a continuous-loop furling line, the day will (maybe has!) come when it's necessary to replace that line. It happened to me on *Wind-Borne*, my 1985 Hunter 28.5.

Easy, you say. Nope. Oh sure, it's easy to buy the perfect line for the furler, but can you splice a multi-braid line? While on your boat? Well, that's what it takes. To make matters worse, the connection cannot be much larger in diameter than the line itself.

But there's good news here. In my research, I learned that line can be sewn, yes *sewn*, together instead of being spliced. I read the few sources I could find and decided to test the idea. I purchased several feet of the required ⁷/₁₆-inch multistrand braided line and got to work experimenting. I'll save you the failures and jump ahead to what worked.

You can see the results in the last two photos. The black heat-shrink tubing was rather stiff (4), but you need the line

to be flexible. I obtained this additional flexibility by using white silicone Stretch & Seal tape (5). We'll see how this tape holds up in use and weather.

I performed a couple of tests. Pulling against the connection with all my strength, I could not break it. Pulling it while standing in a loop with my 165 pounds didn't seem to faze it a bit.

It'll be great to have my furler back to its former self! \varDelta

Ferman Wardell began sailing an 11-foot Styrofoam Snark on a 30-acre lake in North Carolina. He later owned a 12-foot Scorpion, a San Juan 21, and now his good old Wind-Borne, a 1985 Hunter 28.5 that he cruises and races on Lake Norman near Charlotte, North Carolina. He has sailed extensively in the Caribbean and recently received his U.S. Coast Guard Merchant Mariner Captain's Credential. Ferman enjoys doing boat maintenance, repairs, and "improvements."

Night light An inexpensive LED shows the way

BY ALLEN PENTICOFF

e all know about using dollar store LED yard lights for finding our way home in an anchorage. Another handy use we've found aboard *Thebote*, our MacGregor 26D, is to charge one up in the sunny spot of the winch-handle pocket (we rarely use the handle) and then at night bring it down into the cabin, where a quick twist of the top removes the solar LED assembly.

We place the light upside down on top of the cooler that serves as our table. That one small white LED bulb chases away the otherwise complete darkness of our cabin. It creates just enough light so we can get up and find something or go to the head without turning on brighter cabin lights or locating a flashlight. It's not so bright as to disturb sleep. As a night light, it's just right. \varDelta

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

Solar-powered LED landscape lights have many "off label" uses on board. Allen sets this one in the winch-handle pocket during the day to charge, then uses it in the cabin as a night light.

HOOPERSYACHTS.COM NEW & USED SAILBOATS SAILBOAT HARDWARE RIGGING & SWAGING QUALITY SERVICE 800.377.8795 651.436.8795 TIPS ON HOW TO SAVE FUEL COSTS BUY A SAILBOAT WWW.HOOPERSYACHTS.COM

continued from page 9

But wait! There's more!

After we sent Dale a copy of the issue as Mike requested, we got a note from Dale saying:

"Love your *Good Old Boat* magazine and the fine article in the July 2014 issue about the Oxford Dinghy that I built for 10 years. After selling the dinghy molds, I built the powerboat pictured, a sailor's powerboat: 45 feet long, single engine, bow thruster, etc. My wife and I lived on it for 16 years. It was four years in the building. Please enter a one-year subscription to your magazine."

-Dale Denning, Marathon, Fla.

Boat ladders

I read the article on boat ladders ("Boarding Ladders 101," May 2015) with interest, as it reminded me of an incident sailing on Lake Michigan a few years ago. My brother had jumped overboard for a quick swim to cool off, but then found the freeboard on my Ericson Cruising 36 a bit too high for him to climb back aboard. To get him back on board, we used a technique that proved quite handy. We tied one end of a line to a mid-deck cleat and lowered a long loop of the line into the water. We then put the free end of the line around a winch. My brother simply stepped on the loop of

line in the water and we hoisted him aboard using the winch. A boat ladder would have been a little more elegant, but this approach works every time.

-Joe Duehmig, Milwaukee, Wis.

PFD or posthumous Mercedes

I always wear a life jacket. I have a friend who does not know how to swim a stroke and who never used to wear his life jacket. One day he came in when it was blowing upwards of 20 on the lake. He sat down and I offered him a beer and said, "Fred, you will fall off that boat one day and the last thing you will see as you sink beneath the waves is that pretty wife of yours on her cell phone. She is not calling the Coast Guard, she is calling the Mercedes dealer."

He wears one all the time now.

-Thor Powell, Brighton, Mich.

Escapist literature, perhaps?

We received a form letter from an "Authorized Employee" (who will go unidentified, primarily because we can't read the signature) of a Department of Corrections institution (which will go unnamed in case there are any innocents to protect). This special form is titled: NOTICE OF REJECTION OR IMPOUNDMENT OF PUBLICATIONS.

As it turns out, an inmate there received our November 2014 issue, but it was "impounded pending review by the Department's Literature Review Committee because the Warden or designee believes that the publication may contain subject matter that is inadmissible per Section (3) of Rule 33-501.401 F.A.C."

The explanation is on the back of the form: "Pg 18 & 19: connecting electrical wires to batteries."

-Good Old Boat Editors

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

Production multihulls

Since production fiberglass multihulls were first built in the United States in 1965, many have become good old boats. Before 1965, multihulls could be purchased in Europe and some were also sold in the U.S. A Sailnet link offers some history on fiberglass production multihulls from Europe: www.sailnet.com/forums/other-brands/83658-corinthian-trimarans.html.

On our free website, Cal Markwood and I have specifications, as well as performance and stability data, for more than 1,000 multihulls, most of which are production designs. We are in our 10th year of providing services to the multihull sailing community. With the advent of the newer, faster designs, these older multihulls are still very good boats. We think it is worth the time and effort to tout their qualities, so come check some out: www.multihulldynamics.com.

-Pat Ross, Milton, Fla.

Black locust

I'd like to recommend an excellent wood, and also an excellent supplier of it, to good old boaters who are improving their boats. It is black locust, an extremely hard, strong, and virtually rot-proof wood — its life in wet, not damp, soil is 70 years or more. It is very hard to find, mainly because most mills find it quickly dulls their carbide tooling. It is also to my eye quite beautiful and it glues well with epoxy, holds screws extremely well, and is much cheaper than alternatives.

The problem is finding someone willing to mill it; and for this I can enthusiastically recommend C.C. Cook & Son Lumber in Reelsville, Indiana. It's a years-old family business with huge machines that could probably manage metal if they had to, and people who spent the better part of a day making sure everything in my small order was just right. I ordered 12 2½- x ¾-inch x 9-foot boards, that I angled into the back of my Subaru (a trucker wanted \$400 to deliver them to me). The lumberyard wanted \$107 total. A bonus was the back-roads drive back to Southwest Michigan through beautiful Indiana. Good karma for the boat! -Stephen Sittler, Sawyer, Mich.

Here's Henry Barousse at the helm of his 1980 Hunter 30, Summer Wind, dueling toward the finish line against his old friend and sailing buddy Raymond Swinney aboard his 1978 S2 9.2, Reivers, during the third race of the Corinthian **Sailing Association of Lake Pontchartrain (North Shore** Fleet) 2015 Winter Series. Send your high-resolution sailboat photos to jstearns@ goodoldboat.com and we'll post them on our website. If we publish yours here, we'll send you a Good Old Boat T-shirt or cap.

Introducing ...

A suspense novel written for sailors by sailor/author Tom Wells.

Paul Findlay is living his dream, sailing the Great Lakes aboard his beloved sailboat and writing about his voyages to pay the bills. When Paul receives a cryptic call for help from his old college roommate, Rich Perry, the dream quickly turns into a nightmare. A deadly game of cat and mouse across the greatest of the Great Lakes begins . . . and the cat has all the modern advantages.

About the Author

Author Tom Wells is an engineer, a longtime sailor, and a Contributing Editor and boat reviewer for *Good Old Boat* magazine.

He has a sequel in the works, featuring Paul Findlay and his sailboat in another nautical setting.

What readers are saying

This book is addicting. It practically reads itself ... [*Superior Run*] could be the offspring of Tom Clancy meeting Sandra Brown on a Great Lakes cruise ... Tom Wells' knowledge and passion of sailing and the Great Lakes makes this a richer read, enough to whet your interest in one of the most beautiful spots on Earth. I will be awaiting the sequel(s). — Dave. NY

An imaginative plot and excellent narrative pull the reader in. — John, RI

Superior Run is a true sailor's novel. — Karen, OR

Available through: Amazon, Kindle Reader, Barnes & Noble, and Tower Books.

Product launchings

Lantern and gadget charger

Secur just keeps adding to a long and impressive list of clever, useful products. While Secur's market is mostly land-based campers, we all know that living on a boat is camping in luxury. Its newest product, the Four-in-One Light and Power Bank, model number SP-1100, multi-tasks as a 17-hour 140-lumen flashlight/lantern, a 34-hour emergency red flasher, or a 2,000mAh battery backup charger for smart

phones, tablets, and other digital devices — one of those must-have items whenever you go off the grid! The retail price is \$44.95. The only improvement we sailors could ask for would be the option of a steady red light as well as the flasher. For more information, go to www.securproducts.com.

for the iPad and iPhone from Digital Yacht. After some testing last summer in our cruising grounds, I have to say this app is easy to use and full of useful features. It seamlessly links the latest NOAA digital vector charts for the entire United States and displays features including current position, track, course, speed, ETA, VMG, and bearing and distance to the next waypoint. The app needs a GPS data source, but there are many solutions to that problem available at a reasonable cost. (Using the GPS in your iPad or iPhone quickly drains your battery.) NavLink US is priced at \$29.99 from the App Store. For more information, go to www.digitalyachtamerica.com. –Michael Facius

Compact emergency starter

The Cyntur JumperPack mini jump-starter could be your salvation when your boat's starter battery doesn't come to work some morning. This Li-ion battery pack is compact (6 x 3.3 x 1.3 inches), weighs less than a pound, and comes totally self-contained in a handy carrying case. The JumperPack mini contains a USB charging port, a 200-lumen flashlight with a steady and a flashing mode, an AC adapter for charging, and a jump-starter cable with large alligator clips to attach to your 12-volt battery.

The 12,000mAh Li-ion battery delivers 250 amps of starting power and can hold its charge for up to one year. In addition, the USB port delivers 2.1 amps to charge any phone or tablet. The Cyntur JumperPack mini is available directly from

for \$99.99.

To be featured on this page, items must be new products. If you would like your product featured here, please send an email to Michael Facius, michael@goodoldboat.com, or call him at 612-605-8319. By the way, readers, if you contact a marine supplier mentioned here or elsewhere in our magazine, please remember to tell them that *Good Old Boat* sent you. NORDIC Dt

Safe, efficient, quiet. (
0.5 to 0.85 amp/hr draw.
Increases oxygen in cabin.
Dry, comfortable heat.
Thermo comfort control.

Please visit our web site: www.wallas.us

2144 Westlake Ave N Suite D, Seattle, WA 98109 206-285-3675 fax 206-285-9532 Toll free: 1-888-606-6665 email: info@scanmarineusa.com

wallas

BETA MARINE

RELIABILITY AND MORE!

Engine Model	Vessel	Engine Model	Vessel	
Beta 14	Albin Vega	Beta 30	Catalina 36	
	Cape Dory 28	Beta 38	Sabre 38Mk1	
Beta 16	Catalina 30		Valiant 37	
	Tartan 30		Westsail 32	
Beta 20	Catalina 30	Beta 43	Hinckley B40	
	Contessa 32		Valiant 40	
	Island Packet 27	Beta 50	Bristol 41.1	
	Pearson Vanguard		Morgan 41 OI	
Beta 25	Alberg 35		Morgan 45	
	Morgan OI 33	Beta 60	CSY 44	
	Alberg 37			
	Pearson 35	Some of our installations		

Engine Model Beta 38 Dip Stick Oil Change More than just a reliable engine...all of our new engines are equipped with a serpentine belt Fuel Oil Filter drive system for Raw Water the alternator at Pump no extra cost! Fuel Lift Lube Oil concept! Engineered to be serviced easily Beta Marine Superb Propulsion Engines, using Kubota Diesel • From 13.5 - 100 hp including our famous Atomic 4 replacements Also available: Marine generators up to 30Kw **BETA MARINE US Ltd.** PO Box 5, Minnesott Beach, NC 28510 877-227-2473 · 252-249-2473 · fax 252-249-0049 info@betamarinenc.com

www.betamarinenc.com
Good old classifeds

Boats for Sale



Camper & Nicholsons 8.80m 1972 motorsailer, 29'. Twin keel, shoal draft. Recent 50-hp Perkins w/2,000 hrs. Dinghy w/2 OB. Recent sails, new standing rigging, AP, 2 chart plotters, SSB receiver, new VHF, new bottom. Life raft, MOB gear, 3 anchors. Ready to go to the Keys/Bahamas/Cuba. \$20,000.

Kenneth Clark dianakenclark@gmail.com



Rhodes Whistler 38 1967. Diesel, navigation, plumbing, and electric upgrades. Pacific Northwest delivered. Vancouver, BC. Inquiries and offers welcome. \$47,000 USD.

Wilfrid Worland judywilf@telus.net www.whistlersdaughter. wordpress.com



NorSea 26 1979. Raised salon w/tandem-axle trailer. Yanmar engine with 320 hrs. RF. box 2 anchors. *** Fridge/fr * ; pres water, * copane 2-burn ven. vacuu 1800W inve to aft, full Stored cock 4,000. indoors. Lan raters 217-653-2384 waterse@adams.net



Nonsuch 30 Ultra 1985. Lovingly maintained, spacious coastal cruiser seeks new captain. Not ready to retire yet, but her current captain is. Always sailed in fresh water. Off-season stored indoors since '07. Nearly new sail and lifelines, new house batts and 20A charger. Fully equipped for comfortable cruising. Roomy 11'8" beam w/dinette layout and pullman double berth forward. Westerbeke 27-hp diesel, optional Zodiac inflatable w/6-hp OB. Muskegon, MI. \$55,000.

Carol Faber faberrc@comcast.net http://flic.kr/s/aHsjHKcdrh



Pearson Vanguard 32 1965 Philip Rhodes classic. A joy to sail. Current owners have spent the past 7 years restoring and upgrading her while maintaining many original details. Move to Europe forces reluctant sale. Recent upgrades include Yanmar YGM30G diesel, running/standing rigging, total rewiring, new main, 2-burner Force 10 propane stove w/ oven and broiler, Lavac head, 25-gal holding tank. Custom interior cabinetwork in teak and mahogany. Furuno GPS, ICOM VHF, much

more. San Diego, CA. \$21,500. **Pamela Ploeger** 858-888-3635 pamela.ploeger@dartmouth.edu www.sailboatlistings.com/ view/48526



Pacific Seacraft Crealock 34 1988. Osprey made the return voyage from La Paz, Mexico, to California in July '14. The PS Crealock is famous for strong. heavy construction and a very seaworthy design. Sailed extensively in the South Pacific. Made the passage from Seattle to La Paz during a stormy early winter period. Maintained. Improvement list and '10 survey available by email. Eureka, CA. \$79,900. **Donald Snyder** 541-890-4168 donaldesnyder1@gmail.com http://bit.ly/1I3fOtJ



Morgan 42 Mk II

1973 sloop. Same owner 42 years. Feature boat in Apr/May '12 issue of Good Old Boat. Meticulously maintained, freshwater boat. Re-engined w/Westerbeke M38 diesel. Re-rigged w/Charleston Spars mast and boom, shrouds, turnbuckles, solid boom vang, and RF. St. Joseph. MI. \$49,500. **Ronald Rueckwald** 269-313-2586

Swan 43

1972. Hull #64 out of 67. Fully equipped world cruiser. Fridge/ freezer, watermaker. Needs cosmetic work. Call for complete list of upgrades. Powerful sailboat! LaPointe, WI. \$50,000 firm. Gary Krubsack 715-747-2350 Mzlb@aol.com





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

fsbrockman@hotmail.com



Vineyard Vixen 34 1980. Classic double-ender. Nimble, distinctive, and handles well under all sailing cond. Featured in the January 2015 issue. Vixens were built to high standards of structural integrity and quality finish with a semi-custom design. The teak deck, butterfly hatch, and elegant lines turn heads. Self-tending club sail enhances singlehanded sailing. Full inventory of sails. Light and airy cabin w/good headroom. Amenities. Well maintained. RI. \$56,000.

David Lyon 401-461-8993 VineyardVixen@verizon.net www.sailboatlistings.com/ view/48559



Kittiwake 24

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

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



Rhodes Bounty II Beautiful 1957 41' Phil Rhodes sloop strongly built at the dawn of the fiberglass era. Completely restored inside and out by Deltaville Boatyard over the past several years at a cost far exceeding the current asking price. In the water in Deltaville, VA, in sailaway cond. \$44,750. Skip Madden 804-436-7131

skipmadden@gmail.com



O'Day 37

1979 center cockpit. Featured in the Jan/Feb '13 issue of *Good Old Boat.* Great sailing boat, formerly owned by Annapolis Sailing School. Currently on the hard at Herrington Harbour North in Deale, MD, just south of Annapolis. For sale through Midcoast Yachts, Tom Aga. \$27,500.

Philipp Theune philipp.theune@gmail.com www.yachtworld.com/ boats/1979/O'day-Center-Cockpit-2754385



Ranger 28

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

770-498-1678



Ranger 33

1978. Second owner since '79. All years on Lake Superior. New rig, drainage system, head, keel step, depth sounder, cushions, and companion door. Rebuilt mast and engine drivetrain. Atomic 4 in exc cond. Restored teak interior and original gelcoat hull in beautiful cond. On Madeline Island, Lake Superior. Madeline Island Yacht Club membership may be negotiated as part of sale. \$24,000.

Joe O'Brien 763-234-1031 joe@callta.com



Bristol Sloop 30

1972 Halsey Herreshoff design. Originally sold for \$80,000. Unexcelled performace to windward. Outstanding heavy weather performance. Extremely fast in light or heavy weather. Repowered '02 with Yanmar 3GM30F w/low hrs. Transmission, drive shaft, and new fuel tank all installed by ABYC certified mechanics. ST 4000 wheel Autohelm. Custom-cut cockpit cushions. Beautiful mahogany interior. \$11,500. Ken Delhagen 804-938-6869 kdelhagen1@tampabay.rr.com



Seaward 24

1987. Explore snug low-draft anchorages w/draft 2/3.5' CB u/d. Sailed Casco Bay. Buying larger boat. Electric-start DF15 Suzuki long-shaft. Trailer rebuilt '10. Porta Potti '14, pressure water, Origo alcohol 2-burner stove, shorepower transformer, deep-cycle and starting batteries. Seaward's CB design problem corrected. CB replaced and refastened in '11. Can be delivered in ME and will help set up. Information pack available. Turner, ME. \$12,000. **Water Reynolds**

water Reynolds 207-240-1407 wereynoldsllc@gmail.com



Tripp 30

1960. Classic sloop designed by renowned Bill Tripp, Jr. Long overhangs and beautiful lines; a Bermuda 40's little sister. Very good cond. Hull #1, Werkspoor Holland, solid construction, fully glassed hull-to-deck joint. Restoration includes: Beta Marine (Kubota) 16-hp diesel, Andersen ST winches, RF jib, Lewmar windlass, nav system w/AP, complete new Awlgrip, new head, S/S holding tank and fuel tank, reinforced chainplates, etc. Shelter Island, NY. \$18,000.

Mark Vollmer 917-620-1165 markvollmer@yahoo.com



Pearson 26

1973. Classic pocket cruiser in great condition. Balance. 8'8" beam, 4' draft. 9.9-hp OB, 4 sails in exc cond. Depth, new VHF, 2 marine batts w/solar backup. Full head and galley. Newington, NH. \$7.400.

Don Ash 603-332-1881, 603-332-6889 ashpt@aol.com



3 boats for sale 1985 Catalina 25, \$5,900. \$11,000 w/V-10 tow truck. 1957 Interlake 18, \$950. Chrysler 15 Daysailer, \$150. All boats are fiberglass w/swing keels. Good trailers. Catalina will be at White Lake Municipal Marina, Whitehall, MI, summer '15. Details and photos available via email

> Michael Murphy 269-624-6583 modalservi@aol.com



Cape Dory 25

1973 classic cruiser. Trailer available and included in price. Yanmar YSM 8 diesel rebuilt and runs well. Maintenance records available. Interior repainted. Cushions in great cond. Halyards recently replaced. All original parts included: stove, Bimini, galley table, etc. Tampa, FL. \$5,000. Fenn Giles 813-766-4302 fenn.giles@yahoo.com

Good old classifieds



Nimble Kodiak 27 1998 pilothouse yawl. Rarely offered. Long keel, 18-hp diesel w/3-blade prop, 2 steering stations (wheel inside, tiller in cockpit), marine toilet, holding tank, 1 burner alcohol/electric stove, 12/110V fridge. Sleeps 3 in comfort. 6'7" headroom in pilothouse. 2 previous owners. Many upgrades, 110V GFCI outlets, 12V lights. Draft 2'10" allows ultimate gunkholing in comfort. RF, all lines managed from cockpit. Elkton, MD. \$29,900.

Craig Poole 717-842-4298 CraigMPoole@mac.com



Pearson Pilothouse 36 1980. 36'x12'. See *Good Old Boat* Sept '13. Low hours. 4'6" draft. Fresh water, Sandusky OH. \$27,500.

Mike Browne mikebrowne@horizonview.net



Helms 27

1982. Well cared for; in restoration process.Custom sail and winch covers. Extensive restoration on the interior. New bottom paint. Running rigging and most tackle 1 year old. Restored mainsail, 3 headsails, and spinnaker w/ spinnaker and whisker poles. New lifelines. 13-hp Yanmar diesel. Many extras. A dream to sail, responds quickly and is very forgiving. Lexington, SC. \$13,500. Art Martin

843-343-5480 amartinggc@gmail.com http://swampfox27.weebly.com



Pearson Alberg 35 1963, hull #77. You won't find a yacht of this vintage in this cond. Many upgrades. Solid boat for cruising or blue water. A pleasure to sail! Lots of new items installed last year including engine bed and motor mounts, Cutless bearing, stuffing box, oil pan, starter, prop, VHF, Jensen iPod/stereo system, main/jib, Harken RF, standing/ running rigging, holding tank w/ new seals and hoses. Ready to go sailing. List and photos available to serious inquiries only. Recent survey available. Westbrook, CT. Reduced. \$26,000.

Joy Sherman 203-530-5037 joy@joyridecharters.com



Graves Constellation 30 1964. Stunning collaboration of E. Selman Graves and L. Francis Herreshoff, built in the famous Graves Yacht Yard in Marblehead, MA. Classic daysailer and weekender with beautiful lines and superb speed and handling. Heavy fiberglass hull complemented by Honduras mahogany cabintop, coamings, and trim. Enormous cockpit with natural teak sole. Complete '08 survey available on request. Wickford, RI. \$28,000. Christopher Runci

401-744-6748 crunci@runcigroup.com



Pearson Alberg 35 1962 classic. Aluminum RF boom, original spruce spinnaker pole, solid-fuel fireplace, sails, docklines, fenders, and ground tackle. Propane cookstove. Rebuilt original Atomic 4 with 3-blade prop. DeTour Village, MI. \$10,500. Richard Ross 989-732-9576

989-732-9576 rbross@freeway.net



Seafarer 31

1968 Bill Tripp. *Trilogy* of Rockland, ME. Cruise ready. A master cabinetmaker's boat. Classic inside and out. Solent-type rig, furler and headstay, inner cutter sail, RW&B spinnaker in sock, red canvas dodger/awning. 200W solar, 400AH battery, inverter, hot showers, microwave, fridge, AP, cabin heater, Corian counters. 15-hp OB in lazarette. Rockland, ME. \$25,000.

DT Lewis 603-669-7937 dtlewistrilogy@gmail.com



Sabre 28 1975. Great cond. 4-cyl. Universal engine, newly painted bottom, new sails, new Navico Wheelpilot AP. Clayton, NY. \$11,900. St. Lawrence Restoration 315-686-5950

315-686-5950 slr@boatrestoration.com



Allied Seawind 30 1967 ketch. Restored and presently on the hard. She needs to get back in the water but I cannot sail her at this time. Equipment includes rigid 7' dinghy, radar, 7 boat stands, and more too numerous to list. NH. \$15,000.

Al Leonas 603-938-2260 a.leonas@yahoo.com

Pearson 365

1978 ketch 36.5'. Bristol cond. Second owner, fresh water until recent cruise south. Upgraded modern interior, spacious storage w/louvered teak doors, U-shaped galley, fridge and separate freezer, teak-and-holly sole, separate shower, solar panels. Top condition 40-hp diesel, electric windlass, glistening teak, shiny original gelcoat. Indiantown, FL \$54,900

Ross Newkirk 519-884-0985 newkirk.ross@gmail.com www.yachtworld. com/boats/1978/ Pearson-365-Ketch-2800946



O'Day 37 1981 center-cockpit cruising sloop. *Persephone* is beautiful, well-maintained, fully equipped, self-sufficient, and ready for cruising. Through years of cruising, thoughtful upgrades, and enhancements, her current



Norsea 27 1978. Freshwater boat. Many upgrades including new Yanmar 3YM20 20-hp. Cleveland, OH. \$33,000.

> Jim Eberlin 216-225-1776 216-228-8282 eberlin8@aol.com





Boat molds

Dory molds professionally made off a wooden Chamberlain Dory. Photo is hull #1 of 2 made. Dory is 13' w/horseshoe seat in the stern, small forward deck, and 2 rowing stations. Boat description and design drawing appear in *The Dory Book* by John Gardner. 3 mold units: hull, horseshoe stern seat, forward deck. Turner, ME. \$3,200.

Walter Reynolds 207-240-1407 wereynoldsllc@gmail.com



Sailing Equipment Extensive list of sailing equipment after years of Great Lakes and offshore sailing. New England line, Fortress FX-11, Harken parts, impellers, and filters, Forespar thru-plug, Yamaha F4X 4-hp, Raymarine smart controller, Achilles LEX-88 dinghy, Great White 12V spotlight, and more. All in new or like new condition at very reasonable prices.

> Alan Zelina 216-272-4472 a2sail@yahoo.com

> > Wanted

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

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





Lake Superior/Apostle Islands cabins, homes, lake frontage Attention sailors and power boaters. We can find you the perfect property for your specific needs and wants. Exclusive buyer's agent. No charge to you for my services if the property is in the MLS.

Sharon Locey 715-779-5757 sharonkrealty@ncis.net







www.forespar.com











Meeting Pendragon's liveaboards

Former owners reach out across the years

here is a lot to love about sailing. Hal Roth put it simply when he wrote of "the pleasure and the freedom." Lesser mortals talk about wind in their hair and spray in their faces. Others love being away from it all and setting off on adventures to unknown lands. Whether daysailing on lakes or crossing oceans, one of the pleasures of sailing is meeting other sailors. Always, someone has just come from where you are going or is going where you have just been. Invariably, another salty soul has seen the same problem with his gear that you are trying to solve; I have yet to meet a sailor unwilling to share that knowledge. A new sailing friendship unexpectedly formed from across the globe arouses particular delight.



Mary and I have been steadily working toward our plan to move aboard a sailboat and into a life outside the norm. I have always maintained that sailors fall somewhere on the spectrum between those who can afford boats and those who can fix them. I am on the "fix them" end of the scale. We have bought, restored, sailed, and sold project boat after project boat, moving from a 17-foot weekender to our current work in progress, a 39-foot Yorktown.

From our base in Ireland, we scanned the used-boat adverts for a bargain bluewater cruiser in Europe, with an emphasis on Britain for its proximity and its larger market. One evening, quite by chance, I discovered on an Irish trading website a boat for sale just 20 minutes' drive away. Miles from the sea, this 39-footer looked huge and completely out of place, but *Pendragon* was just what we were looking for and miraculously within our budget.

The seller said this 1974 Yorktown 39, bluewater model, had been bought from an American couple who had lived aboard and sailed her for 12 years. The liveaboard layout did not suit the current owner's needs and so — after sailing her for a season or two — he brought her inland for a complete overhaul. Sometimes life intervenes with projects such as this and *Pendragon* languished for seven years on a trailer, stripped to the bare hull and awaiting a rejuvenating hand. She has now sat in my garden, receiving daily attention, for the past nine months and I expect she will be sailing once again in another six. Almost daily, she has revealed more and more of her history to us, but it was not until a few weeks ago, when I received a large stack of long-forgotten manuals and folders that had belonged to the boat, that the full extent of her history became clear. Among the folders and manuals was a little black-and-red hardback journal. Inscribed inside the cover were the words, "For *Pendragon*'s new family." To us, this was like the unveiling of the tomb of Tutankhamun. We were receiving from the hands of the American couple, Linda Davis and Jim Rueff, everything we could possibly need to know about the boat. But the best was yet to come. Toward the end was an invitation to get in touch with them and an email address. As quickly as we could type it, we sent an email across the world to Washington state and the home of *Pendragon*'s former liveaboard owners.

Never had the time difference between our two continents seemed so long. Then, late in the evening, an email arrived that began: "We were just wondering if *Pendragon* would go on another adventure." In a couple of clicks of a mouse, we had bridged the gaps, geographical and chronological. Within a few emails, all our questions about *Pendragon*'s history had been answered and all of our wonderings satisfied. Most important, we had made new friends with a couple who had gone before us and have since become mentors as *Pendragon* is restored, refitted, and reincarnated as *Faoin Spéir*, Irish for "under the skies." \varDelta

Leonard Skinner's full-time job is the Faoin Spéir refit but, since it doesn't pay, he makes a living writing and teaching engineering in an alternative-education school for teens. He and his partner, Mary, sail on Lough Derg, Ireland, in their 1969 Achillies 24. They're working toward completing the restoration of Faoin Spéir with the intention of moving aboard in July 2016. For more about the project, visit www.faoinspeir.com.



Equipping you to sew at home & on the water

With the right tools and knowledge, there's nothing you can't accomplish.

At Sailrite, we've been supplying DIYers with all the tools and parts they need to complete their projects for 46 years. But good projects require more than just the right tools, they require the know-how. That's why we also provide thousands of educational videos and articles to mentally equip you for your project and to help you understand it inside and out.

Start your next project at Sailrite.com or call 800.348.2769.