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CHARLOTTE: A Boatbuilder's Schooner
Vintage Tour Boats of Glacier National Park
Presto Sharpies

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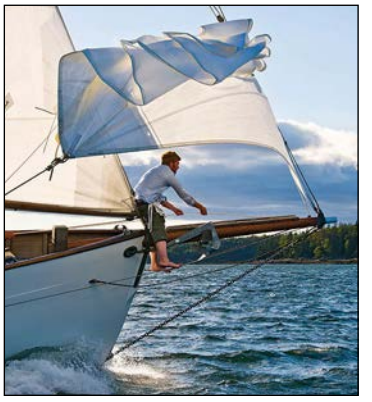
Cover: A deckhand strikes the jib on the schooner CHARLOTTE. Nat Benjamin designed and built the vessel for his own use; his account of her construction appears on **page 62**.

Photograph by Benjamin Mendlowitz



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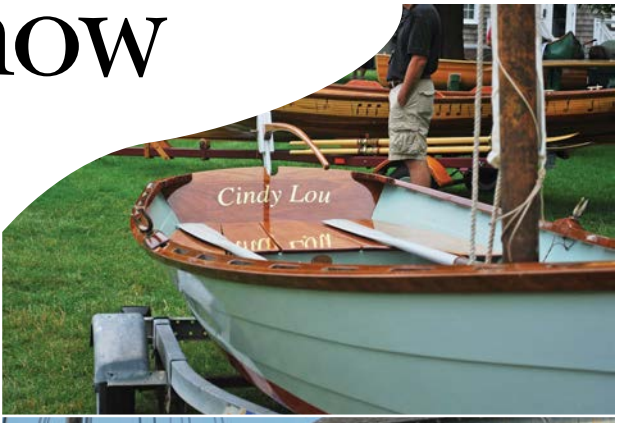

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41 WoodenBoat Lane • P.O. Box 78
Brooklin, ME 04616–0078
tel. 207–359–4651 • fax 207–359–8920
e-mail: woodenboat@woodenboat.com
web site: www.woodenboat.com

PUBLISHER Carl Cramer

EDITORIAL
Editor Matthew P. Murphy
Senior Editor Tom Jackson
Assistant Editor Robin Jettinghoff
Technical Editor Maynard Bray
Boat Design Editor Mike O'Brien
Contributing Editors Jenny Bennett, Harry Bryan, Greg Rössel
Copy Editor Jane Crosen

ART & PRODUCTION
Art Director Olga Lange
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Associate Art Director Phil Schirmer

CIRCULATION
Director Richard Wasowicz
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ADVERTISING
Director Todd Richardson
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Classified Wendy E. Sewall
Sales Associates
East Coast & Midwest: Ray Clark, 401–247–4922; rgclark@cox.net
Frank Fitz, 401–245–7424; ffitz@cox.net
New England: John K. Hanson, Jr., 207–594–8622; john@maineboats.com
West Coast and Western Canada: Ted Pike, 360–385–2309; brisa@olympus.net
International: 207–359–4651; advertising@woodenboat.com
WoodenBoat Marketplace: Tina Dunne, tina.dunne@woodenboat.com

RESEARCH
Director Anne Bray
Associates Patricia J. Lown, Rosemary Poole

BUSINESS
Office Manager Tina Stephens
Staff Accountant Jackie Fuller
Associate Roxanne Sherman
Reception Heidi Gommo

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Director Rich Hilsinger
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CONTRIBUTIONS: Address all editorial communications to **Editor, *WoodenBoat*, P.O. Box 78, Brooklin, ME 04616–0078**. *WoodenBoat* is a largely reader-written magazine. Care is taken with unsolicited contributions, but we are not responsible for damage or loss.
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Building on Tradition

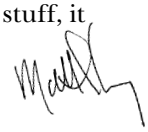
There's a subtle theme of "innovation built on tradition" running through this issue. Consider, for example, Harry Bryan's article about alternatives to auxiliary inboard motors (page 40). Harry takes two tried-and-tested forms of propulsion—the sculling oar and the outboard motor—and gives each his own unique spin. His sculling oar is meant to propel a pocket cruiser when the wind dies; indeed, sizable boats can be moved right along with a well-conceived oar and an experienced hand. But a sculling oar is long and a pocket cruiser is small, so stowing the oar on a small boat is a challenge. Harry's oar can be broken into two pieces for stowing, and then accurately and easily reassembled for use. The shop-built outboard-motor bracket that shares space in this article eliminates the blight of an outboard hanging permanently on the stern of an otherwise lovely boat; when removed for stowing, it leaves hardly a trace of hardware on the hull. Both sculling oars and outboard brackets have been with us for some time, but Harry has created something new in each of these items.

Likewise, the Marblehead 22 daysailer that I profile beginning on page 88 draws on many established concepts—the catboat, the wishbone rig, wood-composite construction, and unstayed carbon-fiber spars—but it puts these elements together to create a unique and exciting boat. That was the goal when builder Matt Sledge called designer Doug Zurn wanting to build one of Zurn's stock designs. Zurn wanted to seize this opportunity to innovate—to "do something that's a little more aggressive in terms of rig and performance...." The result is a truly exciting performance daysailer that's as easy to get under way as the simplest skiff.

Seeing such innovation in the 21st century makes one wonder what it might have been like to be looking over Commodore Ralph Munroe's shoulder in the mid-1880s. Munroe took an established type—the New Haven sharpie—and softened her bilges and rounded her chine in an effort to create a more seakindly sharpie. In so doing, the designer created "a whole new animal in marine architecture," as author Reuel Parker so aptly puts it in his piece beginning on page 34. Parker himself carried the Presto tradition forward with his own innovations—not the least of which was a laminated bilge to achieve the rounded shape of a Presto-type hull. (Parker goes on to acknowledge that he later learned that designer Dudley Dix, then working in South Africa, had beat him to this idea.)

Finally, consider the standup paddleboard whose construction Geoff Kerr describes beginning on page 46. I must admit, the first time I saw a standup paddleboard I thought it was a lark. I thought someone had grabbed a long canoe paddle and a long surfboard, and was simply improvising. Then I saw another...and another... and soon learned that I was witnessing a growing and improbable craze of propelling the most basic of "boats" while standing up. That most unlikely of boating postures, by all accounts, is a lot of fun, is far easier than it looks, and affords a grand view of benthic communities and the surrounding surface world. The whole idea of it, Geoff Kerr tells us, was born of some simple experimentation by Waikiki surfing instructors who married their longboards to outrigger canoe paddles.

Simple experimentation in wood is a delight. The material is available, workable, adaptable, and shapable. Like no other stuff, it allows us to tinker and invent.



Sheathing CARIB II

Dear Sirs,
Thank you for your article on fiberglass sheathing. It's long overdue. I can admit it now. I too have been a party to many fiberglassings. Truth be known, half of the wooden workboats in Nova Scotia would be on the bottom now if it wasn't for fiberglass. Early in its life my dory was caught in a storm tide on a shingle beach. The bottom chafed down to a point where it was uncaulkable. It has been 'glassed to the top of the garboard plank for over 20 of its 30 years with no ill effects. Once in a while we add a little more where it chafes through. It has rotted other places but not under the 'glass.

Kim Smith
Black Rocks, Nova Scotia

Matt,
In 1960 Alvin Brewer and I (mostly Alvin; I was 13) covered my family's 21′ strip-planked daysailer with fiberglass. The boat was galvanized-fastened and coming apart in alarming ways when sailed. The first season sailing her we bailed nearly constantly. Because of her edge fastenings, refastening the strips was not possible.

Alvin's method included first sanding off all the paint from the hull with 16-grit sandpaper using a disc sander. His theory was that the rough and fuzzy surface would grip the resin better than a smooth one. Alvin refused to do the job in anything but a northwest wind. While waiting for that wind, Alvin and I reframed the boat with steam-bent, frames. They were about 2″ sided and ¾″ molded. We also replaced a good number of the floor timbers and keelbolts. He applied a couple of coats of cloth and resin over the hull, one side at a time. I believe he used at least two layers of cloth with no chopped mat. Once one side had the requisite amount of resin and cloth, I sanded the boat to a reasonably fair surface and Alvin finished up the job to his standard. Somehow Alvin managed to do the job without losing the waterline. He applied gelcoat to the faired surface, black on the topsides and red below the waterline. He did not encapsulate the iron keel, which proved a mistake as water got up under the fiberglass that covered the deadwood and broke the bond.

We had the boat for another 10 or so years. In that time we refiberglassed the

Altering Vintage Boats

In WB No. 228, Maria Simpson wrote about the conversion of the Ohlson 40 sloop GYRE from cruiser-racer to daysailer. With that article's publication, we asked participants in WoodenBoat*'s online Forum to offer their opinions regarding when it is appropriate to alter a classic design, as was done with GYRE—and when it is not appropriate. The following is a sampling of that conversation. To read the full thread on the Forum, visit www.woodenboat.com, and click the* WoodenBoat *magazine tab under "WoodenBoat Forum."*

rbgarr: Although GYRE might be considered vintage in age, she isn't the only one of her production class. She's pedigreed, well-built, long-lived, and a good example of a successful and fast design for her era, but she isn't a unique vessel. I think she was a good choice for the remake.

Bob Winter: Boats are a lot like houses: Both require ongoing maintenance to keep them functional, and changes from the original are bound to happen. Does anybody care if a boat has the original engine? It is an important consideration with a classic car, but not so much with a boat.

Peter Malcolm Jardine: I have some experience with vintage cars. If you modify a vintage car from its original state, it becomes a rod, or a restomod, or a custom. While it may appeal to some, the definition of the vehicle has changed. I have no issue with modifications of vintage boats or cars, but one cannot then claim that this is the "preservation" or a "stewardship" of the vintage object. The object has changed from what it was into something different. It is no longer the original item.

Garret: With a production boat, I feel that keeping the boat in use and in good condition is far more important than keeping it 100 percent original. Would I rather see a well-loved/used/cared-for modified boat over a boatyard derelict? I think you know the answer.

Woxbox: I, too, cringe whenever I see a fine old boat adulterated in any way. But I've got to say also that I don't have much patience with people who would dictate what ought to be done with boats they don't own. Owning a boat means it's yours, and you can do whatever you like with it. The preservation-minded should stop whining and donate cash to museums and other organizations that are in a position to buy up the treasures that they want to be preserved.

James McMullen: I'd rather a boat get used and loved than kept in a museum. Unless it's really, really unique or historic, I guess. But honestly, how many of those are there really? I don't think the Gokstad ship or VICTORY ought to have flying bridges and new Lexan portlights installed, but someone wanting to take the engines out of an old Chris-Craft and put in a modern electric hybrid drive or something is just fine with me.

Duncan Gibbs: I think compromises and upgrades are always required. A yacht is not like a painting insofar as a yacht is a functional object with aesthetic qualities and a painting is an aesthetic object with no "functional" qualities. The only case for pure preservation would be as a static museum piece.

Canoeyawl: If it were possible for the designer to control all the aspects of the project, then I suspect the boat would be of note and demand respect. (Aage Nielsen and Nathanael Herreshoff are good examples of rigid control over the finished product, and the prices of their vessels reflect this.)

Boats are essentially utilitarian objects, and in the course of normal use they can be damaged or just deteriorate over time. The person responsible for repairing these ravages of time and use has to make a financial decision that often cannot consider much of the original fabric. The first compromise might be that finding that the materials common when the vessel was built are no longer readily available.

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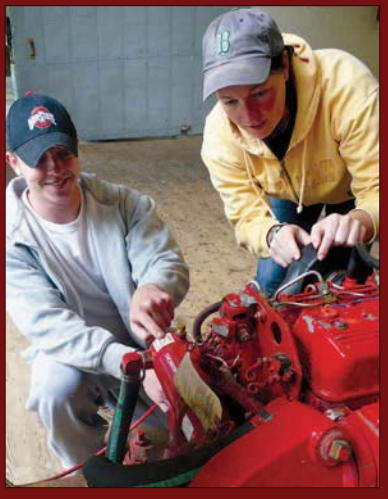

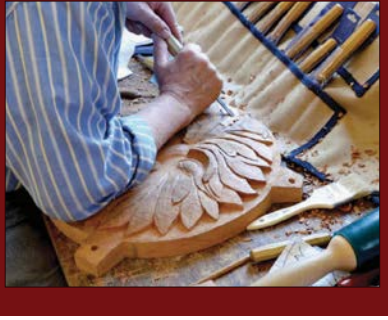

deadwood once, but the rest of the job held up well.

The CARIB II rescue brings up the question of what constitutes a wooden boat. If one were to take out the planking from the inside of the boat and replace the original interior with a suitable ceiling lining the fiberglass, would CARIB II still be considered a wooden boat?

Bart Chapin
Arrowsic, Maine

Hello, *WoodenBoat*,
Do you know that the French sailor Eric Tabarly saved, in 1958, his old sailing yacht PEN DUICK I, a William Fife III design, built in 1898 and first launched as YUM? He used the old hull as a male mould, and after polyester sheathing, he took off all the wooden planking. PEN DUICK I is still sailing in 2012!

François Tallot
la Trinité sur mer, France

Dear Sirs:
My congratulations to Mr. Soule on his outstanding article regarding the saving of a fine wooden vessel by use of the Vaitses Method of sheathing a wooden boat in fiberglass! It did my soul good to see that another wooden boat owner was willing to try this work to save a classic vessel from the burn pile or worse still, ambivalence. How many fine classic boats end up in the latter category because the costs of restoration are prohibitive to would-be owners? The day of J.P. Morgan's comment, "If you have to ask, you can't afford it," are over! Ordinary people of ordinary means can purchase, revitalize, and utilize these craft for the purpose stated by L. Francis Herreshoff: "A yacht is designed to give pleasure."

William Draper
Aboard LAST HURRAH
Hillsboro, Illinois

Reinventing GYRE

Dear Editors,
Regarding the excellent articles "Reinventing GYRE" and "A Structural Exoskeleton," there is only one real issue: Do we value strict authenticity or continued life on the water? I own an exquisite 23′ Stone Horse sloop. The first thing we did after purchase in 1991 was remove the galley, built-in ice chest, and water tank so more than one person could comfortably sit in the cabin. We adapted by cooking in the cockpit and storing all our culinary gear under new, comfortable seating. We were therefore able to cruise in it for 15 years until we were forced to buy a boat with standing headroom to accommodate our creaky joints and growing lack of flexibility.

To those of you who feel pain in removing or replacing beautiful original equipment or wood, but know you have to go through with it: Save everything you remove, including hardware and fixtures. Photograph the original boat in great detail, and even make measurements for a nice sketch of how it was. It could make the next owner's job of restoring to exact original design so much easier. Keeping all options open is more important than being a slave to just one.

Perry Munson
Grosse Pointe, Michigan

For more discussion of GYRE, see the sidebar on page 6.

Correction

In WB No. 228, we incorrectly reported that Jim Moores of Moores Marine executed the cutting up of the Trumpy motoryacht IBIS. In fact, he had nothing to do with that grim task. —*Eds.*

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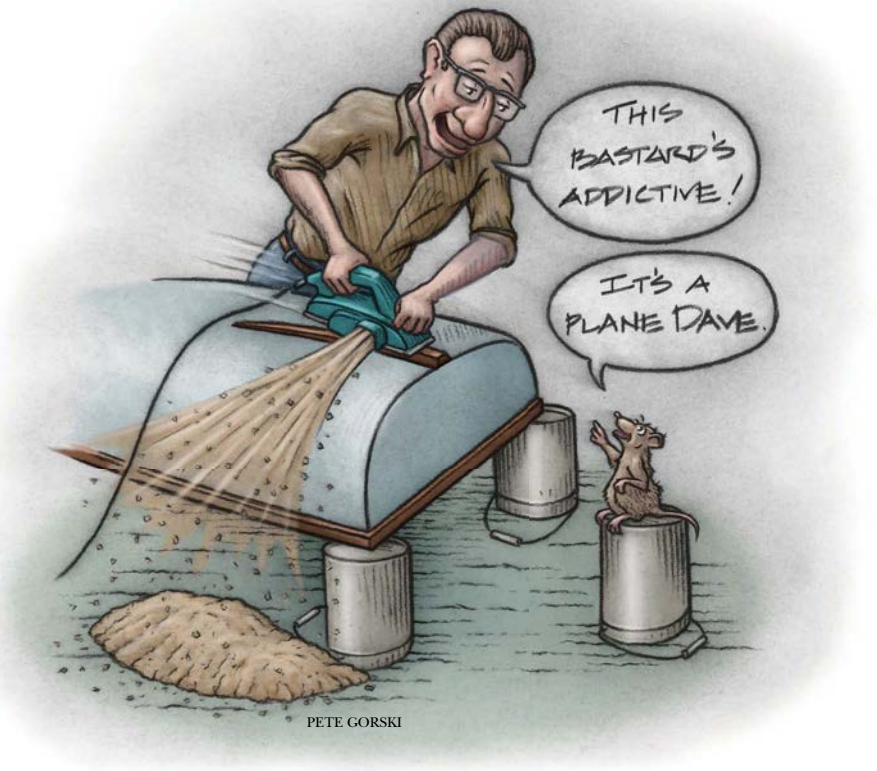
We look forward to joining you in the Netherlands!

Illegitimi Non Carborundum

by David Kasanof



I have been using hand tools for a long time, and most folks would probably call me competent at it. Nevertheless, I continue to encounter certain problems that, it seems to me, a real veteran would have solved long ago.

For instance, many decades ago, I was looking at an illustration of files in an old dictionary. One of the files was called a "bastard." No, not a "bastard file." The damn thing was called a "bastard." Period. Years later, I realized that one could legitimately insert "file" after the dreaded word. That would have taken some of the sting out of using just the single word. In my ignorance of any alternative, I chickened out and asked for a "flat file" the first time I bought one. How could I ask the nice man in which aisle the "bastards" were kept?

Another verbal hang-up awaits me, because I must buy another tool. If I use the correct terminology for it, confusion will result. Now, pay attention. I once owned a brace and bit. I lost the brace. I have the bit. Hell, I have lots of bits. I just want the brace, you know, the thing that looks like part of a crankshaft. The tool is more than a thousand years old and was known to the Vikings, but if you walk into a hardware store and ask for a brace, all you'll get is a bovine stare or an inquiry as to what you want to brace.

I know this because I've been there before. Braces don't like me. I lose them or they jam up, or…I don't know what…they just seem to vanish from my custody. When buying yet another brace, I use the proper terminology but accompany it with some pantomime by moving my hands in a "cranking" motion. Primitive, but it works.

Not all my problems with tools are merely verbal. The following may come as a shock to you, but there are some things I simply have never been able to become proficient at, let alone master. One of these things is the sharpening of chisels and plane blades. Without a jig to hold the blade at the proper angle throughout the sharpening stroke, I don't see how it's possible to sharpen anything.

How then do I explain the presence of sharp tools in other folks' toolkits? I believe they must sneak away to nearby towns and buy new ones. I confess that the only truly sharp tools I have are those I've just bought.

The electric plane I recently purchased may be an exception because it has a jig for sharpening blades. I shall try it out as soon as I manage to decipher the Japanese-American in which the instructions for using the jig are written. Meanwhile, another problem has appeared. The damn tool is hypnotic: You can remove so much wood so cleanly and effortlessly, with such a satisfying whine, that it's hard to stop. I may need to see a therapist if I can find one who specializes in electric plane addiction.

Unfortunately, my problem may be more serious than it first appeared. I may be addicted to any power tool, as long as it is cordless. After a lifetime of using power tools with cords, I have bought my first cordless tool, a drill. I love it. Until now I had no idea what a nuisance a power cord is. In addition my new toy needs no chuck key. You just turn a knob on the drill to release the bit and then insert another one. I'm born again! Glory be! Freedom from chuck key and power cord bondage!

Naturally, my first intention when I took the tool out of the box was to try it out by drilling a hole and then driving a screw into it. However, when I looked for a screw I found, amid all the junk in my toolbox, only a few screws with those damned square holds in the heads. Not knowing what they are called, I took one to the hardware store and asked the nice man for the appropriate driver. "You need a Number 2 square drive bit," he said. I thought of replying, "So that's what those bastards are called," but once again I chickened out and said "things" instead. Never mind, I have my cordless drill to keep me happy.

7e ÉDITION

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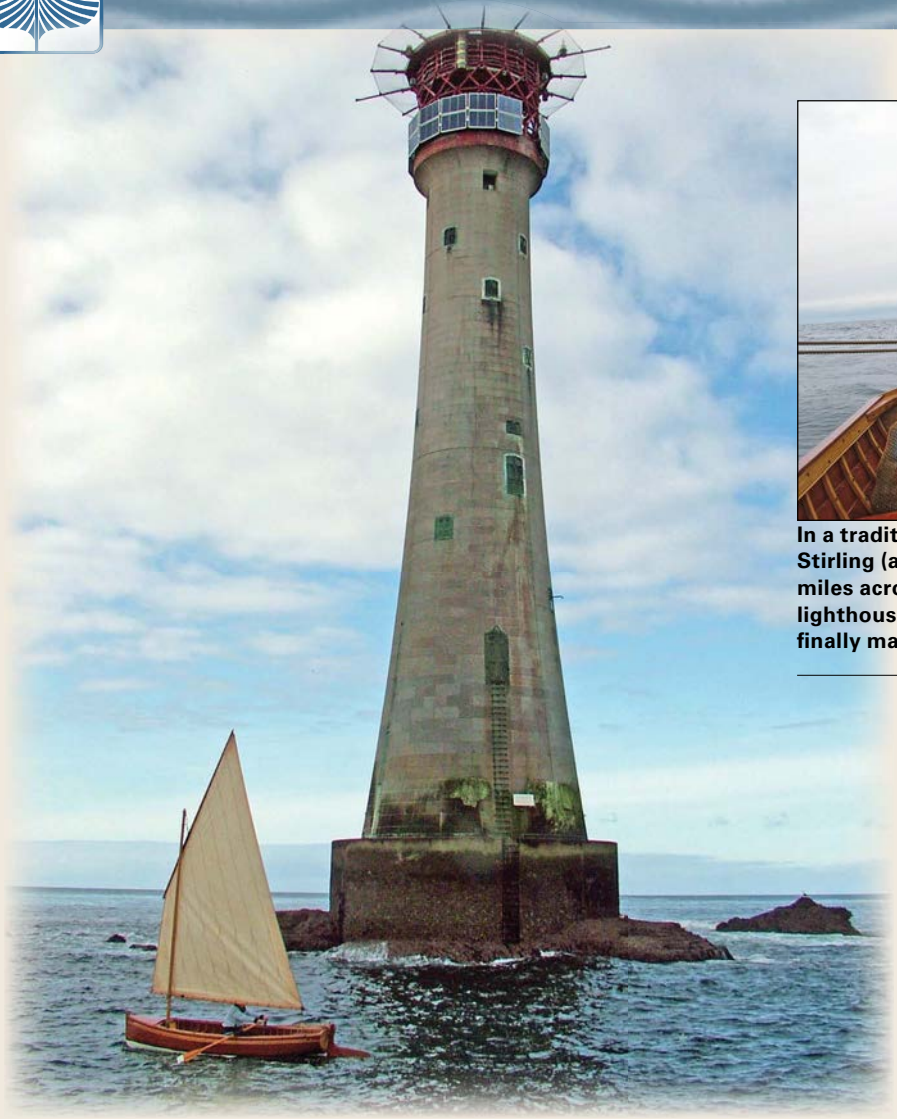


WILL STIRLING (BOTH)

In a traditionally crafted 14′ daysailer, boatbuilder Will Stirling (above) and crewman Dave Balaam sailed 95 miles across the English Channel, rounding La Hanois lighthouse (left) and La Corbière lighthouse before finally making landfall at St. Helier in Jersey.

Small boats with large ambitions

by Tom Jackson

Of all the pleasures in the world, one of the greatest is casting off the docklines at the beginning of a voyage. The preparation done, the plan in place, the moment arrives, the adventure begins. Joshua Slocum still inspires solo circumnavigators—and writers—with his SPRAY voyage of 1895–98. Increasingly, however, small boats are setting off on intrepid courses, taking advantage of excellent boats and increasingly sophisticated technology in ever smaller packages. Just as Slocum inspired ocean voyages, Frank Dye's exploits (Scotland to Iceland, Scotland to Norway) more than half a century later in a 16′ Wayfarer dinghy still resonate with small-craft sailors. More of them are venturing farther from shore, with equipment Slocum or Dye couldn't even dream of. There are still risks. A certain turn of mind and a particular kind of seamanship are demanded. Yet we hear increasingly of extended small-boat adventures—and we know we'll hear of more. Here are just three recent examples:

■ "With our **14′ mahogany-on-oak Edwardian daysailer**, we planned a **95-mile course across the English Channel** from Start Point in Devon to St. Helier harbor on Jersey," **Will Stirling** writes. The voyage was intended as a dramatic demonstration of the seaworthiness of the boat built by his company, Stirling and Son, Tavistock, Devon, England (see www.stirlingandson.co.uk). "We had concluded capsize and immersion trials, and we carried VHF, GPS, EPIRB, Iridium telephone, radar reflector, and an offshore flare pack. The Brixham, Guernsey, and Jersey coast guards were all informed. We departed at midnight, May 2, 2012.

"Dave Balaam took the first two-hour watch while I set the boat in order. We soon had a good deal of spray coming over the foredeck. However, it felt good to be going fast and making good progress. By daylight, a grey and damp dawn displaced the darkness, with both of us feeling cold and tired.

"Our primary concern was crossing the shipping lanes. This was less troublesome than anticipated, although in the southern, or eastbound, lane the wind died away and we rowed for two hours in a flat calm. Then a light northeast breeze came up, blowing us to within 10 miles of Guernsey by 1600. We sailed around La Hanois lighthouse and set a southeasterly course for La Corbière lighthouse on the southwestern tip of Jersey, 24 miles away. Night fell, and with the east wind and tide turning to the southeast, we were unable to make our course. After tacking twice to gain position, we were able to hold the course for La Corbière, which we could now see at a distance of 8 miles.

"Having been awake for a day of work, a night of sailing, and a day of sailing, we were both extremely tired. I had begun to hallucinate sound. Concentration was difficult. Neither of us slept very well. Off watch, we lay on the windward bottom boards on a camping pad—a couple of hours of pretending to sleep, we called it.

"As we neared La Corbière, thick fog came down. We were within half a mile of Jersey before we could see it. As the dawn broke, the wind died and we found ourselves at the turn of the tide two cables from the lighthouse and associated rocks. I was unable to anchor

JOHN CALOGERO

A hardy crew rowed the Port Townsend Wooden Boat Foundation's longboat BEAR most of the 40-mile crossing of Puget Sound in restricted visibility.

with 23 meters of rode. Instead, we grabbed a fisherman's buoy, which unfortunately fouled the rudder. With the tide running fast, we didn't want to let go, so Dave, with great strength, pushed the buoy free. As we carried the line forward, the boat spun around, lurching in the tide. This was the most dangerous incident of the trip; we could have been awash in moments. Once settled, she rode comfortably. The crew were not so comfortable: La Corbière lighthouse was playing a merry, and very loud, foghorn tune a cable away from us, and we had five hours of foul tide to go. We both donned Russian hats with ear flaps and tied them under our chins. We ate some hot beans, and notwithstanding the noise, we both slept for two hours.

"At 1100, we let go of the mooring. St. Helier lay 6 miles straight upwind. We made slow progress, and the wind increased to Force 4. This was almost too much for us. We thought to beach in St. Brélade's sandy bay, but with the media awaiting in St. Helier, we decided to sail on. After an hour and a half, the tide turned and we made much better progress over a choppy sea with wind against tide. We finally reached St. Helier at 1330 on Friday, after 37½ hours at sea. We enjoyed a dazed walk ashore and were taken to St. Helier's best hotel, the Pomme d'Or, where we washed, ate, and slept—the contrast sharpening one's appreciation of circumstance."

■ **John Calogero** served as the skipper of the Port Townsend Wooden Boat Foundation's **26′ longboat BEAR** during the summer of 2012, crossing from Port Townsend, Washington, to Orcas Island. "The last time I tried to **cross the Strait of Juan de Fuca** in a longboat, my crew of Sea Scouts was tired from a week of rowing as participants in a wooden sail-and-oar 'raid'—with little sailing. The nerves around the tendons in their young arms were screaming. It was rough, with no wind and decreasing visibility that eventually became thick fog. We took a tow from one of the escort vessels, much to the disappointment of some of the crew.

"For this journey, we had 12 committed crew," but no option for a tow; the boat was setting out solo. "We began mustering at the boat at 2:30 a.m., departing at 3:35 on June 30. Our first destination was Friday Harbor, hoping to be there early enough to put ashore crew who needed to catch a ride back to Port Townsend on another boat. At 4,

as we approached Point Wilson, the fog rolled south from the strait. Our plan to ride the ebb out into the middle of the strait to a point where we would have a chance to ride the flood to Cattle Point and into San Juan Channel was fading with the reducing visibility.

"Fortunately, the crew consisted of two groups: five extremely knowledgeable sailors with longboat experience; three of us licensed; and the rest who trusted us. We changed our plan, crossing Admiralty Inlet to Whidbey Island with the help of Seattle Vessel Traffic and ships in our vicinity. Like the other vessels, we became a weather buoy: 'Rowing boat BEAR, is that you 1 one mile north of Point Partridge?' 'Roger.' 'What is the visibility at your location?' 'One hundred yards.' 'Thank you, BEAR.'

"Later, the fog lifted a bit in a light southwest wind, and we quickly set sail, supplementing wind power with the oars. I thought it might still be possible to get far enough west to make Cattle Pass, but the flood on our port beam pushing northeast was squashing that dream. So, we joined the flow and headed north into Rosario Strait. By Thatcher Pass we were rowing again.

"More than 14 hours later at Lopez Island, part of the crew took a ferry to Anacortes and found their own way home, tired and yet happy to have accomplished the crossing. We had covered more than 40 nautical miles, mostly under oars. I was glad, too, but aware that I had 15 miles to go to reach Camp Orkila, where the boat would be used for summer programs. With enough fresh recruits joining on short notice, eight of us had sun, a favorable current, and some wind on the beam, and we covered the distance in a little more than four hours."

MIKE WICK

Kevin MacDonald and Mike Wick were closely observed via computer during their sail from Key West, Florida, to Dry Tortugas —70 miles one way— in a 15′ Marsh Cat.

■ **Kevin MacDonald** and **Mike Wick**, who often sail in company, last year took on an ambitious challenge—a **70-mile crossing from Key West to Dry Tortugas** in Florida. Their boat was MacDonald's Marsh Cat, a 15′ open boat with a beam of 6′11″.

"Safety in a small catboat is never absolute," Wick writes. "Preparation is the key. Safety starts with a sound and seaworthy boat. The Marsh Cat that Kevin built was designed by Joel White to be just that. I could go on for hours about the wholesome behavior of LITTLE T in all conditions. She rode a little low with crew, supplies, and water, but she has generous freeboard. Decks, washboards, and coamings turned away most of the spray and water. We had two muck buckets for emergency

BEN BROUWER

BEN BROUWER

***Left*—Franklin Salas, one of several dozen boatbuilders on Bolivia's tiny Isla Suriqui, frames up a fishing boat. He builds eight to ten such boats per year. *Right*—Suriqui's builders produce passenger *launchas* and fishing *botes* for much of Lake Titicaca.**

dewatering—since they are faster than pumps. Our dry bags for gear and electronics doubled as buoyancy bags when securely fastened to the frames. We had redundancy in GPS and VHF, flares, of course, and a SPOT transmitter. We had practiced capsize drills in small boats and felt that we should be able to survive every emergency."

One further idea was to seek advice and local knowledge through the **WoodenBoat Forum**, which started a lively discussion. "The best advice we got from the Forumites was to choose points on each leg where we would review the forecast and make a final go or no-go decision. This minimized our chances of exposure to sudden changes of weather or circumstances. We listened to the weather, still audible beyond the Marquesas, and asked ourselves and each other, 'Should we keep going?' As it turned out, both ways the forecasts were encouraging, and we chose to continue. We had two weeks of time and lots of supplies, which allowed us to wait out the weather if need be. As it turned out, the best weather was right at the beginning; we sped out and back quickly and had several days at the end of the trip to tour the lower Keys.

"We had little idea how many on the Forum were watching our every step. They were reading our updates, the forecasts from Key West, and the weather observations from sea buoys off Sand Key and Loggerhead Key, and they were sharing the information with everybody on the Forum. You aren't alone anymore, not in 2012. When Blondie Hasler and Francis Chichester first decided to race singlehanded across the Atlantic in 1960, they discussed using radio transmitters and ruled them out, preferring to 'die like gentlemen.' SPOT, EPIRB, VHF, GPS, and dry suits all help us in bad situations, and we have lost much of our opportunity to 'die like gentlemen.' I'm glad. I doubt my gentlemanly commitment."

Tom Jackson, WoodenBoat*'s senior editor, is always itching to go.*

Boatbuilders on Bolivia's inland sea

by Ben Brouwer

The first thing that struck me when I stepped on to the long concrete pier of **Bolivia's Isla Suriqui** was the sound: the whine of power planes, the back-and-forth of a handsaw, and the racket of hammers on nails. Scattered around the lakeshore and displayed in front of adobe brick homes were **wooden boats in every stage of construction**.

The island of Suriqui sits at the southeastern end of the mountain-ringed waters of Lake Titicaca, at 12,500′ above sea level on the border of Peru and Bolivia. The lake is probably best known in the maritime world as the home of expert *totora* reed raft builders made famous for their construction of vessels for two of Thor Heyerdahl's expeditions. But the lake's native reeds long ago fell out of favor as the preferred material for ferries and fishing boats on this windswept 3,200-square-mile lake. According to local builders, Suriqui established itself as Lake Titicaca's heart of wooden boat construction in the 1950s and has maintained that lineage from generation to generation by churning out fishing boats, barges, and tourist ferries to meet the lake's changing economy.

Suriqui is a boat ride removed from the tourist circuit that brings thousands of travelers every year to Lake Titicaca's hot spots: Copacabana and the Incas' sacred Isla del Sol. I found my way to Suriqui by way of Huatajata, a quiet town on the shore of Lake Titicaca, and home of the self-proclaimed "World's Highest Yacht Club." A gravel beach serves as the wharf for a once-or-twice-daily passenger ferry service to Suriqui. Propelled by a 40-hp Yamaha, our 30′ Suriqui-built *launcha* crossed the wide, shallow southern end of the lake, dodging the occasional fishing boat that was either reeling in or paying out a ragged, delicate net. Nearly all of the brightly painted fishing boats carried small outboards, but instead of running their motors, many made their way back to port under oar power or opted for the light breeze in big, colorful gunter-rigged sails.

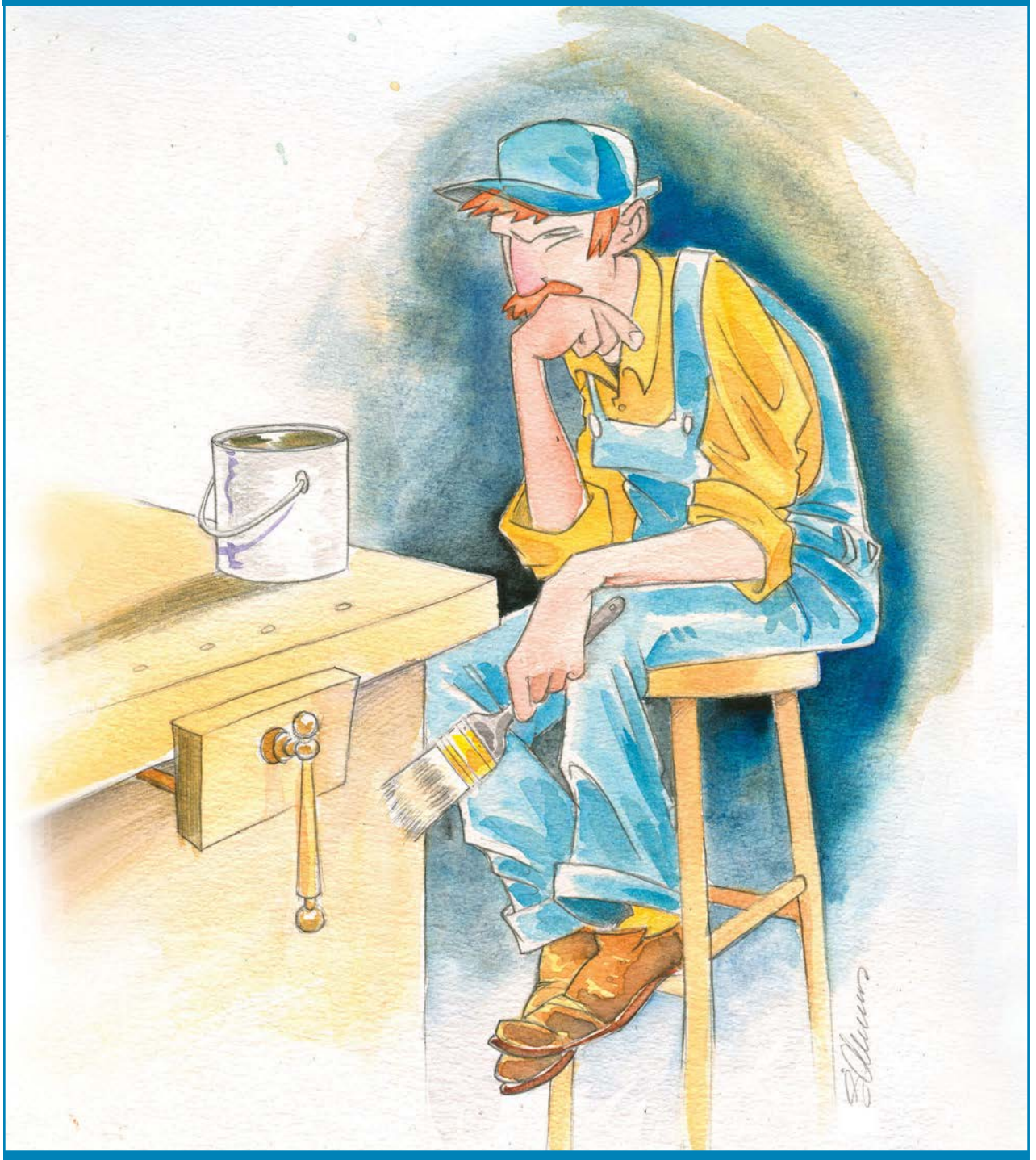
During a day and a half on Suriqui, I wandered the shore and steep paths through the town of a few hundred families and looked in on nearly 30 active boat construction projects. I helped drag a just-finished fishing boat through the town square, down a flight of stone steps, and out the concrete pier for an unceremonious, everyday launching. And I traded two-liter bottles of Coca-Cola and pictures of my own boat for photo-ops and details of the construction process.

What caught my eye in particular were the 12′ to 20′ open fishing boats. Regardless of length, they're built in a consistent style, with a broad transom, swooping stem, round bilges, carvel planking, and bold colors. The stem, keel, and sternpost structure is laid out in laurel. The boats are unballasted. The keel, which runs about half the length of the boat and 12″ deep, offers minimal windward sailing ability. Boiled walnut frames are prebent around a mold of two stumps set in the ground and then fastened to the keel with long galvanized nails. The ½″- to ¾″-thick cedar planking stock is clench-nailed to the frames. Up to 12″ wide, the planks are often boiled before fitting and fastening. Cotton soaked in linseed oil is used for caulking the plank seams. Spars are fashioned from the prolific eucalyptus trees on the island, and oars are simply built with eucalyptus looms and nailed-on cedar blades.

Except for the eucalyptus, wood for the boats is harvested in the Yungas, a region of Bolivia's northeastern tropical lowlands, and then trucked to mills in El Alto, a booming city two hours from Huatajata. The builders buy their lumber and tools in El Alto. They primarily rely on hand tools for the fishing boats, but for the ferries and barges they build for shuttling trucks and buses across the Strait of Tiquina on the main road to

Getting Started in Boats

from the Editors of WoodenBoat *Magazine*



Volume 37

Varnishing Basics

A Guide to the Instructions on the Can

— Varnishing Basics —
A Guide to the Instructions on the Can

by Matthew P. Murphy
Illustrations by Simon Adams

Many years ago, one of the big varnish manufacturers had a regular advertisement showing a cowering boat owner eyeing a brightwork project with a feigned expression of terror, and saying "Vvvvvvvvarnish?" Such fear is a common sentiment among would-be and occasional varnishers, and for good reason: Varnish provides excellent protection while showing the beauty of the wood, but it takes a consistent commitment of time and skill each year to maintain it. And achieving a good bright (aka varnished) finish in the first place requires careful surface preparation and application.

There are myriad pitfalls that can compromise the job along the way, and a lack of maintenance during the season can ruin a fine job. Paint, frankly, is a better option for those who lack the time or inclination to maintain varnish. Indeed, vast expanses of paint (cabinsides, for example) accented by bright trim will look much better than poorly maintained varnish. Varnish, however, is not only rewarding aesthetically; because it's transparent, it also can reveal potential areas of rot that show up early as dark, discolored spots before they become a serious problem.

Some great books and articles have been written on the topic of varnishing (see Further Reading, page 8). For those seeking a more succinct lesson than those tomes provide, all major varnish brands include on their labels a concise set of instructions. I'd wager that that's where most of us take our initial varnishing advice. Yet, due to the space constraints of the can, these instructions are typically printed in a barely legible type size, and they leave some room for interpretation—especially for the first-time varnisher.

So, the goal of this installment of *Getting Started in Boats* is to interpret the varnish can—to give a bit more depth to those instructions, without writing a book. A can might say to remove all dust. We'll look at how we do that, and the other basics of varnishing, leaving aside tangential concepts such as two-pack systems, spray application, wood staining, and stripping of old finishes.

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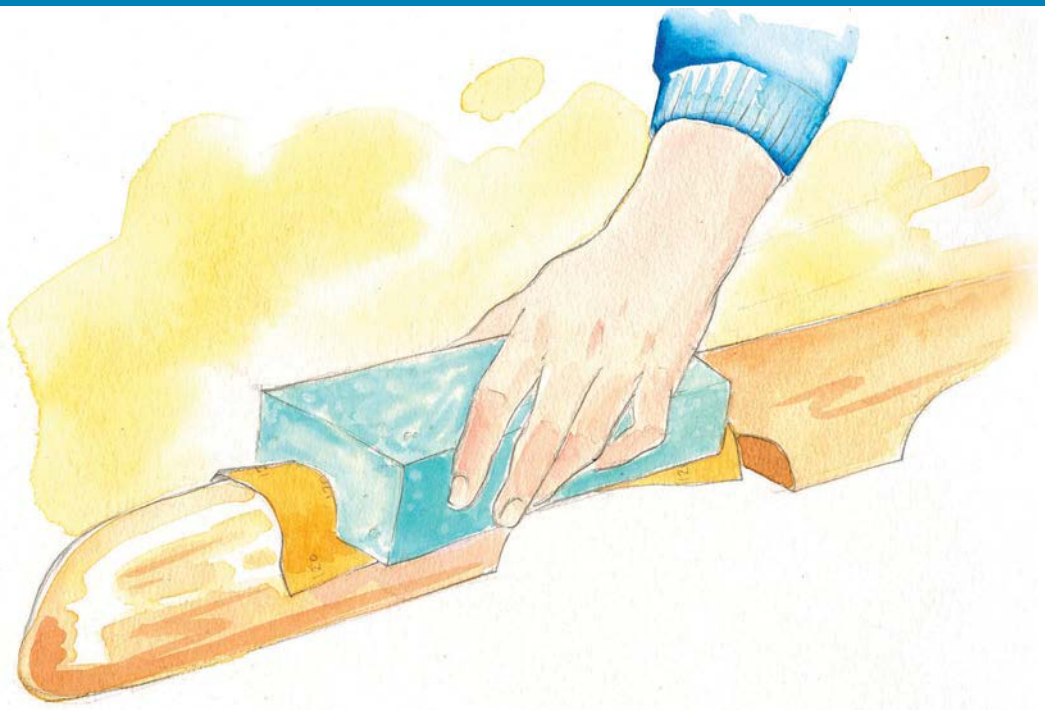
—Preparing and Sealing Bare Wood —



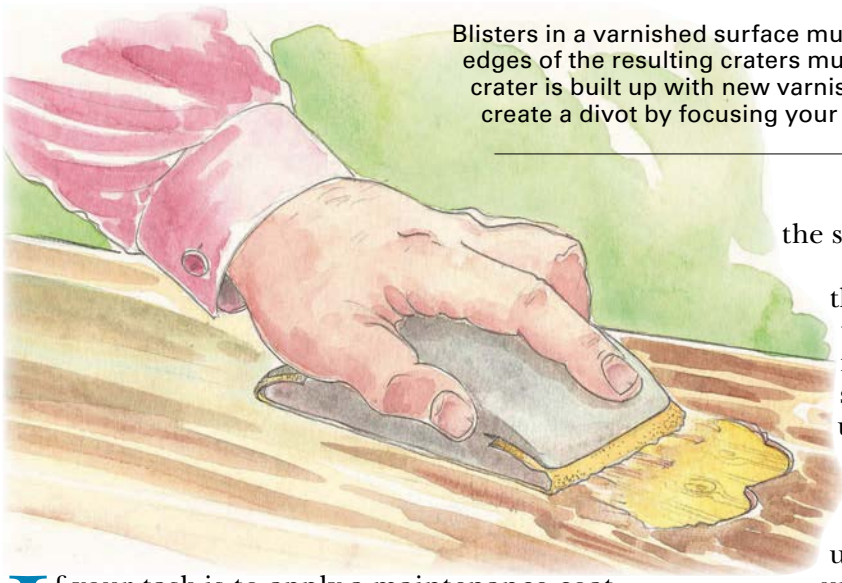
A block of foam insulation can be shaped to a contoured surface to create a custom sanding block.

All labels will tell you the wood must be clean and dry before varnishing. But there are a few other considerations, too. Painters and varnishers have an old adage: "It's 90 percent prep work." Divots and unevenness in the surface will telegraph into the finish coat, so be sure to get your bare-wood surface as smooth and scratch-free as you'd like it to be when finished. If you can live with raised and uneven grain, then a thorough sanding is all it takes. But if you'd like a mirror-smooth finish, now is the time to begin working toward that.

Large, flat surfaces such as transoms and cabinsides can be sanded with sticky-back sandpaper, which comes in a roll, mounted on a hard-rubber sanding block. Alternatively, the surface may be scraped smooth with a cabinet scraper—essentially, a small rectangle of thin tool steel with a uniform burr worked into its cutting edge; when drawn across the wood surface, the cabinet scraper raises the finest of shavings. Rounded and faceted surfaces may be hand-sanded without a backing block, but achieving consistent contact between the paper and the surface can be challenging in this scenario. A better approach is to create a custom backing block from blue foam insulation. To do this, cut off a block of foam of appropriate size, form a piece of 80-grit sandpaper over the surface to be sanded, with the grit side facing out, and rub the foam block back and forth over it until the shape is transferred to the foam. You now have a shaped block to which you can apply your paper. This works especially well on long, straight facets and rounds, such as handrails, railcaps, and half-round trim.

A quick survey of varnish labels reveals strong disagreement over what grit of sandpaper to use before the all-important first sealer coat is applied. One can I looked at specifies using 80-grit on bare wood, while another says 120. And still another recommends 180–320-grit paper. The theory of the coarser grits is that they'll give the varnish more "tooth," or mechanical adhesion. Lower-density woods will easily soak in the initial coat of varnish, so a finer grit is a good choice here; denser woods may require a coarser initial sanding, so extra care must be taken to sand with the grain to mask the scratches, because a fine finish requires no visible scratches in the bare wood. For most wood species, 180-grit is a good choice. The sealer coat (which we'll cover shortly), if thinned properly, will penetrate the wood's surface to give adequate mechanical adhesion.

—Preparing Previously Varnished Surfaces —



Blisters in a varnished surface must be scraped away. The hard edges of the resulting craters must then be sanded flat before the crater is built up with new varnish. Use a backing block here; don't create a divot by focusing your sanding efforts on the bare wood.

If your task is to apply a maintenance coat or two to an intact finish, rather than to varnish bare wood, then you must first clean the entire surface of grit and dirt, and then sand it with fine-grit paper; 220–320 grit is the right choice for this. But before you get started on that task, you should survey the surface for yellow blisters. These telltale marks show where the varnish has separated from the wood, and they must be carefully scraped away to bare wood before sanding can proceed. (If the surface is littered with these blisters, or if the majority of the finish is peeling, then you must strip the entire piece to bare wood—a process we won't cover here.) A 1″ hook scraper, filed sharp, is the ideal tool for scraping away small blisters. It'll dull quickly as you use it, so keep a file handy, and sharpen the scraper's blade as soon as it can no longer remove fine ribbons of varnish—which will be fairly often if you're scraping frequently. Don't do this sharpening on deck; the fine steel dust will rust and make a mess.

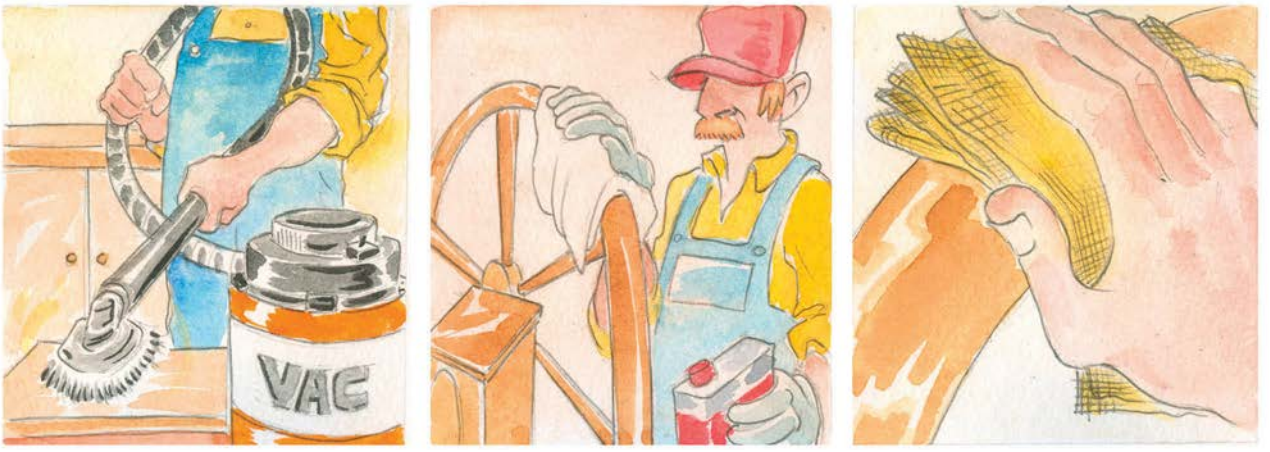
If you're scraping bare spots in a finish that's been stained, then you have another challenge ahead: These bare spots must either be restained to match the surrounding finish, or you must live with the contrasting patches. Likewise, scraped patches in unstained mahogany are likely to contrast at first with the surrounding finish, though they'll blend in as the finish ages. On the other hand, if you're working on teak, you'll find that scraped bare spots blend beautifully and immediately with the surrounding finish.

Scraped bare spots must have their edges "feathered"—the hard transition from bare wood to varnish must be sloped by careful sanding. The goal here is to gradually thin the varnish around the edges of the crater, but to not remove wood. A sanding block is recommended, and careful use of a scraper can speed things up. With the scraping and sanding done, it's time to apply a sealer coat to the bare spots—to "spot-prime" them—and then to apply three or more "build coats" to these spots (see application instructions, page 6).

Folding Sheet Sandpaper

For sanding long pieces of trim, handrails, spars, oars, and such, you'll likely be using 9″ × 11″ sheets of paper. These should be folded and then cut into quarters. These quarters are then folded in thirds, as shown in the photograph, so that none of the grit surfaces touch. When one surface becomes clogged and no longer cuts, flip the paper over for a fresh surface. When that one is clogged, unfold and refold the paper to expose the final unused surface. This can also be done with half sheets—though for surfaces typically requiring pieces this large, you'll likely want a sanding block.

— Sanding and Dust Removal —



Sanding between coats creates dust; clean it up with this three step process: (1) vacuum, (2) wipe down with solvent, and (3) wipe with a clean tack cloth.

With scraping and spot-priming out of the way (if you had to do it at all), it's time to sand the entire surface. This is a step that often befuddles the novice varnisher: The goal, after all, is to build up a thick coat of varnish on the wood. This must be accomplished by applying multiple coats, and you must sand between these coats, typically, to get the later coat to adhere to the earlier one. But in the process of doing this, you want to sand away as little of the previous coat as possible. A light touch and a fine grit are required for this task. If the finish is in great shape, then use 320. If it's beat up or requires some leveling, then use 220.

There are two exceptions to this sanding-between-coats rule. The first is a technique called "hot-coating," whereby a subsequent coat is applied to one that's not yet fully cured, so the two actually melt together, chemically. If you're new to varnishing, then I suggest you stick to the tried-and-true methods outlined here, and not be lulled by the promise of less sanding. The second exception is a product from the Dutch varnish company Epifanes, called Woodfinish, which is specifically formulated for no sanding between coats. This saves the time of sanding. And it saves material, as there's no specter of sanding away the previous coat. It has drawbacks, though: Sanding between coats has the incidental benefit of dulling the previous coat, giving a nice sharp contrast between varnished and unvarnished areas when you're actually applying the stuff. Unless the light is just right, you can't always see where you've been when you don't sand between coats, and thus you risk "holidays" in your finish (see page 7). The other drawback of not sanding between coats is that you lose the chance to eliminate the previous coat's imperfections. Sags, dust, bugs, lint, unevenness, and other sins are repaired or eliminated with each successive sanding.

It seems antithetical to do all of that sanding, and then to be instructed to apply varnish only to a surface that's clean and free of dust. But take heart: There's an established protocol for removing dust from a surface. First, vacuum as much of it away as you can, using a clean brush attachment on your shop vacuum. If working outside, you can use compressed air to blow off the dust. Second, wipe down the surface with a rag that's been dampened—not soaked—with paint thinner, acetone, or some other solvent that won't leave a residue. The rag itself should be clean and free of lint. The third and final step is to wipe the entire surface with a painter's tack cloth. (I've recently become a big fan of a new detail sander that can be attached to a shop vacuum. Its dust extraction is so good that the wipe-down step can be eliminated, and I can go straight from sanding to tack cloth. See Review, WB No. 225.)

— Applying the Varnish —

Apply varnish by first brushing it on vertically, and then drawing it out horizontally with long, even strokes. Don't overwork it in an attempt to make it mirror-smooth; trust that it will level out before it cures.

The man who taught me how to varnish had a rule regarding time of day: He'd never begin applying varnish outside after about 2 p.m. on a summer day. Why? Because humidity on uncured varnish will dull and cloud the finished product. I had this lesson driven home the hard way several years ago when, pressed by schedule to get a coat of varnish on my mast, I did the job after work, at 5 p.m. Within a few hours, the dew dropped on the partially dry varnish, and the next morning the finish on the "up" surface of the mast was cloudy, dull, and textured, while the down side was clear and shiny. Cool, dry weather—classic New England fall conditions—is best, as the varnish has a chance to level out before it cures. In fact, getting your varnish done in autumn is a great way to manage your varnish maintenance, as you'll feel like a genius for having it out of the way come the press of spring and the promise of boating weather. One word of warning on this: The short, cool days of fall typically require an indoor workspace, because the dew dries late in the day and falls early in the evening.

The first coat on bare wood is the sealer, which should be thinned adequately enough to allow it to seep into the wood before it cures. When it dries, the sealer should all but disappear into the wood; there should be no ambition to achieve a heavy gloss finish at this stage. Thinning is typically specified as a percentage of the varnish in your pot, and the range specified by manufacturers varies depending upon the viscosity of the varnish. One brand of thick-bodied varnish calls for 50 percent thinning for sealing purposes; less viscous, more forgiving varnishes are generally thinned only 10 percent.

Don't varnish straight out of the can. Instead, pour your varnish through a medium or fine paint strainer into a clean container. This filtering step is especially important if you're using a previously opened can, for globs of cured varnish can inhabit the rim and find their way into your finish.

Once the sealer coat has dried, it's time to scuff it with 220-grit paper—just enough to knock down any hardened fuzz on the surface, and to dull the shine, if there is any. With this done, wipe down the surface with thinner applied to a clean lint-free rag, follow with a tack cloth, and apply the next coat. Some manufacturers will recommend that this next coat be

thinned by 25 percent, while others will counsel full-strength varnish at this stage. Again, your best bet is to follow the can's instructions.

The ideal is to not thin your varnish at all for the buildup coats, but the reality is that your brush will drag after a while on hot days or on long jobs as the solvent in the varnish flashes off. A fraction of a capful of proprietary thinner should thus be added occasionally, to make the varnish flow properly.

Good brushing technique is a matter of experience and concentration. I have good days and bad days applying varnish, probably because I do it only a few times a year. Here are some of my common pitfalls, and how I've come to avoid them:

SAGS—It's incredibly disappointing to look back at a surface that was varnished only five minutes ago, and to see an unfixable sag propagating down it. Varnish, you see, has a short window during which it can be worked. Once it starts to set up—to skin over—further brushing will only make it worse. Let's consider varnishing a sailboat's cabinsides: I like to apply the varnish in adjacent vertical bands and, once the brush has been emptied of varnish, to brush these out horizontally. This technique "meters" the varnish consistently, and avoids great sags in the middle of the surface. The place I always get into trouble when doing my cabinsides is under the half-round trim that defines the top edge of the cabin. Varnish loads up under there, and no matter how carefully I inspect the area before moving on, it always seems to release a sag or two. To avoid this, I now mask the cabinsides and varnish the trim first, and then freehand the cabinsides once the trim cures. It takes a bit more time, and some tape, but the saved frustration is worth it. If you find a sag in a cured buildup coat, scrape it away carefully before sanding for the next coat.

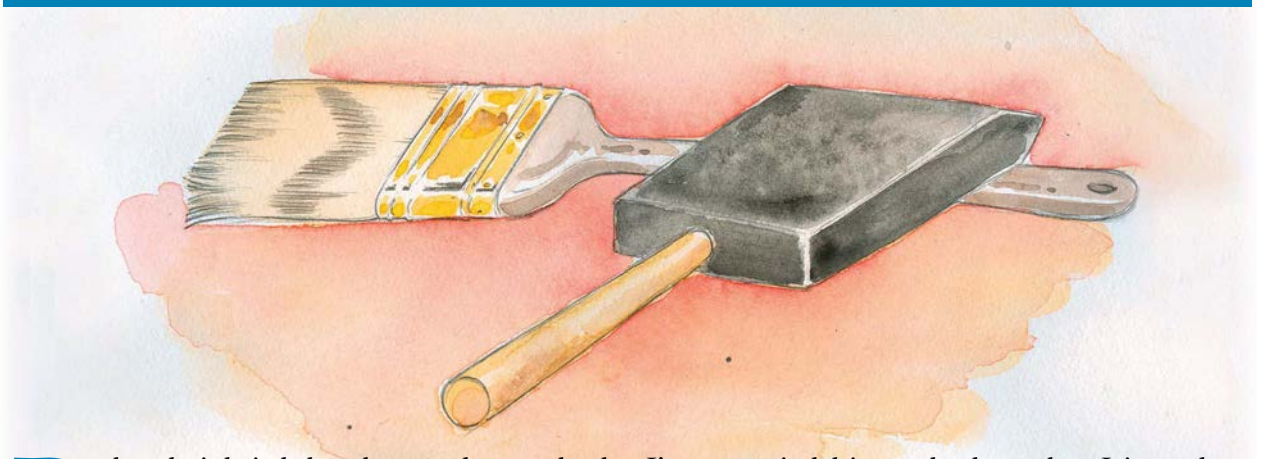
DUST—This is a disappointing defect, too, though I must say that a small bit of dust in the varnish seems to disappear once the boat is in the water. Perhaps it's that our focus shifts to other things once the season is underway, or we absorb the boat as a whole, rather than as a brightwork project. Anyhow, don't despair if you get a bit of dust in your buildup coats. The time to really be attentive to this is when applying the top coat. Varnish on a still day, vacuum, wipe, and tack the surface carefully, even wet down the shed floor if your situation allows you to do so, and use a clean brush. If you still pick up some dust, remember: This is an ongoing process, year after year. There'll be time for perfection next season.

HOLIDAYS—"Holiday," as you likely know, is the painter's affectionate term for places that didn't receive finish, and should have. They are typically a mental concentration issue, though occasionally they may be the result of inadequate amount of varnish on the brush. Be aware of them. Avoid them. And know that you'll get better at brushing the more you do it.

BRUSH MARKS—Brush marks are the result of one of two things: Either the varnish has been overworked to the point that it was curing while being brushed, or it was applied in short, choppy strokes that began in the "wet edge." The wet edge is the "front," if you will, of wet varnish that's advancing along the unvarnished surface as you apply the finish. Always complete your brushstroke into this edge, rather than originating it there. And apply it in long strokes that unload the brush evenly. Short, choppy ones will pile up the varnish unevenly, possibly leading to sags. The idea is to spread a coat of uniform thickness, one that's sufficiently thick to shine, but not so thick that it will sag. Whatever it takes to achieve this should be done: Speed of application, a good-sized badger-hair brush (1½″ or 2″), easily spread varnish (add retarder on warm days and accelerator on cold ones), and a "feel" for the process, all help.

People new to varnishing often balk at the idea of five to seven coats, thinking it an excessive amount. But that's typically the minimum required to build up a good and durable varnish finish that will last all season—again, with sanding between each coat. You'll know you're sanding a fresh coat too soon if the varnish gums up your paper; you must wait to sand until the varnish doesn't do this, but rather turns to fine dust. It takes one to two coats per year to then maintain a varnished finish in a temperate climate, and more in the tropics. A few months of neglect in hot summer sun will result in a dull finish, and a little more than that will often result in cracking in the surface, and eventual peeling.

— Brushes: Bristle or Foam? —



Badger-hair bristle brushes are the standard for serious varnishers. They are worth their cost, because they hold plenty of varnish, and release it evenly and cleanly—that is, with minimal brush marks. With careful cleaning and storage, they can be used year after year. Cleaning typically requires three rinses in clean thinner, with a twirl in a paintbrush spinner between each rinse. Then they can be soaked in kerosene or diesel and spun out before being wrapped in a clean rag and hung from a hook for the season; to use them again, soak them in thinner to wash off the kerosene, spin them out, and they're ready to go. Never store them in a can of thinner, because remnant varnish solids will settle to the bottom of the can, contaminating the brush.

Recently, Maynard Bray introduced me to his method of keeping varnish brushes, which is much less solvent-intensive than the steps I've outlined above. He's maintained one brush for 12 years using his technique, which he shares on our web site (www.woodenboat.com) under the magazine's "bonus content" section. I've not tried his method yet, but I intend to this fall.

Foam brushes are disposed of after use. Their downsides are: (1) They don't hold as much varnish as a bristle brush, so they must be dipped more often and thus long, even strokes can be a challenge; (2) they lose their stiffness after a period of time; (3) they don't work well cutting into tight spots; and (4) they add to the solid-waste stream. Nos. 1, 2, and 3 are generally considered to be acceptable trade-offs for small jobs, or in situations where prompt brush cleaning is challenging or impossible. The solid-waste issue must be balanced against the chemical-waste issue of cleaning brushes with solvent. Neither one is zero-impact.

Matthew P. Murphy is editor of WoodenBoat.

Further Reading

Brightwork: The art of finishing wood, and *The Brightwork Companion,* both by Rebecca Wittman.

"How Not to Varnish," by Georgia McDonald. *WoodenBoat* No. 135 (March/April 1997), page 59.

SOUTH SHORE BOATWORKS

South Shore Boatworks in Halifax, Massachusetts, is converting a 1973 Rhode Island commercial lobsterboat for pleasure use in Croatia.

Copacabana, chainsaws, power planes, and tablesaws come into play.

The builders work by eye, every year adding subtle changes along the sheer, in the freeboard, or in the shape of the stem or transom. No one I talked to had ever seen plans for the boats they were building, and opinions about the origin of the distinctive fishing-boat style were varied and inconclusive. The boatbuilders of Suriqui actively keep their expertise alive: Schoolboys help their fathers shape planks or trim frames after classes. The young fathers in turn help older generations roll over a fishing boat for planking. It takes a crowd to maneuver one of the big barges or *launchas* into the shallow, reed-ringed bay.

I was told that for the annual celebration of the town's inauguration day in late January, there are races by oar, sail, and motor. Of course, the biggest honor is to have built the winning boat.

Ben Brouwer and his wife, Becca Leaphart, spent six months working and traveling in Bolivia. They live in Helena, Montana. In WB No. 195, Becca wrote about the boatbuilding project and subsequent Inside Passage trek they and other friends made from Lopez Island, Washington.

Around the yards

■ A 40-year-old **commercial lobsterboat** is getting a **thorough makeover** at **South Shore Boatworks** in **Halifax**, **Massachusetts**. A Swiss physician, who spent part of his youth in Massachusetts and learned to love the boats he saw there, commissioned the conversion, which will be home-ported in Croatia—a circumstance her original builder could scarcely have imagined. TWIST was built in 1973 by Donald Wilcox of Apponaug, Rhode Island, and served the family in commercial lobstering until 2011. "The hull is in great shape," said Bob Fuller, of South Shore. At 45′ LOA with a beam of 14′4″ and drawing 5′, the boat provides ample space for accommodations. A new superstructure is being added, and such amenities as teak fittings and trim, a desalination unit, and a hydraulically operated drop-down transom that doubles as a swim platform and an access port for Mediterranean-style, stern-to mooring. A spring 2013 launching is expected. South Shore Boatworks, a longtime maker of traditional ship's wheels, also recently completed a wooden wheel for a U.S. Navy assault ship being refurbished at Norfolk, Virginia.

South Shore Boatworks, 415 Elm St., Halifax, MA 02338; 781–248–6446; www.southshoreboatworks.com.

■ Paul Arro writes from **northeastern England** with news that a century-old coble has been restored and is sailing again under a new owner. "MADELEINE

PAUL ARRO

Steve Emmerson restored a 1912 coble for use in Bridlington, England.

ISABELLA took to the sea again at **North Landing, Flamborough**, after her complete overhaul and repaint. Having waited for a suitable window in this awful British summer to take his coble to Bridlington, skipper Steve Emmerson pushed her down from the old boathouse and across the beach after a period of some seven months out of the water. Her new paintwork gleaming in the sunshine disguised the fact this coble was originally launched in 1912, by George Cambridge of Hartlepool for the Handyside family of Beadnell, Northumberland. The only 100-year-old coble currently sailing out of Bridlington harbour, MADELEINE ISABELLA is a beautiful example of a bygone age, once such a familiar sight all along the Yorkshire and Nothumberland coastline."

■ **GOLDEN BALL**, a classic shoal-draft leeboarder designed by L. Francis Herreshoff, 46′6″ LOA with a beam of 11′ and a board-up draft of only 2′, has been donated to the **Apalachicola Maritime Museum in Florida**. The 1962 boat arrived at the museum overland in mid-August 2012, and an **extensive restoration was expected to begin this fall**. "We have begun a thorough plank survey and are soon to be ordering replacement stock from nearby Thomasville, Georgia, from selected longleaf pine," said George K. Floyd, chairman of the museum's board. "We expect that around 50 percent of the planking below the waterline will need to be replaced. Major repairs to the decks, spars, and cabin structures are also required. We plan to bring her back to her full glory to match the HERITAGE and utilize her in our educational programs." HERITAGE is HERITAGE OF APALACHICOLA (ex-QUARK), an L. Francis Herreshoff Bounty design built at Brooklin (Maine) Boat Yard in 2002 and currently running day sails out of the museum, to which Floyd donated the ketch (see Currents, WB No. 215). "We have a number of staff and volunteers that will be working on the project in conjunction with our other projects at our wooden boat school," Floyd said, and progress will be updated

APALACHICOLA MARITIME MUSEUM

GOLDEN BALL, the L. Francis Herreshoff–designed leeboarder, is now in the care of the Apalachicola Maritime Museum, which plans a full restoration.

CRAIG MILNER

SYLVINA W. BEAL, a 1911 knockabout schooner now used for charters on the coast of Maine, was hauled out fully rigged for some planking and refastening.

in videos, broadcasts, in a WoodenBoat Forum thread, forum.woodenboat.com/showthread.php?146525-Saving-The-Golden-Ball. The donation was by Jaime Canfield, of Bradenton, Florida, who bought the boat with the intention of restoring her (see Currents, WB No. 199) and then came to the painful realization, which he described on the Forum, that he did not have the means for a restoration that he felt would do the boat justice. He approached the museum, which accepted the donation knowing that a restoration would be necessary.

"Please pass along an invitation," Floyd wrote, "for anyone interested in joining the effort to come visit us this winter, where the days are warm and the hospitality is even warmer. We are providing free lodging to volunteers in an 1890s-era home in downtown Apalachicola to those interested in being part of the project. This home will eventually come to be part of our wooden boat school lodging."

Apalachicola Maritime Museum, 103 Water St., Apalachicola, FL 32320; 850–653–2500; www.ammfl.org.

■ "Keeping a **century-old schooner** in shape for the charter trade requires commitment and an occasional haul-out," Craig Milner writes from Manset, Maine. "So it is that the **1911 schooner SYLVINA W. BEAL,** the last of the sailing herring schooners, is currently undergoing renovations at Manset. The 84′ gaff-headed, knockabout schooner was built in East Boothbay, Maine, at the Frank J. Adams Yard for Charles H. Beal of Beals Island and named for his wife, Sylvina W. (Alley) Beal. Dave Hancock, an independent shipwright from Rockland, is doing the work on behalf of her owner, Capt. Steve Pagels of Downeast Windjammer Cruises, who also operates the four-masted schooner MARY TODD out of Bar Harbor. With her rig removed in the 1920s, the BEAL was used as a diesel-powered sardine carrier. Her rig was restored in the 1980s. In the 1990s, she was used as a setting in two films, *AMISTAD* and *Age of Innocence.* The current work includes replacing planking and doing a complete refastening to 'set her right' and to repair damages from a collision."

Offcuts

If ever there was a sight to make a person wince and cover his eyes, it is the sight of a museum gone up in flames. Those who have worked as volunteers or in any other capacity for one of our maritime museums know how much hard work goes into collecting and preserving historical objects. The work is done on behalf of future generations, which we hope will care as much as we do. So the loss by fire causes an almost physical pain. Such

ROBERT HURRY/CALVERT MARINE

The last of the log-built Chesapeake Bay buyboats—left to right, WM. B. TENNISON, OLD POINT, and F.D. CROCKETT—gathered at the Calvert Marine Museum in Maryland in August 2012.

a sight of **charred timbers** was the **Deltaville Maritime Museum** in **Virginia**, which **burned to the ground in July 2012**. Some losses—artifacts, for example—can never be recovered. What can be recovered is the spirit of a place, and Deltaville proves it by continuing its schedule of outdoor events, and planning to rebuild. All of this makes reaching for the checkbook seem like easy work, for certain.

Deltaville Maritime Museum, P.O. Box 466, Deltaville, VA 23043; 804–776–7200; www.deltavillemuseum.com.

Richard R.J. Dodds of the **Calvert Marine Museum** in **Maryland** has called our attention to an **unusual gathering** of Chesapeake Bay craft: "The **last three surviving Chesapeake Bay log-hull buyboats** came together for the first time on August 6, 2012, at the Calvert Marine Museum in Solomons," he notes. "The buyboats (or deckboats as they are more commonly known in Virginia) were part of the annual gathering of these unique former workboats held by the Chesapeake Buyboat Association. The WM. B. TENNISON, built in 1899, is owned by the Calvert Marine Museum, and she was joined by the OLD POINT, built in 1909 and operated by the Chesapeake Bay Maritime Museum in St. Michaels, and the F.D. CROCKETT, built in 1924 and owned by the Deltaville Maritime Museum," which suffered its fire only a couple of weeks before. "The hulls of the TENNISON and CROCKETT are made of nine logs, while that of OLD POINT is made of seven."

Calvert Marine Museum, P.O. Box 97, 14200 Solomons Island Rd., Solomons, MD 20688; 410–326–2042; www.calvertmarinemuseum.com.

Speaking of boat gatherings, Timothy Du Vernet writes about one in Ontario. True, neither of the principal steamships involved was built of wood. But a Muskoka Lakes **small-boat flotilla**—many of them wooden-hulled—turned out in force both to **salute the steamships** and raise money for a worthy cause. "More than 150 boats joined in on August 18 to raise money to fight cancer," Du Vernet writes. One of the iron-hulled steamships is RMS SEGWUN, launched as NIPISSING in 1887 and rebuilt in 1924, counting as North America's oldest operating steamship. "The occasion was the re-enactment of a 100-mile regular steamship run on the Muskoka Lakes," Du Vernet writes. "SEGWUN, one of the Muskoka Lakes Navigation and Hotel Co.'s fleet, celebrated her 125th year this summer. She was joined by WENONAH II, a modern replica launched in 2002. The cruise began at Muskoka Wharf in Gravenhurst, and by

the time the steamships arrived in Port Carling to lock through to the upper lakes, close to 100 wooden boats had gathered. The town was buzzing with spectators and a live band. Both ships were sold out months in advance, and the numbers of registered boats kept growing as the date approached. The entry fee represented a donation to the Canadian Cancer Society. At the climactic moment, SEGWUN and WENONAH II arrived at their turnaround point at the head of Little Lake Joseph. A piper played on the boathouse roof. The spectator fleet, by then approaching 200 boats, began slowly circling them. From my perch in a helicopter, it was a surreal scene of natural choreography—truly once in a lifetime."

TIMOTHY DU VERNET

A flotilla of small craft, many of them wooden-hulled, saluted the iron-hulled SEGWUN of 1887 and the modern WENONAH II at Little Lake Joseph in Ontario in August 2012.

March 1, 2013, is the application **deadline** for the **Ed Monk Scholarship** awarded by **The Center for Wooden Boats** in Seattle, Washington. The annual award, totaling up to $2,000, can be used to cover the costs of transportation and housing, giving professionals working in the marine trades opportunities to broaden their understanding of current or historical boatbuilding traditions of other cultures. The award was established by John Goodfellow, who is active in the CWB, and later it was supplemented by WoodenBoat Publications. It is named in honor of Northwest boat builder and designer Ed Monk. *For information, contact Dick Wagner at The Center for Wooden Boats, 1010 Valley St., Seattle, WA 98109; 206–382–2628; www.cwb.org.*

Speaking of grants at **The Center for Wooden Boats**, the Center itself received one recently: **$6,000 from** the **National Trust for Historic Preservation** to study the history of Puget Sound **fishing resorts**. "Creating Context at Cama Beach: The Boathouse Era on Puget Sound, 1890–1970" will gather materials about places—all but gone, now—where people could rent a rustic cabin and an outboard fishing skiff or just enjoy natural surroundings. Fortunately, people can still experience that lifestyle at Cama Beach State Park (see WB No. 211), which is run in conjunction with CWB. It is the last of the line.

Robin McCarthy writes from Belfast, Maine, about volunteers who are **completing** the construction of **a Friendship sloop** at the **Sail, Power, and Steam Museum** in nearby **Rockland:** "Registered as hull No. 120 with the Friendship Sloop Society, and later named PERSISTENCE, the boat, 46 years in the making so far, was started by **Carlton Simmons** of Friendship in 1966. Simmons was a descendant of turn-of-the-century Friendship boatbuilder Wilbur A. Morse. Over the course of 10 years, Simmons

WoodenBoat

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E) Total distribution: 66,904
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I certify that the above statements made by me are correct and complete.

Carl Cramer, Publisher
WoodenBoat Publications, Inc.

ROBIN McCARTHY

Volunteers at the Sail, Power, and Steam Museum in Rockland, Maine, are working to complete a 29′ Friendship sloop project that a previous owner started many years ago.

laid the keel, set up the stem and transom, created molds, and bent in white oak frames. He began strip-planking the hull with cedar, completing a third of the 29′ LOA boat, which has a 9′ beam and a 5′ draft. In 1976, Simmons sold the unfinished hull and materials to **John Lichtman,** also of Friendship, who gave the boat her name. Thirty years later, a neighbor of Lichtman's suggested he donate it to the museum. 'It feels really good,' Lichtman said, 'and it's probably the only way I'll ever actually sail her.'

"The construction has fallen to a half-dozen local volunteers, most of them novices, who meet once or twice a week throughout the winter. The museum provides the shop, tools, lunch, and the guidance of professional boatbuilder Dennis Gallant. One museum neighbor donated enough cedar planking to finish the hull, and another, Spruce Head Marine, donated the 1923 Morse sloop EAGLE for parts, including a 25-hp three-cylinder Universal marine diesel installed gratis by Patrick J. Ricci.

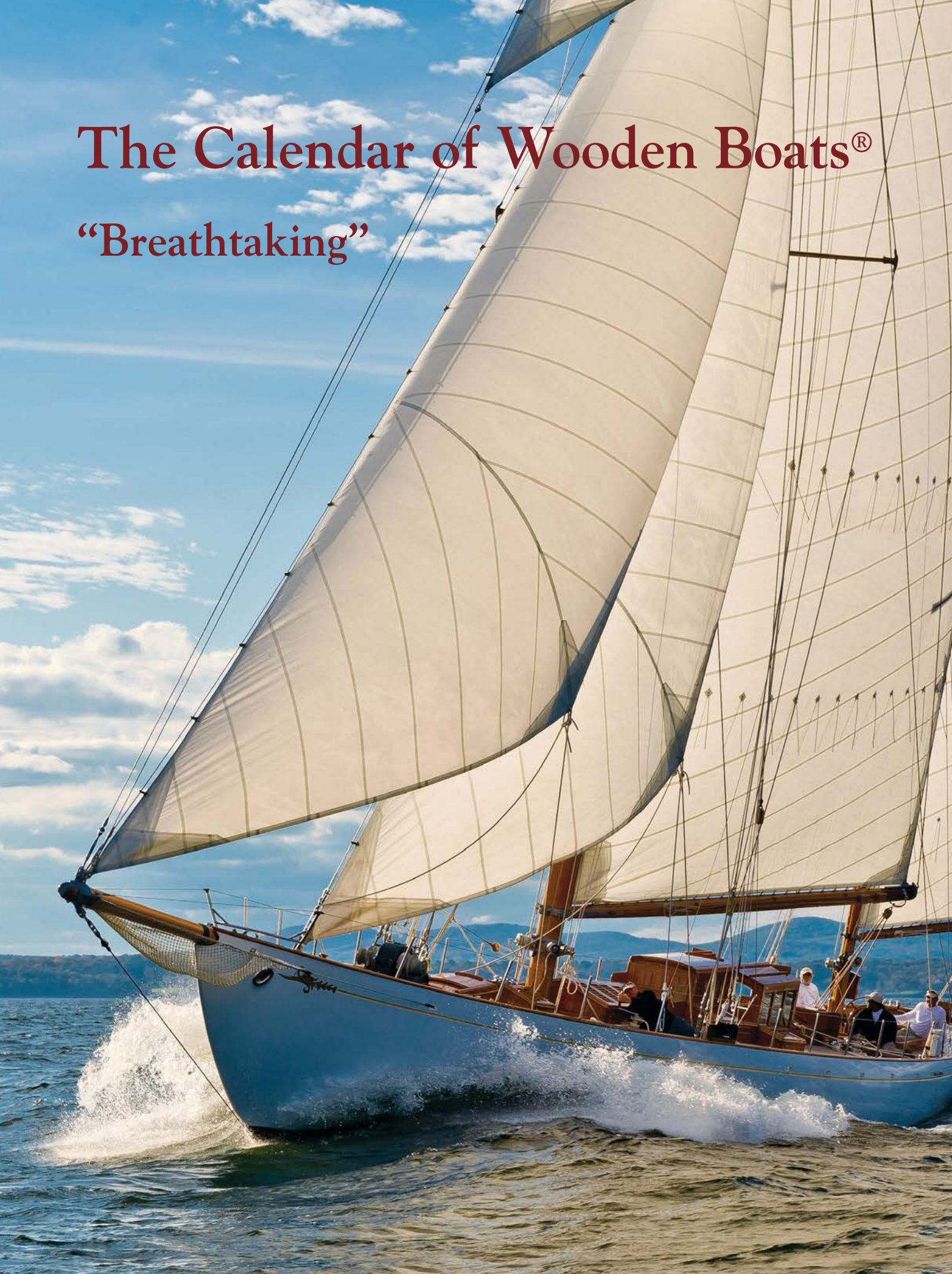
"Ultimately, the hull will be sheathed in fiberglass cloth set in epoxy and used by the museum for daysailing outings. For this boat, at least, persistence is paying off. A spring 2013 launching is expected." *Sail, Power, and Steam Museum, 75 Mechanic St., Rockland, ME 04841; 207–596–0200; www.sailpowerandsteammuseum.org.*

Across the bar

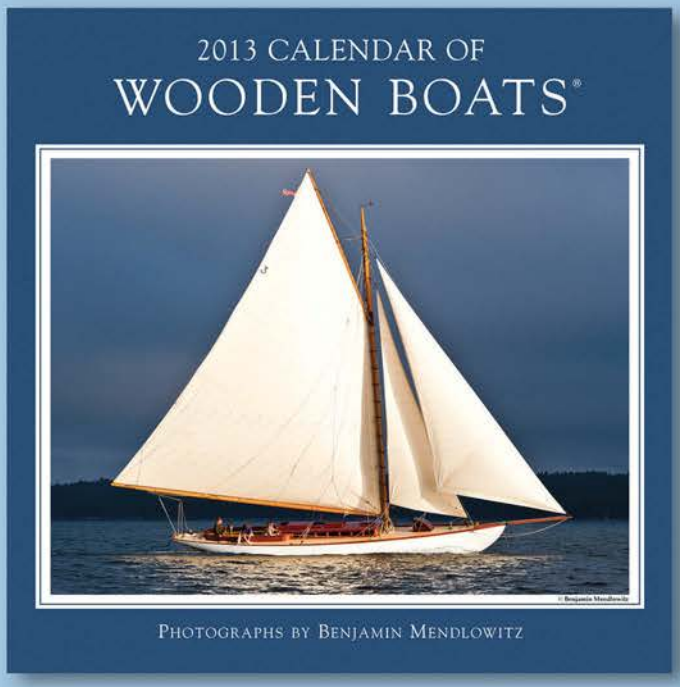
■ **Daniel Charles Gould**, 59, July 10, 2012, Brewster, Massachusetts. Mr. Gould was born in Texas while his father was stationed there with the U.S. Air Force, but the family soon returned to Cape Cod, settling in Orleans. Reportedly, Mr. Gould's first spoken word was "boat," and after graduating from Nauset High School in 1971 and working for a time with his father as a Volkswagen mechanic, he went off to study boatbuilding at the Apprenticeshop, then located in Bath, Maine. He hired on as a shipwright on the USS CONSTITUTION, then in 1983 took a position as a shipwright on the 125′ LOA schooner SPIRIT OF MASSACHUSETTS. He served as crew during her maiden voyage, meeting his wife-to-be, crew member Marie Surprenant. Later, he served as chief engineer aboard the PRIDE OF BALTIMORE during her European tour. After marrying in 1991, he and Marie moved to Cape Cod, where Mr. Gould joined Tony Davis—another old friend from the SPIRIT OF MASSACHUSETTS days—at Davis's Arey's Pond Boat Yard, where Mr. Gould served as the head boatbuilder for 20 years. His work included many wooden boat restorations, most recently of the century-old catboat CONJURER. He also built a Friendship sloop for himself, and crafted musical instruments, telescopes, bicycles, and furniture—including a sea chest now on exhibit at for a year at the Nantucket Whaling Museum.

The Calendar of Wooden Boats®

“Breathtaking”



Photography by Benjamin Mendlowitz



The 2013 *Calendar of Wooden Boats®* features twelve never-before-published photographs of classic wooden boats in a variety of striking settings. Our collection includes a stunning Fife ketch; a Baybird Sloop and a Classic Catboat sailing together through a marsh; an 86' schooner used for sail training in Bermuda; the last New York 50 Class sloop of her kind; a sardine carrier; and a peapod. Our cover shot is a stunning 1902 Herreshoff racer/cruiser. Rich color, dramatic lighting and attention to detail are the ingredients that set the mood for this unique calendar.

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Chisels

Selecting the right tool and technique for the job

by Jim Tolpin
Photographs by Craig Wester

***Top*—The shapes and sizes of chisels are optimized for specific tasks; for example, the large firmer chisel shown here is used bevel up for paring, as described on page 31. *Above*—From left to right are a mortising chisel, a large firmer, a small firmer, a long-handled paring chisel, a hybrid/firmer chisel, and a crank-necked paring chisel.**

Chisels are one of the most common and effective hand tools in the boatbuilder's tool kit. From gross waste removal to final trimming, you can use a chisel for a range of essential tasks. You can bust out the mortises for the tenons of a sampson post, mast foot, or butt end of a frame; shape and fit notches at structural intersections such as the lap where a deck-beam runs over a beam shelf; trim to final fit the cheeks and shoulders of joints, the gains of lapstrake planking, and the protrusion of bungs.

Not all chisels work wood in the same way, however. For fast, coarse work, you can use them as a wedge to rive, or split, wood apart along grain lines, quickly reducing the stock to a workable size. To create mortises, you can chop down across the grain to chunk away the waste. Using a paring action that cleanly slices the grain into uniform, thin shavings, you can true and flatten surfaces and joints to extremely high tolerances. Each of these processes involves a fundamentally different interaction between the tool and the wood. Each calls for a different shape and size of chisel as well as handling technique to make the work go most efficiently and to be easy on the tool itself. In this article, I'll show how to choose the appropriate chisel and technique for the task at hand.

Riving

Riving with a chisel is a fast way to remove the waste up to a cut line. Most woods cut relatively easily along grain lines, although some tropical hardwoods, for example sapele, are more resistant due to their inherent interlocking grain patterns. Experiment on a piece of scrap first. You may need to call on specific strategies—such as making more relief cuts, as explained below.

Riving calls for a rugged chisel. Choose a "firmer" and a 24-oz or heavier wooden mallet to drive it. As you can see in Figure A, a firmer's blade has straight, rather than beveled, side edges to help stiffen the blade. Its primary cutting angle is at least 25 to 30 degrees, which keeps the cutting edge relatively thick to increase the edge's durability while producing an effective wedging

WORKING SAFELY WITH CHISELS

Chisels can hurt you, even though they rarely move with the speed of a power tool. If a chisel's cutting edge touches your skin, you will very likely get cut. Usually we are talking nicks—but people have suffered much worse. To work safely:

- Only use a sharp chisel. A dull chisel takes more power to propel it forward, invariably resulting in less control over its direction and range of movement. (See sharpening, page 31.)
- If the workpiece can move at all under force, clamp it securely. Avoid using your hands as clamps—they will invariably place themselves directly opposite the line of force, and therefore the line of fire, of the chisel's edge.
- Never orient the chisel and workpiece in such a way that the chisel edge is directed at any part of your body.
- Don't use mallets on chisels designed for paring, except for very light tapping in lieu of the force offered by the palm of your hand. A mallet can blow apart a wood handle, sending shards in all directions while allowing the mallet to continue down onto your hand.
- Protect the fingers of the hand that's holding the blade by relieving any sharp side corners or by wearing a work glove.
- When aggressively chopping in areas where the chisel's edge might encounter hard knots or foreign objects, wear safety glasses. Always wear goggles when using a steel hammer on steel-capped chisels. —*JT*

action. Large firmers, often called timber framer's mortising-chisels, provide more leverage and control. Because of the mallet blows they endure, firmer chisels' wooden handles have metal rings fitted around their tops to prevent them from splaying out. The heaviest-duty versions have a socket formed at the base of the blade to encapsulate the handle. Choose a blade wider than the stock thickness when working an edge,

Figure A—*Blade Cross-sections*

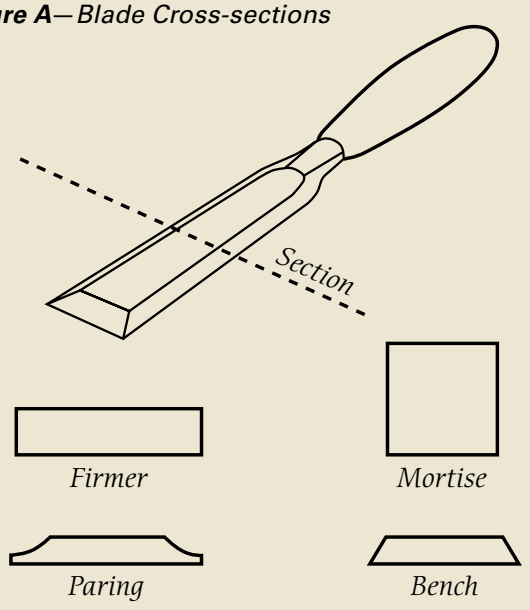
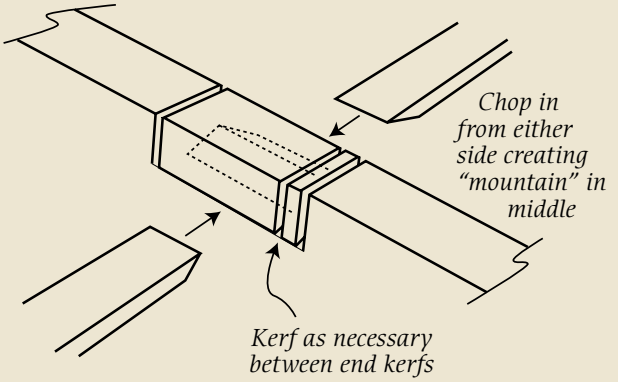


Figure B—*Riving in a Notch*



Above—**When riving a notch, work down from both sides with the bevel down until reaching the depth cutline. Turn the chisel bevel-up to flatten the bottom.** ***Top***—**If the notch sides are inaccessible, rive from above, using the back of the bevel as a fulcrum to control the cut depth. Kerf as needed to control the depth of cut in contrary grain.**

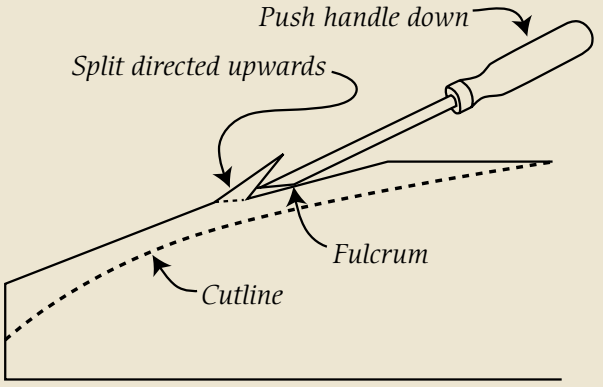
and one narrower than the width of a notch if you are driving the chisel from the sides, across the grain.

Riving wood along its grain is fast work. Thick slivers practically shoot off the board. Whether working along a board's length or across its width, always orient the blade bevel down when riving as you drive the chisel forward with a mallet. With the bevel down, you can gain more control of the depth of cut. As you exert force downward on the handle, the back of the bevel acts as a fulcrum (see Figure C) and powerfully redirects the split upward. With each impact, you can make subtle adjustments as necessary.

You can also use the firmer to rough out a curve, or a compound curve, along the edge of a board—for example, when shaping a side thwart to follow the both the longitudinal and athwartships curvature of the hull. After measuring and marking cut lines on each face of the board, begin the chisel work: Orient the chisel bevel-down so you can control the amount and direction of the wedging action by using the base of the bevel as a fulcrum. The longer the handle, the more leverage you gain—an important consideration

Left—**The cross-sectional shapes of various types of chisels reflect their different intended uses.**

Figure C—*Riving a Curve*



when working with thick or tough pieces of wood. Rive away the waste area in a series of layers, as illustrated in Figure C. You can finish with a paring action, as shown in the lead photo on page 28, pushing the chisel bevel-up with a continuous, steady motion utilizing the momentum of your body—or, you can switch to using a spokeshave.

Chopping

To cut a mortise, or socket, in a face or edge of a piece, chop across and down through the wood grain between two scored end lines. With careful work and proper technique, a minimum of paring will be needed to clean up the cut. As you drive the chisel into the wood, it severs a chunk of wood exactly the width of the chisel. If you drill a relief hole first, the chunk automatically is pushed into that void by the wedging action of the blade's cutting bevel. Even without such a hole, you can use the chisel as a lever to lift the chunk up and out of the cut, as shown in Figure D.

Chopping asks a lot of the tool, and you'll need a chisel stout enough to stand up to the pounding and levering. Long, thick-bladed firmer chisels of the type used by timber-frame home builders are a good choice for cutting large mortises, but they are too unwieldy for

***Below*—Chopping action in depressions, as in a mortise for a maststep.**

Figure D—*Chopping Action*

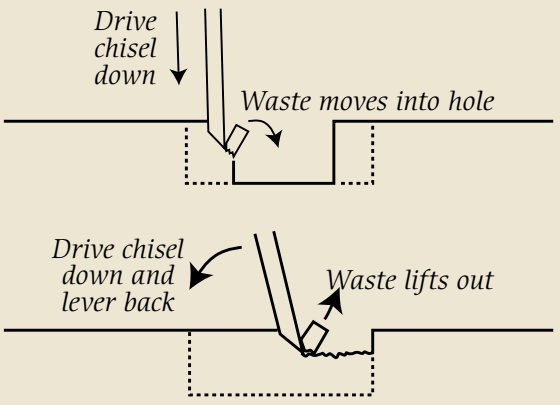


PHOTO 3

***Left*—Riving with the grain, with the firmer held bevel-down, removes wood very quickly. *Above*—Working well away from a cut line, bevel-down chiseling makes the chips fly. Nearing the cut line, bevel-up work (visible in the lead photo on page 2) with a long-handled firmer in a paring action allows precise cuts to the line on each side of the piece, followed by paring away the "mountain" in the middle.**

working on small pieces or in tight quarters. For the latter, choose firmers with an overall length of about 12″. Another choice is the hybrid type of firmer—generally called a "bench chisel." Such a chisel has beveled side edges, but because they're not as thin as dedicated

MALLETS

As a general rule, use the largest mallet you can comfortably handle. You want the mallet's mass, not your muscles, to do the work when you're using a chisel designed to be used this way. Be aware that hard woods may ask for a heavier mallet than you are accustomed to using. The mallet head should be just slightly softer than the wood of your chisels. Traditionally, mallet heads were beech while chisel handles were boxwood. The carpenter's flat-faced wooden mallet is my favorite mallet style. Its flat face, which is also angled slightly to account for arc of arm swing, helps avoid glancing off, an especially important trait for both safety and for damage control when doing heavy work. For very light work, I use a brass-headed mallet in lieu of the palm of my hand. —*JT*

Light to heavy mallets (left to right) are brass-headed, medium 16-oz., and 24-oz.

SHARPENING

Here's a less-than-a-minute (and dare I say it, foolproof) method of honing a razor-sharp edge. Sharp, by the way, means you can effortlessly pare a shaving across the end-grain of a nasty-dense piece of stock. The one-word secret behind this method is "microbevel." Except that I really mean it: The micro really must be micro (see photo, lower right). If you allow the microbevel to grow any larger than a couple hair-thicknesses, this method still works—but not as well and not as quickly.

By keeping the microbevel small through occasional regrinding of the primary bevel, you can get away with freehanding the final honing—which eliminates time-consuming jig setups. Because the tiny bevel can be fully restored with only two strokes on the medium-grit stone (800 to 1,200 in the waterstone system) and about four more on the fine-grit stone (4,000 to 8,000), you are not likely to round the bevel. This means the angle at which you maintain the edge during honing is not critical. Plus, you can jump from the medium to the finest stones, since there is so little volume of metal for the stones to remove.

To freehand hone, grasp the chisel so the fingers of your leading hand can apply pressure to the front edge of the chisel while your other hand grasps the handle. Set the primary bevel down on the far end of the stone. If you've maintained a small microbevel, the primary bevel is large, and therefore easy to feel when it's flat against the stone (see photo at left). Lift the back of the chisel up about ½″ at the top of the handle—or approximately 5 degrees. Then, pull both your elbows against your side. You are now a sharpening jig! Rock slightly backward, applying pressure to keep the microbevel on the stone; then "float" the chisel back, meaning to keep your position but raise the blade slightly off the stone for the return stroke, and repeat. If the microbevel is truly micro, you need to do this only once or twice to produce a burr on the flat face. Next, move up to the fine stone and repeat the process, but double the number of strokes taken on the first stone. Finish up by laying the chisel's back flat on the fine stone, pushing down and pulling back (usually only once) to remove the burr. Wipe the chisel off with an oily rag, and get back to work. —*JT*

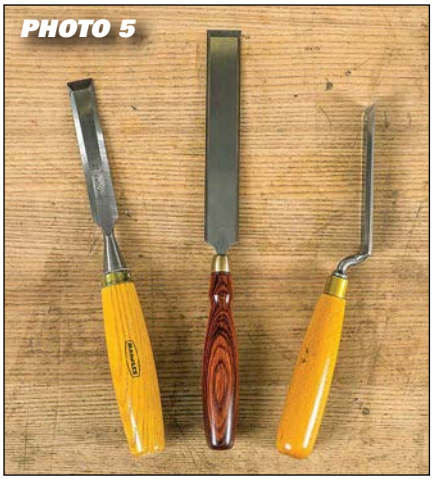
paring chisels, they can stand up to mallet work. If you are working with hardwoods such as oak and locust, look for the more durable, socketed-handle style.

In Photo 4, I'm chopping out a mortise in a maststep. The techniques used in chopping demand that the workpiece be held very securely. Here, I've brought the step to the bench and have clamped it in place over one of the legs to eliminate vibration, which is an issue even on my 4″-thick bench. I begin by boring a hole to the depth of the mast's tenon. I've planned the tenon to match the width of the chisel I'm using to do the chopping. I start chopping near the center of the hole, going down about ¼″ and working my way toward the end lines in about ¼″ increments, levering the waste into the hole.

Because chisels are wedge-shaped, they don't maintain a constant line of direction when driven down into the wood. The deeper the chisel is driven, and the thicker the cut, the more the wedging action increases, and the more the chisel tends to undercut when chopping. I therefore stop cutting about ⅛″ away from the end lines until the central part of the mortise reaches its full depth. Only then do I make the final chop at the cut line. When making these final chops, first I scribe the line with a knife, then set the cutting edge in the line to assure a true start to the chopping cut.

Paring

Paring with a chisel is a slicing action, primarily powered by the steady force of the mass of your body to make thin, precise cuts either with or across the grain. Your muscles come into play mostly to skew the handle back and forth and to hold the blade down on the wood.



***Upper left*— Chopping across the grain quickly removes chunks of wood to create a mortise. Start in the middle and move toward the ends in increments as shown in Figure D. Bore a hole to provide a release-void for waste. At the ends, reverse the chisel to chop straight down, as shown here.**
***Lower left*— Paring chisels are (left to right) a standard bench version; a patternmaker's with a long, thin blade; and a crank neck. All have handles that are rounded to fit comfortably in the palm.**

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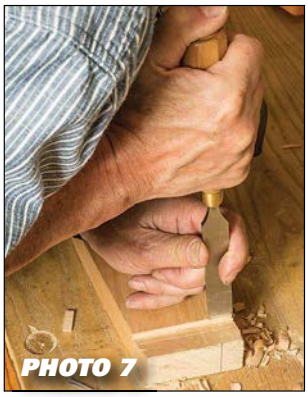
When paring a surface true, a long, flat blade acts as a reference surface to guide the cut. The thin side-bevels of this paring chisel allow it to slice under the angled corner of this dovetailed shoulder.

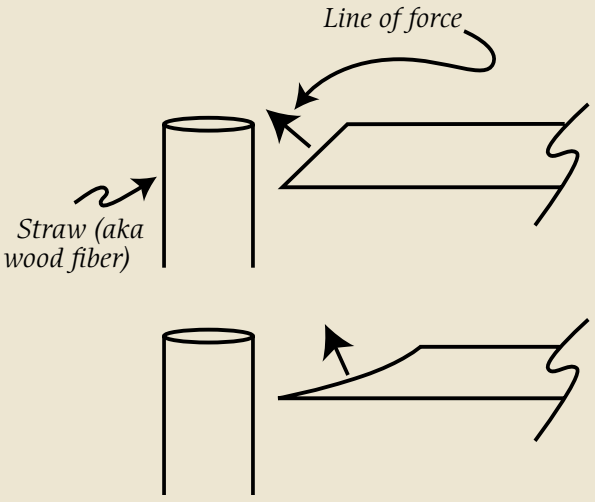


To true the cross-grain shoulder of the joint, place the chisel's edge in the knifed layout line and push down to the bottom of the shoulder. Body weight, exerted via the shoulder against the thumb covering the top of the handle, provides ample force.

Paring down to knifed layout lines at an angle helps prevent overshooting past the cut lines.

Remove the waste down to the layout lines by setting the chisel in the ledge formed by the layout knife. Choose a chisel slightly narrower than the workpiece to avoid digging into the side faces.

Figure E—*Cutting Force at End Grain*



Paring chisels are ground to comparatively low angles, which cut most effectively in end-grain.

The optimal paring chisel is the "pattern-maker's" type, which has a blade of up to 10″ long, providing an ample reference surface for the cutting edge and increasing the blade's skewing forces. The paring blade's primary cutting bevel is 20 to 25 degrees, with low-angle bevels on the side edges to allow the blade to slide under overhangs made by acute angles, like those encountered when making dovetail joints. Smaller versions of paring chisels are usually called bench chisels—though some bench chisels are really hybridized firmers as described earlier. A specialized variety of paring chisel has a "cranked" neck, in which the blade is offset from the handle, allowing you to push it across a wide board when trimming joints such as dadoes. Because true paring chisels aren't meant to be used with mallets, their handles aren't hooped or otherwise protected.

Japanese paring chisels are widely available, although I find that their high Rockwell-indexed hardness—up to 10 percent greater than western-style blades—makes them brittle and vulnerable to chipping and early edge-failure when used on hard tropical woods or when encountering knots. The bottom line is that you'll spend a lot of time sharpening and regrinding them.

The paring chisel's low-angled cutting bevel allows you to almost effortlessly and precisely take off thin shavings, even across end-grain. As you can see in Figure E, the line of the cutting force is perpendicular to the bevel angle. The low-angled paring chisel directs its severing action upward, while a higher-angle chisel tends to "bulldoze" into the wood fibers. This also explains why skewing any chisel from side-to-side is so effective: As you skew the blade relative to its forward motion, the cutting angle is effectively lowered (thanks to geometry!), making the cut easier, without having to put your back into it.

Some of the shaping, and all of the final fitting, of a joint such as the dovetailed notch at the end of a deck-beam where it joins a carlin, is a job for the paring chisel. After first sawing the shoulder at the side of the joint, use the chisel to slice away the waste down to the bottom of the saw kerf lines. In Photo 6, notice how I'm using my fingers to index the flat face of the chisel to the face of the joint surface while my other hand pushes the blade, the tip of my index finger tucked behind the swelling at the handle's base to provide a braking action.

Jim Tolpin lives in Port Townsend, Washington, and is currently teaching hand-tool woodworking at the Port Townsend School of Woodworking (see www.ptwoodschool.org).

AL BUTKAS

Revisiting the Classics
Commodore Munroe's PRESTO

by Reuel B. Parker

Commodore Ralph Middleton Munroe (1851–1933) was one of the earliest settlers in the Biscayne Bay region of South Florida. He came from Staten Island, New York, in 1877, fell in love with the bay, and in 1886 purchased a 40-acre tract of land just south of what would later become Miami. Munroe named it Coconut Grove; he cleared the land and planted the coconut palms himself. In 1891 he also designed and built a unique home, which he named "The Barnacle"—it still stands today, as the oldest home in Miami-Dade County and now a state park.

Munroe was an avid sailor and yacht designer, and created dozens of beautiful cruising boats of all sizes and types, many of which he either built or had built (he is credited with 56 designs). He is responsible for introducing the sharpie to South Florida, having brought a model of his own design to Key West in 1881 on the Mallory steamer from New York. The 30′ sharpie was received with much skepticism until it trounced every local vessel in a series of races, and earned the name SKIPPEREE. She even bested Munroe's chartered freight schooner in an informal 21-mile beat to windward during a hard norther, after which it took the schooner 75 minutes to catch up! That same year he brought KINGFISH, also his own design, to Coconut Grove, and with an additional $400 traded her for the land that became his home. Munroe subsequently designed and had built his famous 28′ double-ended "sharpie lifeboat," EGRET, in 1886, which became arguably the most famous sharpie in history.

Munroe also designed a number of shoal-draft, round-bilged cruising sailboats, the best known of which are probably MICCO, WABUN, PRESTO, CARIB (see WB No. 228), UTILIS, and ALICE. But it was the 41′ PRESTO that caught the world's attention, particularly after Munroe published an article about her in *Yachting* in 1926. Many of these Munroe models had similar lines—essentially variations on a single evolving design theme. But he designed other types, too, including many sharpies and even four proas. It is interesting to note that America's best-known yacht designer ever, Nathanael Greene Herreshoff, was a close friend of Munroe, and in later years he and his wife spent several winters in Munroe's waterfront guest cottage.

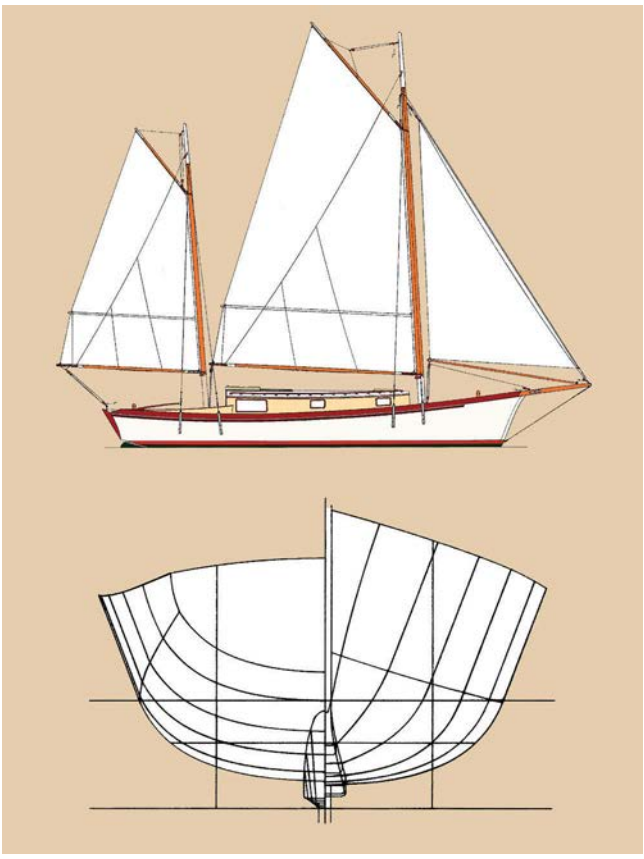
Munroe had PRESTO built at Brown's yard in Staten Island in 1885. She was launched unballasted, and when her builder stepped on board she rolled down so far that he feared for his life and condemned her on the spot. Munroe calmly told him to put her ballast in, and that it would then be a different story. While

***Above*—A Presto 36 built by Al Butkas. Reuel Parker designed several sail plans for the Presto 36, but only the original gaff-ketch has been built.**

initially tender even after ballasting, PRESTO became increasingly stiff as she heeled over, and proved herself to be an extraordinarily seaworthy shoal-draft cruiser.

Acutely aware of how seaworthy his sharpie KINGFISH was, Munroe had drawn the lines for PRESTO by gently arcing her bottom and rounding her chines into soft bilges, creating a whole new animal in marine architecture. PRESTO's sections are U-shaped, and Munroe described her as a "round-bilged sharpie." He was seeking a more seaworthy hull form, as well as one that would not pound while beating to windward. He had the following to say about the new design:

> It was the direct and necessary result of my interest in Florida where shoal waters put a great premium on extreme light draft. But my interest in the centerboard type and its performance at sea had been growing almost from the beginning of my sailing days. The centerboard schooners frequently used in the old West Indian fruit trade always aroused interest and comment, and some of them were enthusiastically championed, as against their keel rivals, by skippers who were certainly keen sailors of wide experience, while their business required "cracking on" at all seasons, and some of them were Englishmen, born and bred in the tradition of deep keel craft.
>
> One of the main advantages of the shoal-draft boat in deep water is her light weight, which gives her the ability of a nimble boxer in her contest with the sea. She is quick to lift at the impact of a wave, rising lightly over its crest, instead of standing stolidly to have it break over her. This not only makes her ride dry and comfortable, where the "lead-mine" would be swept by every sea, and must depend only on tight ports and hatches to keep herself afloat....



REUEL PARKER

Ketch-rig sail plan and body plan of the Presto 36. The body plan shows the boat's sharp entry, overhanging stern, and U-shaped sections.

COURTESY OF THE HISTORICAL SOCIETY OF SOUTHERN FLORIDA (BOTH)

The original PRESTO sailing on Biscayne Bay in the late 1880s and, above, her designer Commodore Ralph Munroe.

> The deep boat, held down by the inertia of her keel, cannot quickly lift to the sea; the full weight of the wave must envelop her and put forth its lifting power to uproot her keel from the depths, before she can struggle free of it. Conversely, once started upward, she leaps high above the crest, to fall with the greater shock into the next trough. There is also a similar contrast in horizontal strains, for the keel holds a craft rigid by its deep anchorage, and her topsides cannot yield to the onslaughts of the wave crests, but must simply stand and take them, while the light shoal boat does not have to thus fight against herself, but ducks and dodges the worst of the sea.
>
> —from *The Commodore's Story*; Historical Association of Southern Florida

In 1979–80 I sailed from California to Florida in FISHERS HORNPIPE, my deep-keel, heavy, flush-decked cutter, and experienced firsthand everything Munroe wrote above. Arriving in South Florida and the Bahamas and being confronted with vast areas of very shallow water, I immediately—and dramatically, as we ran aground everywhere—realized the necessity of shoal draft.

I became fascinated with Munroe's designs, and visited The Barnacle many times, beginning in 1980. The shallow-draft ketch MICCO, one of the only surviving Munroe boats, is still there, beneath her own open-sided shed.

In 1983, as an aspiring yacht designer, I met the Polvere family of Fort Pierce, Florida, and received my first design commission. The result was the schooner SARAH, which became the first of my Exuma series. Michael Polvere and I built her in White City, Florida, in 1984 with the help of Eliot Greenspan and Bill Smith, who would become my boatbuilding partner, a relationship that continues to this day.

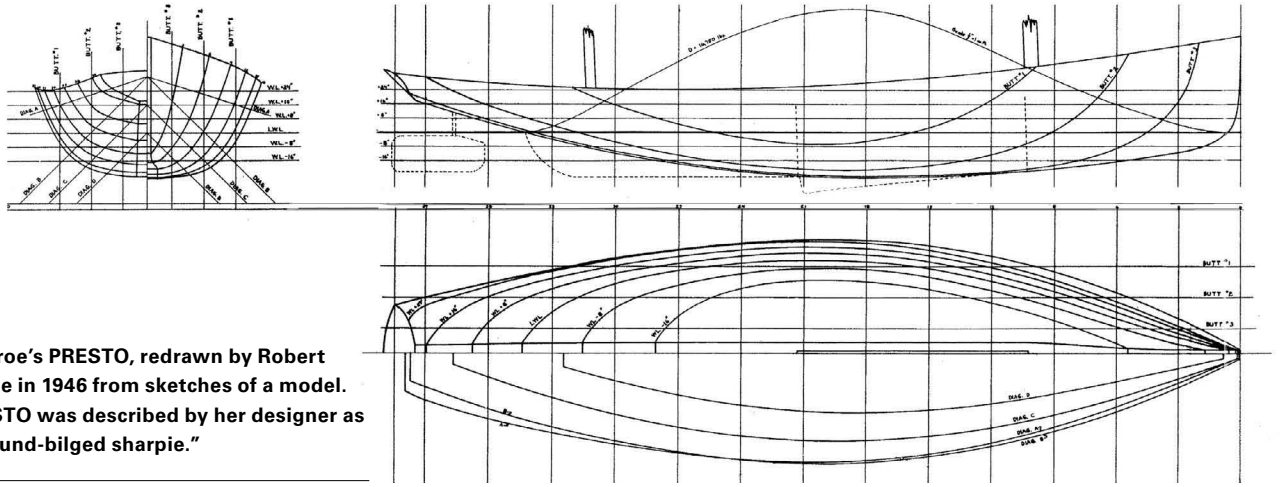
While designing SARAH, I constantly referenced the designs of Ralph Munroe and N.G. Herreshoff as well as traditional types like the Chesapeake Bay bugeye. I had PRESTO's lines in front of me, and they were a primary influence in all my early design work.

If you study the lefthand side of her body plan, you will note that as the sections proceed aft, the same basic curve is lifted and shifted inboard. This is called "whole-molding" and was a popular technique in early ship design. I first encountered it in Munroe's designs, and later studied it in Chapman's brilliant 18th-century work *Architectura Navalis Mercatoria*. I experienced a revelation: Water flowing along the same curve shifting up and in would travel the smoothest and most direct route possible, with the least amount of turbulence. This is corroborated by the "diagonal lines" that are expanded from the body plan as the beautiful fair curves shown in the bottom half of the lines drawing. PRESTO was a beautifully molded and very slippery boat!

PRESTO's elliptical bottom sections, rising into straight, flaring topsides, became the cornerstone for many of my own early designs, and certainly influenced many other yacht designers throughout the decades of the 20th century. As you might remember from high-school geometry, a circle has the smallest perimeter surface of any shape for a given internal area. Applied to underwater hull shapes, this means that a circular bottom will have less wetted surface (and, therefore, less frictional resistance) than a flat bottom or V bottom or any other shape. Because for a monohull, a submerged half-circle would roll miserably, elliptical hull shapes become the next-best choice. (You may have noticed that catamaran hulls, and the amas of trimarans and proas, often have circular bottoms, because their geometry allows this.) Indeed, many of the sailboats designed in the past century employ some variation on the "elliptical bottom" concept. They are often called "canoe hull forms," though properly speaking, canoes are generally more oval-shaped—flat-bottomed with round bilges.

To manifest this shape for strong, simple, one-off custom boatbuilding, my own early construction techniques employed a triple-layer bottom of double-diagonal planking over a self-fairing tongue-and-groove inner layer. I learned of this basic building technique from an article in *WoodenBoat* (WB No. 25) about the construction of Bruce King's extraordinary WHITEHAWK at Lee's Boat Shop in Rockland, Maine, in 1978.

Because the topsides of PRESTO become flat in section and curve only fore-and-aft (creating what designers call a "developable surface"—one that can be built from a bent panel), I could use full-sheet plywood for planking above the bilge. I employed this construction technique on all my Exuma and Presto series designs, and later on many of my other designs. Only when I eventually became involved in USCG-certified charter-boat design did I encounter a technical glitch with this method—certification guidelines (like the American Bureau of Shipping's Scantlings for Offshore Racing Yachts) are not capable of analyzing multiple-laminate construction in which there are both longitudinal and athwartship structural components.



Munroe's PRESTO, redrawn by Robert Beebe in 1946 from sketches of a model. PRESTO was described by her designer as a "round-bilged sharpie."

This anachronistic Catch-22 motivated me to seek alternative construction methods.

Many years later, in search of an even simpler construction method, I "invented" a new technique involving multiple laminations of plywood in the bilge sections of Presto-type hulls. I thought I was being truly innovative until I discovered that South African yacht designer Dudley Dix had "invented" the same method, and with it built a prototype sailboat in which he crossed the Atlantic.

My second Exuma boat was the 44′ cat-schooner TERESA de ISLA MORADA, named after my Cuban friend Teresa Rodriguez. Eliot Greenspan, Bill Smith, Teresa, and I built TERESA in Islamorada (Florida Keys) in 1985. She became my "trial horse," and we had many adventures in her.

In 1985 I also designed an Exuma 36, based primarily on Munroe's PRESTO. I later renamed her "Presto 36″—creating a separate design series—because her hull shape lacked the chines of my Exuma series boats. I subsequently designed three other Prestos over the years: 30′, 32′, and 37′.

DAVID WEST (BOTH)

***Left*—The first Presto 36 in frame, being built by David West in Texas. *Right*—The same hull planked up, showing the transition from triple-laminated bottom to full-sheet plywood laminated topsides.**

I drew several rigs for my Presto 36 design, but to the best of my knowledge, the only one that has been built is the gaff-ketch as utilized by Munroe on the original PRESTO.

I have had no opportunity to build a Presto 36 myself, but in 1990 I sold a set of plans to Judge David West, of Houston, Texas, and he started construction, kindly sending me many photos as work progressed. Years later, I asked him about his project and learned that he had never completed that boat, which had succumbed to rot and termites. Now retired, Judge West purchased a new set of plans from me, and built the same boat all over again, finished her, and went sailing.

In subsequent years I sold more plans for the Presto 36, and received a design commission for a smaller version, which was never completed. I eventually designed

a Presto 37, for which I drew two alternate rigs, but never completed her interior plan.

Other designers have created their own versions of Munroe's PRESTO. Vincent Gilpin, for example, designed a version, modified for his own purposes, some 60 years after the original was created. He wrote an entire book about her, called *The Good Little Ship* (Livingston Publishing Company), with an introduction by L. Francis Herreshoff:

> It is quite befitting in these hard times that more should be written about the good little ships developed by Commodore R. M. Munroe of Coconut Grove, Florida. Certainly the boats designed by the Commodore are among the best examples of American shallow draft cruisers, and the reason for that is that he entirely disregarded the racing measurement rules which have influenced and spoiled most yachts.

I draw attention to the last sentence, as I firmly agree with it. Practical, safe, comfortable cruising yachts should never—in my opinion—be influenced by racing rules. In his foreword for *The Good Little Ship*, Gilpin describes Munroe's Presto-type boats as "the ablest shoal-draft boats ever built. In ability, handiness, comfort and economy they were extraordinary." Gilpin owned Munroe's WABUN for 19 years and loved her. He was an outspoken champion of shoal-draft yachts, as I am, and sought "to dispel some of the thoughtless and unintelligent condemnation of shoal draft in small seagoing yachts, which is so common."

The only suggestion Munroe himself ever made for improving PRESTO was to slightly increase her beam. This he did for his MICCO, WABUN, and CARIB models, and declared them to be more weatherly. But it is my firm conviction that PRESTO was a miracle of innovative thinking, and changed the world of yacht design for the next century.

Reuel Parker—profiled in WB No. 224—is a writer, designer, and builder of boats. He divides his time between Florida, Maine, and the Bahamas. A full range of his work can be seen on his website. His series "Revisiting the Classics" began in WB No. 225.

Plans for Reuel Parker's Presto series of designs are available from Parker Marine Enterprises, P.O. Box 651429, Vero Beach, FL 32965; www.parker-marine.com.

Further Reading

The Commodore's Story, by Ralph Munroe, published by I. Washburn, 1930; republished by The Historical Association of Southern Florida, 1974.

The Good Little Ship, by Vincent Gilpin, published by Livingston Publishing Company, 1952 and 1961 (second edition); republished by Sutter House, 1975.

Voyaging Under Power, by Robert Beebe, republished by International Marine/Ragged Mountain Press, 1994.

When the Wind Fails

MARTHA BRYAN

A sculling oar or small outboard motor can keep her moving

by Harry Bryan

At the turn of a key, a sailboat with an auxiliary engine will command the power to maneuver through a tight anchorage or, if the wind dies, motor the last mile to the mooring. The complication and expense of an inboard installation are accepted as part of the cost of owning a larger boat. However, a sailboat under about 25′ long is easy enough to keep moving with the use of a small outboard or single oar.

What amount of power is needed? One person, working at a level that can be sustained, puts out about 1/10 hp. This effort will just move a 20′ sailboat against a 5-knot breeze, but will give her a respectable 1½ to 2 knots in a flat calm. With a 5-knot breeze, the boat could sail the last mile home at perhaps 3 knots. If becalmed, a sailboat can be moved along simply by sculling with a single oar over the stern, covering that last mile in just over half an hour. For those who value uncomplicated things, sculling is worth serious consideration.

If 1/10 hp can do the job, then an electric or gas outboard motor producing 2 to 3 hp will supply plenty of muscle. A motor this small is easy to set on its mount or store out of the way when not needed. A small, light motor also allows for a small, light mounting bracket.

It may be desirable to carry both an electric outboard and a sculling oar. The motor can be saved for longer distances or where a short burst of power is needed, while the oar is used for short stretches or along with the electric motor for more speed or to cover greater distance.

***Above*—A sculling oar works well for moving a small boat in a calm, and it is a simple device to make and to use. At times, a small outboard may be desirable instead, and a low-profile side-mounted bracket (shown opposite) can use fittings that are as unobtrusive as possible to the lines of a traditional boat.**

MAKING A SIDE-DECK OUTBOARD MOTOR MOUNT

An outboard motor bracket for a sailboat can be mounted on the transom or along the side of the boat. Neither position is ideal. When waves are large enough to cause a boat to pitch, a motor mounted on its transom can be lifted from the water one moment, then immersed the next. This can lead to loss of control or possible engine damage. Likewise, the effectiveness of a side-mounted motor will be compromised by heavy rolling or heeling to even a moderate breeze.

Fortunately, a sailor sails when there is breeze enough to create a sea. When the wind dies, an outboard motor on a bracket will bring him home.

The motor bracket, or mount, presented here is designed for those who use a small motor when necessary but wish to remove almost all trace of it when it is not needed. The strength of the mount will handle the weight and thrust of a small electric or a 2–3-hp, four-stroke gas outboard. This has proved to be enough to push a 20′ displacement hull in light air. The width of the side deck, between the coaming and the rail, should be a minimum of 5″ in order to space the mounting bolts far enough apart to absorb the motor's force. Alternatively, a T-shaped mounting bar (No. 1 in Figure 1, page 42) will allow the unit to mount to a narrower side deck.

Making the Motor Mount

• **The wooden body.** The mount pictured at right is made from ash, but any dense hardwood will do. Decay resistance should not be a problem, since the mount can be stored out of the weather when not in use. The wood for the body of the mount measures 1½″ × 4¼″ × 7″, with the grain running horizontally. The width (4¼″ measured vertically) should be considered a minimum for effective clamping of the motor. The 7″ length may need to be modified for the brand of motor you use. In any case, the motor should be mounted as close to the hull as possible. This wooden piece will need to be shaped for a loose fit around the rubrail, as shown.

• **The upper stainless-steel bar.** Cut the ¼″ × 1½″ stainless-steel flat-bar to length. The upper bar runs the length of the wooden mount, then extends across the deck nearly to the coaming. (If you are making the T-shaped bar, shown in Figure 1 as an option, make sure that the weld is of professional quality.) Center-punch this bar for the two ⅜″-diameter holes that will take the hold-down wing bolts. Spread these holes as far apart as possible. The outer hole will probably be centered over the sheerstrake, while the inner hole will be as close to the coaming as it can be while still allowing the wing bolt to turn.

MARTHA BRYAN (ALL THIS PAGE)

***Right, top*—Three simple permanent metal fixtures are all that's needed to attach the bracket. *Right middle*—With the lower fitting slipped into a pad-eye, two upper wing bolts hold the bracket securely. Shallow bores receive the clamp pads of the outboard. *Right*—An electric motor works well, but so would a small gas-powered outboard.**

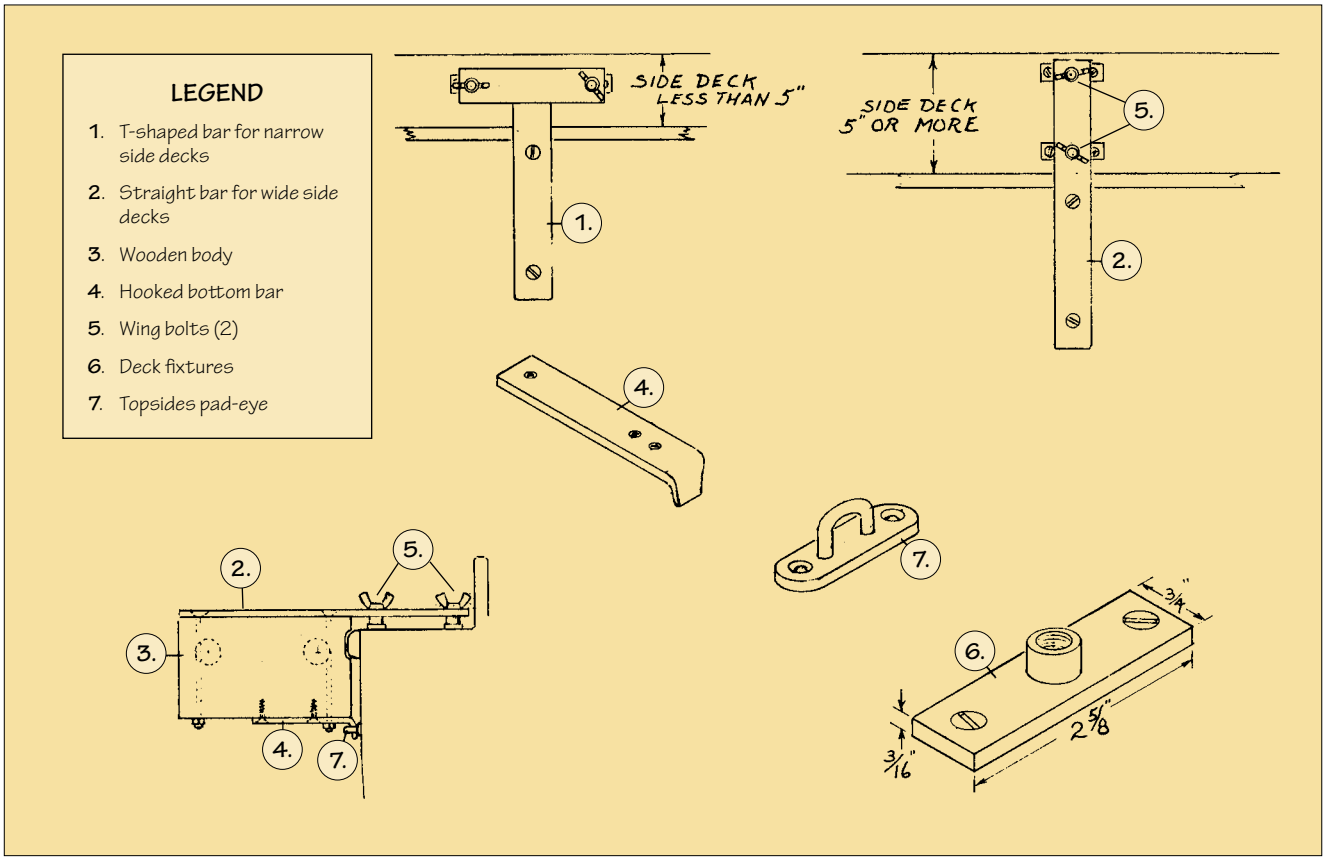


***Figure 1*—The simple components of the side-mount bracket are made from commonly available materials: metal flat-bar, wood, threaded nuts and wing nuts, and threaded rod. Fastenings are wood screws and machine screws. Silver-soldering or welding can be used to join metal components where necessary.**

Also center-punch the bar for the two 5/16″ flathead machine bolts that hold it to the mount's wooden body. Bore out the punched holes and continue these 5/16″ holes on through the wooden mount. Countersink the holes so that the heads of the bolts, when installed, will be flush with the bar's surface.

Before going on to make the hooked flat-bar on the bottom of the mount or placing the pad-eye on the hull, install the threaded fixtures on the deck.

• **The deck fixtures.** The bases of the deck fixtures are made from 3/16″ × 3/4″ × 2 5/8″ bronze or stainless-steel flat-bar. Drill and countersink them to receive No. 14 × 1½″ flathead wood screws at each end. Silver-solder (see WB No. 215) a 3/8″ coarse-thread nut centered on these bronze bases. If you have patience with a file (or a metal lathe), you may file the corners off the nuts to make them round, but this is only for looks. Drill down through the nut and base with a 5/16″ bit; then, using a 3/8″ tap, continue the nut's threads through the base.

• **Wing bolts and assembly.** Make up the wing bolts that hold the mount to the deck fixtures. First, turn a 3/8″ bronze wing nut onto a length of threaded bronze rod, and silver-solder it in place. (Although I specify silver-soldering for the wing bolt and the deck fixture, a careful welding job will do as well if the components are fabricated of stainless steel.) Cut off the rod so it is 9/16″ long below the wing nut. Screw the stainless-steel bar onto the deck fixtures, then fasten the bar to the wooden mount using only the outboard 5/16″ machine bolt, for now. Position this assembly on the deck, then drill pilot holes for the deck fixtures' fastenings, and drive them into place.

• **The hooked bottom bar.** Now, make up the hooked bar that will fasten to the bottom of the wooden mount and engage the pad-eye on the hull. Make this from a piece of bronze or stainless steel, 3/16″ × 3/4″ × 5″. Bend 3/4″ of one end at 90 degrees, then shape this with a hacksaw and files to fit through the pad-eye, which measures 3″ long by 1″ high. Drill and countersink the hooked bar for two No. 10 × 1″ flathead wood screws that will attach the bar to the wooden mount.

Position the hooked bar so it engages the pad-eye, then clamp the bar into position. Mark for the pad-eye's fastenings on the hull, then remove the clamped-up mount. Fasten the pad-eye to the hull and fasten the hooked bar to the mount using the two wood screws and the inboard 5/16″ through-bolt.

• **Fitting the motor.** The mount is completed by boring two shallow holes, 3/16″ deep, of a size slightly larger than the clamping pads on the outboard motor. These center under the motor's clamping pads and key the motor in place should the clamps become loosened in use.

A TWO-PIECE SCULLING OAR

Some years ago, we used a long sculling oar to push our family's 25′ Friendship sloop. The boat's wide side decks provided a place to stow the oar without seriously restricting passage along the deck. But the side deck of our present 20-footer is too narrow to serve as a practical storage space for such a long oar, and the ideal place—which is in the cockpit under the side deck—is too short.

Our solution was to make an oar that can break down into two lengths, each of which is short enough to fit under the side decks. The scarf joint we used to allow the two pieces to be fastened together effectively is a slight modification of one developed by Nathanael Greene Herreshoff for the two-piece mast of a cat-rigged dinghy. The joint has proved to be strong, yet the oar is easy to assemble and take apart.

At 10′5″, our assembled oar is long enough to immerse its blade astern, while the loom (that part of the oar between the blade and the handle) extends forward over the transom far enough into the cockpit to allow an easy stance while sculling. A steam-bent curve in the blade allows it to enter the water at a favorable angle for producing forward motion. It also helps to induce the correct twist to the oar when reversing the direction of the stroke. This shape approximates the curve of the boat's sheer in plan view, allowing the oar to be stored out of the way, under the side deck, out against the hull.

Such an oar may also be used for rowing. Many hulls can be propelled efficiently by facing forward and pushing on a single oar. The tendency for the boat to turn away from the oar can be opposed by the rudder, held slightly to one side by the rower's body pressing on the tiller. The oar's scarf joint should therefore be placed so that it doesn't land on the transom when sculling or in the oarlock when rowing.

Making the Oar

- **Stock selection and layout.** Ash is the recommended wood for making this oar. It is tough without being excessively heavy, and it responds well to steam-bending. A single piece of wood that is a full 2″ × 6″ × 8′ will make an oar long enough for most any boat, as the handle end can be varied in length and drawn on the wood alongside the blade end. Kiln-dried wood will be too dry to steam and should be avoided. Fast-growing wood, with wide growth rings, is preferred.

  First, plane the wood to a finished thickness of 1⅞″. Next, lay out the blade end of the oar, using the dimensions on Figure 2 on page 44. A good way to do this is to plot out these dimensions equally to each side of a carefully drawn centerline. This centerline

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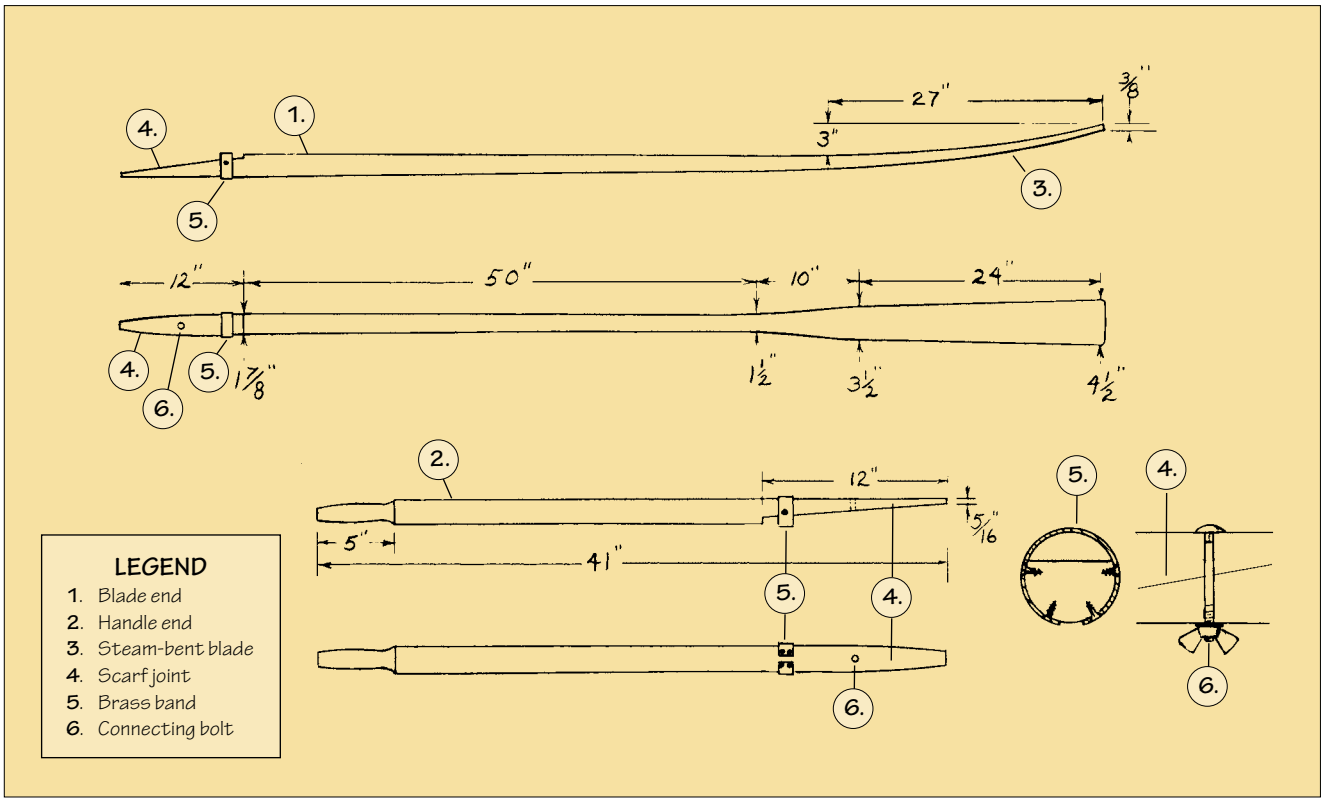
***Upper right*—A nibbed scarf joint slides into position through two brass bands. *Lower right*—Once the two oar sections are in place, a simple carriage bolt secures them. *Below*—Broken down, the sculling oar fits along the side of the cockpit under the side deck, while the outboard stows below the seat.**

BRYAN GAGNER



HARRY BRYAN

***Figure 2*—The two pieces of the sculling oar can be laid out on a single 2x6 piece of wood, preferably ash, 8′ long. The bend in the outboard end is made after shaping to the final dimensions.**

can be offset from the center of the 2×6 board if necessary to make room for drawing the handle end or to improve the run of grain in the oar. After the plan view (looking down at the flat of the blade) has been drawn out from the tip of the blade to the inboard end of the scarf joint, the outline of the handle end can be drawn alongside the blade end. Cut out both pieces with a bandsaw and, disregarding the scarf-joint profiles for now, finish them square and to the line using a spoke-shave and a smooth plane.

Next, turn the blade end of the oar on edge, draw a centerline, and mark out the tapering profile of the blade and loom. Then, cut and plane the oar square to these lines.

Because the handle end of the oar is parallel-sided, it can be brought to 1⅞″ square for its full length with a thickness planer. Shape the handle in both views so it is finished to the lines, but leave it square for now.

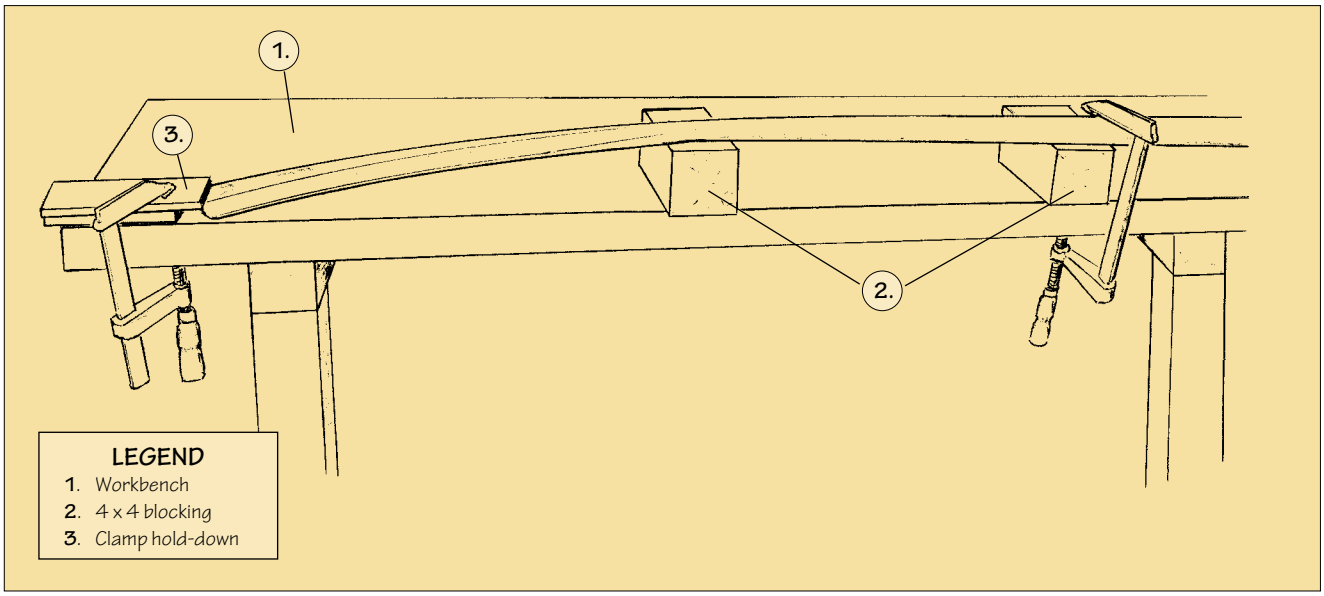
• **Shaping the scarf joint.** While both pieces are still perfectly square, draw each half of the scarf joint as shown on the side view. Note that the scarf does not run to a feather end, but is nibbed, or left with a 5⁄16″ thickness at the tips. Cut and carefully fit the pieces so they join tightly and result in a straight loom. With the two pieces held tightly together, drill pilot holes for No. 6 × ¾″ flathead screws ¾″ from each end of the scarf. These temporary screws will hold the two pieces of the oar together for final shaping. Countersink them slightly so that you can work the oar down without damaging your edge tools. The screws will be removed and their holes filled later, just before the finish is applied.

• **Rounding the loom.** The way to make a square piece of wood round starts by marking off the loom of the oar using an eight-siding gauge. (For a good article on the gauge and its use, see WB No. 71.) After the marks are drawn, use a drawknife, a spokeshave, and finally a smoothing plane to work down the wood until it is evenly eight-sided, extending as near as practical toward the blade. Finish shaping the blade by planing a straight slope from its centerline out to both edges, leaving them ¼″ thick.

Continue shaping the loom by carefully making it 16-sided. Then, as close as you can, try for 32 sides. Give the looms their final rounding with sandpaper. A sanding belt, of about 80-grit cut to make a single long piece of sandpaper, can be fitted with simple grips to make a good tool for rounding. The secret of making things accurately round without a lathe is to resist rounding until as many facets as possible are created along the length of the piece.

Finish shaping by fairing the transition between blade and loom. Complete the handle by following the same 8-, 16-, and 32-siding process, using rasps, files, and sandpaper.

• **Steaming-in the curve.** The amount of bend given to the blade is not critical, but try for about 3″. It is critical, however, to note the orientation of the



HARRY BRYAN

***Figure 3*—A simple benchtop steam-bending trap holds the oar blade curvature until the piece cools after steaming. The piece should steamed for an hour and a half.**

bend in relation to the slope of the scarf joint.

Figure 3 shows one way of making a benchtop bending trap. The 4×4 blocking will produce a 4″ bend, which allows for a 1″ inevitable springback. Because the oar blade thickness reaches 1½″ in places, about an hour and a half in the steambox (calculating one hour per inch of thickness) should be long enough.

If you do not have a steambox, you can use towels and boiling water instead to prepare the wood for bending. Wrap a 3′ section of the oar in a couple of layers of terrycloth toweling, extending 18″ either way from the point where the blade starts to taper toward the loom. Wrap polyethylene film around the toweling and use spring clamps to hold it in place. The plastic film will reduce the cooling effect of evaporation and help to direct any excess water to a strategically placed bucket. Now pour boiling water between the clamps until the cloth is soaked. Renew the water twice over the one-and-a-half-hour interval.

After removing the oar from the steambox (or taking off the wet towels), bend it over the trap, clamp it, and leave it there for 24 hours.

• **Fitting the brass bands and connecting bolt.** The brass bands that hold the scarf together are 1″ wide and 5½″ long, and are cut from 18-gauge sheet brass, which is 0.05″ thick. One source for brass of this thickness is a hardware store or building-supply store, where it is sold as a plate to protect doors from wear and tear where they are pushed or kicked open.

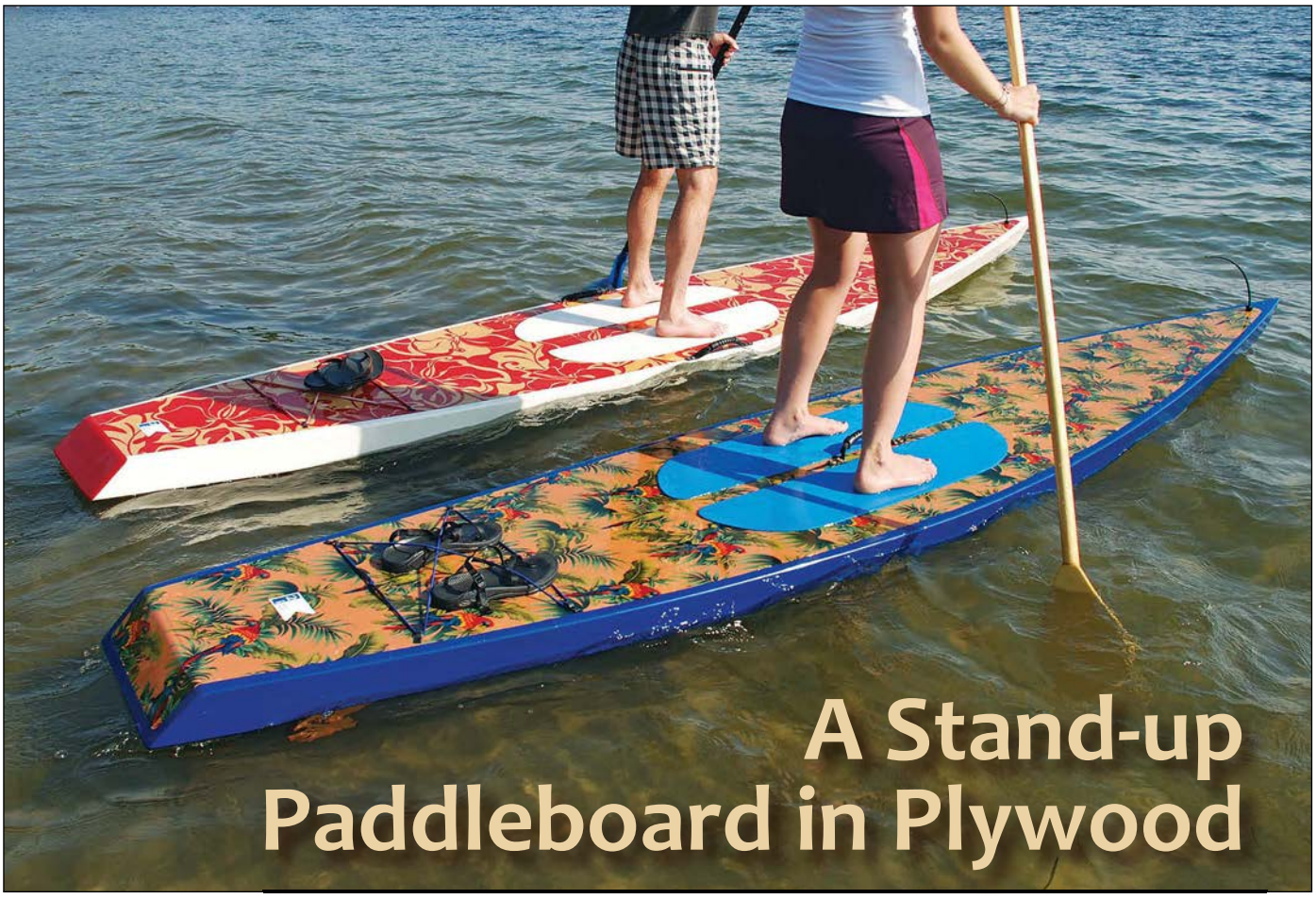
Cut two pieces of brass to size, using a fine-toothed hacksaw, and file the edges smooth. Drill and countersink the holes at each end of each of the bands before bending them, using a bit that will just allow for the shank of a No. 6 screw. Just drill the holes in the ends for now; leave the other holes for later. Having the end holes will make the bands simpler to install, but waiting on the other holes will better assure a smooth bend in the next step, which is to bend the brass to its round final shape. As a bending jig, you can use 1¼″ water pipe, which has an outside diameter close to 1½″. Although this is smaller in diameter than the 1⅞″ oar, the brass will have some springback.

After the brass is bent to your satisfaction, slip one of the bands over the oar, which is still held together with its temporary screws, and mark its location so it will be centered 1½″ from one end of the scarf joint. Hold the band tight, making sure that the open side of the band is centered on the side of the oar opposite the scarf joint. Drill pilot holes in the wood for the end fastenings, and then install No. 6 × ⅝″ flathead screws. Follow the same process for the second band, then drill and countersink the brass for the remaining screws, as shown in Figure 2.

• **Install the bolt.** One more task must be completed before the temporary screws holding the oar together can be removed. The scarf will be held together by a ¼″ × 2½″ carriage bolt, secured with a wing nut. I used a silicon-bronze bolt, but stainless-steel would also work. Drill the hole for the bolt, then use a narrow chisel to shape each end of the hole to receive the square forging under the bolt head. Shaping both ends allows the bolt to be installed from either side of the oar. For a first-class job, silver-solder a washer to the wing nut (and make a second one of these as a spare that you can keep aboard the boat). Cut the bolt to length.

Finally, remove the temporary screws that have been holding the scarf joint together, fill their holes, and then varnish the completed oar.

Contributing editor Harry Bryan lives and works off the grid in Letete, New Brunswick. For more information, contact Bryan Boatbuilding, 329 Mascarene Rd., Letete, NB, E5C 2P6, Canada; 506–755–2486; www.harrybryan.com.



JEFF MEYERS

A Stand-up Paddleboard in Plywood

How to build Kaholo, Part 1

Text and construction photographs by Geoff Kerr

While it seems that stand-up paddleboards (SUPs) have become a worldwide rage overnight, the craze actually spread both east and west from Hawaii in the past decade or so. The oldest references to it seem to date to the 1960s tourist boom, when Waikiki surfing instructors propelled longboards with outrigger canoe paddles in an effort to keep their cameras dry. The current boom owes its genesis to Hawaiian surfers and watermen looking for cross-training fun.

The concept is simple, the very essence of boating: a boat and a paddle. Sea kayaking took the recreational world by storm in the 1990s as the public rejoiced in its low-cost, easily stored and transported human-powered boats. SUPs up the ante by eliminating about three-fourths of the kayak's auxiliary equipment, thus simplifying launch and boarding, and reducing the logistics for an outing to the bare minimum.

The physical skills and effort required are similar to cycling or Nordic skiing: Essentially, you just get on and do it (I'll cover some of the basics in part two of this article). As with those sports, the learning curve for basic paddling is pretty shallow, and an outing can be as long and as hard as you want it to be. There are certainly refined skills, and inevitable subgenres of the sport: One can indulge in around-the-buoys racing, open-water crossings, whitewater descents, wave riding, cruising, and even paddleboard yoga. I think, however, the true broad appeal is just the sheer joy of getting out on the water for an hour or so, poking around the cove, up the creek, or through the marsh. Need some exercise? Go hard for an hour. If you like to thrill yourself, try a rougher day. Want to mellow out? Paddle out to the middle of the pond and lie down for a while. Among the paddleboard's finest features is its universal appeal. Leave one on the beach over a family holiday, and every generation will have fun with it. The "type A" athlete can go aerobic, three six-year-olds can play "splash and scream" until their lips turn blue, and the curious can venture to the island beach around the point.

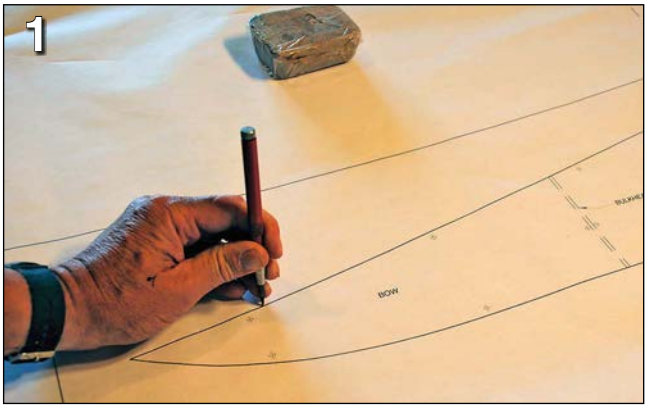
Paddleboards are ubiquitous. They are for sale at

***Above*—The Kaholo paddleboard is offered in two lengths: 12'6" and 14'. The 14' board is meant for heavier paddlers and those wishing to carry some gear; the 12½-footer is for smaller people, and it fits within the dimensions of many racing classes. The instructions on the following pages may be applied to either design.**

every small-craft and recreational outlet. They are available in a wide range of materials, from pudgy polyethelene and unlikely inflatables to ultralight carbon fiber—and, yes, even wood. Chesapeake Light Craft caught the paddleboard wave around six years ago, when owner and designer John Harris teamed up with California paddling guru Larry Froley of Grey Whale Paddles to develop an easily built, high-performance kit board. The CLC catalog now includes two Kaholo models, the original 14-footer and the newer 12′6″ model, which conforms to common racing classes while suiting smaller-stature paddlers. Both have undergone multiple design revisions aimed at strengthening the decks, improving tracking, making carrying more comfortable, and simplifying construction.

The Kaholos are available as precut kits, or as a plans-and-patterns package. They are relatively simple stitch-and-glue projects, requiring minimal space and infrastructure, but they offer a wealth of opportunity for fine workmanship and artistic expression. A nicely built Kaholo is competitive in the SUP market, whether one is assessing weight, durability, performance, or cost. As with any build-your-own project, you'll want to savor the satisfaction of the process as well as the product, but the gratification arrives pretty quickly in this case. CLC figures the build time to be 60 hours. At WoodenBoat School last summer, students built ready-to-sand and -paint boards in a very mellow 35-hour week.

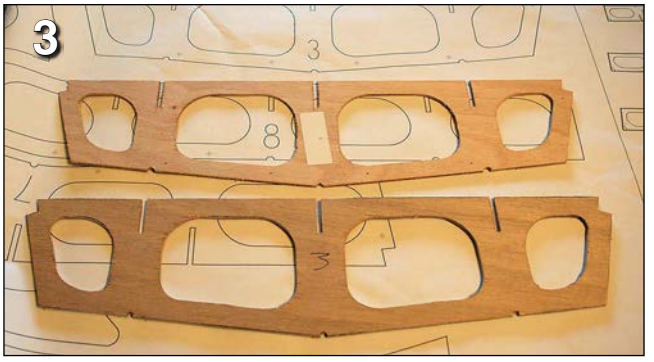
The following photos and descriptions will give you an appreciation of the skills, materials, tools, and equipment needed to build yourself a Kaholo. While I'll present sufficient information to build this paddleboard from these pages, I strongly encourage would-be builders to buy plans or a kit. Their full-sized patterns and fine details and dimensions are well worth the price of the plans—as is precision cutting, in the case of a kit.



1 If you're building from scratch, your first order of business will be to transfer the shapes of various pieces to your marine plywood (three sheets of 3mm BS 1088 okoume, plus one half sheet of 4mm). Use the layout scheme shown on the drawings to maximize your plywood. If you're working from the plans on pages 50 and 51, you'll have to carefully transfer the measurements to your plywood; if you're working with the full-sized patterns, a simple means of transferring the shapes is to prick through the paper patterns with a fine awl or similar pointy tool. You'll be connecting the dots with a pencil and straightedge or batten as appropriate; space the prick marks close together in tight curves. Looser spacing is fine for easy curves or for straight lines, but do not assume a line is straight; check for subtle shape with a straightedge. Note that there are holes indicated for the future wire stitches. These are in specific places, which must be respected. Draw duplicate pieces only once, and cut them in a stack. There are a lot of pieces, some large and very shapely and many rather small and complicated, and some just plain wiggly. You must remain patient and accurate, for any deviations will show in the shape of the board. It may take a couple of full days of careful work to cut out a Kaholo's pieces from scratch. Take your time and do it right.

2 Handling and cutting such thin plywood can be a challenge. You'll want to use a combination of tools. The smoothest and cleanest cuts can be accomplished with a circular saw and a fine plywood blade. With the blade set to cut shallow, it's quite easy to follow fair curves and straight lines on the large hull and deck pieces. You'll occasionally need to switch to a jigsaw for the tighter curves at the bow, or cut tangents with the circular saw and smooth them with a plane. You'll notice in the photo that I have the stock blocked up off the table with scrap 2 × 6 blocks. This saves both the table and the blade from unnecessary cuts. Use numerous such chunks to level and stabilize the stock. I suggest setting up your system and practicing a bit so you can follow a line and cut where you want. Be aggressive but accurate; cutting "outside the line" to be safe will only result in hours of soul-sucking trimming and fairing.

3 The frames are cut from 4mm plywood, and will take extra time and attention. They have lightening holes to reduce the weight of the finished board. I used both a bandsaw (for the outside shape) and a jigsaw (for the lightening-hole cutouts), smoothing them up on a stationary belt sander. Take the time and trouble to find fine-tooth, narrow blades for your jigsaw for clean and



accurate work. The photo shows a shop-cut frame alongside the same frame from a CNC-cut kit. Cutting your own parts is perfectly doable, but you must take your time to be accurate, and label them before you even think of cutting them out!

4 If you're cutting out your own parts, you'll need to join the hull panels to length. It's easiest to scarf together the rectangular plywood blanks from which you'll cut the full-sized parts. The method used for joining plywood is a feathered scarf joint; this maintains the plywood's thickness throughout the joint while mating the panels accurately. Lay out a 1″ bevel on both sides of a joint (that is more or less an 8:1 slope in 3mm stock); stack them together, staggered to cut both sides at once; and clamp them in place on your workbench. A sharp block plane will make quick work of cutting the

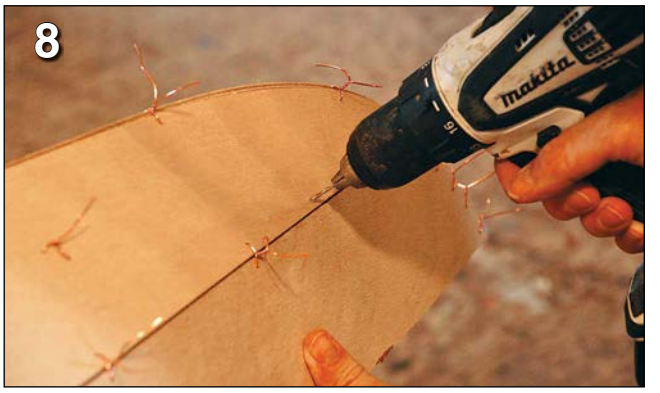
joint. Make your layout accurate, and trust the parallel glue lines in the plywood to keep your cut flat and true. The photo shows bevels cut in both pieces of stock that will be joined for a full-length side panel.

5 Wet both mating faces with unthickened epoxy, then spread them with glue-powder-thickened epoxy and assemble the joint accurately. Now lay a sheet of polyethylene masking plastic over the joint and on the workbench below the joint, and cover it with a piece of flat scrap wood; then add a suitable weight to hold the joint in alignment while the epoxy cures. Gravity clamps such as this are inexpensive and versatile. I use concrete blocks here, on a scrap of ½″ plywood. Once the epoxy has cured (overnight is a good rule of thumb), remove the clamps and masking and clean up the squeeze-out with a sander or a scraper and heat gun. Then lay out the panels according to the drawing, cut them out accurately, and drill all holes required for the upcoming stitching stage.

6 Before we can assemble the hull, we must glue the sheer clamps to the top inside edges of the topside panels. These clamps serve as stiffeners and gluing surfaces for the decks. Lengths of ½″ × ¾″ cypress are supplied with Kaholo kits; scratch-builders can use any clear softwood. You may need to scarf pieces up to the appropriate lengths—7″ short of the nose and ½″ short of the tail. I suggest scarfing-up overlong pieces and then trimming them to fit right on the panels. This is a clamp-happy step, with 2″-opening spring clamps the most convenient choice; you will need at least a dozen of them, and 18 is better. The simplest method is to

butter up one wide face of the sheer clamp, and clamp it accurately in position along the top (inside!) edge of a side panel. Clean up the squeeze-out while it is still soft. Once the epoxy has cured, you can remove the clamps and tend to the second panel. If you have enough clamps, then do them simultaneously; or if feeling impatient and adventurous, do them back-to-back as I have done in the picture. I laid a masking strip of clear packing tape along the top of the mated face of the two panels to keep them from inadvertently sticking together.

7 We have finally made it to the stitching stage, and a morning's work is going to be quite an exciting revelation. With 4″ lengths of 18-gauge copper wire, we'll start by joining the side panels together at the bow, then add each frame in sequence. The twists in the wire stitches go on the outside of the board. The predrilled holes in the side panels indicate the location of each frame. Getting the first two or three frames in is awkward. I suggest a pair of needle-nosed pliers as a helper, and perhaps wrangling the tail ends of the



panels with a wrap of packing tape or light line to approximate the width spacing you need at a particular frame. Relax. After two or three frames, you'll have a system, and they'll get progressively easier to install. At this phase of the project the stitches need only be finger tight; don't crank the wires with the pliers yet. The "boat" should be set up level and square—so, no mismatched sawhorses or uneven blocks. When the sides, frames, and transom are together, we can add the

bottom to the hull. I stitched up the centerline seam first, and clamped the vee into it with a large spring clamp just to make it behave a bit. Start joining the bottom to the sides at the bow, and work a few wires on each side, progressively moving aft. The first three or four are tough, because there is just not a lot of room in there for adult-sized hands. An enthusiastic 10-year-old would be the perfect assistant.

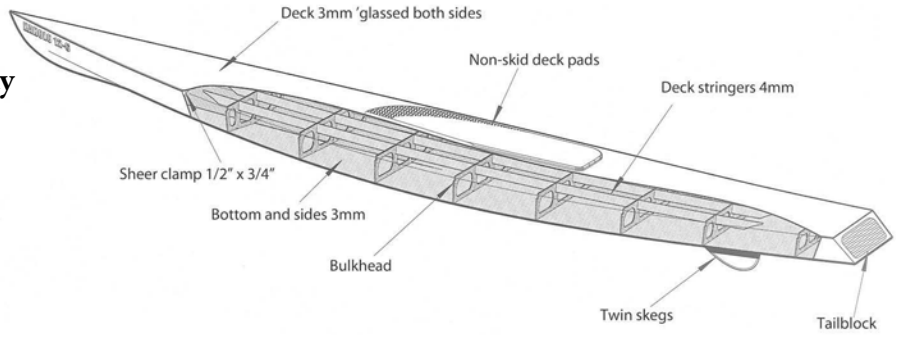
8 After stitching is complete, we need a couple rounds of assessing and adjusting before we glue the beast together. Step back and give the board an overall look. Is it fair, shapely, and symmetrical? It should be, so if it isn't, figure out why not. Is it set up square and level? When you're satisfied with the shape, systematically go around the hull and snug up the wires with a firm but reasonable pull and twist. If you break more than two wires, you are overtightening; just snug them up. The ideal alignment between two panels is tight on their inside corners and an open "bird's-mouth" outside; this alignment should be consistent for a fair hull. After a general snug-up, I look for problem spots, and I predict you'll notice that the chine seam needs a little persuasion at the bow where it rolls from being a corner between the sides and bottom to being more in the same plane. I generally add an intermediate wire or two up here, as I'm doing in the photograph. I have also found an extra stitch is helpful in the chine right aft at the transom.

9 We can now turn the board over, and note that it looks really cool at this stage. Take care to set it up level side-to-side, and support it well. It is going to stay this way for a while, and needs to be true. The kits include a pair of plywood cradles you can clamp or screw to your bench; if you're scratch-building, you'll find a shop-made set of these to be most helpful (I use minicell foam cradles on my work table). You'll know

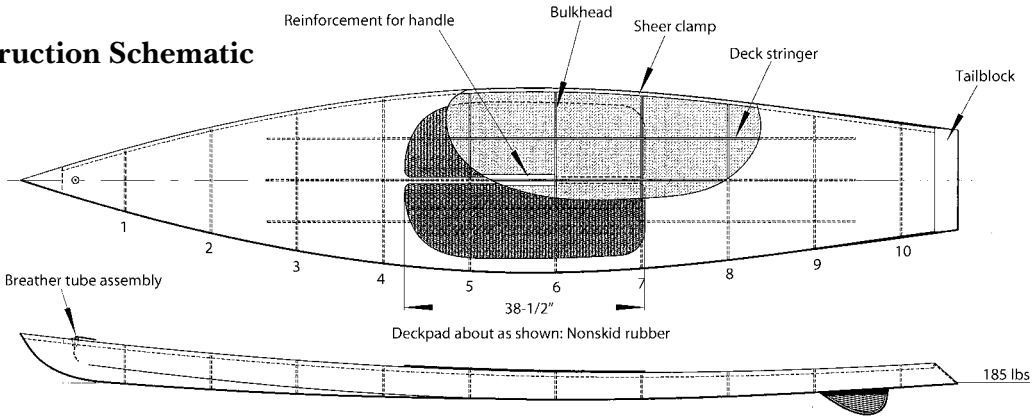
your boat is true when you look from aft and all the frame tops are parallel with each other; they either are or are not, so trust your eye. A regularly heard cry for attention is at the forward end of the sheer clamps, where we held them short of the ends. They usually force the side panels into an unfair bulge. Eventually we'll slip in a breasthook to alleviate this, but for now you should add a long loop of wire from one side to the other and pull things fair. Once you are happy with the hull's shape and alignment, use a screwdriver or putty knife to press the wires into the inside corners of the chines and the centerline seam. This helps to lock up the shape and alignment.

10 Now it's time to glue up the hull. I suggest a two-step process as the easiest way to be clean and neat. First we'll "tack-weld" the seams and remove the wires. Then we'll carefully fillet the seams. Tack-welding is accomplished with epoxy thickened to the consistency of smooth, moist peanut butter. I apply it in a small bead (¼″ diameter or less), running the bead 3″ or so between

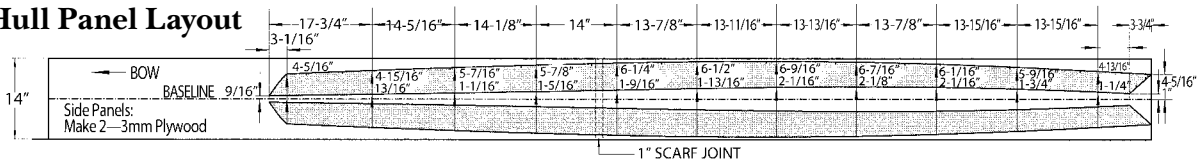
3D Cutaway

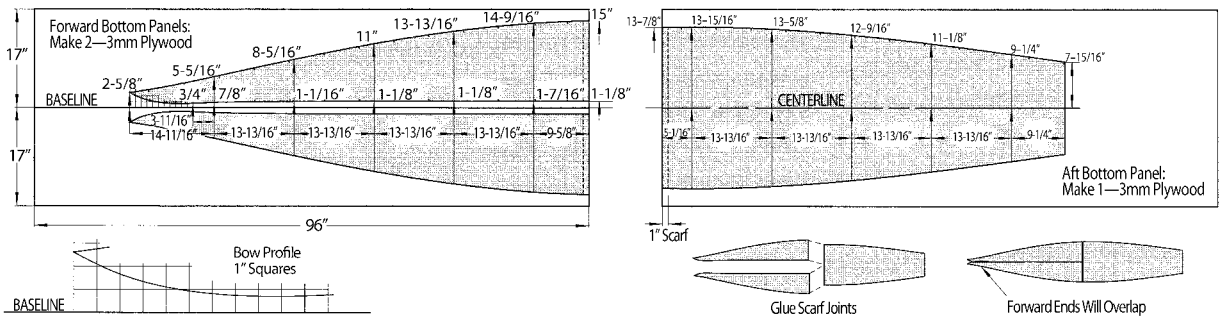


Construction Schematic

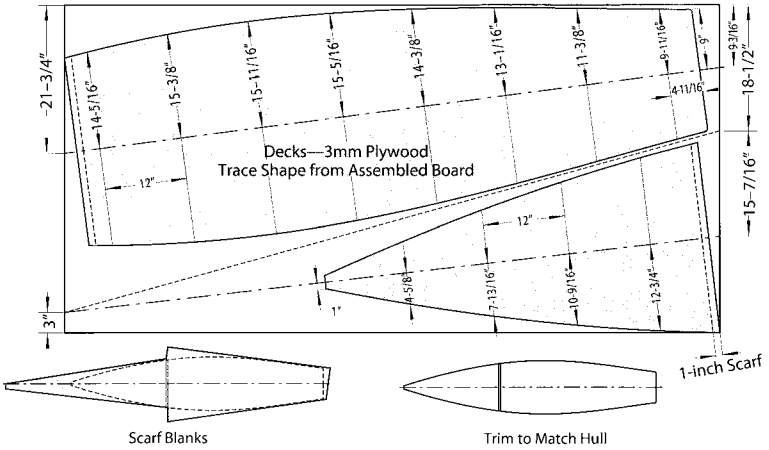


Hull Panel Layout





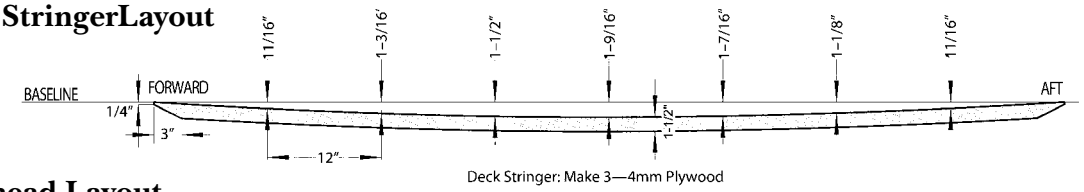
Deck Layout



The plans on this spread detail the dimensions of the components of the 12'6" Kaholo paddleboard. Please note that the relative scales of the various views are different. The author estimates that it would take a few days' work to accurately lay down these lines on plywood and cut the pieces out.

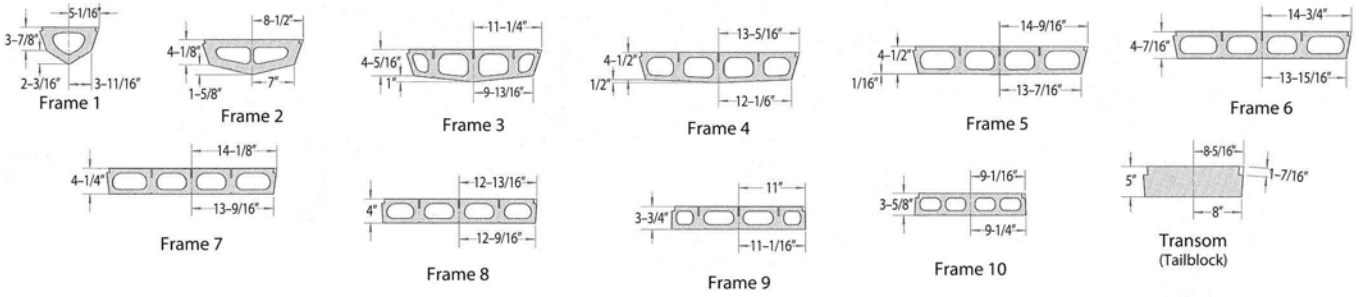
Readers wishing to purchase plans, full-sized patterns, or kits may do so through Chesapeake Light Craft, 1805 George Ave., Annapolis, MD 21401; 410-267–0137; www.clcboats.com.

Deck StringerLayout

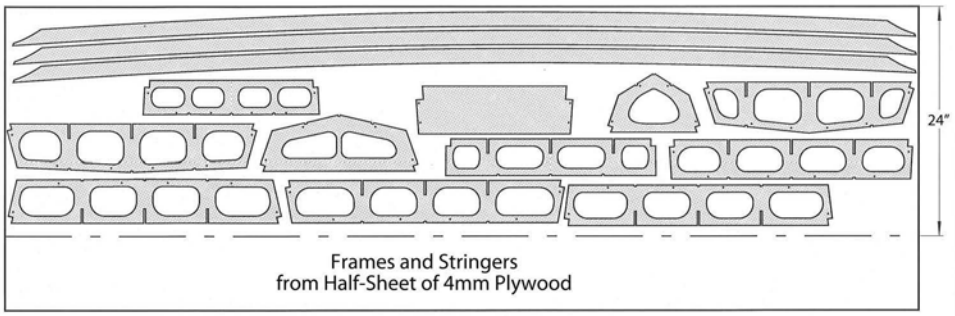


Deck Stringer: Make 3—4mm Plywood

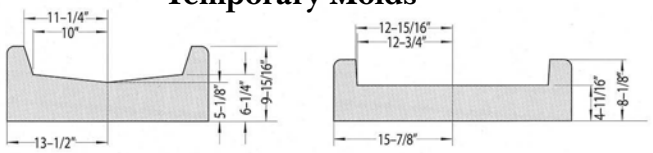
Bulkhead Layout



Bulkhead Sheet Layout



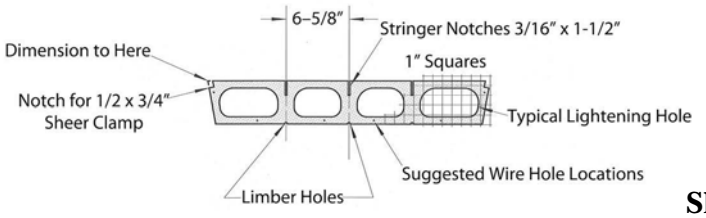
Temporary Molds



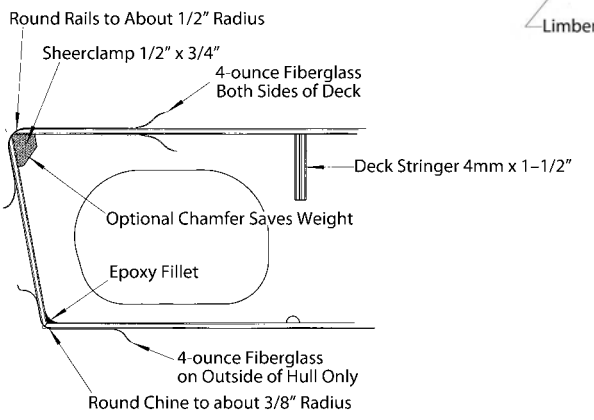
Frame 3—Temporary Mold

Frame —Temporary Mold

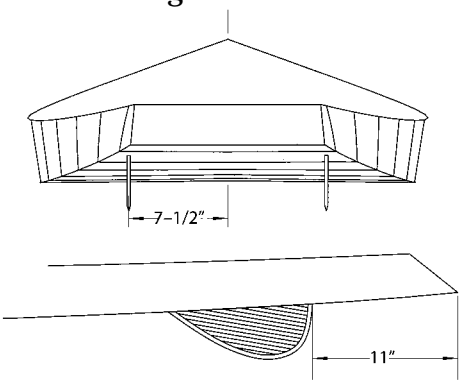
Typical Frame Detail

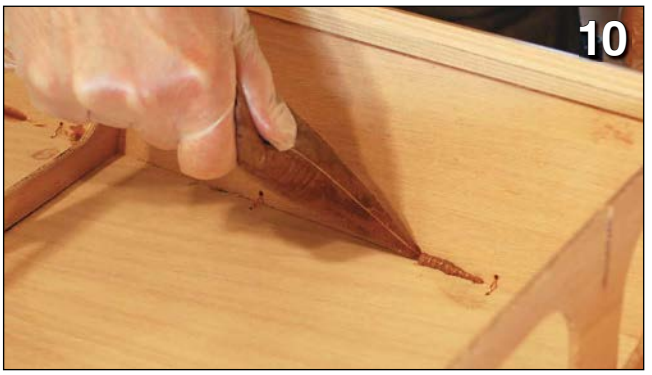


Hull Section



Skeg Location





the wires. Do your best not to bury the wires, because we want to take them out tomorrow. Applying epoxy at this step is done easily with a commercial pastry bag. I buy the 10″ size by the carton. Try commercial kitchen supply houses, your local bakery, or the Internet. You can make an approximation with a zip-seal freezer bag, but the angle of the corner and the softness of the plastic are way less satisfactory.

11 After the epoxy cures (seven days at 70 degrees for a 100 percent cure, but the 60 percent cure you get overnight is plenty strong enough to carry on), carefully pull all the wires. I clip them inside where I can, and tug gently on the outside with pliers. Don't beat up the boat and pull it off the table. (You laugh? It

happens in every class I teach.) Work deliberately, and pad the hull with a scrap if you lever with the pliers. Any dents you make will haunt you during finishwork.

12 Now for step two of the gluing process, filleting. This is a larger, continuous, carefully and consistently sculpted bead of epoxy that covers the chine, centerline, stem, transom, and both sides of each frame where they meet the sides and bottom. This is a busy step, and it takes patience to be neat and consistent. I know it's going to be dark inside the finished boat, and neatness really doesn't matter, but consistency lends strength to the structure, and slop will just add weight to a boat you'll be carrying around and paddling. Work in small batches, especially initially while you get your mojo going.

Mix, thicken, apply a bead with a pastry bag, shooting the whole batch so it doesn't "kick" in the bag. Then dress that batch with a ⅜″-radius filleting stick for the chines and the stem, and change over to a fatter-radius stick for the shallower-angle joints. Use a putty knife

to clean up the squeeze-out on either side of the fillet. With the first batch, you'll learn how thick to mix the epoxy, how big a bead to apply, and how hard to press. Refine your skills with the second batch, and carry on.

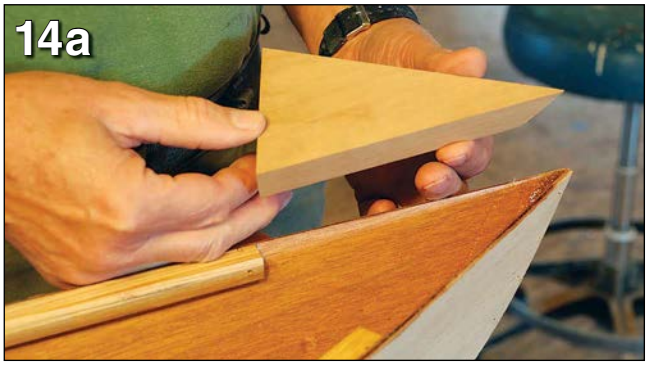
Seal the interior with unthickened epoxy. Use a disposable bristle brush and deliberately "paint" the interior. The goal is a complete coat, but no more than necessary—i.e., no drips and runs and puddles, because they only add extra weight. Mix multiple small batches rather than a large pot that will kick before you can use it, and pay particular attention to the exposed edge-grain in the frame cutouts.

Decorative Tailblocks

We've built-in a 4mm transom, and the designer states that this is plenty sound for the finished boat. However, CLC supplies a set of cedar bead-and-cove strips to give those so inclined a chance to express themselves and lay up a groovy strip pattern to make a decorative "tailblock." Their website and literature show many examples of this (www.clcboats.com). By all means, do it if you like the look. I apparently don't carry the gene that causes people to admire decorative strip construction. On one of my boards I milled a gorgeous chunk of tiger maple down to ¼″ and glued it on. It shimmers! On the board I'm building on these pages, I tried a piece of bird's-eye maple and it just didn't speak to me, so I covered it with the decorative deck fabric we'll apply in Part 2, and pretended it never happened. In classes, we've used various woods for decorative accents, and occasionally even left the original transom as is. *—GK*

13 Now install the three longitudinal stringers, which are cut from 4mm plywood just as the frames were. Each appropriate frame should have been slotted to receive these stringers, though it is a fair bet that the slots will need a bit of tuning to get the stringers to fit—especially to bring their tops down flush with the frames. Try a scrap of 3mm plywood wrapped with 80-grit sandpaper as a handy tool. Before gluing them in, I suggest clear-coating them with unthickened epoxy, on the bench while it is easy. Once they are ready, it is a simple matter to spread some thickened epoxy in the slots as tack-welds and slip the stringers home. I held them in place with some 2×6 blocks as gravity clamps rather than submitting to the tedium of yet more wire stitches. Once cured, the joints merit careful filleting; this ultralight grid is all that is holding you and 3mm of plywood out of the water, after all!

14 Now comes the breasthook, the block that joins the tops of the sides together. It's cut from 1″ solid softwood lumber (pine or spruce, say), carefully fitted, and glued in flush with the tops of the side panels. Epoxy thickened to a peanut-butter consistency is the goo of choice, and this is a rather interesting clamping challenge. You might try packing tape, but the simplest solution is to shoot a couple of temporary screws (two per side) into the breasthook from the outside of the hull. Use care and small plywood pads to keep from making the holes in the topsides any larger than necessary, and keep an eye out for that bulge at the end of the sheer clamps.



15 Two lengths of scrap sheer-clamp stock serve as backing blocks for the carrying handle. These sticks are glued to the middle stringer between frame Nos. 5 and 6 on the 12′6″ Kaholo model. Take care to mount them just flush with the top of the stringer, and not proud. Finally, I like to take a short length of scrap sheer clamp stock and glue it in place at the inside top of the transom; it helps hold it flat and offers more glue surface to the deck joint.

16 When the glue that holds these final structural pieces has cured, you must flatten the deck framing to receive the deck, planing the sheer clamps flat across, and checking that the frame tops are flush at each station. There is not a lot of wood to be removed, but it is important that it be done right, and that it all be fair so you don't have humps in your deck. Check your work with a straightedge held square to the centerline, sliding it along to assess your craftsmanship. A block plane and a sanding block or longboard are the weapons of choice to correct any inconsistencies. Work the whole boat gradually rather than bringing any one spot to perfection. You have a better chance at a fair deck this way.

For a list of the tools Geoff used to build Kaholo, please visit www.woodenboat.com, and click the "Bonus Content" tab under "WoodenBoat magazine."

DAN SPURR

Mile-High Launches

Montana's 1920s-era fleet of wooden tour boats

by Dan Spurr

JAMES W. SCHULTZ/MERRILL G. BURLINGAME COLLECTIONS, MONTANA STATE UNIVERSITY, BOZEMAN, MONTANA

***Top*—SINOPAH, one of three launches from the 1920s still carrying passengers in Glacier National Park, Montana, runs on Two Medicine Lake. *Above*—After a million acres in northwest Montana were added to the park system in 1911, the first concessions for passenger service were granted a year later. The launch ST. MARY started carrying passengers on St. Mary Lake in 1913.**

Four score and eight years ago, Capt. Billy Swanson built the first of three passenger tour boats for the very, very short tourist season of Glacier National Park in northwest Montana. Thanks to that short season—late June to early September—and an annual restoration program, all three are still in use and might just outlast the surrounding glaciers, which are predicted to vanish by 2020.

Scott Burch, 56, today is the third generation of his family to own, operate, and maintain the boats since buying the fleet from Swanson in 1938. The Glacier Park Boat Co. just happens to be the oldest concessionaire for the U.S. National Park Service—no mean feat in a system where preferential status based on performance and personal relationships with park superintendents has been replaced by free market competition in which rival companies bid for contracts. Part of the reason GPBC has lasted so long is its excellent service to the park and its visitors, even though one begins to suspect, after spending time in and around the fleet, that operating this concession isn't exactly—if you'll excuse the expression—a walk in the park.

The maritime history of Glacier National Park is longer and more varied than one might imagine of 1,500 square miles bordering the 49th parallel, with mile-high lake levels, and 10,000-foot peaks capped with snow and ice year-round. Summer water temperatures seldom reach the 50s. And oh, does the wind blow! It is said that mountains make their own weather, interfering with the advance of systems across the continent. The most extreme temperature change ever

recorded in the United States occurred just outside the park, on January 23–24, 1916, when temperatures plummeted 100°F from 44°F to –56°F in just 24 hours.

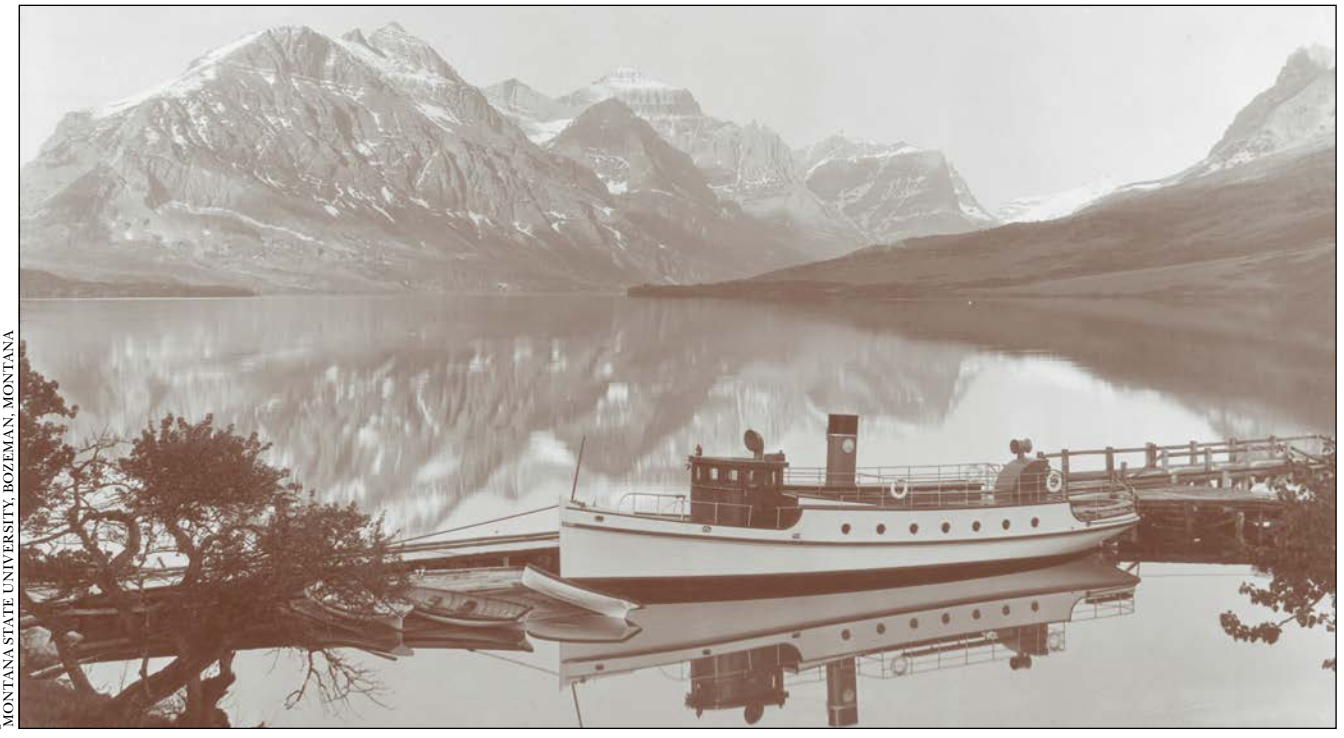
Hostile weather aside, Glacier National Park is a place of extraordinary beauty. It's mostly backcountry, with many more miles of trails than roads. Until the advent of the automobile, horses and boats were the primary modes of transportation.

In many ways, the story of Glacier National Park is the story of the Great Northern Railway, which completed a transcontinental railroad from St. Paul, Minnesota, to Seattle, Washington, in 1893. To encourage ticket-buying passengers, the railroad built hotels along the route where vacationers from the East could spend a few relaxing weeks enjoying the thrill of the Great American West, complete with bears, mountain lions, bison, majestic mountains, trout-filled streams, and encounters with Native Americans. Such a place was Belton (now West Glacier), at the foot of the Lake McDonald Valley. Entrepreneurs set up various services to entertain the tourists who got off the train here, and many of those activities centered on beautiful Lake McDonald. To transport tourists to the scenic north shore and a hotel he would later build there, George Snyder purchased the 40′ wood-burning steamboat F.I. WHITNEY . She was the lake's first passenger vessel and for 10 years remained its only mechanized boat. A ride on her left room for improvement, though: Passengers complained that it was too hot to sit near the boiler and if they moved aft for relief, sparks from the stack burned holes in their clothes.

As the number of visitors and services increased, conservationists advocated government protection of the area. With the support of Louis Hill, president of the Great Northern Railway, President William Howard Taft signed legislation creating Glacier National Park on May 11, 1910. The following year, the first concessions were granted; for boats these went to Frank Kelly and Orville Denny, who owned, respectively, the EMELINE, a 35′ gasoline-powered launch, and CASSIE D, a 34′ gasoline launch. The CASSIE D was built by a Seattle boatbuilder named Pederson in 1911–12 in Kalispell, Montana, for service on Flathead Lake, but two years later she was moved to Lake McDonald.

During this period, William Swanson enters the picture. He was born in 1883, in Pennsylvania, and moved to the Flathead Valley when he was 17. Not much is known about his life, but in time he became the owner of the Flathead Boat Construction and Transportation Company. He built the fastest boat on Flathead Lake, the 62′ CITY OF POLSON, in 1910. Five years later, he sold it to the aforementioned Frank Kelly and his partner John Lewis, for service on Lake McDonald. Once the difficult delivery was made up the shallow Flathead River, Swanson added 11′ to her length and renamed her LEWTANA. Swanson then hired on as her skipper, but he stayed in the job only one year until the Glacier Park Hotel Company, a subsidiary of the Great Northern Railway, lured him away to captain the 125-passenger boat ST. MARY on the growing east

Designed and built by Lee and Nordstrom of Seattle, Washington, on a commission from the Glacier Park Hotel Company, ST. MARY was 68′ LOA, with a beam of 14′ and a displacement of 58 tons. She was prefabricated in Seattle and shipped to the park, where she was in service from 1913 to 1947. Power was an 80-hp, three-cylinder H.P. Frisco gasoline engine. Bill Swanson skippered her for three years.



JAMES W. SCHULTZ/MERRILL G. BURLINGAME COLLECTIONS, MONTANA STATE UNIVERSITY, BOZEMAN, MONTANA

side of the park. In 1919, Swanson applied for his own concession, which was granted, and the following year he was allowed to transport passengers on the east-side lakes of St. Mary, Two Medicine, Lake Josephine, and Lake McDermott (now named Swiftcurrent). To that end, he built the 38′ WYMUFUS for Two Medicine Lake, and the 36′ ALTYN and JOSEPHINE for Lake McDermott and Lake Josephine, the two separated by a short hike. With no road to the upper lake, all tools and materials had to be hauled or carried in. For all the years passing, nothing has changed. Burch and his crew still haul in fuel, tools, and parts.

In 1926 Swanson built another launch for service on Two Medicine Lake, named RISING WOLF, after a mountain by that name, which dominates the northern side of the lake. More than 10,000 passengers were carried on his four boats that year.

The off-season is long in northwest Montana, and Swanson found time to build the 45′, 49-passenger LITTLE CHIEF for his old employer, the Glacier Park Hotel Company, for service on St. Mary Lake. He also built the 73′ INTERNATIONAL for service on Waterton Lake in Canada's adjoining Waterton Lakes National Park. One of his last builds was the 57′ DE SMET, which he constructed in just six weeks, in Kalispell west of the park, and trucked to Lake McDonald. She, LITTLE CHIEF, and RISING WOLF (since renamed SINOPAH after another mountain) still carry passengers on their daily summer runs in the park.

Businesses in and around Glacier National Park were not exempt from the effects of the Great Depression. "There weren't many people who could afford a boat ride," Swanson said of those times. The number of visitors to the park declined from more than 70,000 in 1929 to around 53,000 in 1933. By the next year, he'd fallen behind in his annual payments but still was granted a new 10-year contract for his concession. In 1938, beset by continued financial difficulties and the poor health of his wife, he sold the concession and all the boats to Art Burch and Carl Anderson. Swanson paid off a debt of $449 to the Glacier Park Hotel Company and moved to Los Angeles, California, to run a shipyard, which lasted through World War II.

The partnership owning the concession and boats changed members several times over the years—including cousin Mark van Artsdale—but a Burch was always one of them. Today, Scott Burch, who owns it outright, runs the business and is grooming his son, Sam, to be the fourth generation.

Scott Burch's grandfather, Art Burch, added to the fleet by building MORNING EAGLE in 1945, and his son, Art Burch Jr., Scott's father, built CHIEF TWO GUNS in 1960, for service on Swiftcurrent Lake. Both are modeled after Swanson's planless designs—with the fine entry, flare forward, and tumblehome aft—but with modifications. The only fiberglass boat in the fleet, JOY II, was built by Scott in 1984, and backs up LITTLE CHIEF on St. Mary Lake.

By contract, the concession operators must provide guided nature hikes, sometimes led by park rangers, sometimes by Glacier Park Boat Company employees. A typical tour begins with a loaded boat at a hotel dock, and a leisurely cruise to the other end of the lake, where those wishing to hike disembark and set off toward a waterfall or some other attraction, learning about wildflowers, wildlife, and the movement of glaciers. The boat returns the less adventurous to the hotel

Bill Swanson built DESMET in 1930, but she may not have entered service on Lake MacDonald until 1930. The photographer's note on this photo reads: "J.W. Swanson on box, logging truck is a 1930 Federal 810 SIX, picture date is believed to be 1930."

T.J. HILEMAN/GLACIER NATIONAL PARK ARCHIVES, WEST GLACIER, MONTANA

DAN SPURR (BOTH)

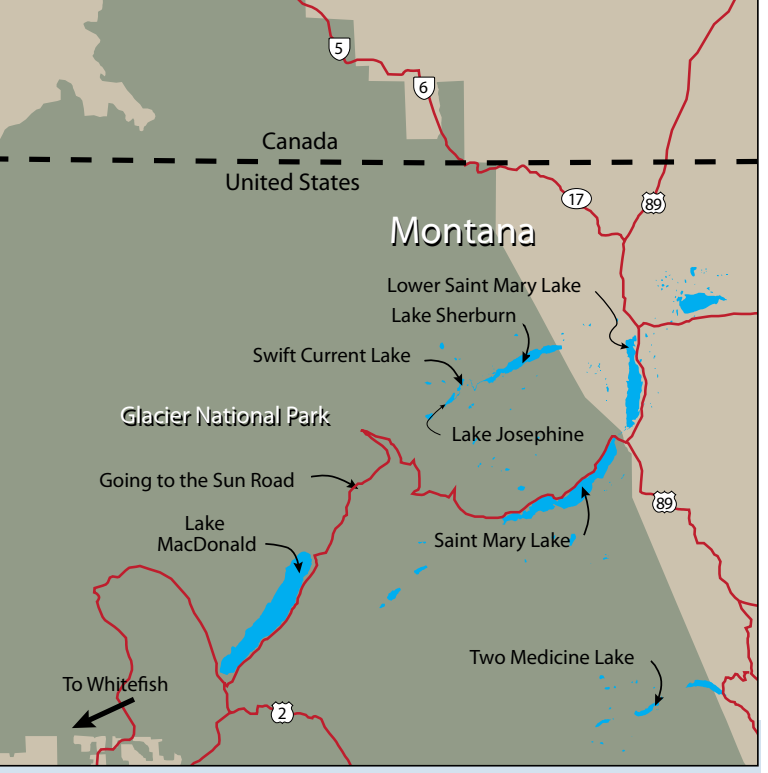
***Above*—The 56′ DESMET was built in 1930 with red oak frames, which have since been reinforced with white oak sister frames. Planking is western red cedar. *Left*—The seats in all the boats are original, though these on DESMET have had to be reinforced owing to the increased weight of passengers.**

and takes on a new set of passengers. When the number of returning hikers increases, invariably augmented by individuals who came to the lake via other trails, the second boat is called into duty. Skippers and crew are young men and women who have passed special U.S. Coast Guard exams to operate these boats only. The national parks operate independently of most state and federal jurisdictions, but since a request some years ago by park administrators, U.S. Coast Guard District 13, based in Seattle, Washington, has inspected the boats for safe operation, including stability tests, and tested the crews qualifications. The crews are not only Coast Guard–certified but also well trained by Burch to serve as park docents who know its history and are passionate about its beauty.

On a gorgeous summer's day in July, my wife and I met Scott Burch at his dock at Apgar, at the southwestern end of Lake McDonald. Our aim over the next few days was to inspect and ride each of the wooden launches, beginning with the 70-passenger DE SMET, named after Pierre-Jean De Smet, a Jesuit priest from Belgium who was a missionary to Native Americans during the mid-1800s. Before boarding, however, we took a quick drive a few miles up the lake to DE SMET's boathouse, located in the Fish Creek campground. Each boat has its own shelter, on its respective lake. After all, there are no marinas, no other covered storage, and no yard hands to perform maintenance and repairs.

The boathouses are interesting because most of them are as old as the boats. DE SMET's boathouse was built the same year as the boat, 1930, and its length reflects attention to costs—it's just 6″ longer than the boat. Metal tracks, twisted here and there by the implacable ice, run from the lake bottom into the boathouse, and on them rides a cradle fit to DE SMET's hull. Before electricity was brought to the boathouses just 20 years ago, various means were employed to retrieve the boats. Horse sense and ingenuity were required for problems that were easily solved elsewhere: Burch recalls that when he was a kid, a 1954 Diamond T truck would be parked next to the boathouse so a belt running from its drive shaft would pass through an opening in the boathouse wall to run a winch at the head of the tracks.

The boathouse is a good place to discuss DE SMET's construction, because most of her repairs are performed here. The original frames were red oak, but all have been sistered with steam-bent white oak. The keel is Douglas-fir and original, and so is the house and decking, which is canvas-covered tongue-and-groove cedar. The hull planking is western red cedar, and many—but not all—of the planks have been replaced over the years. Burch says some repairs were made by replacing short sections—just 4′ or 5′—and now he is undertaking a program to replace them with much longer planks. He says it's hard to find the 6/4 and 8/4



If you go...

There are but two entrances to Glacier National Park—East Glacier and West Glacier—and one road connecting them called Going to the Sun Road, the top of which, Logan Pass, is on the Continental Divide. The Glacier Park Boat Company operates boats on both sides.

The closest you can fly to Glacier National Park is to Kalispell/Glacier airport on Delta Airlines, about 20 miles west of West Glacier. Once in the park, you can get about fairly comfortably via the free shuttles which operate July 1 through September 3. Tours are available in the historic open-air Red Buses. Driving to the east side of the park is through the vast and largely uninhabited grasslands of the Blackfoot Indian Reservation.

Promoted by the Great Northern Railway as "The Switzerland of North America," the area has historic lodges at Lake McDonald, Many Glacier, Rising Sun, and East Glacier. Less-expensive hotels may be found outside the park at Columbia Falls to the west, and St. Mary to the east. Most of the numerous campgrounds are first-come, first-served. Check the park website for more information: www.nps/gov/glac. The Glacier Park Boat Company operates generally from June to early September, though schedules vary from lake to lake; for schedules, fees, and associated nature hikes, see www.glacierparkboats.com.

PETE AVERY

With DeSMET's boathouse doors open to the lake, one of Burch's staff sands the new railcaps.

clear stock, 14″–16″ wide, that he wants. His father and grandfather bought lumber from a family on the Flathead River, which had salvage rights to the trees that came down in the spring floods and milled them for businesses in the area. They're doing more farming now, so lately Scott Burch has been buying clear stock from Chapel Cedar in Troy, Montana; he has it milled to thickness and leaves the edges live. "All the planks are varied," he says. "The [old] planks are pulled out whole and used as a pattern." The new planks are hand-planed, sprung into place proud, and then faired in with 8″ disc sanders.

DeSMET was originally fastened with square clench nails, repaired here and there with poor-quality galvanized screws. More recently, silicon-bronze screws had been used for refastening. Most repairwork is done in the spring, before the park opens, and the job this year was to replace her transom, the garboard on the starboard side, and four planks on the port side. The passenger seats also are original; the increased weight of the average person has reduced the boat's Coast Guard–approved capacity from 100 to just 72, and the seats have been reinforced with metal strapping. A few years ago, the deck forward of the wheelhouse was extended, and the gangway reconfigured to accommodate wheelchairs. The canvas on the decks and coach roof, Burch says, is 40 years old, repainted with an acrylic elastomeric latex paint.

Back at the Apgar dock, we board with the other passengers, nearly every one from out of state. Our skipper is a young woman named Anna, who has worked three years for the company. To maximize seating capacity, the engine is well forward and turns a

DAN SPURR (THIS PAGE)

***Above*—LITTLE CHIEF, built in 1925 as a sistership to SINOPAH, makes daily runs on St. Mary Lake during the short tourist season. She's licensed for 49 passengers. *Inset*—As with all the launches, LITTLE CHIEF's engine is placed forward of the wheelhouse so as not to interfere with the cabin seating. *Left*—In the 1990s, the launch was restored and had her systems brought up to date so she could be placed back in service.**

very long propeller shaft running through multiple pillow blocks set just under the cabin floorboards. Parallel to it is the copper exhaust, with an even longer run to the transom.

The skipper and mate cast off the docklines, and the 56-hp Perkins diesel engine quickly brings the lean hull up to cruising speed of 7–8 knots. It's a leisurely pace, and just right for a lake that's 10 miles long. The cruise takes us across the lake, which has a maximum depth of 474′, and along the northern shoreline. Passengers scan the shore for bear, but today there are none to be seen. Others snap photographs of the mountains, which are reflected in the placid lake surface. The cruise lasts about an hour, after which we disembark at the Apgar dock.

All the other boats belonging to the Glacier Park Boat Company are on the east side of the park, and there are only two ways to get there from the west side: drive south and then east outside the park on Highway 2, known among Montanans as the Highline because it closely parallels the Canadian border; or take the shorter and much slower Going to the Sun Road over the 6,640′-high Logan Pass. Finished in 1932, it is essentially a narrow ledge blasted from the mountain, ascending via dozens of hairpin switchbacks. It is open just a few months a year, and even then can be closed at any moment because of snow or rock slides. Halfway to the pass we pull alongside an old mountain goat plodding along the rock retaining wall, unfazed by the precipitous drop on the other side.

Glacier Park Boat Company operates on four east-side lakes: Many Glacier, St. Mary, Swiftcurrent, and Josephine. We set up camp at the Rising Sun campground, central to the four. As we sit in our canvas chairs enjoying a glass of wine in the dwindling sunlight, a park ranger on her daily rounds advises us to use the steel bear-proof food lockers situated around the campground. She adds that a black bear has been traveling through our campsite on a regular basis, and just a few days ago was resting its front paws on a fallen tree, an unlikely prelude to our predecessors' weekend of boating as he watched them doing just what we were doing—sipping wine.

Billy Swanson built the 45′ × 10′6″ LITTLE CHIEF in 1925. She displaces about 10 tons, is powered by a 59-hp Perkins Sabre diesel, and carries a scant 11 gallons of blended biodiesel fuel. She burns just 5 gallons a day. This represents significant savings from LITTLE CHIEF's previous gasoline engine, a Chrysler V-8 that burned 45 gallons a day. Beyond minimizing emissions into the clean mountain air, there's another reason to be thrifty: every drop of fuel is hand-delivered to the boats and poured from jugs.

Like DE SMET, LITTLE CHIEF's engine is forward of the helm, trimming her high in the stern. In some of Swanson's boats, like INTERNATIONAL, stones were used as aft trim ballast; today Burch uses water bladders. DE SMET, too, was framed in red oak, and all of her original frames have been sistered with white oak. The deck is original. Taken out of service in 1990, she fell into disrepair; some years later Burch and his partner decided to restore her. She had no interior, no stem, and three-quarters of her keel was gone. "Most people would have buried her," Burch says. Last spring, all her seams were reefed and recaulked with cotton and Sikaflex. The new frames were tied to the keel with triangular steel gussets. In service, she runs the length of St. Mary Lake, discharging passengers at the end who wish to take the 2½-mile hike to St. Mary Falls. On this day, the hike is led by a park ranger whose theme is the palette of colors found in the park. The milky color of the water, he says, is due to the "flour" generated by glaciers grinding over rock. "Once the glaciers are gone," he says, "the color of the water will change." It's a small yet startling consequence of global warming.

Twenty miles to the north, at the area called Many Glacier, we find SINOPAH, a sistership to LITTLE CHIEF. The most obvious difference between the two is that SINOPAH's superstructure is bright-finished. She was built a year earlier, in 1924, with white-oak frames and western red cedar planking. In her original configuration, she had no windows to protect passengers from wind and rain. Burch tells us that in her early days on the lake, there were enough passengers to justify using two boats. Oddly, the skippers had strong preferences for opposite ends of the lake, so that to avoid venturing into their less-liked half, when the two boats met the skippers stopped and switched boats.

The remaining wooden boats—MORNING EAGLE and CHIEF TWO GUNS—were built by Burch's

DAN SPURR

The strip-planked MORNING EAGLE was launched in 1960.

DAN SPURR

The plywood-hulled CHIEF TWO GUNS was built in 1945.

grandfather and father, respectively, in 1945 and 1960, the former with a strip-planked hull and the latter with plywood. The design of each attempts to replicate Swanson's signature designs, though the rake of the bow differs and the coach roof lacks the elegant taper forward and aft.

MORNING EAGLE is on Josephine Lake, and to reach it you must take CHIEF TWO GUNS from the hotel dock across Swiftcurrent Lake, then hike a short distance up what is called Heartbreak Hill. It does not seem so arduous to us this day, but then, we are not carrying fuel. In 2006, an avalanche crushed the boathouses and destroyed MORNING EAGLE's superstructure. Desperate to save her, Burch and helpers floated the hull down the stream connecting the two lakes, possible only during spring runoff. In a 3,000-man-hour project, they rebuilt the superstructure and installed new frames.

Burch says that without a concessionaire's contract from the U.S. Park Service, his boats are worth nothing. "No one would buy them," he says. One wonders what would compel someone to work nearly year-round for such a short season, making 90 percent of his income in just 35 days. For him, the motivation is easy. It's the family business, from his grandfather on down to his son, who is majoring in business with the idea that he might be able to apply some new strategies to improve the balance sheet. For Scott and Sam, it all centers on Capt. Billy Swanson's boats—the DE SMET, LITTLE CHIEF, and SINOPAH—the sweat and blood and love of their forebears writ large in each one. They would be eye-catching anywhere, but they are indeed unique in this wild setting.

Dan Spurr is the editor-at-large for Professional BoatBuilder *magazine. He lives in Bozeman, Montana.*

BENJAMIN MENDLOWITZ (BOTH)

Building CHARLOTTE

A matter of balance, proportion, and compromise

by Nat Benjamin

In October 2003, I unrolled the plans for the 50′ schooner whose design I'd been working on for my family over years of "spare time." I reviewed my drawings, and reflected on the years of deferment, keenly aware that for the first time in many years the Gannon & Benjamin boatbuilding shed stood empty. My business partner, Ross Gannon, and I had just launched our largest vessel to date, the 65′ schooner JUNO. This had been an exceptionally satisfying and challenging project thanks to wonderful clients and a highly skilled collection of shipwrights, riggers, caulkers, mechanics, plumbers, and painters involved in it. I had about a month before the space would be taken over by our next commission, a 38′ sloop I was designing for a German couple.

When Ross and I started our boatyard in 1980 on Martha's Vineyard, Massachusetts, we hoped that we would not have too much spare time. We needed to

***Above*— In 2003, after two decades of building boats for others, Nat Benjamin and crew at Gannon & Benjamin Marine Railway began building a 50′ schooner for Nat's own use. The boat, CHARLOTTE, was launched in 2007. *Inset*—CHARLOTTE is framed in single-sawn black locust.**

BENJAMIN MENDLOWITZ

Nat Benjamin worked on CHARLOTTE's design and construction over many years. She was the third large new schooner from the G & B shop—the first two being REBECCA OF VINEYARD HAVEN and JUNO. In the late 1980s, G & B also rebuilt the Alden schooner WHEN AND IF, which had been severely damaged in a grounding during an autumn gale.

keep our nascent business alive to feed our families, after all. But a couple of quiet months each winter might be acceptable, so we could deliver a boat to the Caribbean, go skiing, fix the house (note the order of priority), and, of course, build our own boats. Twenty-three years later, the dream of building our own boats in our idle hours remained as elusive as it was persistent. But I now had a short window of time to get the project started, and I had enough lumber stacked and stickered (see sidebar below) to build our schooner.

I knew I could loft the hull, make the necessary patterns, and clear out of the shop in time to start the new commission. Once I had the patterns, I could begin building pieces and, eventually, assemble them somewhere. The stars had aligned, and so I began the journey, which would prove to be about much more than building a boat. For I needed help to get it done, and the relationships built along the way were as rewarding as the process.

Casson Kennedy and I lofted my drawings to full size on the shop floor in November 2003. Casson had wandered into our shop in 1998 during the early stages of building the 60′ schooner REBECCA. He had a small child under one arm and another peering from beneath the skirts of his attractive, and decoratively pierced and tattooed, strawberry-blonde wife. We discussed his skill level, which was high in the masonry field, and I regretfully told him that we were not hiring. He returned the next day as a volunteer and within a few weeks of impressive learning, we put him on the payroll at $5 per hour. He soon set aside the trowel and

Lumber for a Schooner

COURTESY OF GANNON & BENJAMIN

The lumber for CHARLOTTE was obtained from a variety of sources, both foreign and domestic. Her black locust frames came from Pennsylvania, while her hull planking came from Surinam. Deck planking is of teak.

To gather CHARLOTTE's timbers, I collaborated with our good friend and tropical hardwood importer of 25 years, Brad Ives. Within a few months of placing my order with Brad, Capt. Paul Wahlen sailed into Vineyard Haven harbor aboard his 110′ steel cargo schooner AVONTUUR with the hold laden with angelique, silverballi, yellowheart, and wana. The tropical hardwoods came from trees selectively harvested in Surinam, South America—one of the few countries to manage its Amazon rain forest in a sustainable, ecological manner.

We stacked and stickered this impressive pile of 30′–40′ lengths of angelique and silverballi planking stock, plus a 9″×24″×35′ angelique keel timber, a fore keel, stem, sternpost, horn timber, and deadwood. I had decided to frame CHARLOTTE in single-sawn futtocks with a natural-crook doubler (where the grain follows the curve of the timber) near the turn of the bilge, through-bolted with ⅜″ bronze carriage bolts. I called Chris Groff of Groff & Groff, lumbermen in Pennsylvania, for black-locust sweeps for the frames. Chris had supplied the framing timber for JUNO, although her frames were double-sawn black locust pinned together with locust trunnels—also a very solid construction. Chris knows his trees, and soon we were unloading a truckload of gracefully curved black-locust flitches.

—NB

BENJAMIN MENDLOWITZ

CHARLOTTE is planked primarily in silverballi, though her top two strakes, and bottom four, are of harder, heavier angelique. (See sidebar, page 63, for a discussion of her timbers.)

mortar tub for good and became a skillful joiner and full-time member of our crew, at a living wage.

We made patterns of all the backbone timbers, and located the rabbet and bearding lines so accurate bevels could be taken later. We expanded and patterned the curved, raking transom and lifted the body plan off the floor. Within a few weeks we had finished our lofting and pattern work and cleared out of the building. The lines of the new boat, HERE AND NOW, were ready to be laid down. Our schooner would have to wait.

By mid-February 2004, work on HERE AND NOW and other boatyard projects was moving along nicely. All this creative activity had fairly eclipsed the silent presence of my schooner's carefully stacked timbers patiently shedding their Amazon moisture. I wondered how long I would have to wait for the next phase of construction to begin. I would need a hand, to say the least, and no one was on deck that I knew of.

Pondering my predicament one bitter, sleet-driven morning, I received a phone call from my friend Geoff Gibson. In a concerned father's voice struggling with emotion, he confided that his son Tyler was flunking out of high school, staying out late every night, and usually sleeping past noon. Sobriety was as uncommon as his help around the house. Did I have a job for him? Given the sterling résumé, I reactively said no, while at the same time recalling my own truant past. I agreed to meet with Tyler the next morning.

Our meeting was less than promising, but enough was said, or more accurately, felt, for me to realize that a strong possibility of mutual benefit needed to be explored. Tyler arrived the next day, and we continued our discussion about building the schooner. Given my substantial workload, I didn't feel that I could spend the necessary time coaching an incorrigible 18-year-old in yacht construction. But Tyler was persistent, so I gave him a brief explanation of the task at hand, as I would to a skilled shipwright. It went something like this:

"Let's roll the keel timber over with the outside of the tree facing up so we can see the sapwood and avoid it when laying out the half-breadths. But, first, after scraping off the ice, adze and power-plane the flat

surfaces so we have a constant thickness of 8½″. Then strike a centerline on both surfaces and lay out the stations from the keel batten hanging on the rack over there, and mark down the offsets. Fair them with a batten on both sides of the timber so we can saw it out to the lines drawn. Then lever the timber on its edge, and we'll chainsaw it out."

"Yeah," responded Tyler laconically, gazing first at me, then at the 2,000-lb piece of angelique. I went back to work, knowing full well that this task was far beyond his abilities, my peremptory instructions notwithstanding. A few hours later, Tyler strolled into the building shed and called, "Nat, bring out the chainsaw." We were off.

Using Egyptian technology we levered the timber on its edge and began cutting out the schooner's keel. With a homemade handle bolted to the bar end of the chainsaw, one man could steer the tip while the other ran the saw cutting within ¼″ of the lines. Thus, the taper was sawn and then planed smooth, ready for rabbet lines and the layout of the scarfs. Tyler caught fire, his work interrupted only by occasional visits to the high school. The rest of the centerline pieces followed, and before the snow melted, we had a pile of carefully shaped timbers ready for assembly.

Next came the black locust frames. They were sawn on the ship saw with a rolling bevel, tapered from head to heel, and assembled on the frame table. With minimal guidance, Tyler accurately calculated the changing degrees of angle off the loft floor, made the patterns, sawed each futtock, and then secured the frame pairs to floor timbers and cross spalls. Pieces of the puzzle grew in sculptural stacks outside the shop, waiting for a suitable space for construction. The adjacent 20′ × 60′ woodshed was the obvious location, as most of the lumber in it had been turned into boats, and all we had to do was raise the roof about 6′.

By the fall of 2004, the schooner had a home and a talented young builder with a high school diploma in hand, carefully crafting her pieces. We worked together cutting-in the rabbets, securing the keel timber to the lead ballast (see sidebar at right) with 1″ silicon-bronze bolts, installing the fore keel with a keyed scarf, then the stem and grown angelique knee—lock-scarfed and fastened. The deadwood, sternpost, stern blocking, horn timber, and transom followed. We set up the previously assembled sawn frames on the centerline timbers, through-bolted the floor timbers, strapped the skeleton together with ribbands, and started the fairing process. Any boatbuilder will tell you that there is no parole from fairing. It's worse than childcare. Just when you think you're on the home stretch, a bump or hollow in the road sets you back with plane and batten, smoothing off the unfair curves.

In the early days of 2005, the new schooner's bones filled the woodshed, her easy lines and powerful hull reflecting light and casting shadows, evocative in stillness. She was ready to plank. Tyler and I spiled some magnificent pieces of angelique for garboards, stealers, and broadstrakes. Then we installed angelique sheerstrakes and one plank below [in the same species], providing great strength and good fastening for the deck and chainplates. As we accomplished this gratifying work, the irresistible surfing sirens were beckoning Tyler to the West Coast, and soon he and his buddies were off on an adventure. Like the vessel he labored to create, Tyler's own structural integrity developed with every phase of construction.

Chris Rockwell arrived at our boatyard after years of working in the Pacific Northwest, mostly on fishing boats. A New Hampshire native, he was

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Much of CHARLOTTE's hardware was salvaged from derelict boats. This Sestrel Major compass came from SORCERER OF ASKER, the 1921 Johan Anker–designed sloop in which Nat Benjamin and his family arrived at Martha's Vineyard in 1972.

Reclamation

At Gannon & Benjamin, we believe in reclamation, and one of the advantages of owning a boatyard is the opportunity to collect all manner of derelict boats and their components. When you see some of our new vessels equipped with a particularly fine piece of bronze hardware from a past century, it may have been patterned and cast by us or, possibly, it was cannibalized from a discarded wreck, using a chainsaw and sledgehammer.

Years ago I had the dubious fortune of acquiring the 52′ rotten hulk of a Rhodes-designed ketch built in the 1930s. She was a burdensome vessel with good recycling potential. The big score was the 17,000-lb lead keel I was able to use without alteration for CHARLOTTE's ballast. Along with two winches, appropriately sized stanchion bases, a light fixture, and a doorknob or two, the three days of chainsaw demolition were worthwhile. *—NB*

ready for a change, and the timing couldn't have been better. The pile of silverballi planking stock was now air-dried and ready for the plucking. In lengths up to 40′, this golden-brown lumber had been milled so precisely in Surinam on a gang-saw bandmill that no thickness planing was necessary. Each entire log had been sawn in one pass by multiple blades set at the appropriate spacing for the required thickness, like a loaf of bread being sliced fore-and-aft. Every piece was flitch-sawn (edges not trimmed so the natural curve is retained) to exactly 1 11⁄16″ thick, which yielded, after shaping and backing out, a finished thickness of 1½″. We would drag a piece off the stack, get it up on sawhorses one end at a time, sweep off the grit, and lay out the plank.

If a New England sports team happened to be doing well that day, Chris would be cheerfully and efficiently hanging planks until dark. But during a Yankees vs. Red Sox game, the atmosphere could get ugly should New York take the lead. The radio would be cranked up, and every Yankee hit would be matched by a heavy hammer blow to the silverballi followed by a litany of epithets while Casson added fuel to the competitive fire by cheering for a Yankee victory. Despite the sports-driven mood swings, the planks were expertly hung and fastened with 3″ No. 20 bronze screws, and the silverballi didn't seem to care who won the games.

We had a shutter plank party in July 2005 to celebrate the installation of the last plank. At the time several youngsters were looking for summer jobs, so an under-16 threesome of capable bungmasters and plank-end holders became part of our crew. These lads rose to the challenge and complemented the boatshop atmosphere of hard work and self-reliance.

Fairing a husky, freshly planked 50′ schooner hull is not a task for the timid or inexperienced. The serendipitous arrival of Peter Beckett, a Canadian abstract artist, sailor, and woodworker, proved to be the undisputed solution for this assignment. Peter glared at the schooner's rough new planks while declaring insistently that he would like to fair the hull—alone. Completely alone. I assured him that he could help out for a few hours but that we needed to muster a crew of four or five skilled shipwrights to tackle this monumental task efficiently. Peter wanted to start right away, so with trepidation, I handed him an electric plane which he immediately dismantled, then added a long cord and reshaped three sets of knives on the bench grinder to conform to different areas of the hull.

There was nothing abstract about Peter. We discussed some of the finer points such as swelling out around the shaftlog and fairing-in the stem and sternpost, tuck and transom, but little needed to be said. Peter's sharp eye and meditative approach combined with his skillful use of edge tools allowed him to complete the job in about 10 days. He was a fairing master unleashing his eccentricities in productive artistry.

CHARLOTTE's deck is 1 5⁄8″ laid teak. With proper maintenance including regular saltwater washdowns, this deck will remain smooth and leak-free for many years.

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Here, caulking is progressing on the schooner's hull. The seams are then painted to keep the cotton from creeping, and to prevent it from absorbing the oils in the caulking compound that will be puttied into the seams.

Pulled in different directions by various boatyard duties, I could not work on the schooner as much as I wished to, and I was thinking about another hand to help Chris move things along. When Bill Benns rolled in through the gate in his 1986 Jaguar XJ6 coupe, my hopes were answered. His past careers in stock-car racing and traditional boatbuilding met our job description. Built like the schooner—solid—with a long ponytail and mutton chops outlining his good-natured, round face, Bill set to work with Chris framing the deck, installing locust bulwark stanchions, and so on.

Building the deck frame is truly enjoyable work. There's no more crawling around like a primate or excessive unnatural bending. You are upright, for the most part. We installed white-oak deckbeams fastened and bolted to angelique sheer clamps and shelves. Tyler returned from his California winter to install four pairs of grown hackmatack hanging knees to secure the deck-to-hull connection, adding great strength and minimum weight. Dovetailed angelique carlins were doubled with half-lapped, mitered, rabbeted grubs to receive the deckhouses, followed by angelique covering boards and kingplanks. The teak doghouse aft and silverballi deckhouse amidships were bolted through the grubs, carlins, and deckbeams. All fastenings in the vessel are silicon bronze.

With the hull planked and the deck framed, it was time to shift gears and install the interior (see sidebar, page 68), fuel and water tanks, engine beds, 80-hp Cummins diesel, stuffing box, stern bearing, head, and galley. Using silverballi offcuts from the planking, we milled, splined, and beaded the stock for bulkheads. Finished bright, silverballi is a very beautiful wood, warm and reflective. I used old-growth cypress for face frames, door panels, settee backs, and other areas where the intricate grain and honey color is so pleasing to the eye and in lovely contrast with the darker woods.

After we planted the Cummins on its 3″ angelique beds, a whole new array of challenges was before us: wiring, tanks, plumbing, filters, pumps, siphon breaks, batteries, 12-volt electric distribution panel, light fixtures, and electronics. Bill accomplished most of these tasks with the efficiency of a NASCAR pit crew.

With the interior nearly complete, our next task was to lay the 1⅝″-thick teak deck, sprung against the covering boards, screwed to deckbeams, and let into the kingplanks and grubs. Given the fine grade of stock, this process went very smoothly, and the end result is a beautiful texture of multiple, narrow, bare-wood strakes sweeping along the outline of the schooner's hull, and arriving at the centerline kingplank in a herringbone pattern known as "nibbing." To maintain this expanse of fine practical joinery, regular saltwater rinses (aka "sluicing") and the occasional scrub-down are required. We installed an electric saltwater wash-down pump to facilitate this task, clean the sand off landlubbers' feet, rinse the mud off the anchor chain, and to use as an outdoor saltwater shower.

CHARLOTTE's Interior

Pam and I designed CHARLOTTE's interior to accommodate our growing family and our propensity to sail with lots of friends and occasional charter guests. Let's take a walk below, from aft forward. Descending the companionway ladder, forward of the cockpit bridge deck, you enter the doghouse. This cabin provides a navigation station, with ample storage drawers, a hanging locker, and two large quarter berths (doubles by our standards), with voluminous stowage aft under the cockpit seats. The generous engine access is under the removable ladder. Two rectangular opening ports on either side plus a round one forward allow plenty of ventilation and visibility. The 12-volt electric panel, engine battery, and two 8D house batteries, chart plotter, radar and Sky Mate are all contained in this strategic aft cabin. It is so beneficial to be dry and comfortable at the chart table and able to communicate with the helmsman—who may not be so dry and comfortable—in all weather conditions. I feel that a doghouse is a must for cruising.

MATTHEW HOBART

CHARLOTTE is a family boat, and is also meant for carrying groups of friends and occasional charter guests. She has a functional, seagoing galley located near the companionway ladders, and forward of that, a spacious saloon.

Descend the two steps to port of the chart table, and you're in the galley by the mainmast. The layout is functional with a three-burner gimbaled propane stove with oven, generous work area, double sink, and many shelves and storage lockers. The refrigerator is just forward in the main saloon to starboard. It is top-loading and has a separate front access compartment above so

A critical and somewhat tedious task in wooden boat construction is making the hundreds of linear feet of plank and deck seams watertight. This is accomplished by caulking: the arcane practice whereby strands of cotton fiber are driven hard into the beveled seams with long-headed wooden mallets against flat steel caulking irons. Properly done, the vessel becomes watertight and tremendously strong as the compression builds between the planks and eventually the entire structure rings as a unit.

For several weeks, a chorus of mallets filled the shop and surrounding neighborhood like a multitude of baritone pinkletinks summoning mates to their primeval swamp. After this, the deckseams were payed with an unpleasant black goo that sticks to everything it touches with far greater tenacity than to the teak for which it is intended. (We're not completely satisfied with the available products and continually question the conventional wisdom of better living through modern chemistry.)

After the deck was caulked, payed, and sanded, we installed the cockpit coamings, a wheelbox over the Edson worm steering gear, winch pads, and deck hardware. The gracefully cambered cabintop beams were half-dovetailed into the house carlins, planked over with splined silverballi, then covered with canvas set in a thick rubber paint called Vulkem elastomeric sealant—a wonderful product that comes in a perfectly toned beige. We've found this product key to preserving canvas, as it permeates the cloth and holds up for years without repainting.

A surge of energy and momentum propelled us through the final weeks of construction. Additional hands were brought aboard to complete the staggering tasks of finishwork, varnish, paint, and myriad other details. The schooner neared completion, and we set a launch date of September 15, 2007, coinciding with the popular annual Gaff Rig Race.

Extracting the 57,000-lb static leviathan from the building shed required many hands with shovels and a skilled driver maneuvering a hydraulic boat trailer. Several cubic yards of dirt had to be removed from either side of the centerline for the trailer to get low enough to slide the carrying beams under the keel. After this considerable burrowing, the schooner emerged from the womb after four years of labor. She was unceremoniously placed in a Travelift, launched, and towed to our own railway for the official launching party.

The launching morning began with frustratingly failing breezes for the Gaff Rig Race contenders, who were also struggling against the tide. Around midday, an unexpected cold front ripped the stale sky apart, raising havoc and high winds on the fleet and driving them home with their rails down, if not under. This unique collection of traditional Vineyard Haven boats crossed the finish line and flew into the harbor under a

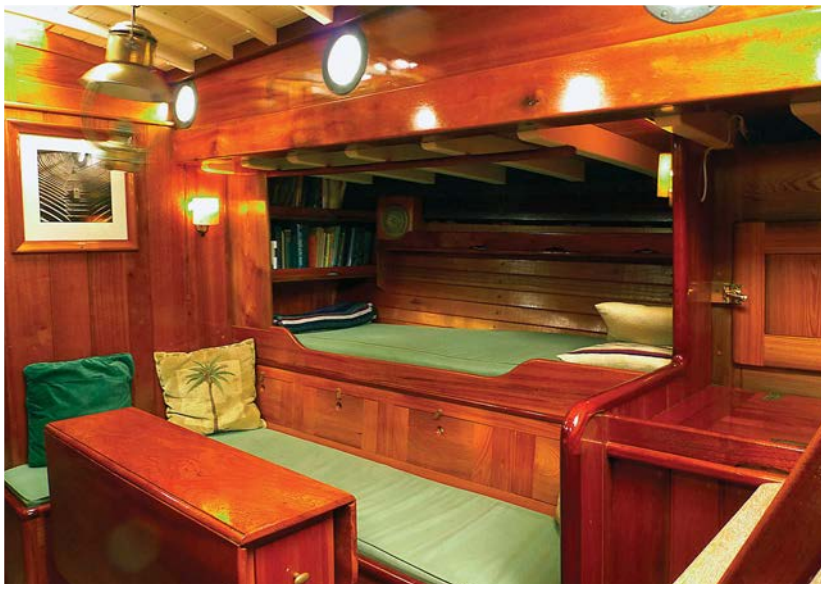
provisions can be stowed in an orderly fashion.

Across from the galley is a full-sized double berth and secondary head. The galley and double cabin admit positive air circulation from cowl vents mounted on Dorade boxes on the cabintop. Glass prisms secured in bronze frames are set in flush overhead to provide natural light while nesting unobtrusively on deck. Forward of the galley and double cabin is the main saloon, also accessible from its own companionway via the 'midship house. Under the traditional skylight the varnished red-locust dropleaf table seats eight for dinner on 6½′ settees to port and starboard. Outboard of the settees are comfortable pilot berths with lots of storage and book shelves. With the glow of oil lamps dancing off silverballi and cypress woodwork, a shipmate feels at home and at peace with his wandering thoughts—at least until he hears "all hands on deck."

The main head is forward of the saloon to starboard. I installed an old porcelain corner sink that I removed from our downstairs bathroom during a remodeling episode, and it looks as though it were made to be aboard. There is also a Lavac toilet, and shower. Another hanging locker nests to port of the head.

The fo'c's'le is particularly popular, with a small double berth to starboard and a single to port. The scuttle above provides great ventilation and separate access. This cabin is used in all but rough sea conditions. Ahead of the fo'c's'le is a chain locker with 350′ of anchor chain, spare lines, rodes, and ground tackle. —*NB*

The schooner's saloon includes an ample dining area and pilot berths with plenty of storage surrounding them.



MATTHEW HOBART

freshly rinsed crystal sky. The schooner waited, poised on the railway.

The launching celebration was a genuine Vineyard event with legions of characters arriving from all corners of the island and beyond. Eloquent speeches were delivered and beautiful music performed while dozens of youngsters raced about like pirates. Our four grandsons participated in the unconventional christening by pouring ladles of water, taken from the island's great ponds, over the schooner's bow and upon each other. A local minister offered a prayer, and my wife, Pam, pronounced the new boat, CHARLOTTE, ready for the sea. Slowly, Ross eased the cradle down the rails and CHARLOTTE, with a full complement of passengers, greeted Vineyard Haven harbor amidst cheers, whistles, and horns erupting from the surrounding crowd. She was free at last.

CHARLOTTE is named for my paternal grandmother, who was a courageous woman, mother of nine, adventurer, and gracious lady. I'm grateful for her wise counsel and unconditional love, and for the opportunity to witness the immeasurable value of a life well lived. We're honored to have her name on our transom.

Putting together CHARLOTTE's rig required another set of skills, so I called on Myles Thurlow for his expertise. Myles (see WB No. 178) came to work at our boatyard at the age of 11, and by the time he reached 15, he was pretty much ruined for any other life. During these and subsequent years, he has mastered the shipwright's trade, traditional rigging and sparmaking, timber framing, and a host of other talents commonly regarded as useful in another century. He has successfully established an enterprising boatbuilding and repair business in the rural North Tisbury fields where he lives with his wife and young son, in the cracks of society as we know it.

For the foremast we dismantled a heavily built Sitka-spruce spar we had salvaged from a wreck years ago. Myles recycled this lumber into a six-staved hollow mast 8½″ diameter at the partners. The mainmast came from a vintage Herreshoff P-class racing sloop and needed few adjustments to meet our specifications. The main and fore booms had been stashed above the collar ties in a friend's shop and were thankfully accepted, and easily modified. We built the gaffs from old-growth spruce, also recycled. Myles made patterns for the gaff saddles, goosenecks, masthead, and spreader fittings, which were cast in bronze. He then spliced ⅜″ 7×7 stainless-steel wire rope for the shrouds and stays. Tyler fashioned the bowsprit from a reclaimed longleaf-pine timber, and I fabricated the Kranz iron, gammon iron, and anchor roller in bronze.

We stepped the masts using a local crane, and Myles finished up splicing the standing rigging with his rigging vise bolted to the dock, and our gin pole tackle

hauling tight the wire overhead. I acquired the 15, 5/8″ bronze turnbuckles from a Florida consignment shop and the blocks and running gear from numerous other sources, all these items being mostly used. The lovely Sestral spherical compass and two Norwegian sheet winches were salvaged from our old 1921 Johan Anker 10-Meter-class sloop, SORCERER OF ASKER. Sperry Sails meticulously crafted a suit of 9 ½-oz Dacron working lowers, with the main and fore fully battened. The full battens work well on a gaff rig where the halyards are not pulling from the top of a marconi-rig triangle, causing tension along the luff. The sails go up and down easily with mast hoops or lace lines, but attention must be given to chafing where the battens meet the shrouds when running off the wind.

In mid-October we were ready for our first sail on a sparkling day with a fair wind from the southwest around 15 knots. Bill, Myles, and I, and several other waterfront friends gathered for this epic event. We set the main, fore, and forestaysail, backwinded the forestaysail to port, and cast off the mooring pennant. In a moment we were romping out of the harbor and setting the jib on a course for West Chop. Reaching off on a lovely fall afternoon is the finest sailing, and we continued on across the Sound, effortlessly bounding along with all hands content and mesmerized by the press of the lee quarter hissing against the vanishing wake. As we settled down to reflect on what was going on, I began to absorb the freedom and pure pleasure of a vessel under sail. No longer in a static environment with measured controls and predictable results, we were now in the mutable, ambiguous, primordial soup we call the sea, reveling in a timeless dimension. With Cape Cod just ahead we tacked around, sheeted her home, and set our course close on the wind for Vineyard Haven harbor. The helm was easy, and CHARLOTTE seemed to enjoy this new activity as much as her crew. Myles scurried around casting mostly positive remarks about the rig.

We sailed into our lovely harbor, dropped the jib and forestaysail, and eased up to the mooring under main and fore. Once made fast, we leisurely stowed the sails and congratulated each other on a successful shakedown. It was time to head back to the dock, so I started the engine and Bill cast off the mooring. Putting the Cummins diesel in gear achieved no response, so I tried reverse, then forward again, to engage the shiny new $3,000 feathering J-Prop propeller. Nothing. Someone looked over the side and informed me that the shiny new propeller was missing. By this time we were drifting astern toward a lee shore, but fortuitously we passed a vacant mooring, which we grabbed. Soon friends came alongside in the launch and we brought CHARLOTTE to the dock, assisted on the hip. This was an important and expensive lesson: Don't buy a J-Prop. Since my maiden-voyage experience I've heard from several other sailors that J-Props just don't like to stay attached, as there is no positive mechanism for securing the lock nut. They all switched to Max props, and so did I. However, I was so pleased with our first sail that I remained uncharacteristically unshaken by this painful

COURTESY OF GANNON & BENJAMIN

Upon launching, CHARLOTTE proved to be perfectly capable in 25 knots of breeze. But in lighter winds, Nat Benjamin says she was "starved for power." Alterations to the mainsail, including additional roach, deeper draft, and a longer foot, solved the issue.

Tweaking the Rig

As with any very special possession, one never stops tweaking, adjusting and improving the little baby. When I designed CHARLOTTE's sail plan, I was a bit conservative with the size of the mainsail. So many schooners are too easily overpowered by their full main when the wind hits 18 to 20 knots. They lie over and struggle with weather helm. CHARLOTTE is perfectly comfortable and balanced when it blows 25 knots, with full main, fore, and forestaysail. The rail refuses to go under, and the boat just stands up and charges ahead—on or off the wind. These sailing qualities give me great satisfaction. But when the breeze drops below 6 to 8 knots we feel starved for power, especially trying to go upwind. I thought I could live with this slightly underpowered, modest sail condition (one can always start the motor), but I can't. I want to keep sailing in light air. After many discussions with our sailmaker, Ben Sperry, we decided that additional draft, more roach, and more length on the foot would achieve the necessary drive. We bent on a new mainsail this past April. The alteration is slight, but significant. We still don't need to reef in less than 25 knots, and we can squeeze her higher on the wind with greater speed in the light air, and I don't have to run the engine. The new main is not fully battened. I'm very satisfied with the full-length battens on the parallel-sided foresail (boom and gaff the same length), but the longer, full battens on the main seem awkward.

I have made other changes to the rig, which although contrary to my minimalist nature, have proven successful. A self-tailing mainsheet winch, an additional set of self-tailing cockpit winches, and, most important, a roller-furling jib at the end of the bowsprit are significant improvements. —*NB*

BENJAMIN MENDLOWITZ

CHARLOTTE recently turned five years old. In that time, she has ranged from the Caribbean to Maine, and proven to be a reliable and comfortable passagemaker.

pecuniary experience, at least until I had to shell out for a new propeller.

CHARLOTTE turned five years old in September 2012, and we've covered some bottom. We sailed her in southern New England the first three summers, and made a trip to Maine in September 2008. I did enough day chartering and occasional term charters to put a big dent in my annual expense budget, while meeting many wonderful people. We've had numerous sails with family and friends, and a wonderful trip to the Caribbean and back in 2011–12, which confirmed my highest expectations for CHARLOTTE's ocean-sailing capabilities.

Aside from the inevitable twiddling and refining (see sidebar, facing page), we are very pleased with our schooner. The wide side decks, comfortable cockpit, and divided sail plan make her easy to manage and capable in a wide range of conditions. CHARLOTTE is a great passagemaker. The powerful hull, long waterline, substantial bulwarks, and easy helm contribute to safe and comfortable deliveries. Although not a racehorse, CHARLOTTE maintains a respectable speed in ocean-sailing conditions. Our 2011 trip to the Caribbean was a pleasant eight days under sail from Vineyard Haven to Hispaniola, with a brief stop in Bermuda.

I remember a wedding toast that took place at our boatyard years ago, where the groom's uncle advocated the importance of building your relationship before your sailing ship. My grandmother would have appreciated that recommendation as she spent most of her life building, understanding, and encouraging relationships—spousal, parental, business, higher power, and others.

Designing and building a boat requires more than a measure of audacity and a handful of carpentry skills. It's about developing balance, proportion, and compromise. And it's about relationships—not just in spare time, but all the time.

Nat Benjamin is co-proprietor, with Ross Gannon, of Gannon & Benjamin Marine Railway in Vineyard Haven, Massachusetts. His designs are widely known for their speed, seaworthiness, practicality, and simplicity. "I feel it's very important to keep an eye on current trends," he says of his design and construction philosophy, "but not to be influenced by the glitter, only the grace."

Venice is dotted with gondola stops, much the way any other city would be dotted with taxi stops.

Venetian Backwaters

Photographs and captions by Nigel Pert

Photographer Nigel Pert began shooting at age seven, when friends of his parents gave him a camera. He was living in Singapore then, where his father worked for the British admiralty. "My very first photographs were of boats," he recalls. "I remember going down to the Singapore Docks one day and taking pictures there. When I was about 12, I saved up all of my pocket money to get a half-decent camera, and just went on from there. I decided to do it professionally in my early 20s."

Nigel shot "all sorts of photography" in his earlier career—commercial, industrial, advertising. But little of it had to do with boats. Then one day in the early 1990s, he "packed it all in," and went sailing for a year. "When I got back to being land-based, I decided to take up photography more seriously again." In his new photography endeavor, he split his professional year between tourist photography in the summer, and building boats and houses in the winter.

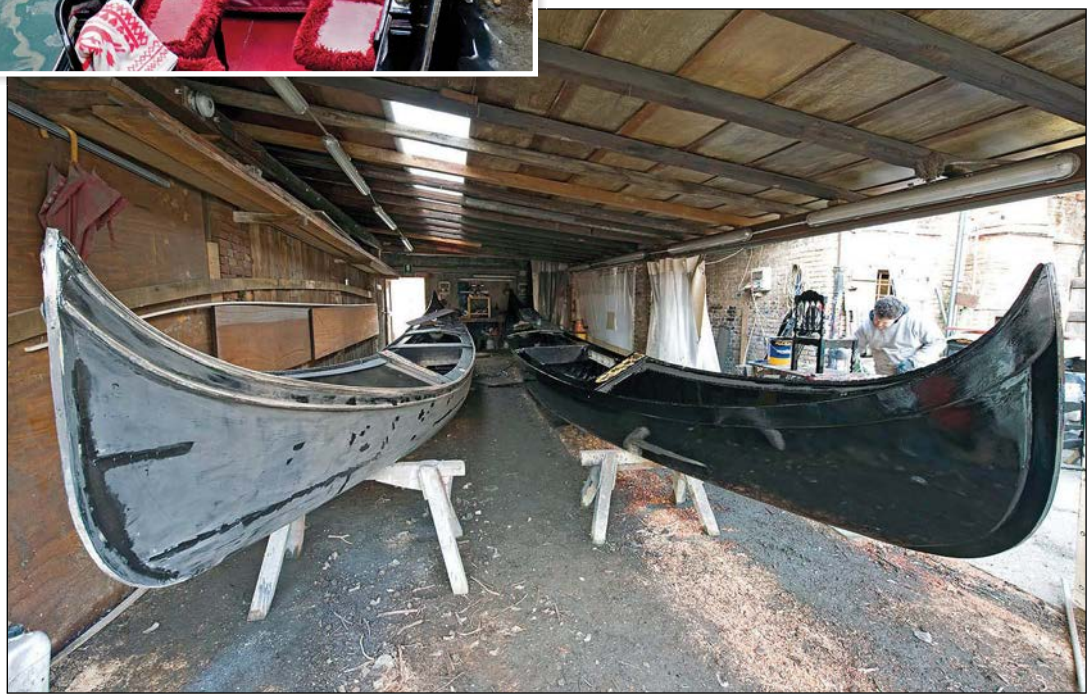
In 1992, he attended and photographed the major maritime festival in Brest, France, which attracted over two million people. "I had a few photographs from that event published in the French magazine *Le Chasse Marée,* and it was then that I decided to focus on maritime photography."

On the following pages, Nigel shares images from a recent weeklong trip to Venice, made on the occasion of his 60th birthday. During his stay, he visited and photographed shops specializing in the city's iconic gondolas. "They're just fascinating craft," says Nigel. "There's a lot to do in Venice," he says, noting that the city has a diverse fleet of fascinating boats that are woven into everyday life (see WB Nos. 152 and 153). "I even got a couple of shots of a DHL [courier] boat going around." —*MPM*

***Above*—Saverio Pastor works on an oar for a gondola in the back of his workshop while the floor-mounted vise in the foreground supports a nearly finished forcola. The forcola is the gondola's rowlock; its special shape allows the oarsman several points of purchase to optimize his efforts for the maneuver he is carrying out.**

***Above*—The graceful form of a gondola slips through the narrowest of Venice's canals. Each gondola is unique in its decoration, which depends upon on the wealth and desires of its gondolier.**

***Above*—Saverio Pastor shapes up a gondola oar in his workshop, which is situated along one of the canals in the Dorsoduro district. Here Savario checks the lines as the blade-end of the oar rests on a purpose-built support reminiscent of one of his forcola, set into a massive sawhorse. The oar is worked on with a variety of planes while its other end is being held in a floor-mounted vise just behind where he is standing.**



***Right*—Two gondolas in the San Trovaso yard undergoing repainting during the quieter winter period.**

***Left*—Saverio Pastor's apprentice, Pietro Mengghini, working on a forcola. He is in the middle stages of creating its complex shape, removing wood with a large drawknife after the coarse form has been roughed out using a bandsaw. The workpiece is held in a large wooden vise fixed into the shop floor and supported with a strut at its extremity.**

***Above*—At the Tramontin & Figli yard, Roberto Tramontin and his apprentice, Enrico, are building one of the two or so gondolas they produce each year. The yard was started in 1884 by Roberto's great, great grandfather Domenico Tramontin; it is credited with giving gondolas their asymmetrical form (see photo, page 73), which compensates for the fact that a gondola is always rowed with the oar on its starboard side.**

***Above*—A craftsman carves a new bas-relief decoration on a gondola at the San Trovaso yard.**

The Yacht Designs of Fred W. Martin

Racine, Wisconsin's nearly forgotten boatbuilding industry

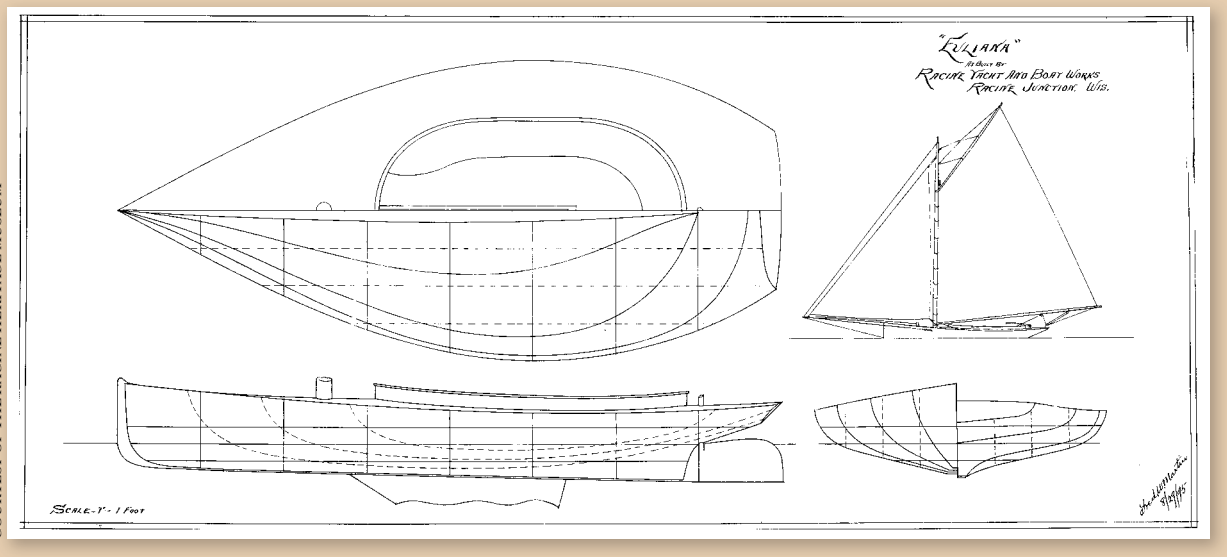
Text and models by Steve Wheeler

In his book, *From My Old Boat Shop* (International Marine, 1979), naval architect Weston Farmer called Fred W. Martin "a naval architect in the tradition of Charles L. Seabury, Edward Burgess, and Nathanael Herreshoff. Artistically, and possibly technically, he was easily the equal of any of those better-known greats." And yet, today, Martin is virtually unknown. He had toiled away in the Midwest, largely in Racine, Wisconsin, around the turn of the last century and, Farmer went on, "…was unreported by the eastern seaboard yachting press of the time because of the state of the nation: the geographic isolation of steam-train times, the slow, two-week mails, and the fact that Big City editorial interest seldom extended beyond the end of the Flatbush subway lines." Thus, even in his own time, Fred Martin received little formal attention beyond the Great Lakes area.

Martin was born in Bellrock, Ontario, in 1860. No photographs of him have been found, and almost nothing is known of his personal life other than that he married his wife, Katie, and had four children, three sons and a daughter. Nor is there much known of his schooling or formal training as a naval architect, although records show that he spent at least one year in high school, at age 12, at Ontario's Kingston Collegiate Institute. His early history as a designer is sketchy, but his drawings show that he became a talented, prolific, and capable one, apparently formally trained and well versed in the many different types of pleasure boats, both power and sail, that were in use between the end of the 19th century and the beginning of the 20th.

His published work includes boats ranging from 11′ to 120′. It was reported that he designed a canoe in about 1882, and later in the 1880s in Waukegan, Illinois, he was issued two patents for a unique double-rudder steering arrangement for sailing canoes. The forward and aft rudders were connected by a set of linkages and sector gears and turned in opposite directions, making the boat extremely quick on the helm. The forward rudder could be disengaged to work like a centerboard, or it could be housed.

In about 1887 Martin moved to Clayton, New York, and became the chief designer for the boatbuilding firm of A. Bain & Co. There, his designs "to scientific principles" brought him a growing reputation and, in



COURTESY OF THE RACINE HERITAGE MUSEUM

—EULIANA—

When the Racine Hardware Manufacturing Company failed in 1893, Fred Martin and colleagues incorporated the Racine Boat Manufacturing Company. Martin left this prospering new venture in 1894, apparently because of a dispute with his partners over the direction the business should take. Once again, he went out on his own and incorporated a new shop, the Racine Yacht & Boat Works—in an industrial district of Racine. There, he produced a wide variety of designs, among them the sandbagger Euliana (facing page and above), a 20-footer drawn in 1895; in Grade "A" construction she could be had for $550. She was featured in his 1895 catalog along with another, similar, 20′ sandbagger, Circe, and a catboat with sandbagger lines.

1888, caused A. Bain & Co. to expand and change its name to the St. Lawrence River Skiff, Canoe and Steam Launch Company. Some of Martin's designs from this period appear in the company's catalogs, including one from 1893 (reprinted in 2001 by the Antique Boat Museum in Clayton), by which time he had already moved on. Among the designs are a pair of St. Lawrence skiffs—unattributed but bearing unmistakable signs of Martin's work.

Martin left Clayton in 1891 and moved just south of Milwaukee on Lake Michigan's western shore to Racine, Wisconsin, where he became chief designer and superintendent of the boat department at the Racine Hardware Manufacturing Company. Why he chose Racine is a mystery, but he may have been familiar with the boatbuilding operation at the hardware company, and even had dealings with it while working in Waukegan.

One of the first things he did at the Racine Hardware Manufacturing Company was to expand the company's line of boats, which at that time was composed primarily of a series of wood-veneer canoes and small steam launches. In the process, he dropped some offerings and added others, increasing both the range of sizes and the variety of boats. Sailboats appeared in the company's inventory for the first time when Martin designed the 25′ sandbagger AMERICAN GIRL for Chicago yachtsman C.E. Berriman.

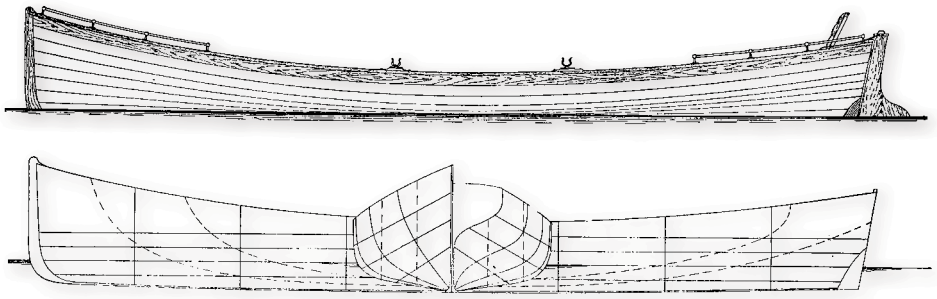
Martin was a traditionalist, and in the introduction to his *Second Edition Album* he stated, "Our experience for the past five years in this business has taught us that all of our customers are not advocates of the modern 'long ends', 'spoon bows', 'shovel noses', 'sternpostless', 'skagless' sterns, and a great many of them still champion the 'plumb stem', 'clipper bow', and moderate instead of extreme overhangs…. We however show a number of the most modern designs, in both power and sailing craft…."

While Martin does seem to have been willing to keep up with the times, he does not appear to have been comfortable with the newer boatbuilding materials such as steel and aluminum that were emerging in the latter part of the 19th century; indeed, there is no evidence that he ever worked in anything but wood.

In 1894, Martin opened a small yard called Racine Yacht & Boat Works, which failed in 1899. While he was mostly engaged with pleasure craft of all kinds, he did create the occasional workboat. A 60′ tugboat he designed in 1898 was typical of the Great Lakes variety which, unlike their cousins on the coasts, usually towed vessels astern and had little need for bow fenders; thus they often had reverse-curved bows. They also spent much of their time in harbors and rivers, which were increasingly obstructed by overhead wires and bridges, resulting in the tugs having low upper works and stacks.

Fred Martin passed away in July 1903 (just after he had published a supplement to his *Second Edition Album*). His death certificate records the cause of death as a "haemorrage from the stomach," possibly a bleeding ulcer. Advertising for his *Albums* appeared in a number of boating publications for some time after his death, and it seems that Katie continued to sell his designs in order to keep her family solvent.

On the following pages is a small sampling of Fred W. Martin's incredible legacy of designs.



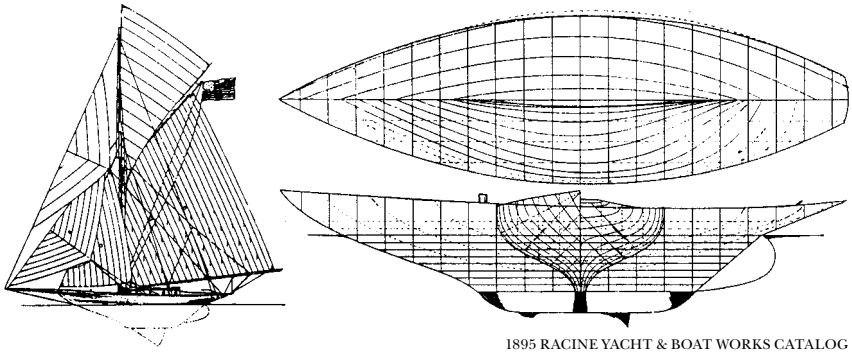
1902 RACINE BOAT MANUFACTURING CO. CATALOG

—MONONA—

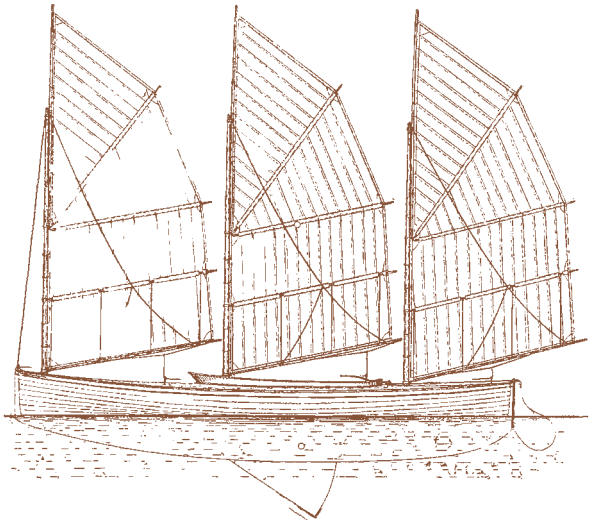
Among his small craft designs was the rowboat Monona, which seems to have been first published in a small catalog supplement in 1892. A boat of this design was exhibited, along with other Martin-designed boats, at the 1893 Columbian Exposition in Chicago. The design remained in production for many years and was renamed several times; it had started as the Lake Michigan Rowboat in 1892, become the Monona around 1895, and finished up as the Princess after 1900. Boats to this design continued to be built after Martin's death.

—VALIANT—

In December 1893, Martin raised capital and, with several partners, ventured off on his own, incorporating the Racine Boat Manufacturing Company on the banks of Racine's Root River. He seems to have brought with him most, if not all, of his workers from his former job at the Racine Hardware Manufacturing Company. By the following April the new firm had completed some 150 rowboats and other small craft, several launches, and a number of sailboats. He had also designed the 42′ cutter VALIANT for C.E. Berriman who had so liked his earlier AMERICAN GIRL that he returned to Martin for the new boat. VALIANT—considered very fast in racing circles—had berths for eight and, with an updated rig, could fit right in with cruising yachts until the beginning of the fiberglass era.



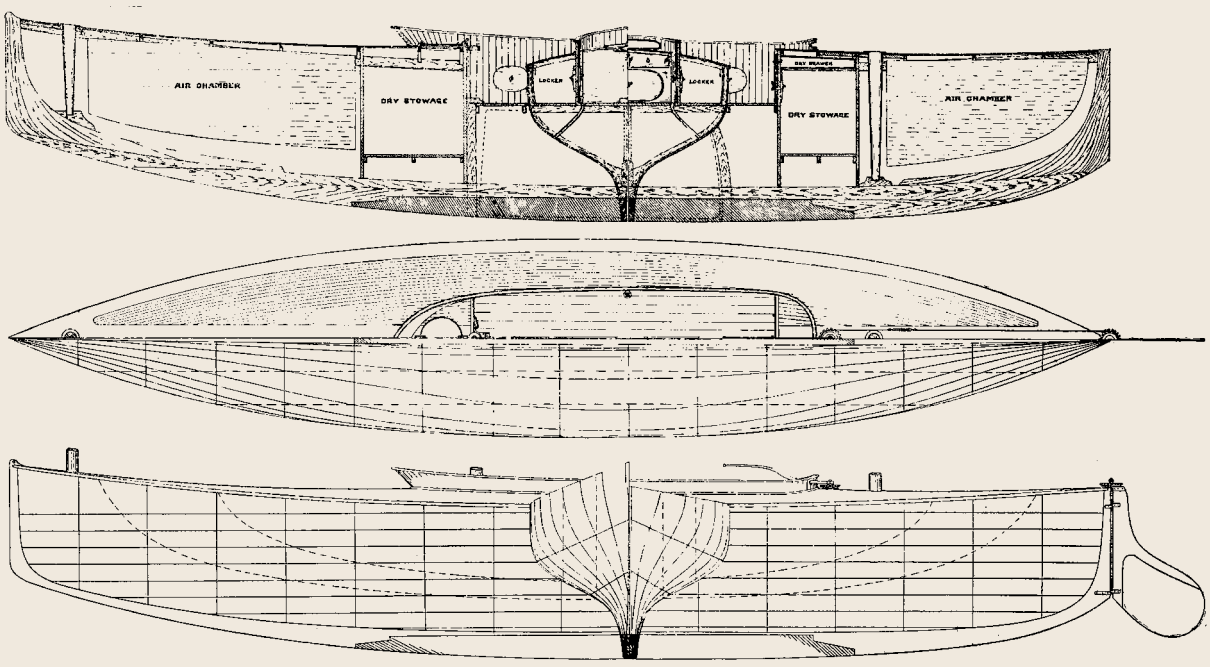
1895 RACINE YACHT & BOAT WORKS CATALOG



AUTHOR'S COLLECTION

—CANOE YAWL—

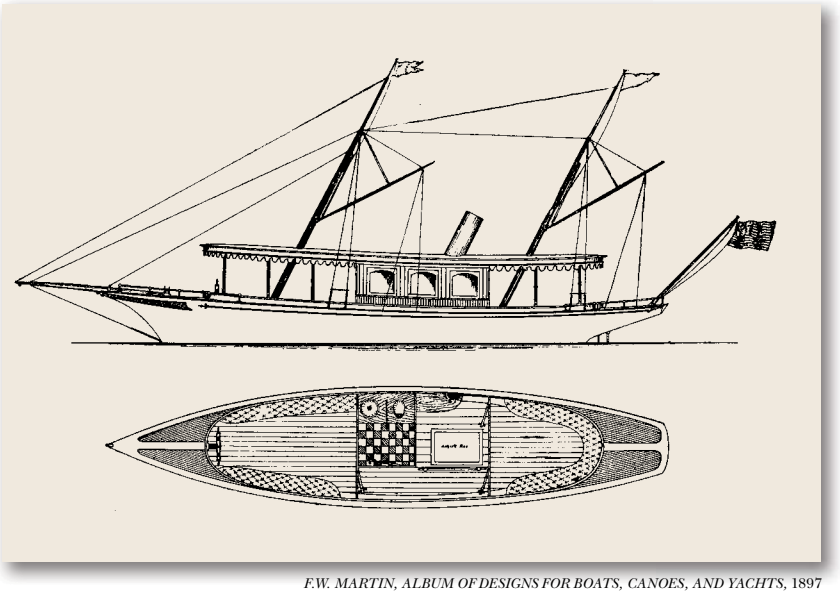
One of the boats Martin drew while in Clayton was his personal yacht, a 22′ canoe yawl. The yacht's three identical batwing sails, all of which could be reefed, allowed for a wide variety of combinations—in both placement and area—according to weather conditions.



FOREST & STREAM MAGAZINE

—JUDGE'S LAUNCH—

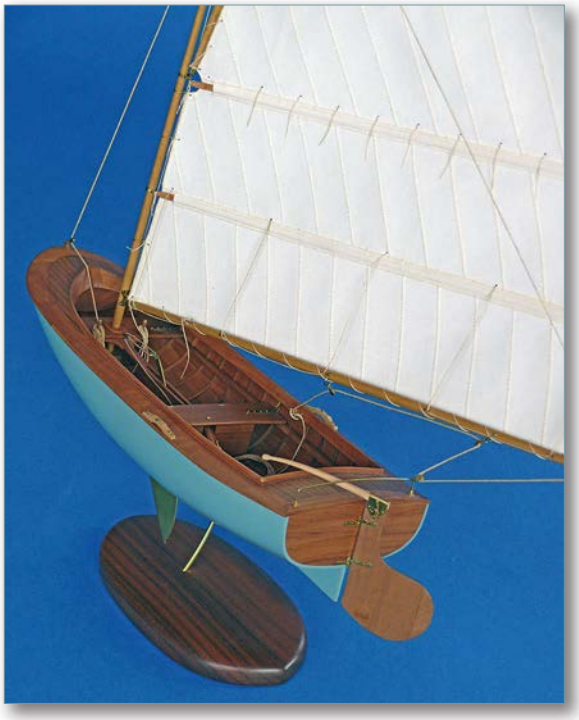
In 1896 came a 38′ Judge's Launch, apparently intended for use as a regatta committee boat or a platform for judging other aquatic events. Martin drew two versions of this boat. The first, powered by steam, showed up in the first edition of his *Album of Designs* (1897); the second, gasoline-powered, was highlighted in his *Second Edition Album of Designs*, published in about 1901. The two versions show that his work was not without error. When he reworked the boat for gasoline power, he altered the rake of the masts, which created a problem with the aft cabin door so it could no longer open fully.

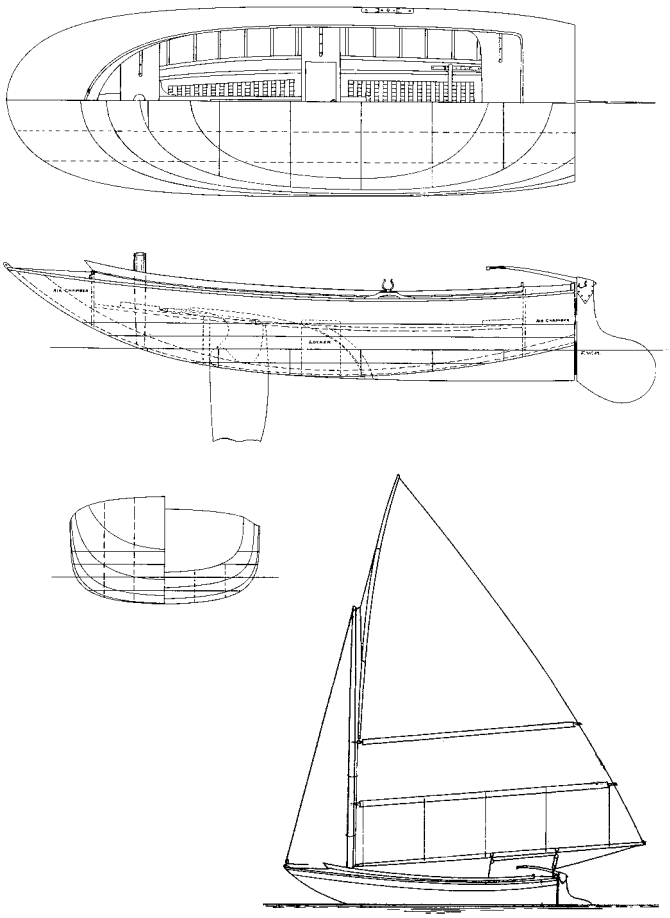


F.W. MARTIN, ALBUM OF DESIGNS FOR BOATS, CANOES, AND YACHTS, 1897

—SAILING DINGHY—

In 1898 Martin drew an 11′ sailing dinghy for an Eastern customer. The sail plan shows she had full-length battens and single-line reefing, which allowed the operator to reduce sail by simply pulling on one line.

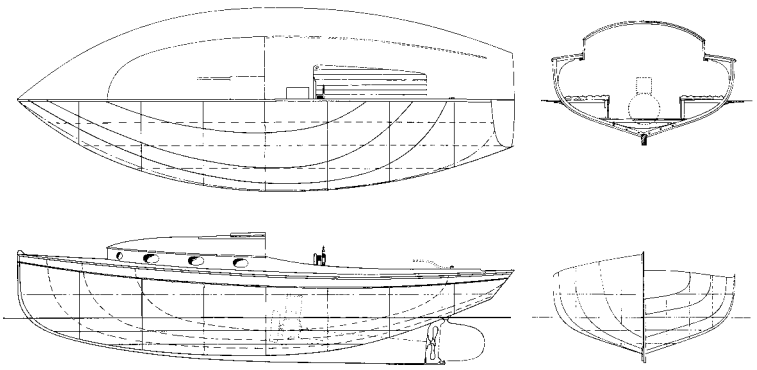




COURTESY OF THE RACINE HERITAGE MUSEUM

—HUNTING BOAT—

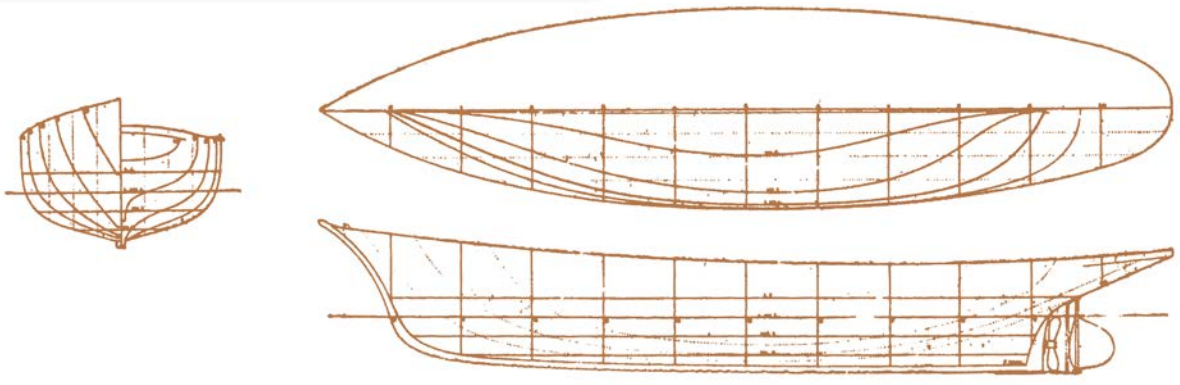
Martin's old firm, the Racine Boat Manufacturing Company, had prospered and developed into a large operation that not only designed and built boats but also made the sails, rigging, fittings, and engines needed to complete them. But Martin's small shop had trouble competing, and the Racine Yacht & Boat Works went bankrupt about 1899. He moved his family back to Waukegan and there resumed his career. It isn't known for sure where he worked, but drawings have surfaced showing that he designed a number of inland lake scows for local builder A.C. Bower. Whether he actually worked at Bower's yard or just did contract work for him is not known. A number of drawings from this period exist, and from 1902 we have a 22′ hunting boat designed for an Eastern client. Apparently designed for waterfowl hunting, it featured relatively low freeboard, which eased boarding from a small boat and allowed the hunter to retrieve his prey over the side. Other craft, both power and sail, with a similar appearance, can be found in Martin's portfolio.



COURTESY OF THE RACINE HERITAGE MUSEUM

—FANTAIL LAUNCH—

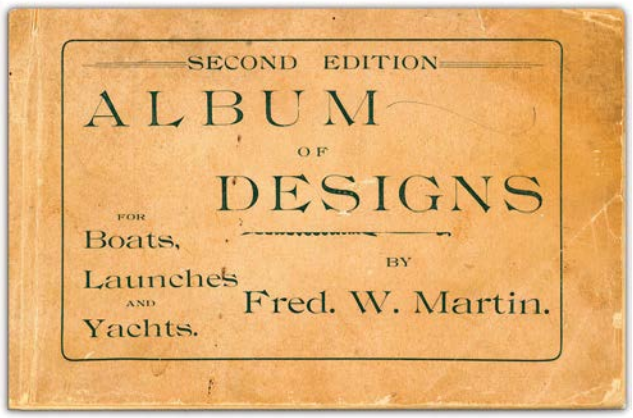
Martin's clipper-bowed fantail launch is typical of his output around the turn of the century. He seems to have been a master of launch design, and of the 73 boats featured in his *Second Edition Album* (see sidebar, page 82) some 22 were of this type. They ranged in length from 16′ to 50′; some had open cockpits, but canvas canopies and hard-tops also appeared, as well as enclosed full or half-cabins.



F.W. MARTIN, ALBUM OF DESIGNS FOR BOATS, LAUNCHES, AND YACHTS, 1902

Fred Martin Design Catalogs

Fred Martin self-published at least four design catalogs to showcase and sell his designs. The first, from 1895, was his *Racine Yacht & Boat Works* catalog, some 65 pages long, in which he included both newly designed boats and older ones pulled from his existing portfolio. Although the original has been lost, the Racine Heritage Museum has a photocopy. In 1897 he published his *Album of Designs for Boats, Canoes and Yachts,* also known as the *First Edition Album,* with some 68 designs ranging from 12′ to 70′; an original copy is in the archives of the Racine Heritage Museum. That was followed, in about 1901, by the *Second Edition Album of Designs for Boats, Launches and Yachts,* with 73 sets of drawings; and finally, in 1903, there was a catalog entitled *Modern Yachts, Launches and Boats, Supplement to 2d Edition Album of Designs* with about 23 plans. Original copies of the latter two catalogs are held by the Cleveland Public Library, and the *Second Edition Album* was reprinted in its entirety by the Altair Publishing Company in 1980; copies are available through the Racine Heritage Museum.



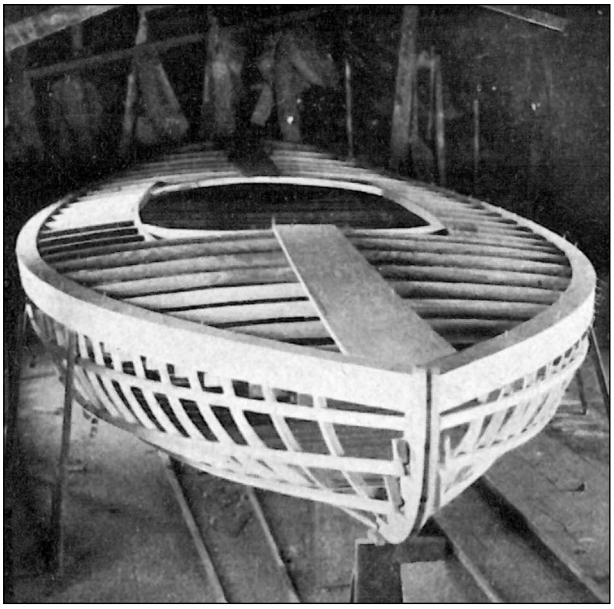
F.W. MARTIN, ALBUM OF DESIGNS FOR BOATS, LAUNCHES, AND YACHTS, 1902

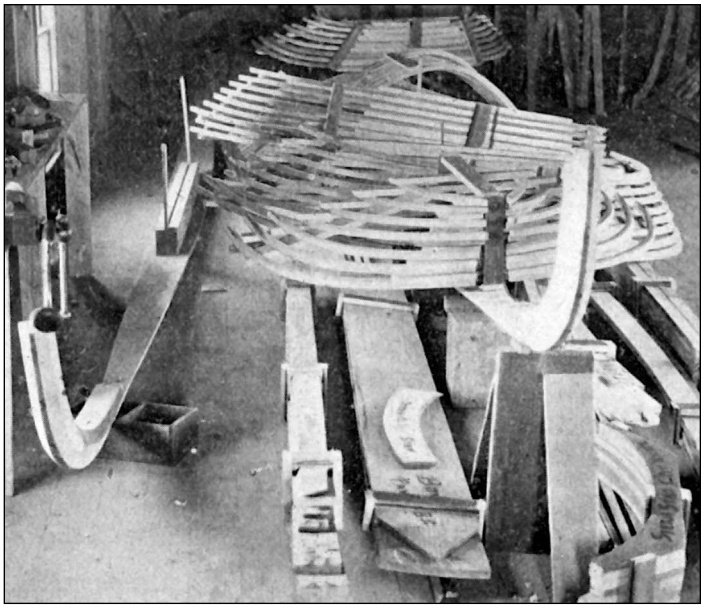
It was Martin's habit to reuse previously published designs in later catalogs, so there is some repetition between these little books, but for the most part, the designs are original and unique. He was also published in *The Rudder* magazine, which Mystic Seaport has indexed, and in *Forest and Stream* and other magazines for which, unfortunately, there is no index. —*SW*

The Album of Designs *reprint and the booklet entitled* The Boat and Yacht Designs of Fred W. Martin c*an be ordered from the Racine Heritage Museum, 701 S. Main St., Racine, WI 53402; 262–636–3926; www.racineheritagemuseum.org.*

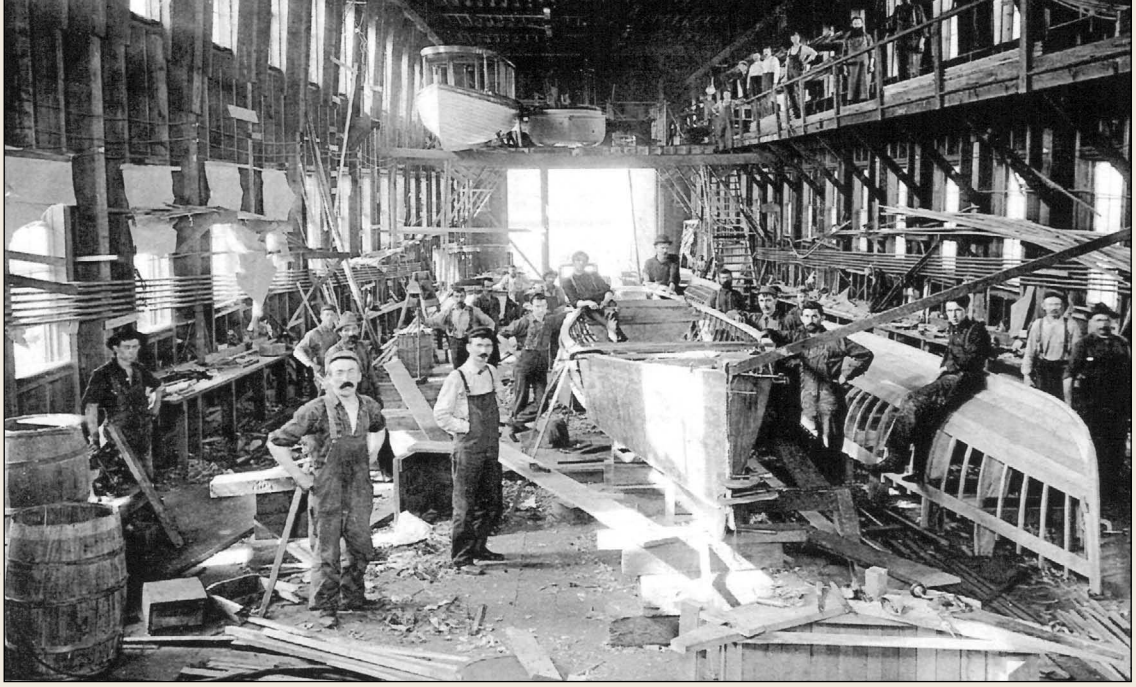
Early Kit Boats

Throughout his career, Martin catered to the amateur or backyard builder and supplied all manner of aids for those who wanted to do their own construction. An opening note from the *Second Edition Album* confirms this (highlighting is from the original): "As before, we will continue to furnish **Amateur Boat Builders** with **Designs to Scale** as indexed in the rear pages of this book, **Special Designs to Order, Specifications, Instructions**, with special hand-made sketches of particular or difficult joints in construction, **Loft Drawings**, (these latter consist of the design being drawn to **Full Size**, on heavy manila paper)… We also furnish **Knock-down Frames** of all sizes for **Boats, Launches** and **Yachts**, each part being fastened up in complete members, set up in the shop, marked, taken down and bundled for shipping to any part of the world." It seems that virtually any size boat in his catalogs could be ordered this way. —*SW*





F.W. MARTIN, ALBUM OF DESIGNS FOR BOATS, LAUNCHES, AND YACHTS, 1902



COURTESY OF JOHN A VanTHIEL

The main construction shed of the Racine Boat Manufacturing Co., 1901, with a steel hull set up amidst a number of wooden hulls. The company also had rowboat and canoe shops, and a sail loft, engine department, foundry, rigging shop, machine shop, and paint room.

THE RACINE BOATS

Over some 50 years spanning the turn of the 20th century, five companies (all of which were popularly called the "Racine Boat Company") in Racine, Wisconsin, built what would become known as "Racine Boats." The one constant among all of them was Fred W. Martin, who worked at one of the companies, incorporated two, supplied designs for one more, and influenced the last. He was the "glue" that built a major industry in Racine. Literally thousands of pleasure craft—and some workboats—large and small, power and sail, built in both wood and metal, came out of the doors of those five boatyards. Between them they produced some of the finest yachts in America at the time, and employed hundreds of skilled workers, many of whom worked at more than one of the firms.

Most of these Racine companies also built rowboats and canoes in large numbers, and many of the canoes still exist. Time, changing fashion, and neglect have taken their toll on most of the large boats, and only a few scattered examples are still afloat.

Three of the firms designed and built marine gasoline engines and steam power plants in volume. A few of these machines survive, some having been lovingly restored.

Of all the drawings, models, photographs, catalogs, and other ephemera that the five yards produced, almost everything has long since disappeared; indeed, very little survives from what had been one of Racine's largest industries. "Racine Boats" and the yards that built them have, sadly, been largely forgotten. —*SW*

Throughout his short career, Martin's work was continually evolving, and it is fascinating to speculate on what he could have done had he lived longer.

As his plans show, he worked in almost every type of pleasure boat then in use—rowboats and canoes; sailboats of all kinds and sizes; launches; and small, medium, and large yachts powered by steam, gasoline, and sail.

Some years ago, 72 original Martin drawings, done in ink on linen or heavy paper, surfaced. The collection is mostly of designs that had been published elsewhere, but a few were unknown. Now on permanent loan to the Racine Heritage Museum, they have been digitally scanned and compiled in booklet form with an introduction and comments by this author.

Fred W. Martin had an immense effect on the boatbuilding industry in Racine. He brought the Racine Hardware Manufacturing Company's boatshop to prominence; he started the Racine Boat Manufacturing Company and, because of his growing reputation, made it possible for that company to prosper and expand; and his widely varied designs found their way into both his own boatyards and those of yet two more yards in Racine. His boats are classics, each one a time capsule, reflecting popular taste in contemporary American boating and yachting.

Stephen Wheeler is a mechanical engineer who retired from IBM in 1997 after 30 years of service. A native of Racine, Wisconsin, he spent many years sailing on Lake Michigan where he developed a love for wooden boats. He is an amateur historian who concentrates on the history of boatbuilding in Racine. An award-winning model builder, he writes extensively about his hobby for a number of maritime history and ship-modeling publications.

The models shown on these pages were all built by the author, at a scale of 1″ to 1′. Some are on permanent display at the Wisconsin Maritime Museum at Manitowoc, Wisconsin; others are at the Racine Heritage Museum in Racine. The author wishes to thank both of those organizations for allowing him to photograph these models and publish these images.

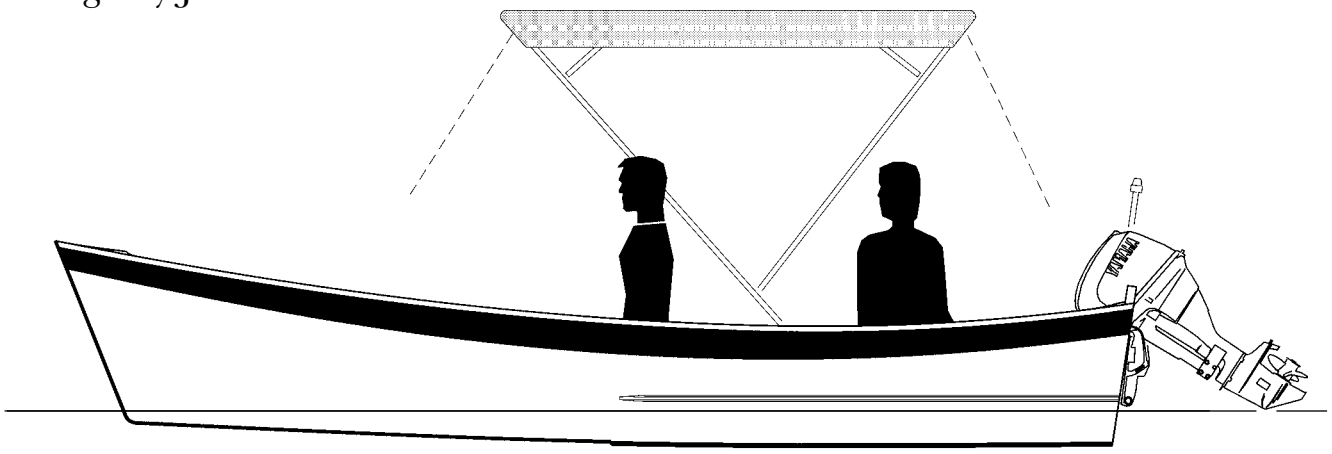
Peeler

Skiff with a dory's soul

Peeler Particulars	
LOA	15′2″
Beam	6′3″
Draft	Not much
Power	4–15 hp
Weight	325 lbs
Max payload	1,000 lbs

Commentary by
Mike O'Brien

Design by John C. Harris



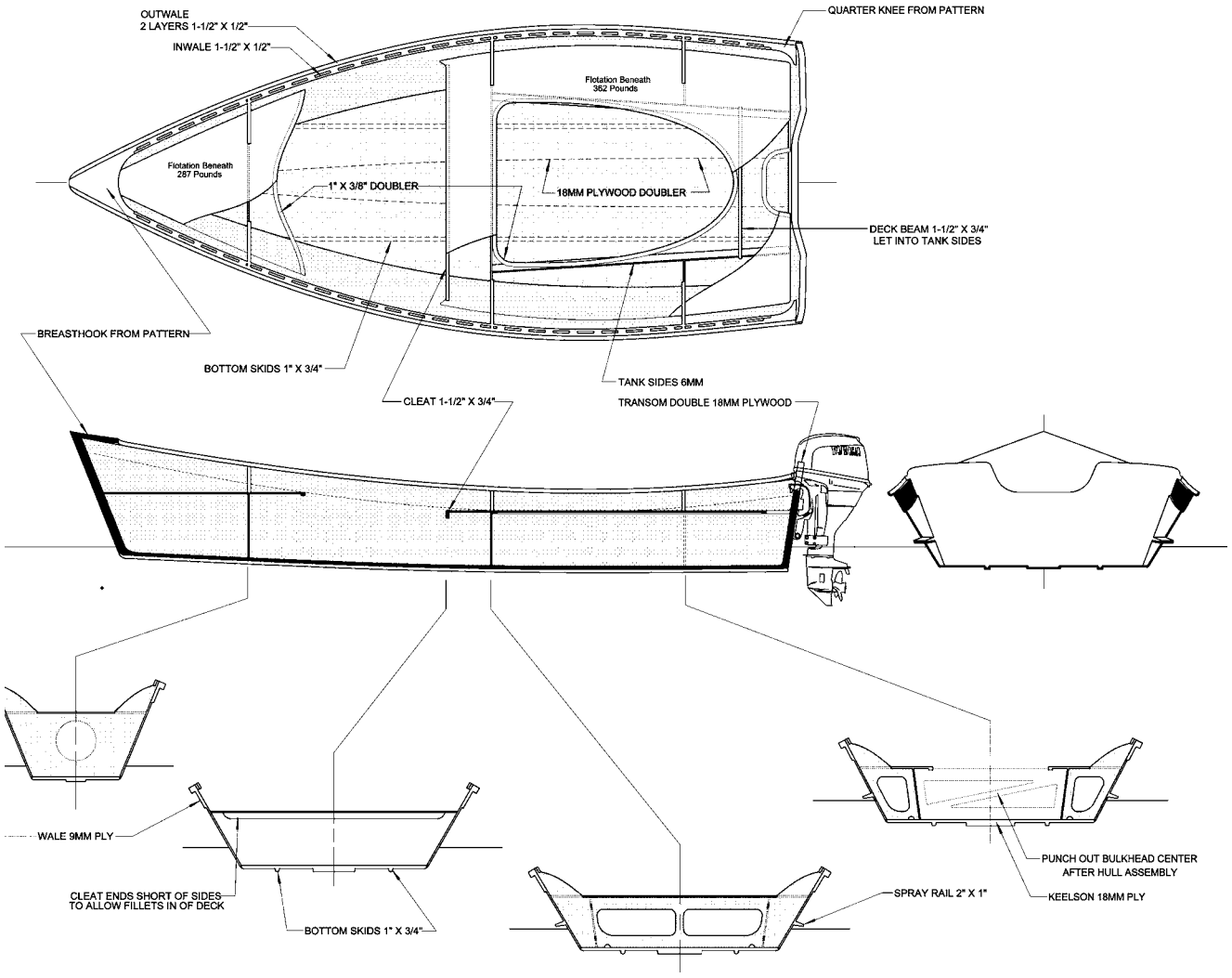
Designer John C. Harris drew this handsome, yet simple-to-build, boat for his own use. The young fellow's house rests at the edge of a lazy Chesapeake river that teems with crabs. As it happens, the most productive locations for traps lie near the far shore. The Peeler Skiff (named after Bay slang for a soft-shell crab) will earn its keep by bringing home supper.

This good-looking skiff went together easily, but it proved a challenge to design. Harris, who also composes music, likened the work to writing an original pop tune: "There is a deep vein of such boats going back a hundred years, and the responsibility was heavy to find something fresh to say."

The designer owns and runs Chesapeake Light Craft, an Annapolis-based firm best known for its stitch-and-glue kayak kits. He wants

Handsome and purposeful, John Harris's easily built Peeler Skiff can earn its keep along almost any waterfront.

IMAGES AND DRAWINGS COURTESY OF CHESAPEAKE LIGHT CRAFT



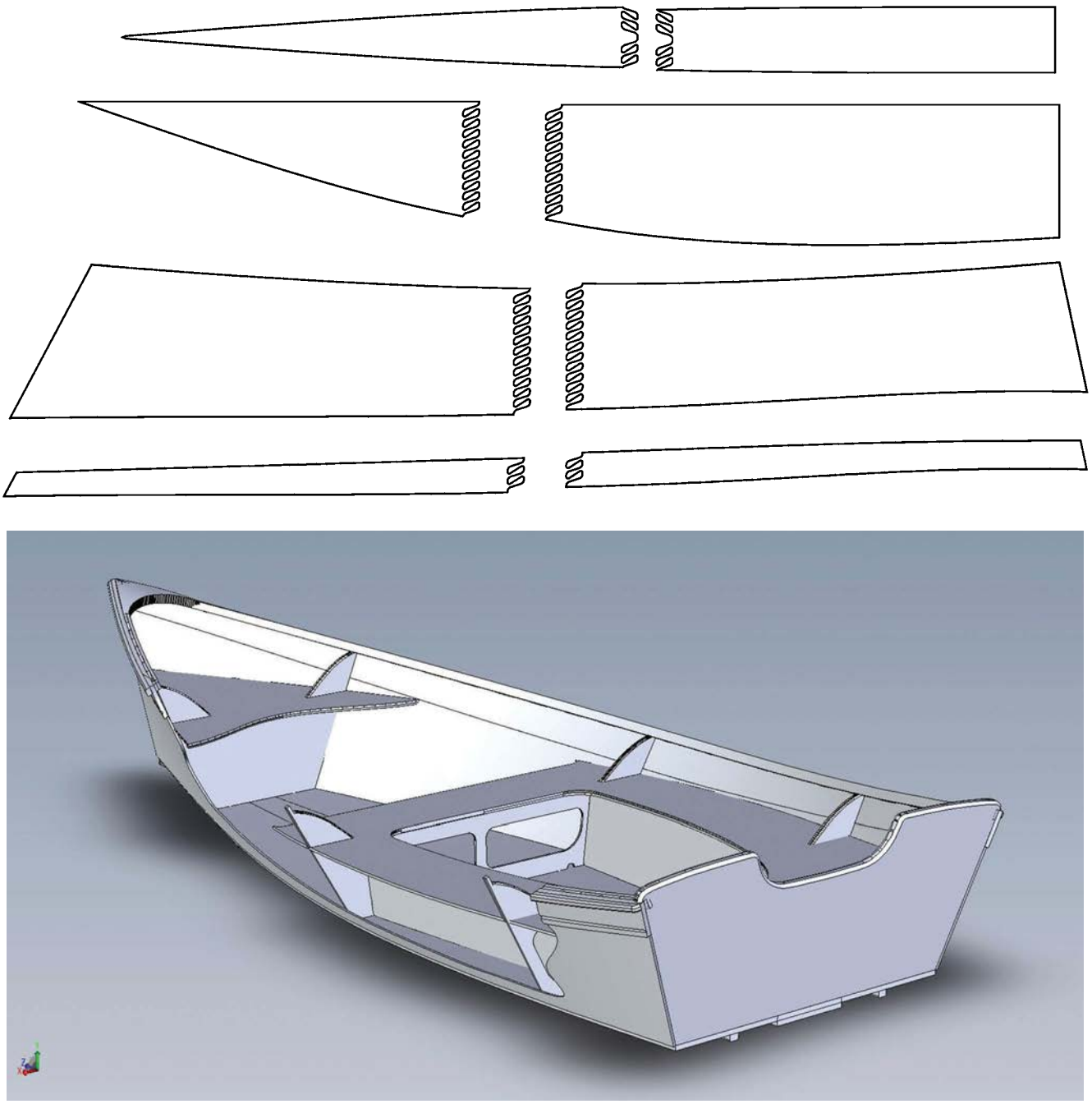
The open layout offers comfortable seating and clear workspace. Some builders might choose to add a center console or a stanchion to allow steering from amidships.

to market a Peeler kit as well, which means that the skiff must meet stringent U.S. Coast Guard regulations for flotation and other matters. Harris tells us that his insurance carrier proved yet more strict, and informed him: "You can produce powerboat kits, or you can have liability insurance. Choose one." Determined to proceed, he successfully negotiated for a special insurance policy.

Unlike most of its Chesapeake forebears, Peeler has the bold sheerline and strongly raked sides of a New England dory-skiff. Harris explains: "These are light, narrow on the bottom, and require little power. A small outboard motor means a lighter and less expensive structure, and the narrow bottom fits into packaging that can ship through the mail. So, while called a 'crab skiff,' Peeler has the soul of a dory."

This sheet-plywood dory-skiff goes together stitch-and-glue fashion with fiberglass and epoxy. Geoff Kerr of Two Daughters Boatworks in Westford, Vermont, built the prototype to Harris's plans in about 200 hours. The finished boat weighed 275 lbs. Its ⅜″-thick bottom (with a ⅜″ "doubler" down the centerline) proved strong enough, but when a 15-hp outboard motor pushed Peeler through a chop, that bottom flexed "like a sheet of rubber." The new boat endured a month of trials and suffered no stress cracks or other damage, but its designer found the floppy bottom a distraction: "This would not do."

He took Peeler into his shop and doubled the bottom's thickness. It now measures ¾″ thick overall and a full 1½″ down the centerline. The modified boat can power hard into a chop with no measurable flexing. This surgery increased overall weight to 325 lbs, and improved all-round performance. Harris recalls that where the lighter skiff had proven "nervous and chatty," its



The Peeler Skiff goes together stitch-and-glue fashion from plans or a kit. The components include (from the top) a bottom "doubler," bottom panels, side panels, and sheerstrakes. To ensure accuracy, jigsaw-puzzle joints connect the forward and after portions of each part. A cutaway rendering (above) depicts the clean and rugged hull structure.

beefier reincarnation can remain on a plane in rougher water with no flexing in its bottom; and it handles "with more authority." Chesapeake watermen have known for a long time that heavier skiffs make solid platforms for hauling traps. Sometimes inertia can be a good thing.

Still, we can't change the laws of physics. Harris tells us that forcing Peeler too hard into a steep chop can "pound out your molars." He describes the simple boat's niche: "This is exactly the thing for fishermen who don't need to jump waves for thirty miles to reach their hunting grounds. It's just wholesome good transport, and it's light enough for the smallest cars to tow." Some folks might ask the designer to add a touch of deadrise (V-shape) to the forward bottom, but would they find the modestly gentler motion worth the more complex construction?

A 15-hp outboard motor pushes the lightly loaded Peeler to a GPS-

Despite Peeler's Chesapeake origins, its strong sheerline and raked sides (right) suggest a New England dory-skiff. Weighted down by 5,000 lbs of iron (below), the skiff floats in a U.S. Coast Guard test tank. Freeboard with this load measures ¼". Maximum working payload is 1,000 lbs.

measured 22 knots across a slick calm. With 560 lbs of crew and gear aboard, that drops to about 15 knots. In any case, this skiff seems happiest when running at 11 or 12 knots. An 8-hp engine gives a speed of 12.1 knots with a crew of two aboard. With the 160-lb designer singlehanding, this smaller motor can push the skiff to 13.4 knots.

Harris initially thought this hull might need a skeg. It does not: "Water funneled between the bottom-skids and the wide centerline doubler keeps the boat steering straight in all sorts of odd conditions—I've tried about everything at this point. It won't skid even a little in hard turns at full throttle." He did add spray rails at the quarters after finding that spray would climb the sides at speed and blow inboard when the wind was abeam.

As do most skiffs, Peeler often likes to carry the weight of a solitary skipper well forward of the transom. At least one builder plans to add a center console. We might be inclined to install a simpler 3½′-tall post amidships. This stanchion (sissy bitt, chicken post, idiot bitt—call it what you wish) will offer a firm handhold when we're standing and steering with a tiller extension. Our knees can work as shock absorbers.

Peeler carries its breadth well aft, and Harris specifies a "swath of comfortable seating" there. The huge U-shaped flat greatly stiffens the hull's structure, and it allowed the designer to save weight elsewhere. In addition, the seats conceal "insurer-pleasing" flotation tanks without stealing useful space.

As for that flotation, Harris shipped the prototype Peeler to the Coast Guard's test facility in Solomons, Maryland, to be "abused and sunk in the name of compliance." With the skiff floating in a tank, technicians put aboard pig-iron weights until water was about to rush into the hull. Peeler supported an impressive 5,000 lbs of iron before taking on a drop. The maximum reasonable payload out on that lazy Chesapeake river should be about 1,000 lbs.

The examiners removed the pig-iron. In its place they clamped ballast to the transom, which would stand in for the 15-hp outboard motor. Additional weight, placed amidships, represented the battery. Then they flooded the boat with a hose. No matter, the good skiff self-bailed through the open drain-plug fitting until only 8″ of water remained in the bilge. Still not finished, they drilled holes in all of the flotation tanks to simulate a catastrophic scenario in which the compartments might be breached. A hose again flooded the skiff, which then remained in the tank for another 18 hours with the through-transom drain plug removed. The enclosed foam did its job. Peeler self-bailed to a level where the water was well below the seats.

In addition to all the above, the Coast Guard tested Peeler's stability when flooded and with dry bilges. At the end of these tough exams, and more, the stout little skiff appears to have graduated with honors.

Indeed, good flat-bottomed skiffs seem easy to build but difficult to design. John Harris has made a fine job of drawing Peeler. This dory-skiff looks sharp and runs well. It should prove a worthwhile addition to almost any waterfront.

Mike O'Brien is boat design editor for WoodenBoat.

Plans and kits from Chesapeake Light Craft, 1805 George Ave., Annapolis, MD 21401; 410–267–0137; www.clcboats.com.

The Marblehead 22

A modern study in simplicity

by Matthew P. Murphy

Back in the 1980s, for a decade or so, windsurfing was all the rage on the North Shore of Massachusetts. On any summer afternoon, the beaches and harbors of Marblehead and its surrounding towns would be shredded by bright-colored sails zipping about whenever there was wind.

If a sailor could get past the awkwardness of learning the sport, basic windsurfing was pretty easy, like riding a bike. It provided a concrete lesson in the forces that drive a sailboat, because you literally held the center of effort in your hands, while the center of lateral resistance was right there beneath your feet. Shift the sail aft, and the board would head up; shift it forward, and it would head down. The basic equipment was alluringly simple in the early days, too: one sail, one board, and one person acting as the sheet. "It's the purest form of sailing," an uncle of mine once observed.

For many sailors, however, it remained an elusive endeavor. I recall one poor guy floating a hundred yards off a Gloucester beach, swearing at his board and pounding it with his fist. "I can't do this f---ing thing," he screamed. "I hate this!" Then he'd stand on the board, try to haul up the sail, be pitched headfirst into the water, and repeat the round of epithets. Finally, he paddled to the shore in defeat. It's likely that many a would-be windsurfer gave up in frustration.

One hundred years before the peak decade of windsurfing, one of the simplest forms of sailing on Massachusetts Bay was the catboat. With a single mast stepped far forward, one or two halyards depending upon the setup, and a single sheet, catboats were a breeze to get underway and easy to sail. The New England catboat had a fleeting moment as one of the hottest boats afloat for young Massachusetts sailors. The great Corinthian helmsman Charles Francis Adams cut his teeth on the type, as did the AMERICA's Cup designer Edward Burgess.

BILLY BLACK

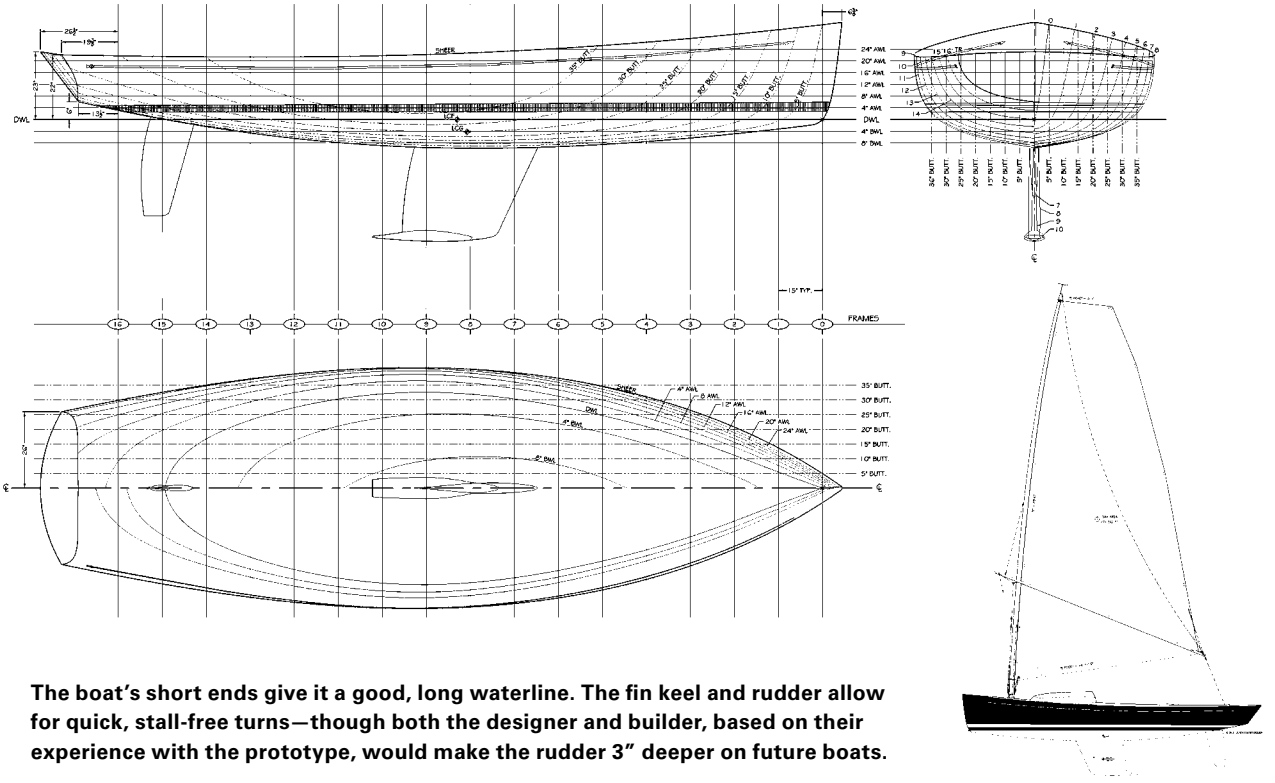
The Doug Zurn–designed Marblehead 22 combines the simplicity of a catboat with the state of the art in rig and hull design. It's an easy yet exciting boat to sail.

I don't know if it was fatigue or expense or both that diminished the popularity of both windsurfing and racing catboats, but the beaches of the North Shore are no longer crowded with windsurfers, and competitive catboats long ago gave way to a more modest—and more original—cruising type of cat. Racing catboats, you see, had grown complicated, with bowsprits, counter sterns, headsails, and massive sail plans. Likewise, windsurfers evolved to the point where, to enjoy their full potential, a connoisseur would need a quiver of sails and boards for varying conditions. In the early days of the sport, you had just a crude board and its stock hollow-leech sail; as the sport matured and became more exciting, the equipment evolved into carefully shaped, fully battened, camber-induced sails driving boards that would not float unless they were moving. And to sail optimally, you might need several boards and sails for varying conditions, and a beat-up Volvo wagon in which to store and transport it all. The quest for speed drove both the racing catboat and the windsurfer beyond the simple ideal.

I've had a recurring fantasy since the days of the windsurfing boom: What if you could take the purity of it, and apply it to a boat? What if you could experience windsurfing without the specter of falling in the water, without the frustrating learning curve? What if you could enjoy the relative ease of a basic catboat while also experiencing the thrill of an advanced sailboard rig? And, more to the point: What if you could windsurf while sitting down to a cold drink?

FACING PAGE: BILLY BLACK

***Above*—Samoset Boatworks of Boothbay, Maine, built the Marblehead 22 in strip-planked cedar and fiberglass. The mast is of carbon fiber, the boom aluminum, and the sail a molded lamination by North.**



The boat's short ends give it a good, long waterline. The fin keel and rudder allow for quick, stall-free turns—though both the designer and builder, based on their experience with the prototype, would make the rudder 3" deeper on future boats.

Well, it seems you can. Or at least that's the impression I came away with after sailing a new, nimble little wooden daysailer called the Marblehead 22 while enjoying a bottle of lemonade ale last summer.

On a sparkling early August day, Matt Sledge and I met at his shop, Samoset Boatworks, in Boothbay, Maine, to embark on a long-anticipated outing in the Marblehead 22. Sledge had built the prototype on speculation, and launched it the previous summer. I'd been hounding him for a sail ever since, having been struck by this boat's purpose when I first saw a rendering of it. Here was a counter-sterned, plumb-bowed catboat merged with a wishbone rig, looking like the sit-down windsurfer of my dreams.

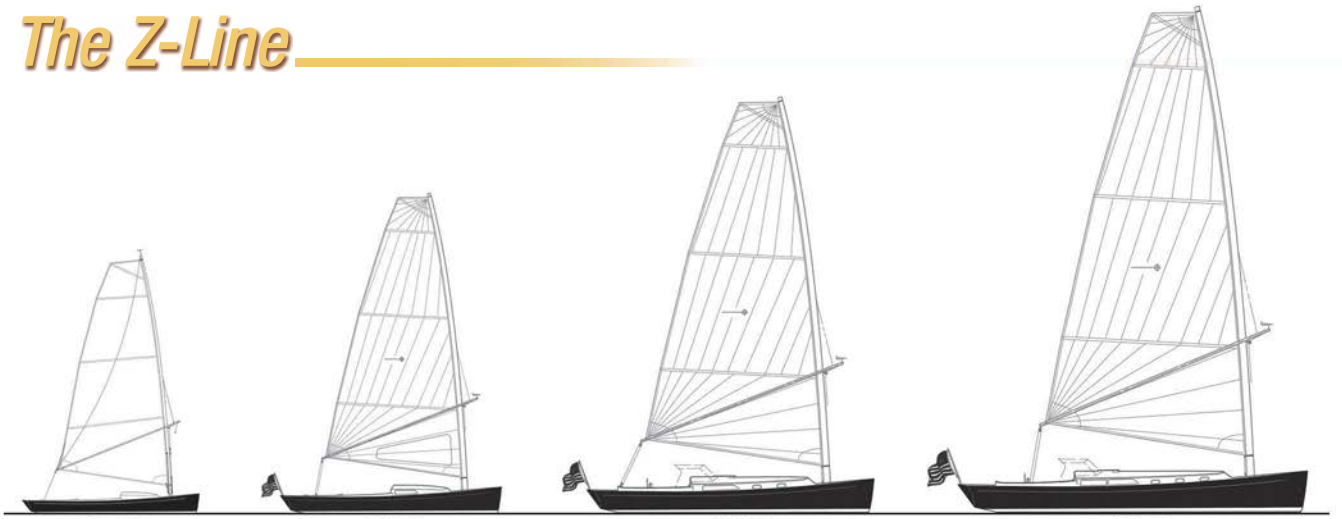
We drove from Sledge's shop to Southport Island on Maine's Sheepscot River, where we boarded Sledge's vintage Aquasport and wove among ledges and islands to arrive at the boat's mooring at nearby Westport Island. We were aboard at 12:23 and sailing at 12:28—and that included the time needed to fish the seat cushions out from under the cuddy, uncover and raise the sail, stow two cold bottles of beer, and scrub a vile accumulaton of gull droppings and leftovers off the after deck. I was at the helm, and within seconds of dropping the mooring, we'd accelerated to 6 knots in 8–10 knots of breeze.

As the opposite shore came up, I announced "ready about," and then realized that this boat doesn't require the usual tacking ceremony, as there wasn't much readying to be done. I put the helm down, we switched sides, and that was that. She accelerated off on the new tack, swinging through a modest 90 degrees—not good enough, perhaps, for a tricked-out sloop, but this is a single-sheet catboat, remember. After a few more turns, the command became a whispered "we're tacking," slipped into the conversation. No matter how hard I put the helm over on each of these turns, there was

BILLY BLACK

This boat is a pure daysailer, with no aspirations for overnighting.

The Z-Line



Designer Doug Zurn has expanded the Marblehead 22 concept into a line of boats he calls the Z-line. The boats share a basic hull profile and proportions, but their different sizes fill different niches. The 28-footer has no accommodation plan as of yet, but there's room below for a V-berth and a head. The 36 has more accommodations—though perhaps less than might be expected, given its relatively narrow beam. The 44-footer is a comfortable cruising boat, whose rig Zurn is considering splitting into a cat-ketch, to ease handling under sail. —*MPM*

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no hint of stalling the rudder; the boat simply sailed through the tightest circles we could make. I observed the marked contrast between this and traditional catboats, which must scribe a wide arc in order to keep an effective rudder. The Marblehead 22 has a shallow hull with a blade-like rudder and keel. It's lightweight, and it spins on a dime.

When I told Sledge I felt no hint of the rudder stalling in hard tacks, he allowed that he'd actually make it 3″ deeper on future boats to this design. In heavy air, at high angles of heel, he said, the rudder does, in fact, come close to stalling. I wondered what the boat's designer, Doug Zurn, thought of this observation, so I called him a few days after my outing in the Marblehead 22, asking him if the boat met his expectations.

"It completely nailed everything," Zurn said of Sledge's execution of the boat. "The only thing I'd change is the rudder," he continued, saying he'd make it deeper, as Sledge had suggested. "And the mainsheet has a little more friction than planned, so I'd change the mainsheet run. And I might move the control lines so you can adjust them from the cockpit." The sail-control lines emerge through a console on the sole of the cuddy cabin. There are only three of them: a halyard, a downhaul, and a "snotter"—which does the job of an outhaul by controlling the position of the wishbone relative to the mast. The rig is hardly the "spaghetti factory" that some high-strung one-designs have become, with their jib-luff tensioners, cunninghams, twings, vangs, barber haulers, travelers, and jib fine-tuners—not to mention the spinnaker's topping lift, foreguy, and two pairs of sheets. The halyard could stay where it is, says Zurn, but the underway tweaking of the other two lines would be more conveniently done without having to kneel in the companionway. "We've found that the sail likes to be quite full," said Zurn, "nearly touching the wishbone."

The rig itself is not an original concept. "It's very similar to the Outward Bound boats," Zurn said, referring to the Maine-based expedition boats of the popular outdoor education school. About a decade ago, Outward Bound commissioned a performance-oriented boat to replace its slower, whaleboat-based design. "I went to Hall [Spars] and said we'd like to do a rig similar to that. That sort of wishbone rig has been around for a while," he said, citing the production-built Nonsuch boats of the late 1980s. "I give [naval architect] Rodger Martin credit for that. I then went to North Sails to get Hall and North to work together to get the right sail for the rig."

The unstayed mast is of carbon fiber, and the wishbone is aluminum. In a rail-burying gust—about 15 knots or higher—the tip of the mast is meant to bend, opening up the leech and depowering the sail, thus allowing the boat to automatically regain her feet. There's one reef, for when the breeze builds to over 18 knots.

Samoset Boatworks offers a standard Dacron sail for the Marblehead 22. The prototype, however, uses a 3DL sail—a seamless soft wing that's heat-molded to its flying shape and supported by a network of exotic fibers—carbon, in this case—rather than stitched together from panels. Although I veer toward the traditional in my boat choices, I was immediately struck by the way this

A Powerboat Version

There's a long tradition of converting catboat hulls into open, unrigged launches, and that tradition continues with the Marblehead 22. Joe Parker of Caro, Michigan, had been discussing electric launches with designer Doug Zurn for several years. "When I saw the Marblehead 22 that Matt Sledge built," says Parker, "I called Doug right way and said, 'You're almost there. I think this would make a great little launch.'"

In a flurry of online meetings, Parker and Zurn made some tweaks to the hull—essentially, flattening the keel rocker a bit—but left the basic shape alone. They raised the height of the cabin sole, and replaced the sailboat's fin keel with a shallow foil-shaped one that will aid tracking and protect the drive system.

The power and drive will be a Mastervolt steerable pod. A 48-volt battery bank will live under the cockpit sole, while a secondary bank of the same voltage will be located in the cuddy, serving an ancillary role as trim ballast.

The boat is being built by students at the Saginaw Bay Sailing Association's boatbuilding program, of which Parker is president. The construction jig was computer-cut by Hewes and Co. of Blue Hill, Maine—a decision that Parker said saved much money and time. The strip planking is of northern white cedar, and this is sheathed in two layers of 17-oz 'glass—a choice meant deliberately to increase the weight of the hull. "Matt Sledge was trying to keep his [Marblehead 22] as light as possible," said Parker. "I'm trying to get it heavier, so it sits on its lines properly—to offset the elimination of the rig, rudder, and ballast keel." Matt Sledge will likely build the cabinhouse in advanced-composite materials, since he already has the tooling for it. Expected launch date is autumn of 2013. —*MPM*

modern cloth, if you can call it "cloth," takes its shape and retains it, with the support of full battens. It's actually a step toward a rigid wing, not unlike a windsurfer sail. While we had an ample breeze on our outing, I'd imagine that the structure of this sail would be a great boon in lighter airs, in which a more conventional sail would hang limp.

The sail itself is square-topped, meaning that a full-length batten supports a head that's about 30″ long, rather than being pointed as a conventional Bermudian mainsail would be. Why? There are several reasons, including a reduction in speed-robbing vortices at the masthead, and increased sail area where the wind is cleaner and more consistent. This shape, in fact, developed on sailboards in the late 1980s, and became popular on larger boats in the mid 2000s. The visual effect is like a gaff-headed main. Yes, the Marblehead 22 evokes the gaff-rigged catboats of a century before, but is powered by windsurfer technology. There's no unbroken lineage, however, that brought us from those boats to this one; Zurn says he took no inspiration from historical antecedents—at least consciously.

"I just draw them how I like to draw them," said Zurn of his inspirations for this design. "I just sit in front of the computer and try to draw a boat that's as well balanced as I perceive it to be.

"The stem is fairly plumb," he said. "The only reason for that, besides aesthetics, is to try to create the longest waterline you can for a given length of boat. What we try to do is a really plumb bow and a counter (aka overhanging) stern." The counter, he said, is an aesthetic thing, for visual balance.

It suggests the Marblehead racing catboats of the turn of last century, I said.

"That could be," he said, considering the possibility. Then he said, "It's just in the water, or something," referring to Marblehead's apparent proclivity for this form.

Aside from the historical roots of this design, if there are any, there were other inspirations, too. "The first inspiration," said Zurn, "was that Matt Sledge called me up and said he wanted to build a sailboat. He wanted to build the Monomoy 21, which was my very first commission back in 1993." That boat was a nice-looking daysailer, but fairly conventional in its marconi rig and its

Builder Matt Sledge takes the helm. The boat's 11′ cockpit occupies half of the boat's overall length, and allows for a party of six, comfortably.

hull form. "I hung up the phone and said, 'wait a minute. That boat's been done, and in a bunch of different versions and variations. Why not do something that's a little more aggressive in terms of rig and performance, but still maintains some of the aesthetics?'"

Zurn and a friend had recently been discussing the idea of getting more people involved in sailing by designing more simple boats. They came up with a 22-footer, four of which could fit in a container to be moved from waterfront to waterfront to introduce people to sailing. That concept was the basis for the design of the Marblehead 22. "I did do some other profiles of the boat," said Zurn. In fact, he developed sketches for what he's come to call the Z-line. "We did several variations of it—22′, 28′, 36′, and 44′" (see sidebar).

"The house [of the Marblehead 22] is kind of different," said Zurn. "Maybe it's a little French...I don't know. It's meant to be a cuddy, to store stuff in." There's certainly not enough room in that compartment for berths or seats, as it's divided by a bulkhead that creates a watertight compartment forward. The rest of the boat (half its length, in fact) is cockpit—11′ of it. This is a pure daysailer, with no aspirations to confuse the issue with camp-cruising or pocket cruising. Sledge has had a party of six aboard for a comfortable daysail, and it's easy to imagine two more passengers in that cockpit before things begin to get crowded.

Matt Sledge is equally comfortable building in advanced composite material as he is in wood. He graduated from the Kennebunk, Maine–based Landing School's design program in 1988. "I'd wanted to be a naval architect since I was a little boy, " he said. "but I fell in love with building things at The Landing School." And so he returned to the school upon completing the design track, and graduated from the building program 12 months later. Three months before his graduation, Eric Goetz, the well-known builder of AMERICA's Cup boats and another Landing School alumnus, offered Sledge a job. "I planned to stay for two or three years," he said. "Twelve years later..." and he trails off. In his time at Goetz, Sledge worked on a total of 85 boats, 11 of which were AMERICA's Cup boats. He also built 20 tank-test models for AMERICA's Cup and Maxi-boat syndicates. "I spent 1989–2006 working for someone else, doing what they wanted me to do," says Sledge of his decision to start Samoset Boatworks in 2006. His flagship construction was a Zurn-designed powerboat, an elegant, cold-molded, center-console "gentleman's day boat" called the Samoset 30.

That's the background Sledge brought to the construction of the Marblehead 22. Just by looking at the boat, you might not realize it's wood. But the hull is, in fact, built of ⅜″ western red-cedar strips, which are scarfed to full length before being hung on the building jig. Two layers of ⅛″ Spanish cedar veneer are vacuum-bagged to this, individually, with a layer of 4-oz cloth between them. Each layer was faired before the next one was applied, and the hull was then sheathed in 6½-oz cloth before a final fairing and Awlgripping.

The decks are ⅜″ okoume plywood, fiberglassed and Awlgripped. The majority of the structure is Douglas-fir, including the maststep, transom, framing, and floors. The boat has five, ½″-thick plywood bulkheads, two of which form watertight compartments forward and aft, one of which is the cuddy companionway, and the remaining two of which are cockpit-seat supports. The cabintop is laminated in three layers of cold-molded ⅛″ Spanish cedar veneers, while the simple-looking fiddle on its after edge, which lends it considerable support, is a foam-and-'glass composite.

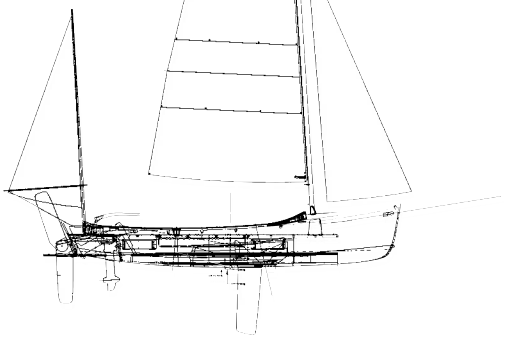
In all, it's a sophisticated and time-consuming piece of construction. But all of this attention to light weight pays off in the boat's nimble performance. The base price is $85,000; Sledge says that a planned fiberglass version would cost $30,000 less. A bulk order is an alluring proposition for a group of sailors considering a one-design class for easy but exciting evening or weekend racing. The Marblehead 22 represents, I think, one of the purest forms of sailing you can do while sitting down. Imagine getting off of work on Wednesday afternoon, heading down to the boat, and being on the starting line 10 minutes later—in a performance-oriented classic wooden boat built with care and driven by some of the most sophisticated sailmaking technology available.

You could have the boat in fiberglass, but I'll leave you with designer Zurn's opinion of that idea: "It would be a shame to go the composite route," he said. "This boat is so much stronger, so much stiffer, and so much warmer in wood."

Matthew P. Murphy is editor of WoodenBoat.

Swallowboats

Tradition meets innovation



Text and photographs by Kathy Mansfield

Britain's Cardigan Bay in western Wales, at the mouth of the Teifi River, is an idyllic setting for a boatbuilding company. There are rolling hills, lively rivers, hidden valleys, the Teifi spilling into the sea between massive headlands. With large tides often accompanied by strong winds, it is a challenging area in which to test a new boat, and that is precisely what makes it an ideal home for Swallowboats, a small boatbuilding operation with a worldwide reach.

As soon as a boat is finished in Swallowboats' new purpose-built workshop, it can be slipped into the water, where new hull shapes, rigs, rudders, and centerboards can get an instant trial. Nick Newland founded the company in the mid-1990s, designing a series of graceful, very sailable small glued-plywood boats and selling them around the globe as high-quality, easily built kits. Since Nick's son Matt joined the operation in the mid-2000s, the company has made a move toward fast, water-ballasted sail-and-oar boats. These are exciting boats to sail along the coast, across a lake, in competitions, or for just a peaceful family sail or a bit of solo fishing.

The two Newlands bring an extraordinary amount of professional knowledge to the small-boat world, and can develop an idea from concept through the building process. Nick was a top naval architect and engineer, designing British submarines, testing them, and later supervising their construction. But he always preferred small boats, and left the submarine industry in 1995. Matt studied engineering at Cambridge University, and worked as a management consultant in London for a couple of years before a year with the naval architect Tony Castro, an award-winning designer of international racing sailboats of all sizes. Matt now runs the company, while Nick looks forward to a quiet retirement. But with a staff of nine, a fine new 3,000 sq-ft cedar-clad building by the estuary, and a full order book, it looks like Nick will enjoy a still-busy back seat.

***Above*—The first SeaRaider, CRAIC, on Loch Ness in Scotland. This design from the Wales-based small-boat company Swallowboats has proven to be fast, rugged, and seaworthy. The yawl rig allows for nimble maneuvering and rapid sail reduction.**

***Above*—The new Swallowboats workshop on the Teifi Estuary in Wales replaces the stone barn, to the right, where the business began. There's plenty of room now for a number of boats under construction, stationary power tools, and a CNC cutter. When the tide's up the boats can be launched and sailed right from the premises.**

Since Nick started the company back in 1995, naming it The Swallow Boat Works, he aimed to design good-looking boats with graceful lines, rather than those with the boxy appearance of many plywood hulls. He intended his boats to sail well, with comfortable positions for skipper and crew. They would be quick to launch, rig, and recover, and be as light as possible. Technology would play an important role, with computer-assisted design and online help for customers.

Nick developed his early designs (see sidebar) as easy-to-build kits, with precision-cut parts and holes already drilled for stitching together. In the early days, he hand-routed the pieces to shape, and later had them CNC cut. Rigs were typically of the unstayed lug, gunter, or sprit variety, allowing for spars short enough to fit inside the boat—and the shipping box. The boxes also included rigging, copper wire and fiberglass tape for joining hull panels, epoxy, and just about everything else needed to complete the boat—except for the paint.

Nick went so far as to develop a special plywood panel in cooperation with the U.K.-based marine-lumber dealer Robbins Timber; the panel has three equal layers of veneer instead of the usual five or seven; the resulting easy bending saves an amateur builder much time and hassle. With the advent of CNC cutting, he also developed a multi-finger scarf joint that assures proper alignment of planks. A bare hull from a Swallowboats kit could be put together in a weekend; the process was supported by a very comprehensive instruction manual, and backed up, if necessary, by Nick at the end of the phone. He was rarely needed. "They are not cheap kits," Nick said. "But they are a relatively inexpensive way to own a high-quality new boat."

When Matt joined the company eight years after its founding, he brought with him an influence that took it in new directions. The Storm 17 design was a turning point. The Newlands had wanted to add a family-oriented boat to their range, and they decided on this beamy 17′ ketch-rigged double-ender. The boat is lightweight, but has good stability and space for up to six people. It is easily sailed and reefed singlehanded, it fits in a normal garage, and trailers behind a family car. A jib-headed 122-sq-ft ketch rig (11.35 sq m) with sprit booms for the mainsail and mizzen and a balanced jib provides good performance. She'll sail to windward under jib and mizzen alone if the wind strengthens.

The Newlands put a lot of thought into ergonomics: crew comfort, quick rigging, easy launch and recovery. The cockpit coaming is comfortable against the crew's back, and hides a big spray hood that raises and lowers easily. They added an outboard well for a 2- to 4-hp motor that operates through a slot in the stern quarter, not ruining the lines of the boat. She's sold very well, and is available also in a fiberglass, round-bilged version. The Storm 17 widened the Swallowboats customer base to include sailors interested in cruising. She's good-looking, sails well, and has spawned two more Storms, the 15 and the 19.

With Matt's arrival came expertise in a then-new computer-aided-design system called Rhino, which offers unlimited shapes. Early computer-aided design programs often dictated the shapes of hulls within a set of confines; Rhino does not. Matt used the software to design a curvaceous little dinghy called Shelduck. The program proved extremely accurate, and building a prototype in order to establish accurate panel shapes was no longer necessary. Fortified by this level of accuracy, the Newlands purchased a CNC cutting machine.

Crew climb back into the SeaRaider, CRAIC, after a capsize drill. With no water ballast in the tanks, the boat rights herself easily. Underway, with the tanks full of water, the boat is very stable under a press of sail.

The Storm 17 attracted a visit from Claus-Wilhelm Riepe of Hamburg, who was looking for a boat a bit longer and faster than his 22′ Drascombe Longboat to use in sail-and-oar Raids—point-to-point cruises in company, with an element of competition to them. He also wanted to enjoy singlehanded and family outings. Claus had thoroughly enjoyed his Drascombe for years, but now wanted to be more competitive. Having seen Swallowboats at the Beale Park Boat Show, he arrived at their workshop in Wales as they were building two Storm 19s for Norwegian customers. He was about to order one when Nick and Matt suggested that perhaps they should design a new boat, longer and narrower for rowing, but one that could also plane and be easily righted in the event of a capsize. "I told them everything that I loved about my old boat," Claus said, "and everything I would hope to get from a new build also: better performance under sail and oar, a self-draining cockpit large enough to overnight in occasionally, less hull weight, a bigger rudder that would rise up automatically when beaching, a self-tacking jib and an efficient and easily removable mizzen, lots of storage capacity—some watertight and lockable—and a boat that could be easily righted and bailed out if capsized."

The BayRaider tries out her asymmetrical spinnaker on the retractable bowsprit, charging along in the Gulf of Morbihan, France. The outboard motor, housed in a well in the cockpit, does not spoil the boat's sheer, and can be lowered quickly.

It was a long list, and ideas flew over cups of tea in the workshop. Claus commissioned the boat right away, and during the next weeks emails arrived with sketch drawings, stability tables, and more ideas. "SeaRaider CRAIC has retained all that I had loved about my old boat," Claus says, "some of it even further improved, but Swallowboats also added loads of new features I had not even hoped for, like her capability to be self-righting after a 90-degree knockdown. All through the design process we together developed very innovative ideas and solutions. The boat has a range of different personalities: a light rower and swiftly planing dinghy, and with the [ballast] tanks full, she moves through the water even in high winds as if she had a large ballast keel. I think Swallowboats are the most innovative trailer-sailer designers and builders today."

On the heels of the SeaRaider came the BayRaider, a 20′ family version of the SeaRaider. The new boat had most of the advantages of its predecessor, plus a bit more form stability, more comfortable seats, and a performance versatile enough to satisfy both beginners and novices. The design does, however, lack the rowing performance of the SeaRaider. She has been extremely successful.

Sailing the SeaRaider

I was around for the first big test sail of the 22' SeaRaider CRAIC on the Sail Caledonia raid up the Caledonian Canal in Scotland. This narrow ketch-rigged open boat could cope with a huge range of winds with its innovative water ballast, which drained out quickly when winds died or oars or the engine came out. The mountainous and dramatic Scottish Highlands tend to provide varied sailing conditions during the week's competitive sail-and-oar cruise up its length, and this was no exception. The early June morning was giving us gusts sliding down the mountains of between Beaufort Force 2 and 5 (3–20 knots), but died as the race began and some boats brought out their oars. Just as we considered doing the same, the wind reappeared and we short-tacked up the windier side of Loch Lochy. The new owner of CRAIC was sailing his old boat, a Drascombe Longboat, and Matt Newland had invited designer Iain Oughtred to take the helm for this first sail.

We began to leave the rest of the fleet behind. The combination of unsettled weather and the encircling mountains began to throw ever longer and heavier gusts down the loch, and the waves produced trailing tails of spume. Soon we had winds of Force 6 or 7 directly ahead, gusting up to 33 knots. We could have reefed or filled our ballast tanks with water, but with four of us on board and curious to see how the boat would perform, we continued to head up the loch with Iain spilling a bit of wind from the sails. Our development class was supposed to put in a downwind leg, though by this time we were too far ahead to realize that the event had been canceled. We rounded the buoy and headed south, prudently tacking downwind. Matt had clocked 8.7 knots on his GPS before the boat suddenly picked herself up and started planing. It was like being inside a wave of our own making, with too much spray to consult the GPS again. Later, on Cardigan Bay back in Wales, Matt clocked over 10 knots.

We held on for the ride, rounded the next buoy, and headed upwind again. By the time we reached our destination, an hour ahead of the fleet, the wind had died again to a negligible breeze. The SeaRaider had met all our expectations, and her new owner had watched with pride. *—KM*

The BayCruiser 20 is derived from the open-cockpit BayRaider 20. This cruising version has higher freeboard and more beam, and a permanent shelter. A BayCruiser 23 is also available from Swallowboats.

Since then, Swallowboats has developed the BayCruisers 20 and 23. These boats are true pocket cruisers, as they have small cabins, and like their predecessors they have water ballast, light and functional rigs (mizzen optional), and are carefully designed to be comfortable and easy to trailer, launch, rig, and recover. These newest designs put Swallowboats into the true cruiser market.

The BayRaider 17 was designed to meet the needs of those who want something smaller and lighter than a BayRaider 20, so that beach launching, for example, could be a possibility. They have the same rig configuration and water ballast as the 20, can self-right, and give the larger boats a run for their money in the right conditions.

There seems to be no end to the ideas and possibilities explored and developed by Swallowboats. I like

Early Swallowboats Kits

The following is a sampling of early offerings from Swallowboats. These boats are now discontinued as kits, though still available as completed boats.

LittleAuk

In 1995, the first boat the Swallow Boat Works offered as a kit was a 10′ (3.1m) double-ended tender called Little Auk, beam 4′4″(1.3m), with a loose-footed standing lug rig. “If you can use a plane, you can build our kits,” said Nick. There were two wide bottom panels of 4mm (⅛″) plywood with a slightly V-shaped bottom, strengthened with two bilge runners and two bulkheads. The lug rig had an adjustable luff tensioner and a sheet horse enabling the loose-footed sail to be trimmed correctly. Both controls are essential for getting good performance from a lugsail. In 1996, the Great Auk appeared on the list of Swallow Boat Works offerings. It is 14′ (4.26m) version of Little Auk, with a balance-lug main and a Bermudan sprit-boomed mizzen. A 12′ version of Little Auk named Kittiwake, 11′5″ (3.48m) LOA, 4′6″ (1.38m) beam, was one of Matt Newland’s first designs for the company. He raked the stem and stern posts a bit more than her predecessor, kept the weight down to just 75 lbs (35 kg), making the boat easily lifted to a car roof rack. He gave her ketch rig with a 35-sq-ft mainsail and a 15-sq-ft mizzen. Currently, the Trouper 12 fills the niche of cartoppable daysailer with room for a family of four.

Sandpiper

The Sandpiper is a lightweight 12′ (3.6m) sailing canoe loosely based on the American Piccolo round-bilged lapstrake canoe ketch. Nick designed his version of the boat for plywood chine construction, with a single gunter sail set on a steeply raked mast. The unstayed mast flexes enough to spill wind in gusts. Matt added an asymmetrical spinnaker. She is Nick’s favorite boat, inspired by having four lengths of 12″ plywood left over and a friend suggesting a sailing canoe. He can pick up

This pedal-powered launch from Swallowboats has turned quite a few heads in Henley-on-Thames, which is home to both classic Thames motor launches and sleek rowing craft.

their pedal boat driven by two crew facing each other, designed to look like a sleek Thames launch with an innovative double set of bicycle pedals and gearing leading to a high-performance propeller. It's quieter than electric propulsion, and much more fun than the gym. The company has a full order book and a growing number of agents—a fine testament to their success.

Small boats have come a long way in the past 20 years. Swallowboats is a living testament to the fact that you can have a boat that performs well over a wide range of wind strengths—and looks good, too.

Kathy Mansfield photographs classic watercraft in Europe, the United States, and beyond, and contributes to various traditional-boat magazines worldwide. She also publishes the calendar Classic Sail.

For inquiries from the United States, contact U.S. agent Bill Vogel, 904–234–8779; bill@swallowboats.com.

From the U.K., contact Swallowboats Ltd., Gwbert Rd, Cardigan, Wales SA43 1PN; www.swallowboats.com; tel +44(0)1239 615482.

the 35-lb (15.8kg) hull with one hand, launch her at low tide, and relax into a reclining sailing position. She was too narrow for a daggerboard, so Nick experimented with leeboards, finding that a single curved pivoting leeboard on one side worked equally well on both tacks. The rudder rides up on its pintle if it hits the ground, and a push-pull tiller was necessary since the rudder was so far from the helmsman. She is built of 4mm ply with a mahogany top strake, and Nick suggests coating her with Danish oil instead of varnish for easy maintenance. She's a pretty boat, and very quick to build. A larger version, the Razorbill, was later designed to be rowed as well as sailed, but her size negated some of the virtues of the smaller boat.

Osprey

The 15′7″(4.77M), 85-lb (39kg) Osprey is primarily a rowing boat, with a distinctive plumb bow, the plywood strakes at both ends split to look like lapstrake. She was developed to meet a customer's requirement for an Adirondack guideboat to go with his Adirondack chairs, but the end product was an amalgam of many different designs. Rigged with a standing lug, she is a graceful and spirited sailboat.

Storm Petrel

Storm Petrel is a 14′ (4.27M) Norwegian faering-style double-ender, first rigged with an unstayed raked mast like Sandpiper. Later Nick tried a balance jib, self-tacking with a boom, as used from the 19th century in America, and found that it worked well. A solid-wood top strake accentuates her sheerline, and that plus recessed decks stiffened the hull torsionally and added to her good appearance. She was the first of the company's very successful Storm designs, subsequently refined by Matt and called the Storm 15. The sprit boom is used again, better off the wind than the loose-footed gunter sail had been. A small daggerboard takes up little cockpit room, and a removable central rowing thwart can be stowed when sailing; the helmsman can then use either the slatted side seats or sit on the floorboards. The long pintle lets the rudder up when beaching, as in the other boats in the Swallowboats lineup. A conventional tiller is usual, but a push-pull tiller is an option and gives greater flexibility for the helmsman's position. —*KM*

Too Hot or Too Cold—How Wood Suffers

by Richard Jagels

Robert Frost in his poem "Fire and Ice" wondered how the world will end. Although he "holds with those who favor fire," he recognized "that for destruction ice is also great." Like Frost, those of us who live in New England know the destructive power of ice—burst water pipes, ripped-out docks, even gashing of pooches' paws.

So a recent letter from Brian McClellan at The Apprenticeshop in Rockland, Maine, did not come as a surprise. He writes:

"We have a piece of angelique 18″ thick by 10′ long. It was donated last year after spending at least five years in a shed. This past winter, several deadwoods constructed from the same stock expanded by as much as an inch on each side of the keel (the thickness was approximately 8″ to 12″). We understand that the water in the wood had frozen and caused the wood to swell considerably in thickness. After cutting into the wood, we can confirm the wood is still very saturated with water. The question is: What happened to the wood during this deep freeze? Were the wood fibers torn? Specifically, was the strength compromised? Is the wood as rot-resistant as it was before? We would hate to waste this nice piece of wood, but are afraid to put it into customers' boats without some reassurance."

Angelique (*Dicorynia guiaensis*) is a respected, durable, tropical boatbuilding wood, originating from eastern Surinam and western French Guiana. Shinkage from green to oven dry is, respectively: radial, 4.6 percent; tangential, 8.2 percent; volumetric, 14.0 percent. Based on this, the maximum swelling in the tangential direction of a timber 12″ wide would be only 0.984″, even if the timber was bone dry at the start. But after storage in a shed for five years the moisture content (MC) was likely closer to 12 to 15 percent; in which case the swelling would be less than ½″, total—not 1″ on each side of the keel, or a total of 2″.

I have no explanation for the reported swelling dimensions. Even if it were a different species, I know of no wood that swells 2″ per 12″ from dry to full saturation. Above fiber saturation (about 30 percent MC), no further swelling occurs, so the total quantity of water in the wood is irrelevant.

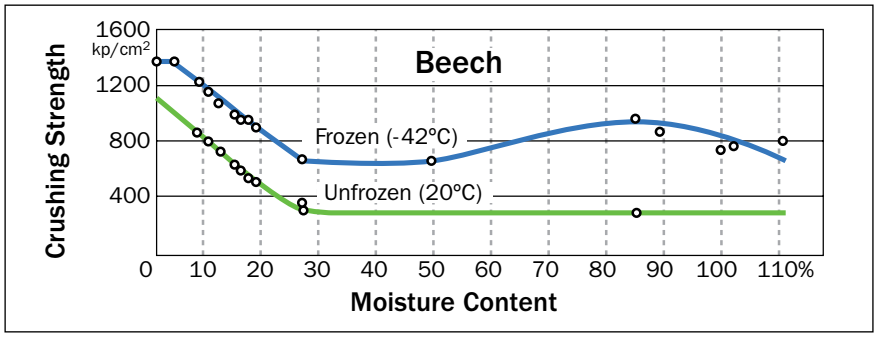
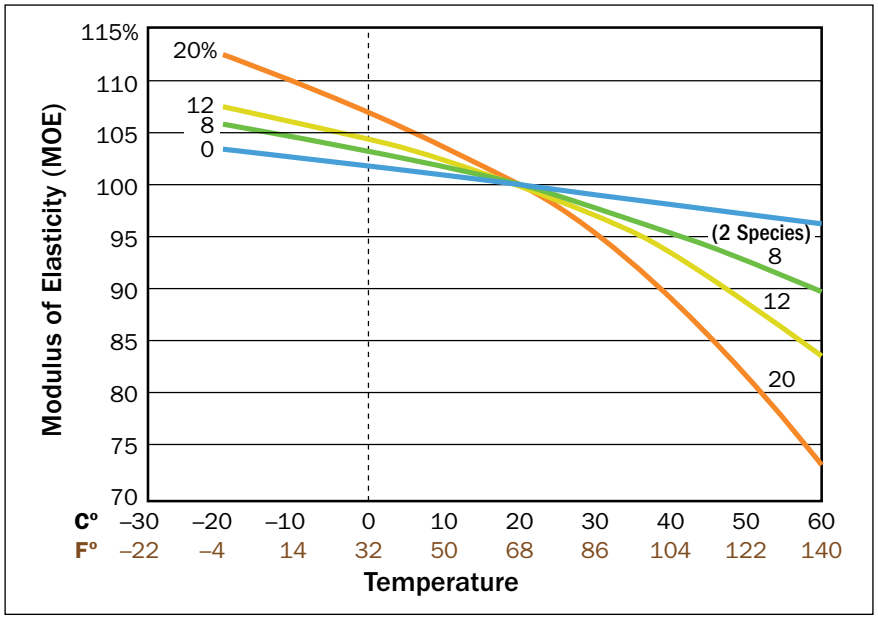


Figure 1—Tests of European beech showed that crushing strength is higher in wood that is frozen than it is in room-temperature samples.



FROM KOLLMANN AND KOTE, 1968 (BOTH)

***Figure 2*—Modulus of elasticity in wood in freezing temperatures is highest when the wood has a high moisture content, but as the temperature increases dry wood has the advantage over wet wood.**

Frozen Wood

When liquid water freezes to form solid ice, it expands a small amount. However, the water in wood does not occupy all of the free space. Therefore, as the water freezes it can expand into the air space within or between cells. If this were not true, trees would swell each winter, causing splitting of the trunk and branches. Occasionally, we do see winter "frost cracks" in trees, but these are often caused by water that entered a previously formed crack or crevice caused by lightning strike or some other injury. Water in such a crack freezes as a solid block of water. In some cases, though, cracking is caused by water diffusing from cell walls and freezing in the lumens. This loss of water from cell walls causes the wood to shrink, and since shrinkage is greater in the tangential than radial direction, cracks form. So, it is more likely that wet wood might shrink as it freezes, rather than swell.

Now to the questions: "What happened to the wood during this deep freeze? Were wood fibers torn? Specifically, was the strength compromised?" An indirect answer is found by observing trees in northern latitudes; they maintain MCs well above fiber saturation and freeze every winter. And after they have lived through decades of cycling between the frozen and unfrozen state, we turn them into boats—with nary a thought about torn fibers.

Even more compelling evidence is provided by results with wood that has

varying MC, is exposed to temperatures well below freezing, and is tested for strength and stiffness properties. Figure 1 graphs a series of crushing strength tests with European beech (*Fagus sylvatica*) conducted by Franz Kollmann, a renowned German wood scientist.* Wood samples at MC between 0 (oven dry) and 112 percent were tested at room temperature (20°C; 68°F) or frozen to –42°C (–43.6°F) before testing. At all moisture contents, frozen wood had higher crushing strength than wood tested at room temperature. The upward trend of the frozen wood at MCs between 50 percent and 90 percent may be due to added strength provided by ice that has formed in the cell cavities.

In another experiment by Kollmann, stiffness (modulus of elasticity, or MOE) was measured in six different wood species that had MCs of 0, 8, 12, or 20 percent (two species each at 0 percent and 8 percent, and one each at 12 percent and 20 percent). Samples were preconditioned to temperatures between –20°C (–4°F) and 60°C (140°F) before testing. Figure 2 shows curves of MOE values as percentages above or below a reference MOE at 20°C, which is designated 100 percent.

MOE is highest in the frozen wood for all six species, and declines with increasing temperature. The temperature effect is least for oven-dry wood, and greatest for wood at the highest MC of 20 percent.

So, contrary to what we might expect, frozen wood is stronger than unfrozen wood, and wood containing high MC is stronger than wood with lower MC when frozen. But this works in the opposite direction above freezing where dry wood is stronger than wet wood. Rot resistance would not be affected by freezing, which is unlikely to cause decay-resisting extractives to be removed.

Baked Wood

What about high temperatures? From Figure 2 we see that MOE decreases considerably at high temperatures and high MC. This, of course, is what allows us to bend wood. Fortunately, the curves in Figure 2 are all reversible, so as heat and moisture are reduced, MOE increases; as frozen wood is warmed, MOE declines.

What happens at very high temperatures? Eventually wood reaches the ignition point (the wetter the wood, the higher the critical temperature) and it begins to combust. Before the ignition point is reached, thermal wood modification can occur (see WB No. 215, page 82). At temperatures between 93°C (200°F) and 315°C (600°F) some properties are improved (dimensional stability, decay resistance) while others, like strength, are reduced. Reductions in bending strength of 30 percent are not uncommon, and they are not reversible.

When the world ends, trees won't care whether it is by fire or ice, but in the meantime trees clearly tolerate ice much better than fire—and so do wooden boats.

Dr. Richard Jagels is an emeritus professor of forest biology at the University of Maine, Orono. Please send correspondence to Dr. Jagels by mail to the care of WoodenBoat, or via e-mail to Assistant Editor Robin Jettinghoff, robin@woodenboat.com.

*Kollmann, F.F.P., and W.A. Cote, Jr. 1968. *Principles of Wood Science and Technology.* I. Solid Wood. Springer-Verlag, Berlin.

Edited by Robin Jettinghoff

These pages are dedicated to sharing news of recently launched new boats and "relaunched" (that is, restored or substantially rebuilt) craft. Please send color photographs of your projects to: Launchings, WoodenBoat, P.O. Box 78, Brooklin, ME 04616, or e-mail us at launchings@woodenboat.com.

Include the following information: (1) length on deck; (2) beam; (3) type, class, or rig; (4) boat's name; (5) names and contact information (include e-mail or phone) of designer, builder, photographer, and owner; (6) port or place of intended use; (7) date of launching (should be within the past year); (8) brief description of construction or restoration.

GLENN MacLEOD

Above—On June 20, 2012, thousands of Norwegians watched the launch of the 71′6″ SAGA OSEBERG, a replica of a Viking ship found near Tønsberg, Norway, in 1904. This unearthed ship, buried about 850 CE, provided many well-preserved artifacts for archaeological research. The replica was built with tools and methods in use during the time of the original ship, including lashing the planks to the frames with baleen. More information is available at www.osebergvikingskip.no.

PAUL DIXON

Above—BLACK PEARL is a 10′6″ Sunshine yacht tender designed by Walter Simmons. Mark Dixon built her with western red cedar planking, yellow cedar frames, and a backbone of white oak. He fastened her with copper rivets and then coated the outside with epoxy. Mark is seen here rowing his grandchildren near his home in Kamloops, British Columbia. Plans are available at www.duck-trap.com.

OSCAR CLENDON

Above—AMOKURA is a 16′ 8″ Fulmar sloop designed by Iain Oughtred and built by Geoffrey and Oscar Clendon of Auckland, New Zealand. They bought this glued-lapstrake plywood kit from Duckflat Wooden Boats (www.duckflatwoodenboats.com), with gaboon plywood strakes and solid timber of Fijian kauri and pohutukawa. Geoffrey reports that she sails like a dream. The plans are from www.jordanboats.co.uk. Contact Geoffrey at rmy@iprohome.co.nz.

JENNIFER CLEMENT

Above—Working part-time over three years, Steven Gould built this 26′ × 7′ triple-cockpit runabout, a Miss Chris design by Ken Hankinson. BAGHEERA's gleaming, dark blue hull is cold-molded mahogany plywood, with varnished mahogany deck and transom. Her 315 MerCruiser engine pushes her up to 40 mph. Plans are available at www.glen-l.com.

Below—Jack Budak of James Island, South Carolina, called a few friends to launch 22′ LIVVY LOO, an Atkin Ninigret he built last year. She is constructed of okoume plywood planking over cypress frames, and won first place in the outboard class at the Georgetown Boat Show in Georgetown, South Carolina. Contact Jack at www.morrisislandboatworks.com.

SHANA CAPOROSSI

Below—Ed Yoder designed and built this 12′ rowing skiff over the past four years. He writes that he spent $1,700 and more than 500 hours on her board-and-batten spruce construction. SEABIXIT's transom and thwarts are mahogany, while the deck and rails are cherry. Ed enjoys rowing his skiff on Dewart Lake, near his home in Indiana.

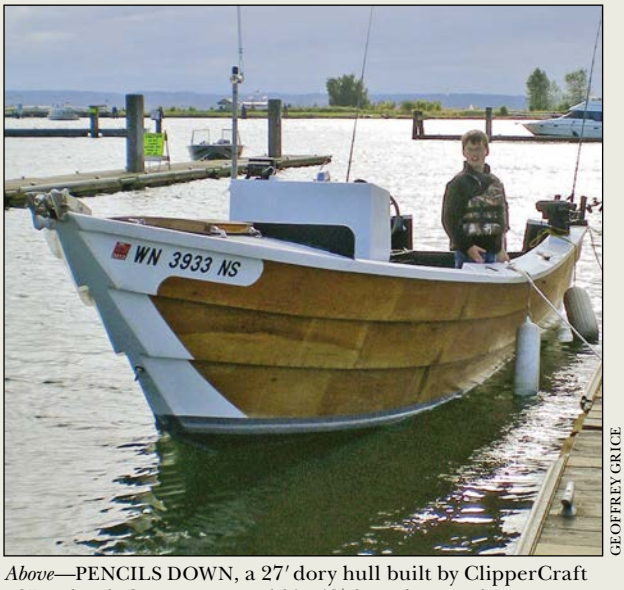
ED YODER

Above—Gator Boats (www.gatorboats.com) supplies the plans for this 14′ Darkwater Skiff, NAOLI, built by Don Harris of Virginia Beach, Virginia. Don epoxied and screwed ½″ birch plywood to white pine frames, then 'glassed the hull up to the white oak sprayrails. The decking and caprails are cypress. Don has sold NAOLI and plans to build another skiff this winter.

DON HARRIS

THE APPRENTICESHOP

Below—Kevin Carney, lead instructor at The Apprenticeshop in Rockland, Maine, designed this 15′ double-ended, gaff-rigged sloop, and guided apprentices in its traditional construction of cedar planking on oak frames. The Apprentice 15 has Sitka-spruce spars and sails by Nat Wilson. The Apprenticeshop launched her last year along with a 14′ Gartside Skylark, 10′ tender, and 14′ sailing skiff. See more at www.apprenticeshop.org.



GEOFFREY GRICE

Above—PENCILS DOWN, a 27′ dory hull built by ClipperCraft of Portland, Oregon, was sold in 1979, and sat under a tarp for 32 years before Geoffrey Grice found her on Craigslist and hauled her home. He finished the hull, adding stringers, engine supports, and fuel tank mounts. He also built the console, installed the wiring and other systems, then painted the boat inside and out.

MICHAEL STRONG

Above—Michael Strong built this 10′ × 3′10″ Lawton tender, HILARY, from Volume 2 of John Gardner's *Building Classic Small Craft*. He strip-planked the hull with ⅜″ × ⅞″ white cedar that he'd cut and milled. Transom, keel, stems, and rails are white ash. Everything was coated with epoxy. Michael writes that she is strong and light, and rows like a dream. Gardner's book is available from www.woodenboatstore.com.

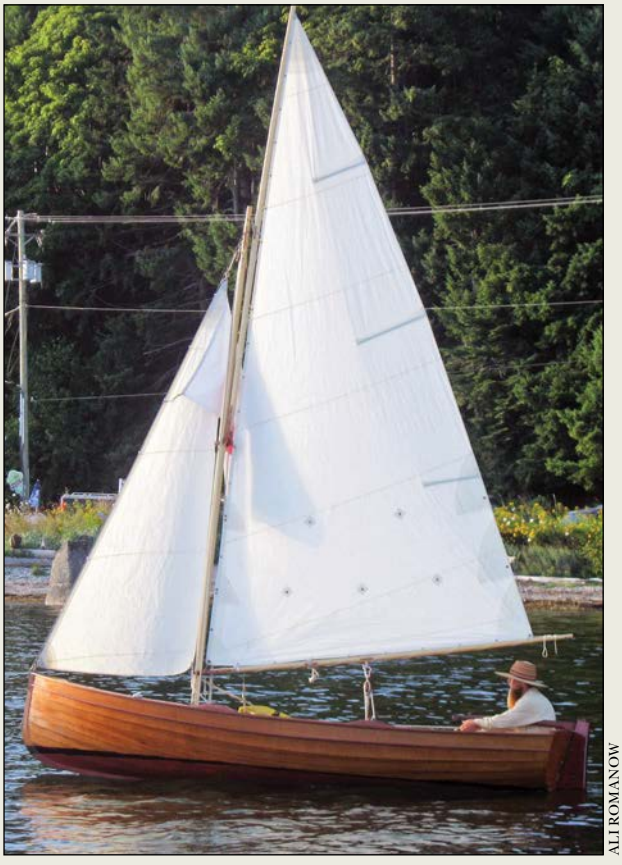
JOAQUIN COTTEN

Above—Nearly 300 people gathered at the Bronx River in New York to watch Rocking the Boat launch CURRENT, a 14′ 8″ semi-dory from *The Dory Book* by John Gardner. The 24 students in the Youth Development Boatbuilding Program built CURRENT, planking her with cedar over sawn angelique frames. She will be available for public use at the program's waterfront. More information at www.rockingtheboat.org.

MARTHA BRYAN

Above—Harry Bryan of Bryan Boatbuilding in New Brunswick, Canada, designed and built this Rambler 18 runabout last winter. Her displacement hull design is intended to maximize safety, comfort, and efficiency in a family-sized boat. Her 18′ hull is built from lapstrake cedar planking on oak frames, and she is powered by a 9.9-hp outboard motor. Finished boats are available at www.harrybryan.com.

Below—Kilian Barker is the proud owner of SYLVIA D, a 15′ gunter-rigged sloop built at the Silva Bay Shipyard School in Gabriola Island, British Columbia. Designed by Paul Gartside, plan No. 148, SYLVIA D is planked in western red cedar on oak frames, with purpleheart trim. Kilian plans to sail among the Gulf Islands of British Columbia. Plans are available from Paul Gartside at www.gartsideboats.com.



ALI ROMANOW

Below—Andre Gross-Fasheun, 15, spent a winter building Tom Hill's Babson Island 14 with his grandfather, Rick Gross, a WoodenBoat School alumnus. After consulting Hill for advice, Andre modified the hull to better accommodate an outboard motor. The hull is okoume plywood. Transom and trim are northern white cedar. Andre launched her in Walloon Lake in Northern Michigan. You can get plans or kits from www.woodenboatstore.com.

DONNA GROSS

MICHAEL TAUSCHECK

Above—Sybille and Rudy Tschäppät found this lovely 27′ sloop for sale in *WoodenBoat* eight years ago. Not so lovely were her keel, trunk, deadwood, and some planking, which they had replaced by boatbuilder Michael Tauscheck, all matching her original construction done by Harry Mote in 1968. MOODY BLUE also got a new diesel engine, and now sails on the Lake of Thun in Switzerland.

JANE KURKO/LANGLEYPHOTOGRAPHY

Above—Rockport Marine put 70,000 hours into the restoration of ADVENTURESS, a 1924, 83′ gaff schooner designed by William Fife III. Among other things, the yard (www.rockportmarine.com) replaced her backbone, double-sawn frames, floors, and planking below the waterline, and also rebuilt her interior, and rigged her once again as a schooner. Hundreds of people were on hand July 21 to watch ADVENTURESS float again.

Below—The Griffin family of Newark, Delaware, is proud of their 1938 Richardson Little Giant, NEVERDONE, recently restored by Will Stahlgren of Heritage Wooden Boat Services in North East, Maryland. Will kept as much of the original hull, topsides, and hardware as he could, leading her to win the "Best in Show: Preserved" award at last summer's ACBS Show in St. Michaels, Maryland.

WILLIAM R GRIFFIN

Below—As a child, George Empson spent many happy hours fishing with his father in an 12′ Jomo Craft tender on Lake Alexandrina in Canterbury, New Zealand. Recently, George found that old boat had been fully restored. Since then, George bought a 1947 Jomo tender in a sorry state that he named NOSTALGIA, and then spent 600 hours restoring her kauri and white pine hull so he can once again fish on Lake Alexandrina.

GEORGE EMPSON

Hints for taking good photos of your boat:

1. Please shoot to the highest resolution and largest size possible. Send no more than five unretouched images on a CD, and include rough prints of all images. We also accept transparencies and high-quality prints.
2. Clean the boat. Stow fenders and extraneous gear below. Properly ship or stow oars, and give the sails a good harbor furl if you're at anchor.
3. Schedule the photo session for early, or late, in the day to take advantage of low-angle sunlight. Avoid shooting at high noon and on overcast days.
4. Be certain that the horizon appears level in your viewfinder.
5. Keep the background simple and/or scenic. On a flat page, objects in the middle distance can appear to become part of your boat. Take care that it doesn't sprout trees, flagpoles, smokestacks, or additional masts and crew members.
6. Take many photos, and send us several. Include some action shots and some of the boat at rest. For a few of the pictures, turn the camera on its side to create a vertical format.

We enjoy learning of your work—it affirms the vitality of the wooden boat community. Unfortunately, a lack of space prevents our publishing all the material submitted. If you wish to have your photos returned, please include appropriate postage.

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Club Shirt

The *always* dapper Mr. Miller loves this shirt. Yes, the pale green color sets off his waterman's tan, but it's that super soft poly/rayon mix of material along with the handsome logo embroidered above the pocket that sold him on the shirt. Plus he doesn't need to tuck it in. Small thru XL **$48.95** (XXL is **$51.95**) #528-CPG
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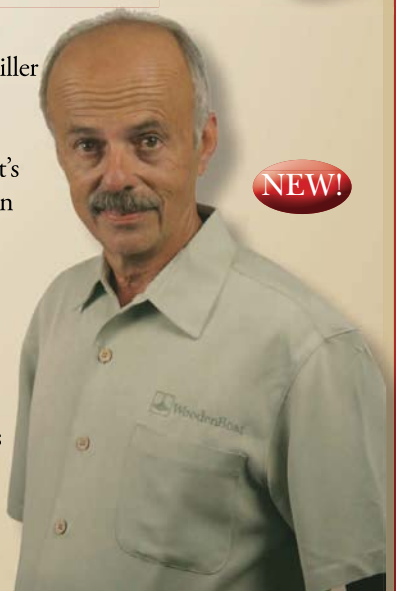

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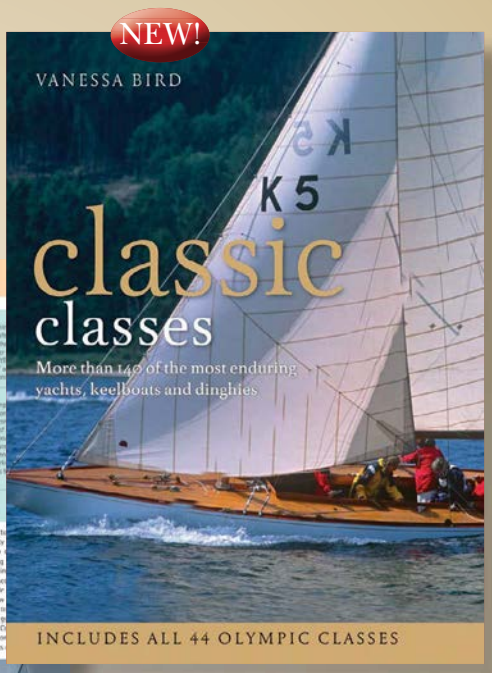
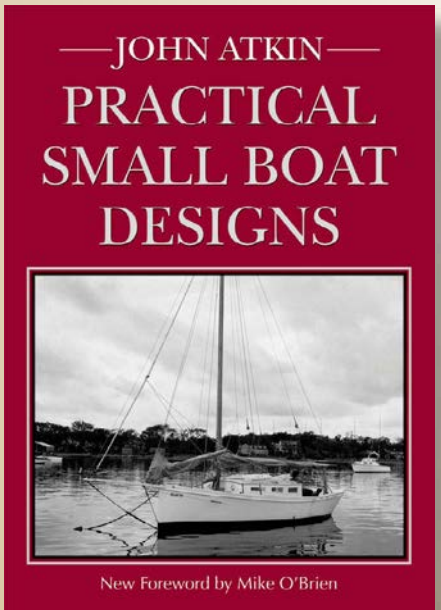


Classic Classes

by Vanessa Bird

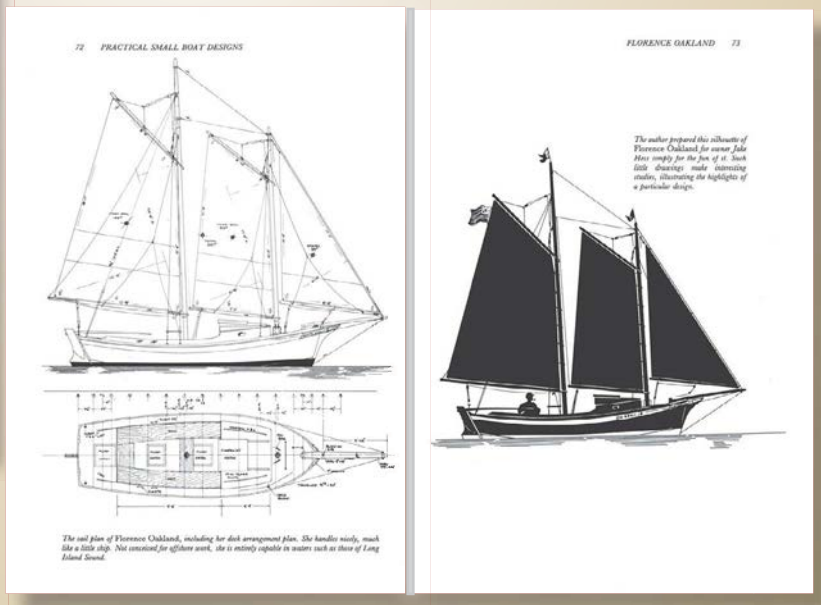
Packed with more than 150 designs, the focus is on the well-known and still active class boats, yet covers over 125 years of boating. Handsomely designed, color throughout, the book is divided into three sections: Dinghy/Keelboats, Olympic, and Yacht classes. Entries include profile drawing, photographs, basic specifications, background, plans availability, class contact, and more. Plus there's a sail insignia guide, and an index. Author Vanessa Bird is a freelance writer and former *Classic Boat* magazine production editor, where she began this series. She sails a 1933 Scottish lugger out of Chichester Harbor, in the south of England. 160 pp., hardcover, 7-3/4" x 10" #325-152 **$24.95**



Practical Small Boat Designs

by John Atkin

Originally published in the early 1980s, it's back in print with a new foreword by Mike O'Brien. The book is packed with the best in basic boats, over two dozen designs from Billy and John Atkin. You'll find rowing and sailing skiffs, the much admired 22' Ninagret, sloops, schooners, and even the 6'6" round-bottomed Petey Dink CM. 176 pp., softcover, 6-1/2" x 9-1/4" #325-150 **$21.95**



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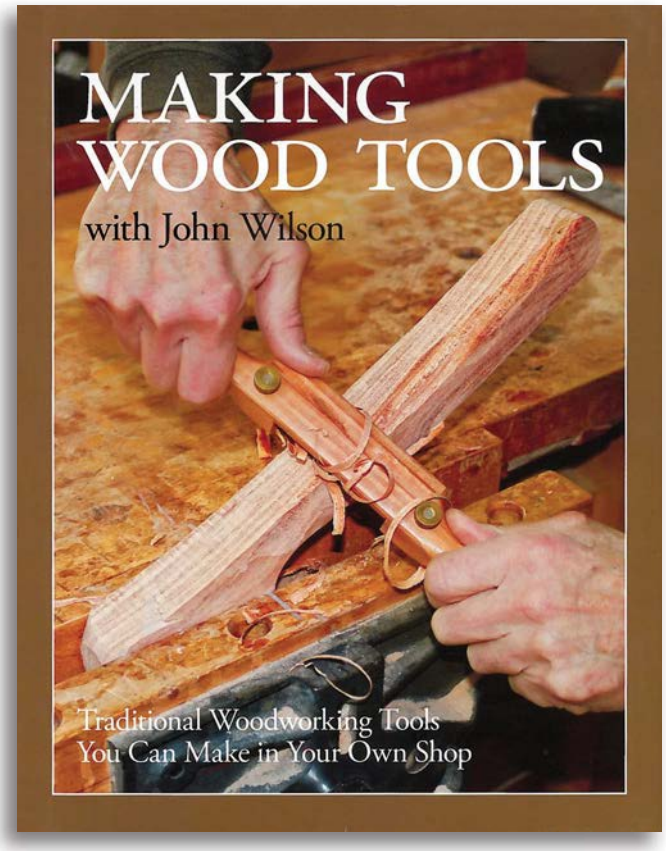
Making Wood Tools with John Wilson

Making Wood Tools with John Wilson, by John Wilson. Home Shop Books, 406E. Broadway Hwy., Charlotte, MI 48813. 244 pp., hardcover, $39.95. ISBN: 0–9729947–4–2. www.shakerovalbox.com

Reviewed by Greg Rössel



Due to the specialty nature of many boatbuilding tasks, the builder is often required to whip up a hand-made, job-specific, non-electrically driven implement on the spot. Be they tiny bevel gauges, plank lap gauges, rivet sets, holding irons, custom clamps, seam reefers, marking and boring devices of all kinds, and of course hand planes of a sort that are unavailable in any catalog—they all have to be made. Indeed, at times it seems like the trade is all about problem solving through creative toolmaking.

Of all the shop-manufactured tools, the hand plane is among the most challenging to make as it requires time-consuming and precision work. To get it right, it is helpful to have some knowledgeable advice from an experienced hand who has done it a lot. That help can be gotten from a new book entitled *Making Wood Tools with John Wilson*. John Wilson is founder of the Home Shop in Charlotte, Michigan, where he has been teaching woodworking courses for over 23 years.

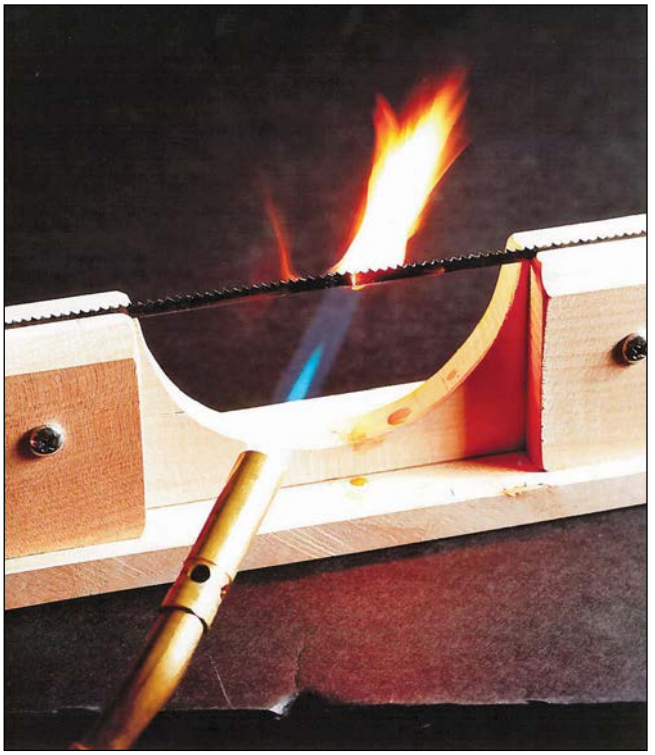
In his book, Wilson offers the reader individual chapters with well-written instructions (and diagrams) for the construction of a plethora of wooden-bodied plane designs including block, chisel, compass, jack, scrub (first cousin of the backing-out plane) and smoothing planes. Additionally, he includes the lowdown on building (and using) lesser-used implements like the hand adze, travisher, scrapers, and even the cabinetmaker's bow saw.

After tackling the bodies of the tools, Wilson proceeds to the matter of cutting-iron manufacture methods and materials. This section alone is worth the price of admission. The business of shaping, tempering, and hardening 01 tool steel into a usable cutting iron is demystified using simple color charts, a homeowner's

gas torch, a double-wall soup-can furnace, toaster oven, and belt sander. Ah, simplicity! Hankering to make your own bandsaw blades from bulk coils of bandsaw blade stock? That's here too.

Which brings us to the topic of sharpening. No hand tool, no matter how elegantly fashioned, will perform without being sharp. Over the years, much has been written on this topic (some in eye-glazing detail and minutia). Wilson does a decent job in just eight pages, with the focus on economy. "You don't need expensive equipment to get a sharp edge," he writes. He also includes instructions for building the often-forgotten leather strop for brightening up and extending a sharpened edge.

But there is more to the book than just toolmaking, and the next logical step is construction of a practical



and rugged workbench to use the tools on. Again the emphasis is on economy—including tackling the bugbear of fastidious cabinetmakers everywhere: using green (unseasoned) wood in construction. The author is a proponent of using the material, as long as you understand what happens when wood dries and you are careful in your stock selection to orient the cuts out of a log to minimize shrinkage. Is your bench getting a little loose as it dries? Just tighten up those designed-in bolts, and you are good to go.

The section on furniture ends with a symphony of sawhorses, saw benches, dovetail vises, chisel holders, and a trilogy of tool totes.

John Wilson is a longtime instructor who (like a good lawyer) understands the value of presentation, repetition, and recapping his argument. Thus, at the end of the volume, in the chapter entitled "Design Elements and Construction Steps," he offers a concise summary of all the previous projects, complete with by-the-number punch lists, required materials, and a cut list and detailed plans for the workbench. With such a handy list, the builder can easily sort out the tasks to be done, cost out materials, and get to work.

Some might say, this toolmaking business is all well and good for the retired hobbyist, but I'm a busy professional and anyway, any tool I want is available on the Internet, so why should I bother? Answers John Wilson: "Some do it [make their own tools] to save money. Others for the challenge to learn how. I would add that a tool is more than itself, it is a mindset. This makes toolmaking an enlightening experience and a legacy to give to your children." To Wilson's statement, this could be added: As lofting enhances comprehension of a set of lines, building and using a proper hand tool (even if you just build one) will give you a much better appreciation of why well-made tools simply work better. As Oprah Winfrey might say, it is empowering.

Contributing editor Greg Rössel also reviews the Earlex Steam Generator in this issue (page 111).

The Earlex Steam Generator

Reviewed by Greg Rössel

Wood is truly remarkable in its ability to be bent to shape. With the appropriate application of sufficient heat, cedar planks may be corkscrewed into place, oak frames can be installed into a hull, straight ash can be formed into a snowshoe, and with the support of a bending strap, a gaggle of perfectly circular mast hoops can be manufactured in an afternoon. The most popular way of applying the necessary heat is to use steam.

The equipment needed for steaming is decidedly low-tech: Just a container to hold the steam and the items to be bent, and a device to produce the steam. Traditional steam-bending units range from the humble teapot on a stovetop to the popular refitted gasoline can set up on the ubiquitous propane-fired outdoor burner—the kind used for deep-frying turkeys. These things take some time for setup, though, and they're not terribly portable. Thus, anyone looking to steam-bend in a remote location at the drop of a hat has been pretty much left out in the cold.

Enter, the Earlex Steam Generator. Manufactured in England, this compact, portable unit has only an 8″ × 12″ footprint and has a built-in water reservoir that holds 1.3 gallons. The water is heated by a 120-volt, 1,500-watt electric element. The tank is made of translucent plastic, so the water level may be easily observed. There's a safety shutoff switch that trips if the tank runs dry or if the unit overheats. The unit also has a pressure-relief valve in the event of excessive steam buildup, and a 12′ steam hose that stays cool to the touch when in use.

This simple steam box, made from a length of PVC pipe and associated fittings, is an inexpensive companion to the Earlex Steam Generator.

The manufacturer says that the reservoir capacity is sufficient for 130 minutes of steaming time before the safety cutout switch trips. That's adequate time for most small projects; larger jobs might simply require a second steam generator to be plugged into the same steambox. For all-day steaming operations, a second unit would also come in handy for tag-teaming the operation: An idle unit could be heated up as an active one is running low, and swapped out without losing steam. The instructions suggest that 15 minutes is the average amount of time it takes for the Earlex to produce steam. The retail price for this unit is about $70, so that two-steamer setup is not an unreasonable scenario for most builders.

The heating element draws a lot of current, so be sure that an extension cord, if used, is of sufficiently heavy gauge. Using hot water to fill the tank will speed the production of steam.

The Earlex Steam Generator is a fresh look at an old concept. Based on our few days of testing it in class at WoodenBoat School, it will be an asset to any shop needing to produce steam quickly and efficiently. And it will stow easily when not in use.

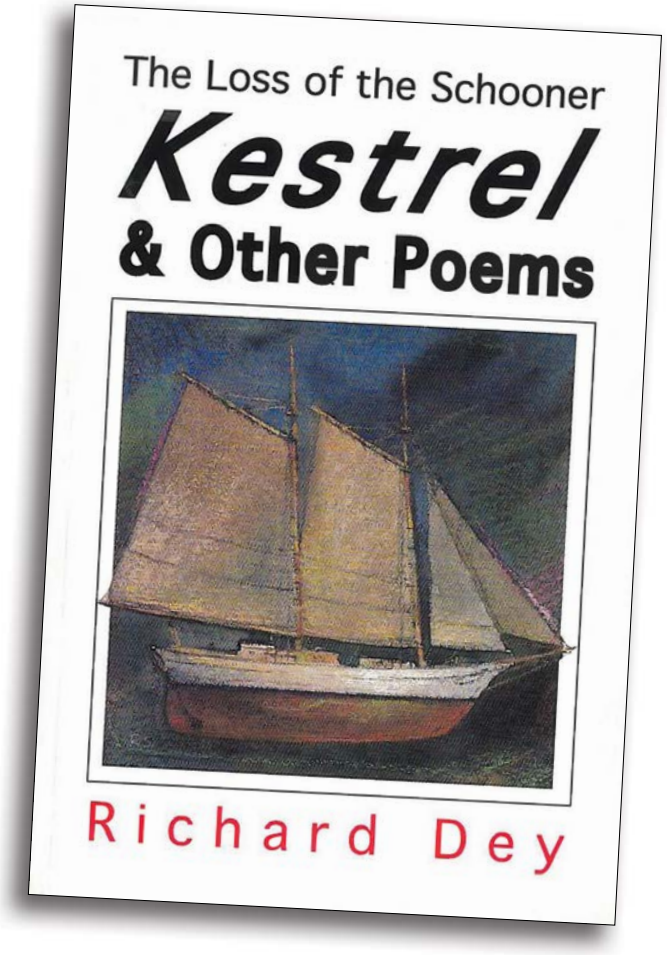
Greg Rössel is a contributing editor, and an instructor at WoodenBoat School.

The Earlex Steam Generator is available at Hamilton Marine and other retail outlets. For information, contact Earlex Inc., 8261 Highway 78, Suite F, Stanley, NC 28164; 888–783–2612; www.earlex.com.

The Loss of the Schooner KESTREL & Other Poems

The Loss of the Schooner KESTREL & Other Poems, by Richard Dey. Boston, Offshore Press, 2012. 131 pp. *Available in hardcover and paperback editions. Order from Xlibris Corp., orders@xlibris.com.*

Reviewed by Llewellyn Howland III



In his magical new collection of sea poetry, Richard Dey asks:

> How was it I came to take as metaphor
> what others take for history or sport?
> And in the idiom to hear charged language?
> To see in an avocation a poet's craft?
> Have I, after all, missed the boat?

These are difficult questions that yield ambiguous answers. For if by becoming a sea poet some 40 years ago Dey sought fame, fortune, and the adulation of his peers, he has not only missed the boat, but been smothered in the prop-wash. Ours is, after all, a literal, a prosaic age, when instant communication by iPad and instant triangulation by GPS strips the language of the sea of most of its poetry and all of its mystery. Ours is a generation that measures worth and value by horsepower, bank balances, prismatic coefficients, and length overall. As to history and sport: this is what we see on the evening television news.

But if, by becoming a poet, Dey sought to capture in words and imagery the practices and traditions, the terrors, joys, and sorrows, the timeless immediacies of life afloat, he has grandly succeeded. If, by electing to make a profession of writing about the sea he has paid dearly, his loss has been by every measure our gain.

Dey's new collection consists of nearly 70 poems of varying lengths and forms, roughly grouped by theme or geography into seven sections, with the title poem, *The Loss of the Schooner KESTREL,* properly claiming one section and a Beetle Cat named FRANGIPANI another. Dey introduces the collection with a seven-page preface that discusses his own work in relation to the surprisingly modest history of sea poetry down the centuries—and its virtual demise in the 20th century. He suggests that "no one … [other than Dey himself] writing in English has published a single book of sea poetry since 1902, when Masefield published *Salt Water Ballads.*" And he notes that "no other serious poet has written seriously about yachts and yachtsmen, not to mention fishboats and fishermen, in the 20th and 21st centuries." From these sources, he adds, have come "the family of metaphors, the body of myth and lore, the diction, the incidents and situations, and some of the themes" in his own poems.

Pedants may point to 20th-century verse narratives in English such as Gene Fowler's *JERVIS BAY Goes Down* and collections by such writers as C. Fox Smith and Dorothy Una Radcliffe that that are substantially, though perhaps not entirely, sea-related; as well as poets who have written about commercial fishing, the merchant marine, and the Navy. But when it comes to yachts and yachting, boats and boating, and the so-called "sailing lifestyle" in our own time, Richard Dey stands supreme—and for all intents and purposes alone.

The same passion and close observation that inform his cycle of West Indian verse (*Selected Bequia Poems,* Boston, Offshore Press, 2011) inform his evocations of yachts and working craft and those who sail in them. Give moral dimension to the demise by dart of a swordfish, "its unscaled flesh/turned silver and blue and green—and dead." Evoke, through the loss of the schooner-yacht KESTREL offshore during a singlehanded passage south, the awful loss of will and nerve—and the death of the dream—of her owner and master. And summon up that evening in Maine when, seduced by a beautiful and very naked young crewmate (and memories of Caribbean "hot-tub salvation"), he dove into the clear

waters off Roque Island and "was out of the water faster than he went in." But all was not lost:

> On deck, beside the cockpit coaming,
> With flukes where feet had been.
> She combed her long black hair
> And I heard rise from her full, deep-blue lips
> The unscaled notes of her legendary song.

The Maine coast, Buzzards Bay (in particular the waters off Westport), San Francisco (not excluding the scow schooner ALMA and Lawrence Ferlinghettis's City Lights Bookstore), Barnegat Bay, and Massachusetts Bay off Minots Light all get due attention in *The Wreck of the Schooner KESTREL*. So does the Lightning in which Dey first learned to sail; the schooner TALL COTTON lying derelict in Somes Sound; the barkentine REGINA MARIS ("Damn the black-tie fund-raisers…Pilot, tow me out/ open the valves, and curse"); the Hinckley Pilot WIND SONG; and the Eastern-rig New Bedford wooden fish-boat NAVIGATOR, lost on the Nantucket Shoals in 1977.

And of course, not just the boats (and mermaids), but the men and women who have sailed with Dey or sailed by or against him over the decades. The life of the sailor and the sailing poet is, after all and by definition, a life of planned and unplanned departures as well as sometimes unwelcome arrivals, and of those rare and fabulous moments of revelation when we are, as Dey writes, "…no longer like the sea driven/by wind, but like the wind itself." His new collection has many such moments. They are marks of Dey's mastery as an artist.

The reviewer may praise the poet. Only the poet can convince the reader. Here is the 14-line admonition to the Beetle Cat FRANGIPANI with which Richard Dey introduces *The Loss of the Schooner KESTREL & other poems.*

The Launching

> Do not be deceived by the calm
> high waters you slip spanking into,
> nor by these ceremonial attentions.
> The history of ships runs hard
> with trial, easy with whim.
> This coin, placed in your mast step,
> is nailed there for luck. No one
> can say what, in its give
> and take, the tide will do. We know
> only the sound of waters rushing
> parted past your bows,
> that even as it takes you,
> you must take the tide. Is that
> the wind? Answer and go.

Take Dey's advice. Answer and go. Take my advice. Buy his book. Enjoy it. Introduce it to your sailing (and your non-sailing) friends.

Longtime WoodenBoat *contributor Llewellyn Howland is an antiquarian book seller in Jamaica Plain, Massachusetts, doing business as Howland and Co.*

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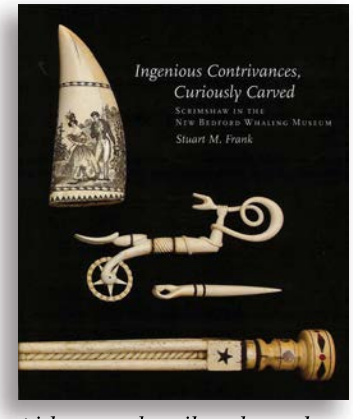

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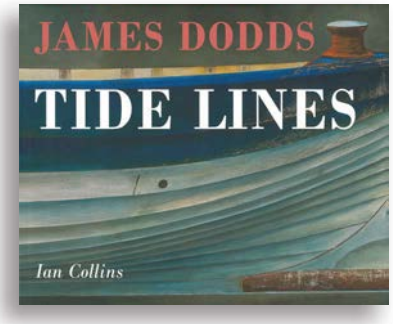

James Dodds: Tide Lines, by Ian Collins. Published by Jardine Press, a division of Messums, The Studio, Lords Wood, Marlow, Bucks SL7 1QS, U.K. www.messums.com. 200 pp., hardcover. *A biography and compilation of the artist's work (see WB No. 205) in a beautifully created volume that displays the evolution of his art.*

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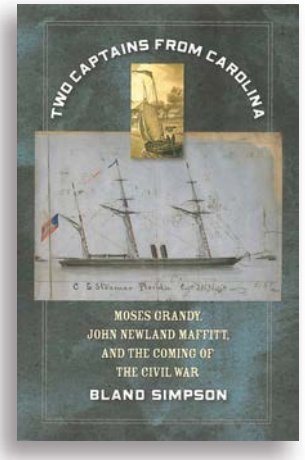

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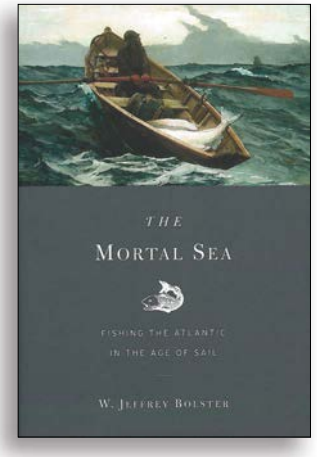

The Mortal Sea, by W. Jeffrey Bolster. Harvard University Press, 79 Garden St., Cambridge, MA 02138. 416 pp., 59 halftone illustrations, 7 line illustrations. $29.95. *Written by a scholar-seafarer, this beautifully conceived work details mankind's impact on the North Atlantic since the time of the Vikings.*

Flowers of the Sea, by Eric Schoonover. Dog Bar Publications, P.O. Box 1245. Gloucester, MA 01931; 483 pp., softcover. *This novel, set on the shores of southern Rhode Island and Norfolk, England—and the sea between them—is set around a 1943 shipwreck and its present-day investigation.*

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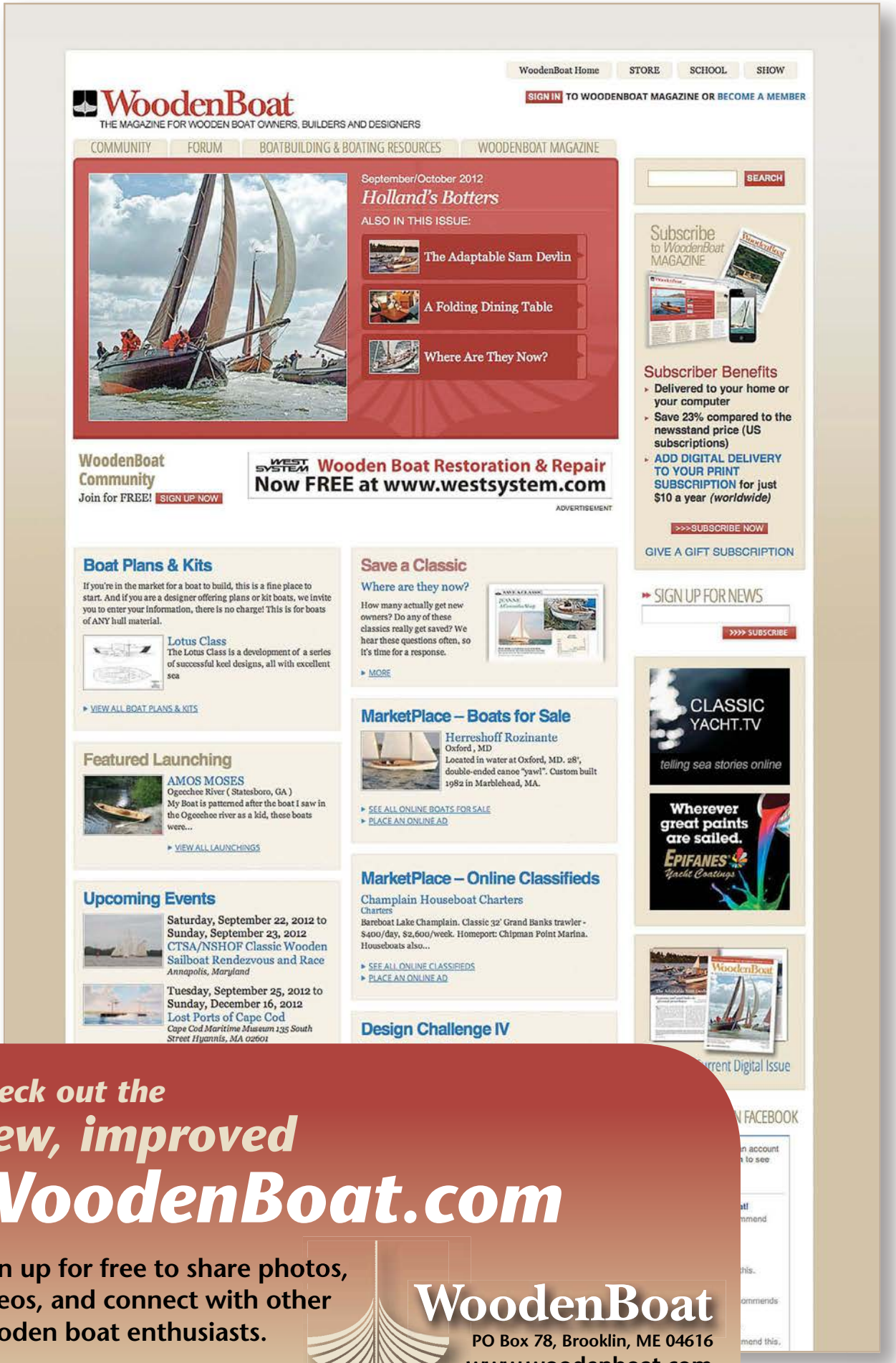

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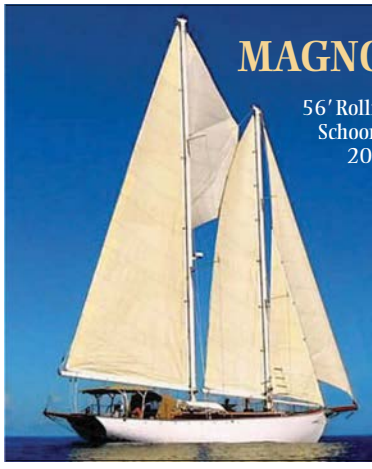

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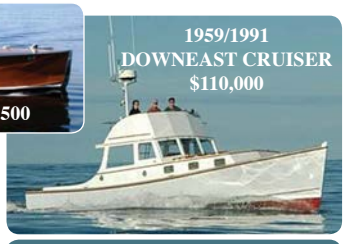

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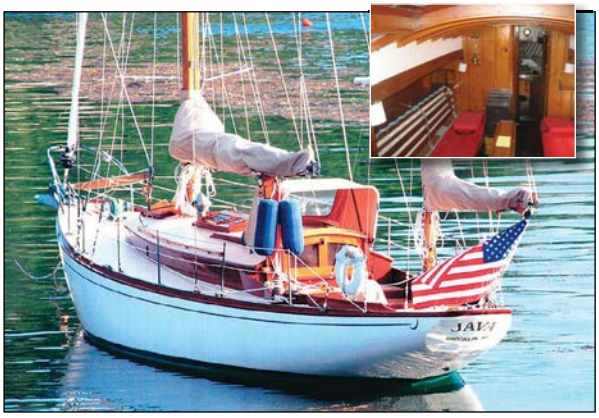

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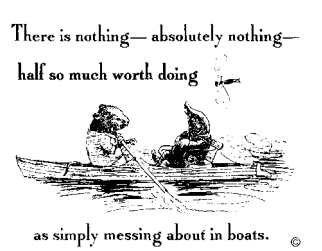

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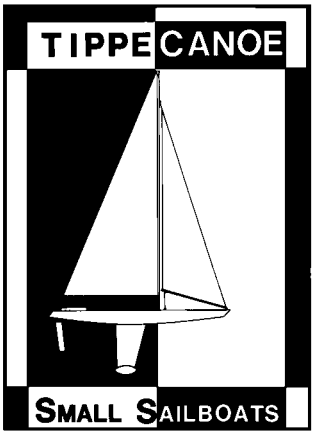

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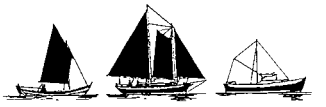

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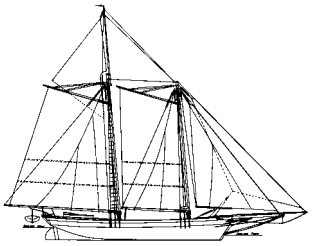

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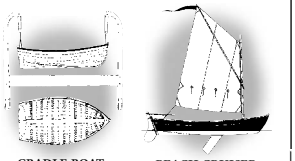

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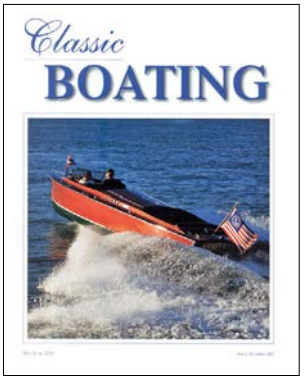

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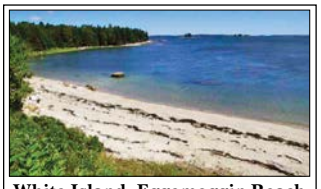

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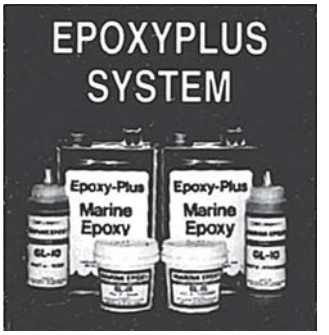

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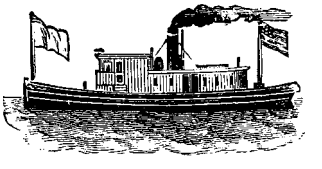

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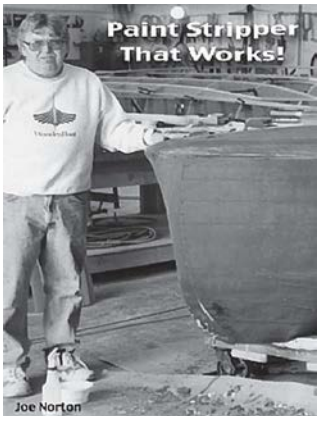

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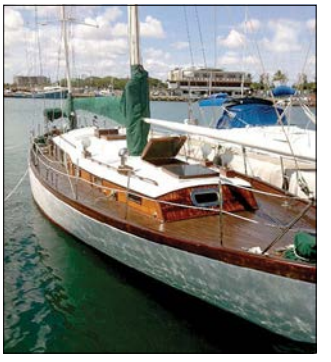

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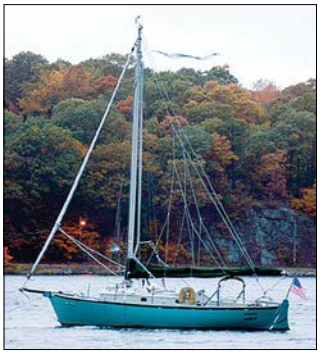

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11′6″ GLUED LAPSTRAKE CANOE—2006, 30″ beam, 31 lbs, okoume, agathis, spruce, ash. $1,100 negotiable. mgt59@nycap.rr.com, 518–237–4916.

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26′ PARECE BASS BOAT—Fully restored. Cedar-on-oak, cuddy cabin, bimini, GM 350, Monel tanks. $20,000. Mattapoisett, MA, 508–728–0009.

21′ JOHN ALDEN DOUBLE-ENDED Sailboat—WB Plan No. 1, daysailer; inboard 2kW, 24-volt electric motor. Launched 2012. $35,000, dhughes@scarsd.org.

HAVEN 12½, JOEL WHITE DESIGN—16′ LOA, gaff rigged, cold-molded hull, lead keel. Mahogany trim, spruce mast and booms, bronze hardware, Dacron sails. Beautiful condition, and a joy to sail. $24,500 or best offer. jancyno@comcast.net.

2003, 22′ SURF SCOTER—Devlin design. Wood/epoxy construction. Sleeps two, roomy pilothouse, spacious cockpit, 40-hp Honda, run very little. With trailer asking $19,000. OH, 216–521–1122, jwproducts@sbcglobal.net.

COLD-MOLDED MAHOGANY Sailboat—Constructed by Matthiessen & Paulssen 1975 in Germany. 39′ (11,74 m) × 11′88″ (3,60 m). Yanmar 54-hp, 1999. Price $90,000 USD. harald.alfers@googlemail.com, www.mahagoni-yacht.de.

RHODES 24—35′ on deck; beam 8′; draft 5½′. Mahogany on oak with teak decks. Built Mystic, CT, 1949, and extensively rebuilt by present owner the last 10 years. A fast thoroughbred. Four-time winner at Foxy's Wooden Boat Regatta. Hull #1 in her class, and one of two left. Cruise the Caribbean this winter, and New England this summer! Serious offers near $80,000. Plans, pictures: yankee_sailor@yahoo.com.

17′ SAILING DORY WITH TRAILER from *Cruising Guide* author Roger Duncan estate. Fine condition, just repainted. $3,300. Call 703–425–5653.

Boats For Sale
continued

"DEVA"—PRICE REDUCED FOR QUICK SALE! L. Francis Herreshoff design #65. The only one ever built. See the feature article in *WoodenBoat* No. 157; and also see Herreshoff's *The Common Sense of Yacht Design*, p. 269. This pedigreed ketch is a beautiful sight to behold, and sail. LOA- 36′6″, beam- 8′6″, draft- 4′9″, displacement- 16,500 lbs. Fully equipped. Located Brooklin, ME. $58,000. 207–359–4651, carl@woodenboat.com.

1965, 42′ TRAWLER. 6-cyl diesel, 4K generator. Undergoing restoration, needs paint and cosmetic work. TX, $27,000. Call for more details. Joe, 713–851–1702.

Boats For Free

1954, 42′ CHRIS-CRAFT Commodore—Aft cabin, and aft deck. Needs work and caring owner. Boat located in Maine. Call Paul 908–599–6703.

1970s ROWBOAT—10′ × 3½,′ handmade by Wayne Shibley. Transom needs replacing and side boards need caulking. 860–536–7617.

1976 PIVER-DESIGN TRIMARAN—Structurally sound, watertight, sails good. 8-hp Johnson electric start; needs cosmetic work. King Harbor Marina, Redondo Beach, CA. Contact: joanndavis2008@yahoo.com

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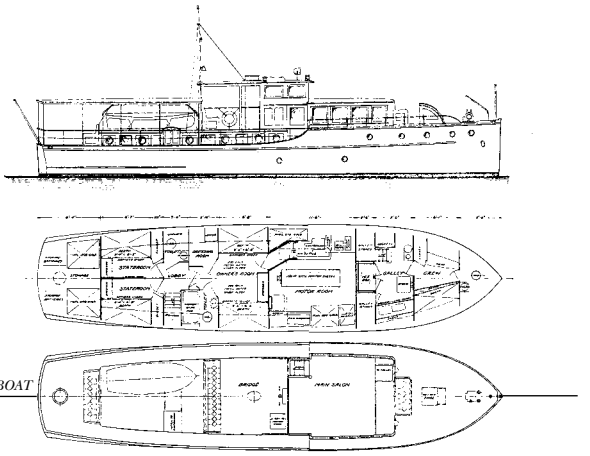
VIDA MIA
A Stephens Bros. Motoryacht

VIDA MIA Particulars

LOA	61′
LWL	60′
Beam	14′ 7″
Draft	4′ 9″
Doc. no.	229011
Displ.	Approx. 37 tons
Power	Detroit 8V92 diesel

Designed by Stephens Bros.
Built by Stephens Bros., Stockton, California, 1929 (hull No. 570)

COURTESY DONALD SCELSA



PACIFIC MOTOR BOAT

***Above*—Taken over for unpaid bills, the 61′ VIDA MIA lies at Kewalo Basin Harbor in Honolulu, Hawaii. *Right*—With few exceptions (for example, the missing foredeck scuttle), VIDA MIA looks as she did when launched in 1929.**

by Maynard Bray

VIDA MIA (the name she has always carried) was originally built for W.V.B. Campbell of Pebble Beach, California, and registered in San Francisco. Of the 14 yachts that Stephens Bros. in Stockton built in 1929, she was the largest and considered sufficiently noteworthy for *Pacific Motor Boat* to feature her in its December issue, concluding, "VIDA MIA is unquestionably one of the finest medium size Diesel cruisers of this year."

Now, despite her increasingly shabby appearance, she's still a head-turner. (I really like that stately raised pilothouse.) Under a variety of owners, this vessel's occupation was taking tourists sightseeing out of Kewalo Basin Harbor in Honolulu, Hawaii. She is still berthed in the harbor, which is right downtown, only 7 miles from Honolulu International Airport. She was abandoned by her last owners, RJMSTRAT2 LLC, in 2009 and has lain idle without maintenance since then, and her U.S. Coast Guard passenger-carrying certificate has expired. With unpaid dockage charges mounting, Kewalo Basin is in the process of taking her over. She should have a clear title in a few months.

Luckily, VIDA MIA still has a friend in harbor manager Charles Barclay, who has kept her afloat and says that for the right buyer the unpaid bills would be negotiable. Here's what he says about the yacht's recent past and present condition:

"In February 2010, the vessel exited the harbor under her own power…to avoid a tsunami as it approached the islands. In March 2010, the bow chocks were ripped out by a large southerly swell while at its mooring. These chocks are believed to be in 10–15′ of water below the vessel. Since fall of 2010, we have had the bottom cleaned every four months. In December 2011, and again in March 2012, we used splash-zone epoxy to fill worm holes that were believed to be the source of leaks. Currently, the vessel requires pumping once per week to stay near her lines. Leaks in the deck and cabin exist. There is an oil or fuel spill in the bilge which we have been using absorbent materials on."

There's a two-year-old, in-the-water survey that includes a bottom inspection done by a diver. In his words, "I was pleasantly surprised that the condition of the hull was still so good after sitting without attention for so long." I wouldn't be surprised, however, if once this old girl is opened up she'll reveal serious deficiencies in need of correcting. An attractive option would be to gather a crew and do the work in sunny Hawaii. Alternatively, shipping her someplace with a facility specializing in such restorations would be worth considering. Either way, I believe this largely original, finely built yacht would be a worthwhile classic to restore.

For more information, contact Charles Barclay, 1125 B-1 Ala Moana Blvd., Honolulu, HI 96814; kbh.harbormaster@gmail.com; 808–587–1849.

See also Barry J. Ward's book, Stephens Bros: Boat Builders and Designers, Stockton, California, *published in 2002 by the Haggin Museum of Stockton.*

Send candidates for Save a Classic to Maynard Bray, WoodenBoat, P.O. Box 78, Brooklin, ME 04616.

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