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JULY/AUGUST 2013
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Cover: Starting with an original Wheeler Playmate, filmmakers preserved patina that only time can provide but re-created details matching those of writer Ernest Hemingway's famous 1934 sportfishing boat, PILAR.
Page 52
Photograph by Tony Arruza

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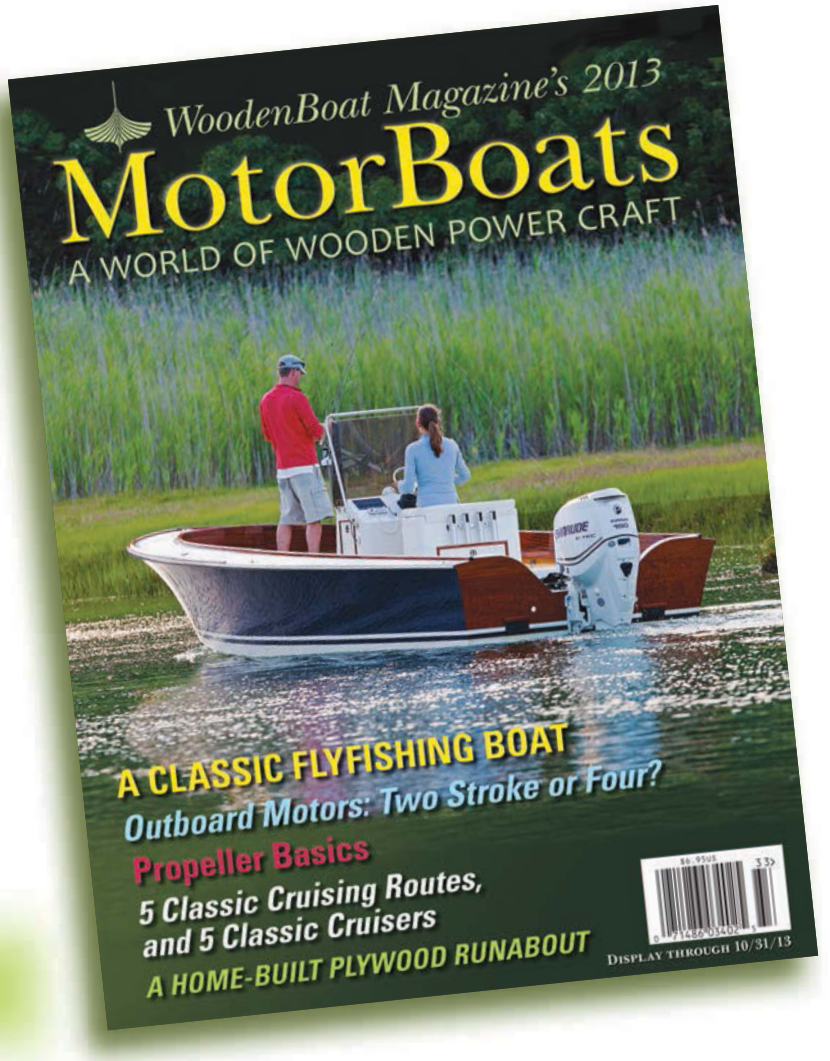

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ON SALE JULY 31, 2013

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Movie Boats

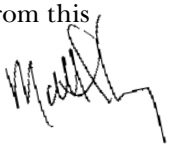
About 20 years ago, David Stimson, then of Boothbay, Maine, built a boat (three boats, actually, for multiple takes) for the 1992 movie, *The Bodyguard*. The design was a pretty little skiff that would take Kevin Costner on a short, serene outing on a lake moments before it (the boat) was blown to smithereens. Several years later came *Message in a Bottle*, also with Costner, which featured both the Concordia yawl ARAPAHO and the Alden schooner MALABAR II. Two years after that, *Domestic Disturbance* was released, this movie featuring John Travolta playing a boatbuilder whose pride and joy was a lovely, long-ended 28′ sloop—an Alden-designed Triangle, it turns out, though it was never identified as such on-screen.

In fact, none of the boats I've mentioned here was identified in these movies, though each played a high-visibility supporting role and caused a fair amount of chatter in our world of aficionados. As fun as it is to see them on-screen, it's often jarring to see the history-steeped craft we love so much presented to a mainstream audience in a context that all but erases their incredible stories and subtleties. So it's great to see two boats featured in this issue taking lead roles in upcoming Hollywood productions.

The PILAR that graces the cover of this issue is a stand-in for Ernest Hemingway's 38′ Wheeler Playmate sportfisherman PILAR, which lies ashore at his estate-turned-museum in Cuba. The film double, also a Playmate, replicates many of the fine details of the original, as we learn in Hilary Hemingway's article beginning on page 52. It will star in the upcoming film *Hemingway & Fuentes*, which will begin shooting around the time this issue comes off the press.

HUSKY CLIPPER is an eight-man shell rowed by a crew from the University of Washington who, in a startling upset, won gold in the 1936 Olympics in Berlin. *Publisher's Weekly* calls Daniel James Brown's book about the story a "nautical version of *Chariots of Fire*"; and, indeed, a film is underway. An adaptation from the book appears in this issue, beginning on page 74.

In a more sober real-life story now playing out in a high-profile lawsuit, we feature Andy Chase's distillation of the lessons of the tragic sinking of HMS BOUNTY last October in Hurricane Sandy (page 62). BOUNTY was built as the star of the 1962 Marlon Brando film *Mutiny on the BOUNTY*, and also appeared in the *Pirates of the Caribbean* franchise. For reasons that remain unclear, she departed New London, Connecticut, on October 25 last year, bound for St. Petersburg, Florida, as Sandy was tracking north and intensifying. The captain and one crew member were lost when the vessel foundered 90 miles off Cape Hatteras several days later. The tragedy played out in real life on *WoodenBoat*'s online Forum, as incredulous viewers followed the ship's track online. The narrative has since been well recounted elsewhere; it's a tragedy of epic proportions that should cause a screenwriter's heart to skip a beat. We're grateful to Andy for his restraint with this story—his willingness to unpack it without drama, criticism, or excessive narrative device, and to instead apply his own hard-won experience to help us learn from this sad event.



LETTERS

SCOTTY, Also

Dear Matt,
There's a perfectly small and forgivable—but, to me, significant—misidentification in the caption in the profile of Mark Mason in *Getting Started in Boats* (WB No. 232): The boat identified as SCOTTY TOO should be SCOTTY TWO—the one in the background in that photo. It was on SCOTTY TOO's *restoration* that I, at age 15 and working for my uncle Everett, got my start in boats. Of course I was just a floor sweeper, sander-man, and plank-holder at that time, but I caught the passion for boats while in the midst of a very bright and talented group working out the details of an intricate project. SCOTTY TWO, in the background of the shot in question, is the new boat. By all accounts she is a wonderful and intelligent iteration of an absolutely awesome original.

Reuben Smith
Warrensburg, New York

Oyster Blight

Dear *WoodenBoat,*
As a 35-year resident of the Chesapeake Bay in Gloucester, Virginia, a fan of wooden Chesapeake Bay workboats, and an oyster disease scientist, I thoroughly enjoyed Jay Fleming's *In Focus* photographs in the May/June issue of *WoodenBoat.* However, there is an error in the caption entitled "Fools' Gold" on page 91 that he may want to correct for any future publications. The oyster diseases that decimated Chesapeake Bay oyster stocks in the 1960s, '70s and '80s were commonly known as MSX (multinucleate sphere unknown) and Dermo. I don't know what "Q" in the caption refers to, unless it is short for the acronym QPX (quahog parasite unknown), but this pathogen is found only in clams, not oysters.

Gene Burreson
Gloucester, Virginia

Thank you, Gene. Author-photographer Jay Fleming had it right in his manuscript; the errant "Q" was the result of a production error. —Eds.

In Praise of Volunteers

I very much enjoyed Tom Jackson's article on volunteering on the schooner ADVENTURESS (WB No. 232). I have been volunteer crew on GAZELA (http://gazela.org), Philadelphia's official tall ship, for 10 years. We are lucky to have crew from high-school age to seniors like myself. Whether we are sailing on the Chesapeake or on the Atlantic, the joy of being on a vessel that you help maintain is just wonderful.

Michael Carlsson
via e-mail

Remembering HERITAGE

Carl:
I was a student at the University of South Florida, in Tampa, at the time when Charley Morgan was building the 12-Meter sloop HERITAGE (WB No. 232). I tried my best to get a job with Mr. Morgan's yard; I was turned down three times. The man with whom I spoke said Mr. Morgan couldn't put one of the older generation of men out of a job just for me. I was crushed as I drove back across Tampa Bay (I was a long-haired, intellectual knucklehead English major—Milton and Shakespeare).

I never did get a job in any yard, but I did get to see HERITAGE in the process of raising frames and molds. It was an amazing sight. The wood structure looked complicated, but once you understand the method it's really simple. That was the case here with all those clamps, frames, and longitudinal members, criss-crossing, let into one another; it seemed like a maze, yet it was simple and strong.

I remember reading in the *Tampa Tribune* about the accident when HERITAGE swung on her straps right into the dock, damaging some of the planks at and near the sheer.

Eventually Dynamite Payson came along, so I learned to build three of his Instant Boats out of plywood. They were—and they are—my level of skill in carpentry.

There is a Mystic Seaport video of HERITAGE and Charley Morgan competing against Bill Ficker and the other boats. It ends so sadly, I often wondered if Mr. Morgan recovered from the defeats. He seemed to have everything and everyone against him. I have wondered if some of those associated with the Cup wanted him to fail, being an outsider and a one-man show. Some of the advice he got was too plain to be accidental.

To the author, nice profile on Mr. Morgan. It could have been several stories at the same time.

Paul Austin
Dallas, Texas

Glued-Edge Planking

Dear Matt,
Congratulations for the excellent article about glued-edge carvel planking. There have been a lot of myths about this type of construction, which were mostly negative. As you mentioned in the article, glued-edge planking is not a new thing. I would like to share some of my experiences that I had over the years with this method.

As an apprentice in my native Germany in the 1980s, I was often on the receiving end when refinishing these types of boats. In our winter storage we had a few clear-finished mahogany Dragons, mostly built by Abeking & Rasmussen, or by a Danish yard called Boerressen. These boats were usually stored in the coldest shed of the yard for the reasons you mentioned in your article. For refinishing they were moved to the heated part of the workshop (as German winters can be very cold). This meant that we had to frantically strip, fair, sand, and seal one side of the hull within one day, so as not to allow it to dry out.

Interestingly, I have never come across a split in any of those mahogany boats. Neither have I seen cracked frames, even though most of the boats were at least 30 years old. Of course, this was a well-known building practice that had evolved from tight-seam planking with no caulking bevel and no glue. Both methods were described in detail in all the apprenticeship literature of

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the time. The secret was to use very dry timber, which definitely also had to be quarter-sawn as this reduces the risk of shrinkage. The timber also had to be very stable, hence the extensive use of mahogany. All the planks used were no wider than 3″ to 4″ amidships, even the ones below the waterline.

Nowadays, we also have the advantage of much-improved paint and varnish systems that stop water permeating through the coating and into the timber, creating a dimensionally stable hull. I have built several boats over the years using this type of construction and coated them with brush-and-roll two-pot paints, with great success.

I hope my experience has helped to dispel some of the myths and encourages more people to have boats built this way.

Herbert Krumm-Gartner
Classic Boats Ltd
Auckland, New Zealand

A WAPAMA Memory

Dear *WoodenBoat*,

My mother and her family traveled in the steamship WAPAMA (Currents, WB No. 232) to San Francisco at the time of the 1939–40 World's Fair. They were wheat farming on a homestead in Idaho, and took a stern-wheeler from Lewiston to Portland. The ship got out of control in the Celilo Canal at Celilo Falls and hit a lock wall, and could not continue to Portland. By the time another westbound boat came and they reached Portland, the ship they had booked for the ocean passage was long gone. The next available ship to San Francisco was the much smaller WAPAMA. No knock on the WAPAMA, but it was a rough passage and they were seasick all the way from the Columbia River bar to the Golden Gate. Fifty years later my grandmother was still talking about their miserable trip.

Norman Goetz
Portland, Oregon

Seeking Information

WoodenBoat wishes to locate the owner of the rights to *The Rudder* magazine archives. Email carl@woodenboat.com, or tel. 207–359–4651 and ask for Carl. Thank you.

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On Moving Large Boats with Small Sticks

by David Kasanof

PETE GORSKI

We who have sailed a heavy-displacement boat without an engine know the frustration of being becalmed. I certainly do, but I also know that the wind always picks up...eventually. I know this must be true because I am here (I think), and not still drifting aimlessly somewhere south of the lighthouse on Brenton Reef.

However, just because you're becalmed there's no reason to believe that your only option is to sit there and passively hope for a breeze. Of course that's your most rational option, but if you were rational you would have installed an engine, wouldn't you?

I feel free to make this rather harsh observation because I, too, sailed a heavy-displacement boat without an engine. Because of this disability, I experimented with various means of propelling such a boat. Along the way, I learned a few things.

For instance, you can't push-pole a 20-ton boat with a boathook. I learned this one night when we were becalmed just a half-mile from our marina. Going forward, I stuck our very long boathook into the muddy bottom and began to walk aft while pushing on the pole. For a while, it looked as if my plan was working. As I moved aft, the boat moved forward. Unfortunately, I had overlooked what every Cajun knows. There comes a time when you gotta, and I mean gotta, retrieve the damn pole. In my case, the mud on the bottom must have been stickier or deeper than I had guessed and my boathook wouldn't come out. I had no more than a second or so to try to free it, because once I got CONTENT moving, she didn't like to stop. It was either let go or get dragged overboard. Fortunately, a kind man in a motorboat heard my intemperate remarks, directed at high volume, against the boathook and the boathook's mother, retrieved it, and gave me a tow back to my dock. Clearly I needed other options.

Sculling looked like a possibility. I recalled hearing about the "boat people" of Hong Kong who could scull very large houseboats with apparent ease. Encouraged, I scarfed the shaft of a 7′ oar to its mate to create an oar long enough for sculling. There was no sculling notch in CONTENT's transom and I didn't have the heart to saw one out, so I fastened two C-clamps to the top of the transom at the right distance apart to control the oar. Well...kinda. The oar kept popping out. I suppose now would be a good time to admit that I didn't know how to scull a boat then, even a small one. Years before, a Bahamian fisherman had told me that the hand and wrist motion of sculling was "just like kneadin' bread dough, mon." Unfortunately, at that time, I knew even less about kneading bread dough than I knew about sculling.

So I was left with one choice. I would try towing CONTENT. I tied a line to her bow, about 6′ above the waterline, and then tied it to the middle thwart of the dinghy. Attaching the line there would allow me to turn the dinghy even when the towline was taut.

When I was all set up, I gave a mighty heave at the oars. This caused the towline to become taut and started CONTENT moving very slowly. It also brought the dinghy to a halt as if it had hit a brick wall. Unfortunately, my forward motion continued and I found myself nearly flat on my back, staring at the sky, flounder-ing with the oars like an upturned turtle. CONTENT's forward motion continued also, and as she advanced the towline became slack again and I had to be quick to avoid being run down by my own boat. When I was in position again, I gave another heave at the oars with a similar result. The trouble was, of course, that rowing produces a discontinuous or pulsating thrust. While I was leaning forward to get ready for the next stroke of the oars, CONTENT marched on, but my dinghy didn't know if it was coming or going. I rowed ahead madly trying to elude CONTENT, but I would just get up a full head of steam when the rope would tighten up, jerking me to a halt. This was no fun at all.

Then I had one of my rare, but brilliant, ideas. I tied a 5-gallon plastic bottle filled with water to the towline about halfway between CONTENT's bow and the dinghy. The bottle's downward pull on the towline kept it from ever going slack.

At the first pull of the oars the jug rose and the towline became taut, but with no jerk on the dinghy, because of the downward pull of the bottle of water. As I leaned forward for the next pull at the oars, the jug sank toward the water, maintaining pull on the towline, hence some pull on the boat. Even though the bottle sometimes hit the water, it still maintained a slack-free towline. In other words, it kept some pull on the boat by smoothing out the pulses of thrust created by the intermittent pull of the oars. Neat, huh?

Incidentally, over the years, I have become a pretty fair bread baker. I am just dying for someone to ask me how to knead bread dough so that I can tell them it's just like sculling.

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ALUMNI WORK WEEK	Fundamentals of Boatbuilding with Greg Rössel		Fundamentals of Boatbuilding with Wade Smith		Fundamentals of Boatbuilding with Greg Rössel		Fundamentals of Boatbuilding with Warren Barker	
ALUMNI WORK WEEK	Making Friends with Your Marine Diesel Engine with Jon Bardo	Glued-Lapstrake Plywood Construction with John Brooks	Finishing Out Small Boats with John Brooks	Build Your Own Greenland-Style Kayak with Mark Kaufman	Traditional Wood-and-Canvas Canoe Construction with Rollin Thurlow	Stitch-and-Glue Boatbuilding with John Harris	Build Your Own Shearwater Sport Kayak with Eric Schade	Build Your Own Shellback Dinghy or Nutshell Pram with Jeremy Gage
	Carving Waterfowl with Jerry Cumbo	Boatbuilder's Hand Tools with Harry Bryan	Introduction to Boatbuilding with Bill Thomas	Marine Painting & Varnishing with Gary Lowell	Making Wood Tools with John Wilson	Fine Strip-Planked Boat Construction with Nick Schade	Building Half Models with Mark Sutherland	The Art of Woodcuts with Gene Shaw
	What Shape Is She In with David Wyman	Inspecting Fiberglass Boats with Sue Canfield	Bronze Casting for Boatbuilders with Sam Johnson	Lofting with Greg Rössel	Elements of Seamanship with Jane Ahlfeld & Annie Nixon	The Marlinespike Sailor with Tim Whitten	Metal Working for the Boatbuilder & Woodworker with Erica Moody	Painting the Downeast Coast in Oils with Jerry Rose
			Blacksmithing for Boatbuilders with Doug Wilson	Elements of Seamanship with Jane Ahlfeld & Annie Nixon		Elements of Seamanship with Martin Gardner & Sue LaVoie	Elements of Seamanship with Martin Gardner & Sue LaVoie	Elements of Seamanship II with Martin Gardner & Robin Lincoln
			Coastwise Navigation with Jane Ahlfeld			Craft of Sail on TAMMY NORIE with Joel Roland	Craft of Sail on TAMMY NORIE with Joel Roland	Island Exploration & Seamanship with Andy Oldman
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Craft of Sail on BELFORD GRAY with David Bill	Elements of Seamanship for Women with Jane Ahlfeld & Gretchen Snyder	Craft of Sail on SOPHIA with Phillip LaFrance	Craft of Sail on MISTY with Queene Foster	Elements of Coastal Kayaking (age 50 or older) with Mike O'Brien	Advanced Coastal Kayaking with Stan Wass			
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Common ground aboard a schooner

by Tom Jackson

COURTESY OF SEAS OF PEACE (BOTH)

Aboard SPIRIT OF SOUTH CAROLINA in 2011, Seas of Peace in its first season brought together 15 students—5 each from Israel, Palestine, and the United States—to sail the coast of Maine. Tasks such as hoisting heavy sails (inset), make students depend on one another, breaking down barriers to dialogue and understanding. This year, the program sails aboard the Boston-based schooner ROSEWAY.

The requirements imposed by boats have long been known to have character-building, and almost therapeutic, benefits. It's not always about getting from Point A to Point B, and for decades now sail-training expeditions and boatbuilding programs have broadened the perspectives young people have on their lives and their capabilities. In a unique variation on the theme, a land-based program meant to achieve mutual understanding between conflicting cultures has now taken to sea with similar goals in mind.

David Nutt and Monica Balanoff, both graduates of Dartmouth College with extensive sailing experience, started **Seas of Peace** after working as counselors at Seeds of Peace. Since 1993, the land-based program has been bringing youths from Israel and Palestine to a camp at Pleasant Lake, Maine, for noncompetitive teambuilding games and deep discussions of the difficulties they face living in a troubled land. The objective is understanding; the hope is for a long-term breakdown of animosity among potential future leaders. Instantly seeing how sail training dovetailed with such objectives, Nutt and Balanoff joined forces to start Seas of Peace, which is now entering its fourth year operating under the auspices of Seeds of Peace.

"I grew up on the coast of Maine, and I spent my free time poking my nose into coves and guts as soon as I could hold oars and a tiller," Nutt said. He was 12 when his mother, a physician, and his father, a boatbuilder, started the family's five-and-a-half-year circumnavigation. "It was a powerful age to be at sea," Nutt said, and large responsibilities came early. He saw the potential for breaking down barriers between young people living on opposite sides of an incessant conflict. "I require participants in Seas of Peace to take a great deal of responsibility for their shipmates. The flip side of responsibility is trust."

Balanoff, a student of Arabic language, public policy, and Middle Eastern studies, learned about Seeds of Peace from Nutt. After her junior year, she served as a counselor there, as Nutt had. For the participants, she said, "It was clear this was an experience that was life-altering, and it gave me hope that we could achieve more. I did want to be part of that dialogue process." Her own perspective on sailing started at age 17, when she started a yearlong shipboard program with Class Afloat. "I found in living in a schooner in an isolated environment removed from everything so familiar, an opportunity to ask whether everything you have been taught is your own values, or not. The other piece is that aboard a schooner you have an excellent opportunity to build really strong bonds with others

you're sailing with. You see the best and the worst with them 24 hours a day, so it's inevitable you become close."

In its first years, Seas of Peace, for which Nutt and Balanoff are supported by fellowships from Dartmouth, sailed with the small craft of Sail Maine and with the schooners SPIRIT OF SOUTH CAROLINA and SPIRIT OF MASSACHUSETTS. In 2013, the Banks schooner ROSEWAY will carry them. The fact that all these schooners are wooden hulled had little bearing on the choice, which has more to do with their crews' extensive experience with sail-training programs for young adults, Balanoff said. From August 13 to 27, as many as 18 students will join the crew, one-third each from Israel, Palestine, and the United States.

"I first imagined Seas of Peace when I was 17 and I visited Palestine and Israel during our circumnavigation for the first time," Nutt said. "Even at that age, it was clear to me that young Palestinians and young Israelis couldn't wait for their governments to make changes for them. They needed to make the changes even if they lacked formal authority. A schooner offers an isolated space where students are forced to focus on each other. The isolation of life at sea can be frightening for our students, most of whom have never set foot on a boat before. But, at the same time, a tall ship provides the ideal environment for students to learn from each other, learn about themselves, and confront the obstacles to changing their world."

"Aboard a schooner," Balanoff said, "you can't do anything by yourself. It's really necessary that you have to work together. There's a certain aspect of physical discomfort that students aren't used to, such as an erratic sleep schedule, not showering.... What they often collectively find is that they're really proud of something they've done that's really difficult and they continue to bond over." Already, Nutt and Balanoff are hearing that some students who have returned to their native lands are staying in contact. It can't be easy: 41 percent of Seeds of Peace participants say violence has touched them personally in some way, and 94 percent said they had had little or no contact with anyone from the other culture. "The leadership skills taught at Seas of Peace are chosen to be applicable to young people anywhere in the world," Nutt said. "Our students report significant and lasting impact on their lives. They report improved relationships with parents and family and improved performance at school."

Sometimes it is about getting from Point A and Point B—although those are not always places. As when raising anchor and hoisting sail, a voyage is always full of hope and promise.

Tom Jackson is WoodenBoat*'s senior editor.*

Seas of Peace, 113 River Rd., Edgecomb, ME 04556; 347–470–7327; www.seasofpeace.org. See also www.seedsofpeace.org.

COURTESY OF NORTHWEST SCHOOL OF WOODEN BOAT BUILDING (ALL)

At the Northwest School of Wooden Boat Building, a 62′ LOA Bob Perry–designed sloop (left) is nearing completion, as is the first of a series of cold-molded daysailers, the Sentinel 24, by Stephens Waring Yacht Design (above left). Three traditionally crafted rowboats (above right) are being built for a BBC production telling of John Wesley Powell's first exploration of the Grand Canyon.

Around the yards

■ For some years now, the **Northwest School of Wooden Boat Building** in **Port Hadlock**, **Washington**, has been complementing its traditional boatbuilding programs by adding courses in cold-molded and wood-composite construction. Two projects reaching fruition this year are particularly telling evidence of the transition.

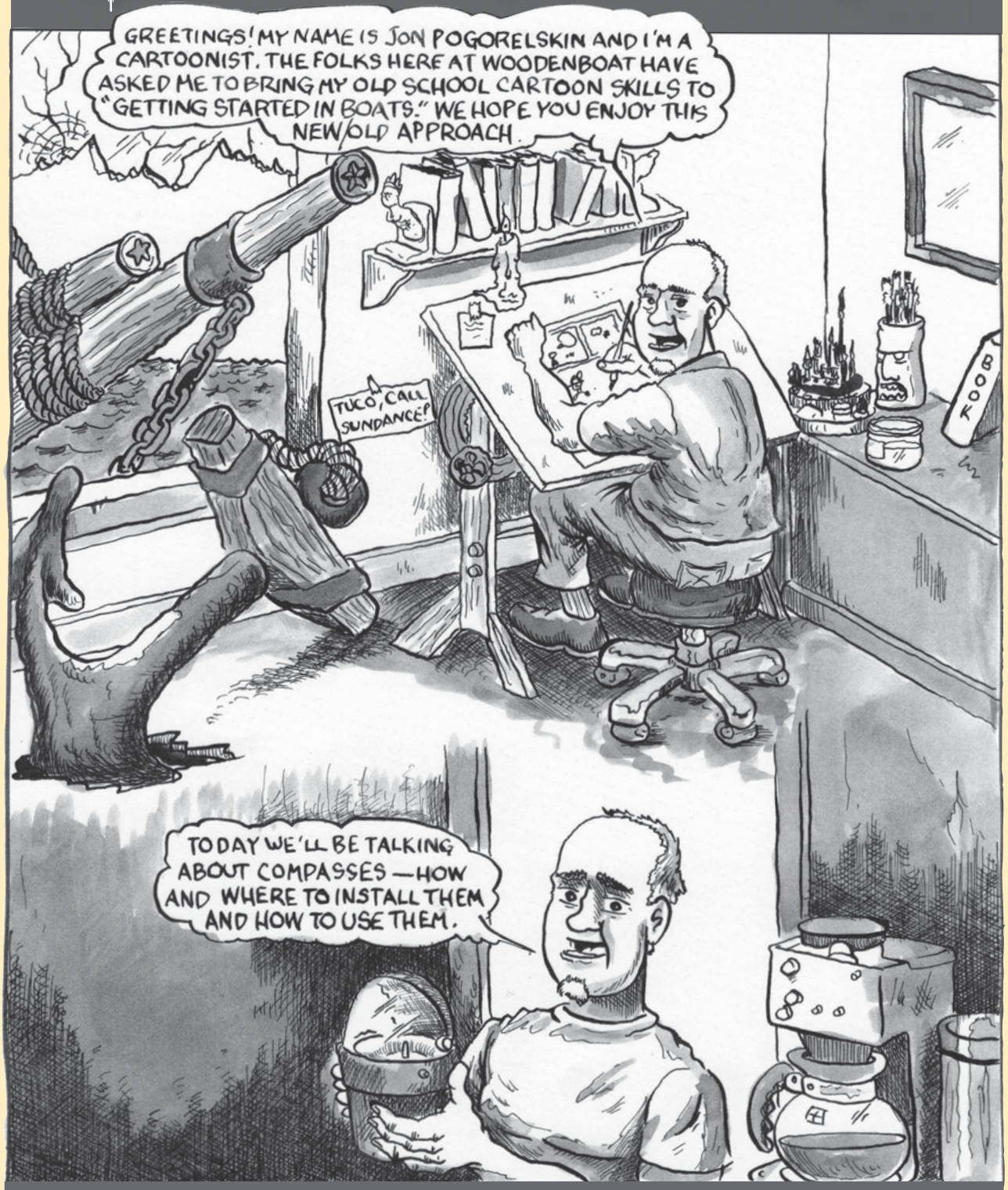
The first is the completion of the **Bob Perry–designed SLIVER**, a slender 62′ LOA double-ended daysailer for Puget Sound yachtsman Kim Bottles, who preferred wood construction—a rarity for Perry designs—and brought the project to the school. The hull is strip-built, using 1″ × 1″ western red cedar sheathed in 24-oz fiberglass cloth set in epoxy, with cored composite decks. This spring, the contemporary boatbuilding class led by Bruce Blatchley is finishing the hull construction, having united the hull, deck, and portions of the interior, all of which were built independently on molds. The rudder, 978-sq-ft rig, and final fit-out will be completed elsewhere. With a beam of only 9′10″, she is a slender boat, and with a displacement of 18,000 lbs, a light one. She'll have tiller steering, a fractional sloop rig, and comparatively spartan accommodations. SLIVER is the largest boat ever built by the school, which has been in operation for 32 years.

An east-meets-west symbiosis is also taking place this year, with the promise of continuing. The first **Sentinel 24**, a design by **Stephens Waring Yacht Design** of **Belfast**, **Maine**, is currently **under construction**, and a second is projected for 2013–14, with more to follow. Designers Bob Stephens and Paul Waring are longtime collaborators, going back to their days at Brooklin (Maine) Boat Yard, and they've been on their own as a design partnership in Belfast since 2011. Waring, originally of Oregon, communicated with the school about a design that would specifically work for teaching contemporary wood-composite construction. Waring's brother-in-law, Sean Koomen, has been leading a class in the subject, using the new design. "It's an ideal boat to build with our students," Koomen said in a press release. "They get the opportunity to gain experience in a variety of different skills and techniques, including laminations, vacuum-bagging, fiberglass in many different weights, and foam construction." The deck will be teak laminated over a plywood substrate. The sloop, 24′ LOA with a beam of 8′ and a displacement of 2,850 lbs, will have carbon-fiber spars. The plan, according to the school, is to build a fleet of Sentinel 24s, one per year, as the central project for the contemporary construction class.

The school is also building **three traditionally crafted Whitehall-type pulling boats**, one 16′ LOA and two 21′

GETTING STARTED IN BOATS

from the Editors of WoodenBoat *Magazine*



Volume 41

COMPASSES
Installation and Use

Compasses—Installation and Use

Text and Illustrations by John Pogorelskin

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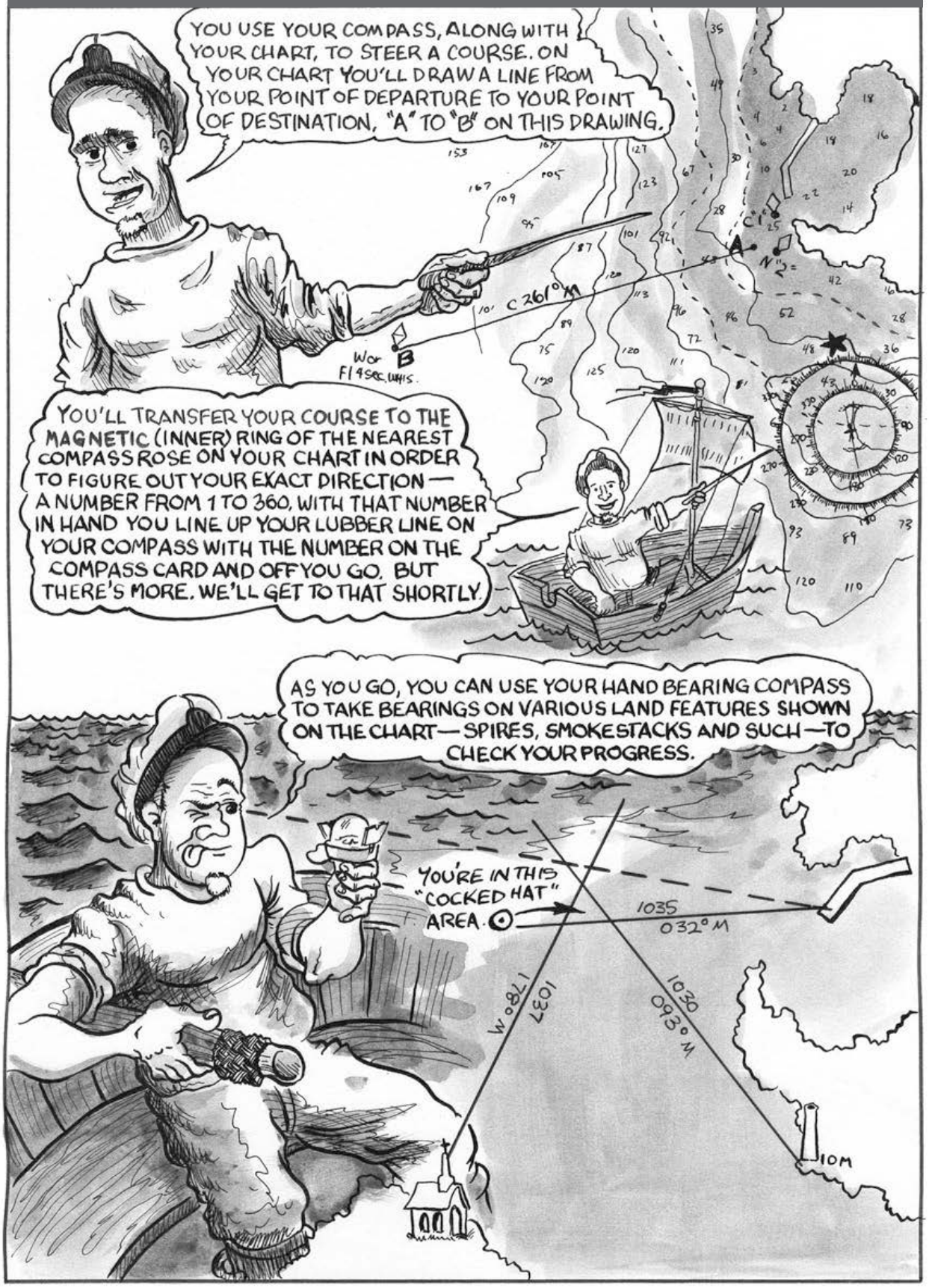

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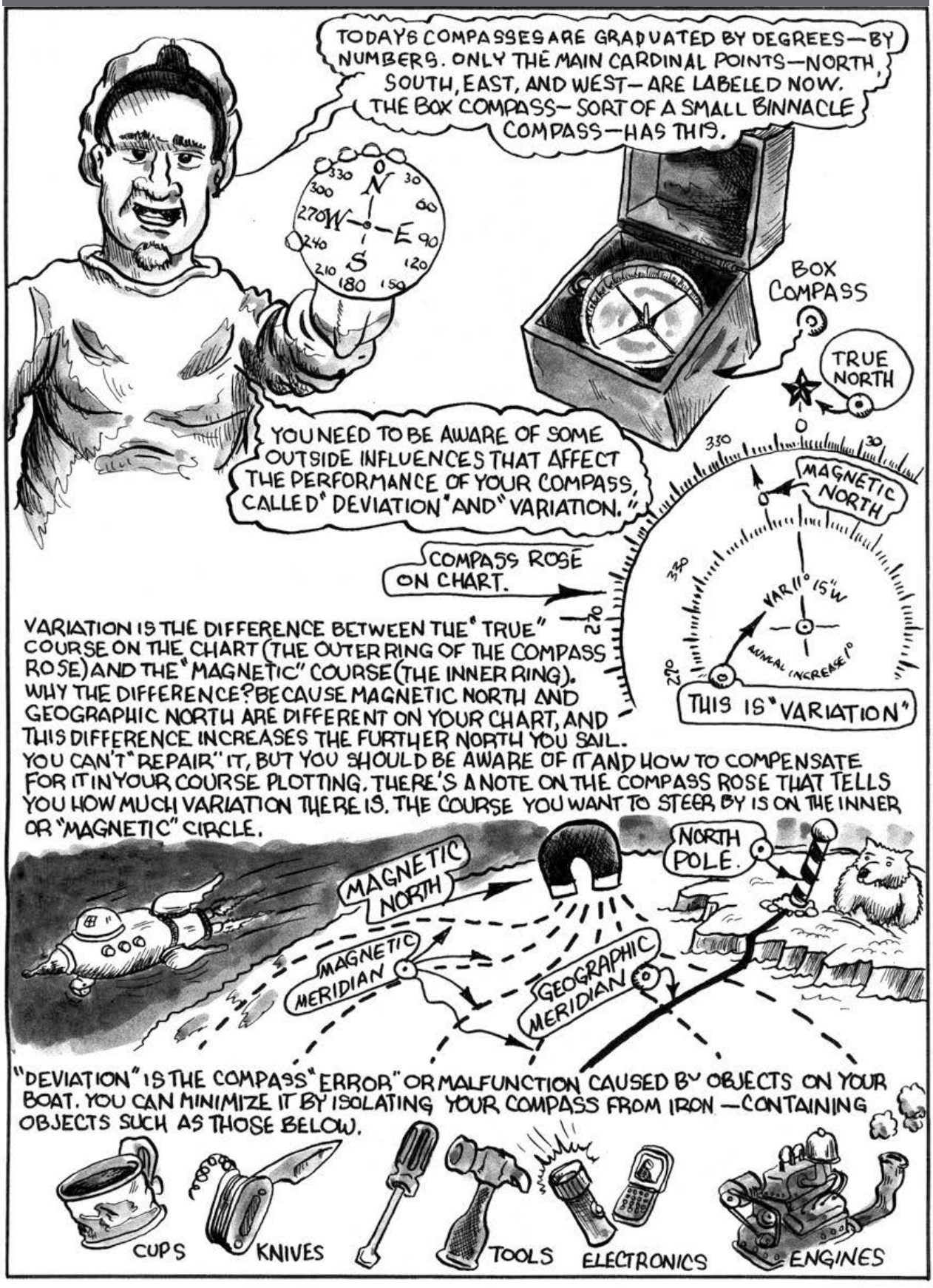

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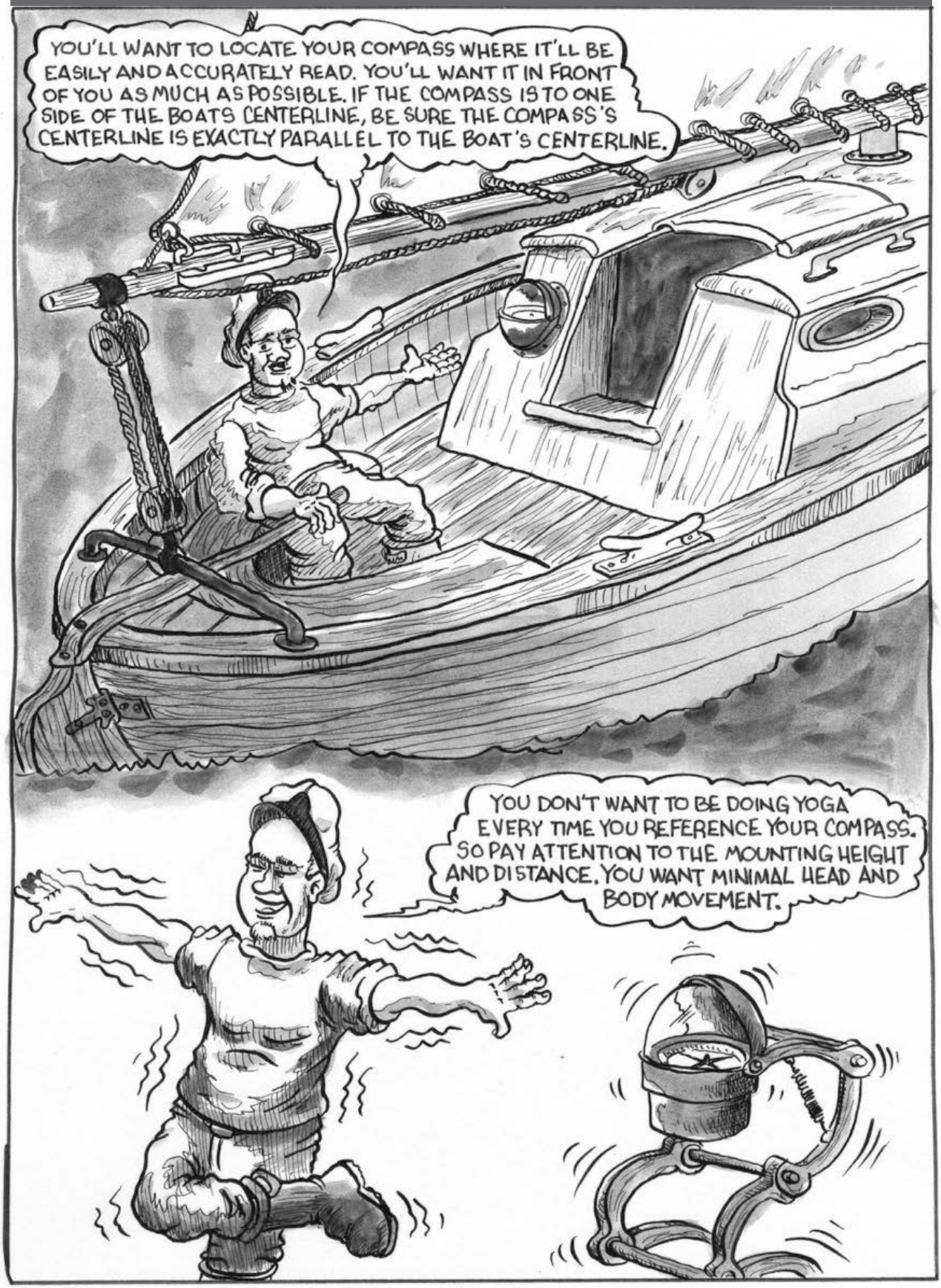

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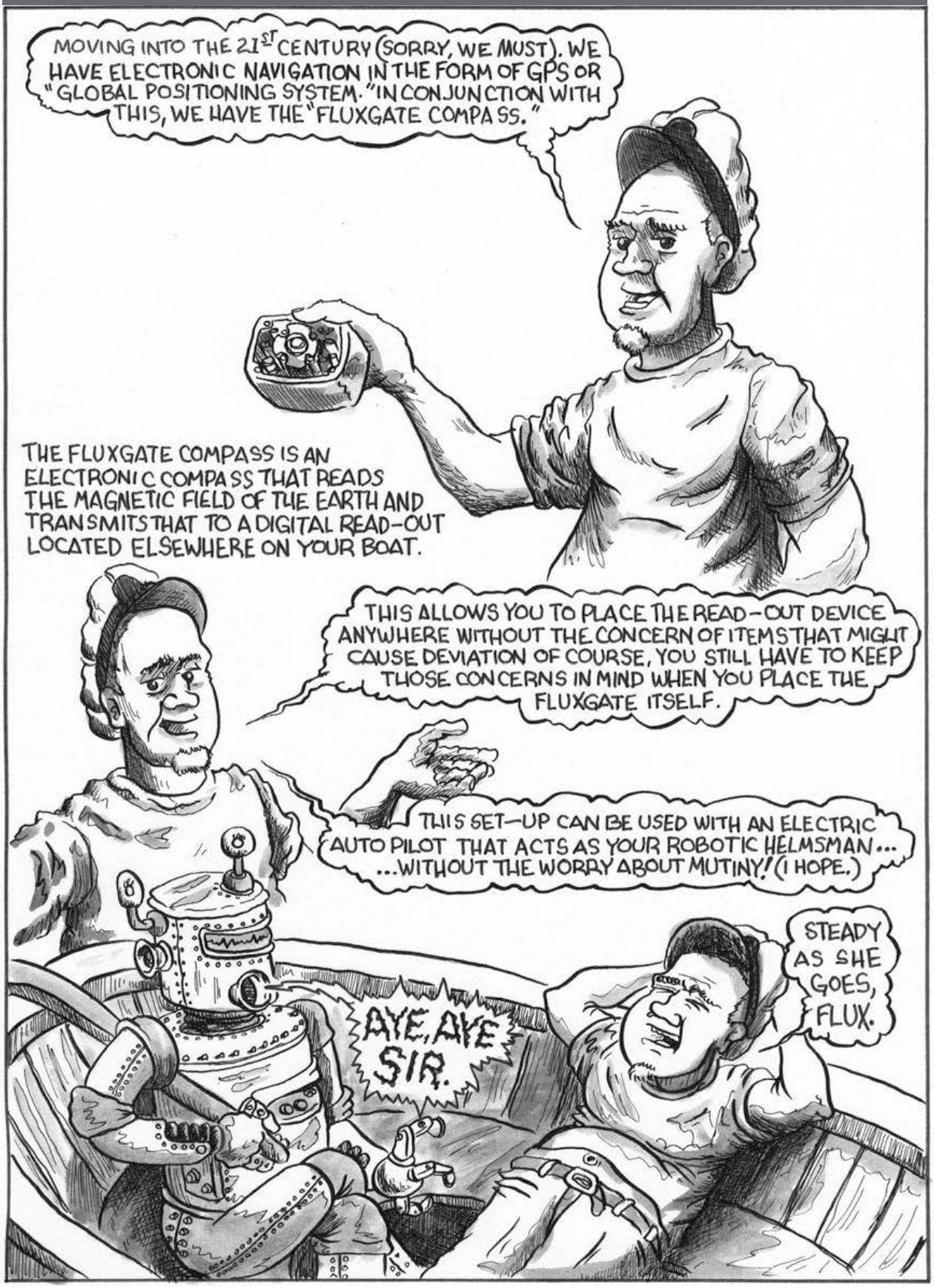

The Tell-Tale Compass

Getting Started in Boats is dedicated to those who are new to boats and boatbuilding.
Please tear out and pass along your copy to someone you know who will be interested.

Earlier volumes of *Getting Started* are available in past issues of *WoodenBoat*, and as PDF (electronic) files, from The WoodenBoat Store, www.woodenboatstore.com

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July 6–7 **Robert H. Teidemann Regatta**
New York Yacht Club, Newport RI
www.NYYC.org, bill@performanceresearch.com

July 20–21 **Classics at 115th Annual Larchmont Race Week**
Larchmont Yacht Club, NY
www.larchmontyc.org, lycclassics@gmail.com

Aug. 10–11 **Corinthian Classic Yacht Regatta**
Corinthian Yacht Club, Marblehead MA
www.corinthianclassic.org, bruce.dyson@comcast.net

Aug. 18 **41st Annual Opera House Cup**
Nantucket, MA
www.operahousecup.org, diana@nantucketsailing.org

Aug. 23–25 **The Herreshoff Classic Yacht Rendevous and Regatta**
(Includes "The Living Boat Show" on Friday)
Herreshoff Marine Museum, Bristol, RI
www.herreshoff.org, info@herreshoff.org

Aug 31–Sept. 1 **34th Annual Museum of Yachting Classic Yacht Regatta**
Newport, RI
www.MoY.org, cmarfuggi@iyrs.org

Sept. 14–15 **Indian Harbor Classic Yacht Regatta**
Indian Harbor Yacht Club, Greenwich CT
www.IndianHarborYC.com,
Shelia Graves: noreaster1926@yahoo.com

Sept. 21–22 **Greenport Classic Yacht Regatta & Maritime Festival**
Greenport, NY
www.SailGreeenport.org
Jeff Goubeaud: qmiii@aol.com

Sept. 21 **American Yacht Club Classic Regatta**
American Yacht Club, Rye NY
Samuel Croll: swcroll@croll.com

Sept. 28–29 **Heritage Cup Regatta and Rendezvous**
Hempstead Harbour Club, NY
www.Heritagecup.org
Michael Emmert: GoldenI37@aol.com

Oct. 12–14 **New York Classic Week**
Manhattan Yacht Club, NY
www.nyharborsailing.com
Michael Fortenbaugh: mike@myc.org

Most events include a Friday evening reception, racing on Saturday, and an awards dinner on Saturday or Sunday evening. Some also include a Sunday race.

For information about participating:
Bill Doyle - bill@performanceresearch.com.

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COURTESY OF PEASE BOAT WORKS

In Chatham, Massachusetts, Pease Boat Works has been chosen to build cold-molded versions of the Alerion Class Sloop, and this season the yard will launch its first of the boats.

LOA, for a British Broadcasting Corporation production re-creating John Wesley Powell's 1869 exploration down the Colorado River, the first to transit the Grand Canyon. It's a repeat project for the school, which built boats for a similar History Channel project in the early 1980s.

A stretched **Bartender**, built to the famous George Calkins design, is also nearing completion, while another class is just getting started with a 28′ stretched version of a 1957 H.C. Hanson–designed U.S. Forest Service boat, due to launch in 2015.

Northwest School of Wooden Boat Building, 42 N. Water St., Port Hadlock, WA 98339; 360–385–4948; www.nwboatschool.org. Robert H. Perry Yacht Designers, 11530 Tulare Way W., Tulalip, WA 98271; 360–652–7771, www.perryboat.com. Stephens Waring Yacht Design, 92 Main St., Third Floor, Belfast, ME 04915; 207–338–6636; www.stephenswaring.com.

■ "**Pease Boat Works** is currently building a new **Alerion Class Sloop**," Michael Pease writes from the yard in **Chatham**, **Massachusetts**. "The boat is being built for a California client who will be sailing and racing with the Nantucket fleet in the summer months. The hull is cold-molded, with an inner longitudinal layer of white cedar, two diagonal inner layers, and a finished outer longitudinal layer of mahogany. The Alerion Class Sloop, a version of the original design by Nathanael Greene Herreshoff, was created by Alfred Sanford of the Sanford Boat Company on Nantucket, where most of the hulls were built, most recently by the late Matt Rives. Pease Boat Works, which was involved in a limited capacity in the production of several of Matt's hulls in the past and also has both built and maintained boats for Sanford, has been **licensed by the Sanford Boat Company** to be the **new builders of the Alerion Class Sloop**, which now numbers 28 boats," Pease reports. An early-summer launching is expected.

The yard was also expecting an early-summer launching for RUM RUNNER, hull No. 6 of its **semi-production First Light launches**, this one a center-console version 26′ LOA with a beam of 8′2″ and a hull draft of 15″. The 144-hp outboard is installed in a well that matches the cockpit joinery. The boat is built glued-lapstrake style, with a sheathed composite plywood bottom, over fir framing.

Pease Boat Works, 43 Eliphamets Ln., Chatham, MA 02633; 508–945–7800; www.peaseboatworks.com.

■ **J.M. Reineck & Son**, makers of Herreshoff-designed bronze rigging fittings, hardware, and anchors, has taken an active interest in the **Turnabout class** (known also by its fiberglass iteration as the National 10 class) and is hoping to develop a **stitch-and-glue plywood kit**. The goal is to spark a resurgence of interest in wooden-hulled versions of the diminutive boats, 9′7¾″ LOA with a beam of 5′3″ and flying a mainsail and spinnaker (see WB No. 36). A prototype of the kit-built boat may be ready in time to race in a **Turnabout Regatta** planned for **June 29**, within The WoodenBoat Show at Mystic Seaport, Connecticut. The regatta, starting at noon on the Saturday of the Friday-through-Sunday show, celebrates the 60th anniversary of the class, first designed by Harold Turner for plywood construction. The hard-chined dinghies continued to be built in plywood until the 1960s, when fiberglass took over. *For information about the racing, contact Jared Reineck at 781–925–1889 or Turnabout945@aol.com. See also www.turnaboutsailing.x10.bz and JM Reineck & Son, 9 Willow St., Hull, MA 02045; www.bronzeblocks.com.*

■ An article elsewhere in this issue of *WoodenBoat* (page 52), tells of the transformation of a 1934 Wheeler as a film-double for Ernest Hemingway's famous sportfishing boat PILAR. For the same film, *Hemingway & Fuentes*, to be filmed this summer, **boatbuilder John Lubbehusen** of **St. Augustine**, **Florida**, was contracted to build a 16′ boat to represent the type of boat the "old man" would have used for marlin fishing off Cuba in Hemingway's novel *The Old Man and the Sea*. Lubbehusen developed a half model, based on historic photographs, to inform the construction. The boat is carvel-planked in Cuban mahogany on sawn frames, and it will have a spritsail of cotton. Lubbehusen has also been building a **replica of a 15th-century *chalupa*** for the St. Augustine Heritage Foundation's commemoration this year of the 450th anniversary of the port's founding by Juan Ponce de Leon. The replica is based on an Iberian boat—Basque, specifically—uncovered by

COURTESY OF JOHN LUBBEHUSEN

For the filming of *Hemingway & Fuentes*, John Lubbehusen of St. Augustine, Florida, has completed a 16′ boat representing a type likely to have inspired Ernest Hemingway's writing of *The Old Man and the Sea*. Lubbehusen is also building a replica *chalupa* for a commemoration of St. Augustine's founding 450 years ago.

nautical archaeologists at Red Bay, Labrador. *Old Florida Boat Company, 142 Riberia St., St. Augustine, FL 32084; 904–806–0595; www.oldfloridaboats.com.*

■ **Gannon & Benjamin Marine Railway** on **Martha's Vineyard**, **Massachusetts**, has been rebuilding SOUVENIR, a **32′ Brownell bass boat** built in 1960. Movement of the original batten-seam planking had caused floor timbers to crack, and the hull was spreading outward at the chines, the yard reports. The keel and skeg were replaced, using angelique of greater-than-original scantlings, and the chine logs were reconfigured for greater strength. Every third frame

COURTESY OF GANNON & BENJAMIN

A 32′ bass boat of 1960 (top) is being substantially rebuilt at Gannon & Benjamin Marine Railway in Vineyard Haven, Massachusetts. Among the yard's other projects is a finely crafted 8′ traditional tender (bottom).

in the boat is a sawn frame, with two steam-bent frames between them; all were replaced with white oak. All of the planking, too, was replaced, using an inner layer of white cedar and an outer layer of wana. The boat has also been given new tanks, a new fuel system, new plumbing, and new wiring.

Meanwhile, the yard also has constructed a traditionally crafted **8′ lapstrake tender** for the ketch ENCORE. Built to a Gannon & Benjamin design and planked with ⅜″ white cedar over steam-bent oak frames, she weighs only 96 lbs.

The railway used for haulouts at the yard has also been upgraded, with new track, new ties, and the replacement of a cradle. The railway has a capacity of 14′ beam and 25 tons.

Gannon & Benjamin Marine Railway, P.O. Box 1095, Vineyard Haven, MA 02568; 508–693–4658; www.gannonandbenjamin.com.

■ At **Fairlie Yachts** in England, a new **53′ custom "spirit of tradition" yacht** is taking shape. Designed and built by Fairlie for a Spanish client, the yacht has the signature laminated mahogany frames and cold-molded wood-epoxy construction that the yard has been using for modern yachts **inspired by the aesthetics of historic designs by William Fife III**. Select teak is used extensively in the yacht's interior, deck, and deckhouses. Like others of the spirit of tradition type, the yacht has Fife's elegance above the waterline but a modern underbody with a fin keel and ballast bulb, and her tall sloop rig will be traditional in appearance but with modern materials, including carbon-fiber spars.

COURTESY OF FAIRLIE YACHTS

Fairlie Yachts in Port Hamble, Southampton, England, is building a custom 53′ yacht, expected to be finished by August 2013.

The design is by naval architect Paul Spooner who joined the firm in 2000 during the restoration of the 1911 Fife 19-Meter-class yacht MARIQUITA, 95′ LOA. Spooner soon augmented the firm's work with new designs, 55′, 66′, 77′, and 110′ long, all inspired by the Fife aesthetics and quality, all semi-production cold-molded yachts with a foundation in wood-epoxy construction.

The new 53-footer has a beam of 13′, a draft of 8′6″, and displaces 29,700 lbs. She is intended to answer the owner's goal of global sailing with limited crew, but with the aesthetics of a classic yacht. An August 2013 launching is planned.

Fairlie Yachts Ltd., Hamble Yacht Services, Port Hamble, Southampton, SO31 4NN, England; +44(0)–2380–456336; www.fairlieyachts.com.

■ **MAYFLOWER II**, the noteworthy replica launched at Upham Shipyard in Brixham, Devon, England, in 1957 and sailed across the Atlantic Ocean for permanent exhibit near the Plimoth Plantation museum in Massachusetts, is **undergoing extensive repairs** at **Fairhaven Shipyard**. Peter Arenstam, the ship's keeper, said that a routine U.S. Coast Guard inspection during a winter haulout identified problems with several bottom planks, which were removed only to reveal rot in some of the ship's double-sawn frames. "When the suspect planks were removed, we discovered the frame

COURTESY OF PLIMOTH PLANTATION

MAYFLOWER II has been undergoing planking and frame replacement at Fairhaven Shipyard in Massachusetts.

issue—such is the way of it," Arenstam said. Ultimately, 11 futtocks, or frame sections, were replaced. "In order to remove the frames, a larger number of planks than the few bad ones needed to be taken off," Arenstam said. "The Coast Guard requires three frames and three planks between plank butts, so this futtock replacement project has required a lot of plank work as well." The original replica was constructed to plans based on exacting research by William A. Baker of the Massachusetts Institute of Technology and drawing on the experience of traditional shipbuilders in England, replicating period construction techniques such as trunnel fastening and the use of wrought-iron spikes. In the replanking, galvanized spikes made at Fairhaven yard will be used for longevity. The ship's rudder, damaged in Hurricane Sandy last year, is also being replaced.

The ship has a significant **commemoration coming up in 2020**, of course—marking the 400th anniversary of the original MAYFLOWER's voyage bringing Pilgrim colonists to the New World. "This work is part of a multi-year plan we have been working on for some time," Arenstam said. "Our goal is to have the ship in Bristol condition for the year 2020 celebrations." The work will be seasonal, so the replica is expected to be back at her berth in June. The ship sails occasionally, but most of her time is spent dockside, augmenting Plimoth Plantation's impressive "living history" re-creation of 17th-century life.

Plimoth Plantation, P.O. Box 1620, 137 Warren Ave., Plymouth, MA 02362; 508–746–1622; www.plimoth.org.

Offcuts

Elsewhere in this issue (page 94), Norman Ward writes about the historic **steamboats of Chautauqua Lake, New York**. But we have also heard from Steven Sweeney of Chautauqua County about a new museum, located on the historic lake, devoted to the story of recreational boating:

"Visitors to the recently established **Lawson Boating Heritage Center** at **Bemus Point** on Chautauqua Lake will notice one thing when they walk in the door: Varnish. Golden varnished wood—and plenty of it," Sweeney writes. "'Everyone that walks though the door remembers their first Chris-Craft or wooden boat ride, or outboard, or fishing, or sailing experience,' said **William R. Reynolds III**, a founding director emeritus of the state-chartered museum, which opened in 2012. 'I wish we could capture all those comments, those I-remember-when moments.'"

"Casual wooden boat enthusiasts will immediately take note of the 1954, 20′ **Chris-Craft Riviera** and the 1947, 19′ **Century Sea Maid** behind it. There is also a preserved 1890s or early 1900s

STEVE SWEENEY

A 20′, 1954 Chris-Craft Riviera shares the main floor of the Lawson Boating Heritage Center at Bemus Point on Chautauqua Lake, New York, with a 1963, 20′ Chris-Craft Caravelle; a 1947, 19′ Century Sea Maid; a 1958, 19′ Century Resorter; and a collection of outboard motors. The bearded gentleman is emeritus founding director William Reynolds III.

Rushton double-ended rowboat, its copper nail heads gleaming. These boats all represent the kind of boats sold, repaired, or maintained at L.S. AeroMarine, a chandlery, boatworks, and Chris-Craft dealership that the Lawson family founded in 1923.

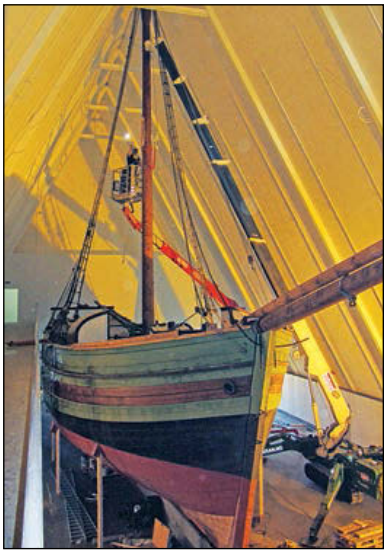
"Much of what visitors see today of the wood-and-steel showroom building is original to the 1940s and 1950s, when the Lawsons purchased materials that had been intended for an expansion at Chris-Craft's short-lived Falconer, New York, factory, known as the Jamestown Division.

"Placards on the main level explain all these facts in detail. For some, that would be enough information. But for boat lovers, an even more interesting find is in the lower level: a 1954, 20′ **Chris-Craft Special Sportsman**. 'It's very, very old, it's very, very rare,' Reynolds told me. 'It had an old two-cylinder Stirling engine as an inboard.' Right now, it is the first restoration project scheduled for the shop.

"Yes, the shop. In the lowest level of the boatworks, Reynolds said, there will be a **several-thousand-square-foot repair studio** dedicated to teaching wooden boat building and restoration principles. The **hands-on program** will fit in well with informational symposiums the center held last year.

"And if all goes well, regional water-ski clubs will be on hand this summer to showcase their skill, complete with ski jumps and human pyramids—behind a wooden boat, of course."

The Lawson Boating Heritage Center, 73 Lakeside Dr., Bemus Point, NY 14712; www.thelawsoncenter.org. The museum is open seasonally and by appointment.



COURTESY OF FRAM MUSEUM

Roald Amundsen's GJØA, the first boat ever to make it through the Northwest Passage, is undergoing restoration. Long displayed outdoors, the boat has been given its own building and is part of the FRAM Museum collections.

"**GJØA**, the first vessel to sail through the Northwest Passage (in 1903–06, under Roald Amundsen), is **now housed in its own building** in Oslo and is **under restoration**," Morten Hesthammer writes from the **Hardanger Fartøyvernsenter** in Norheimsund. "GJØA was first set ashore in San Francisco in 1909. Toward the end of the 1930s, she had decayed so badly that a total restoration was begun. The work, interrupted by World War II, was not completed until 1948. Various original fittings disappeared during these years, so GJØA after restoration differed a little from her original appearance.

"In 1972, GJØA was brought back to Oslo, where the vessel has been standing as a monument outside of the Norwegian Maritime Museum. A couple of years ago, the adjacent FRAM Museum, which has the polar exploration ship FRAM as its central exhibit, took over GJØA and started to build a house for her. The intention was to bring GJØA back to what she used to be. Hardanger Fartøyvernsenter [Ship Preservation Center; see WB No. 183] was hired last summer to reinforce the hull so that she could be lifted into the new building. During this process, half the keel and a few bottom planks were replaced.

"At the end of April this year, the boatbuilders raised the mast and rigged her inside the building, so she looks a bit like the sailing vessel she used to be. The FRAM Museum has done a good job of getting ahold of old pictures of GJØA taken during Roald Amundsen's voyage through the Northwest Passage. By studying the pictures, Hardanger Fartøyvernsenter will be able to bring GJØA back to her 1906 appearance. The work that has been done up till now can be considered two small steps toward this goal. The next step will involve replacing the ceiling planking, putting in heavy beams, and fitting the boat with oak ice sheathing. The job will start later this year and will proceed into the next. The **exhibition** will be **open for visitors** beginning **June 12, 2013**, and people will be able to **follow the restoration** up close when the boatbuilders are in action.

"If readers of this magazine know of old pictures or items from GJØA, both the FRAM Museum and Hardanger Fartøyvernsenter will be interested to hear about it."

FRAM Museum, Bygdøynesveien 36, 0286 Oslo, Norway; 23-28-29-50; www.frammuseum.no. See also www.hardangerogvossmuseum.no.

BERNIDA, the **George Owen–designed R-boat of 1921**, has been living a **blessed life** of late. In 1925, Russ Pouliot bought her and had her shipped to Detroit, Michigan, in time for her to win the first Port Huron–to–Mackinac Island Race. She won again with a subsequent owner in 1927, but after that she was disqualified for having had a keel alteration. Eighty years later, in 2005, she was close to the brink when Mackinac Island resident Charles "Toby" Murray came across her. He brought her to the attention

COURTESY OF MICHIGAN MARITIME MUSEUM

BERNIDA, a 1925 R-boat restored in a years-long effort by Emory Barnwell at Mackinac Island, Michigan, has been donated by Al Declercq to the Michigan Maritime Museum, where she'll take guests on daysails.

of Bart Huthwaite, who bought her and founded Mackinac Island Boating Heritage Foundation to take on a restoration, with volunteers helping. Years of restoration commenced, under the hand of **Emory Barnwell** of **Mackinac Island**, a young graduate of the International Boatbuilding Training College in Lowestoft, England. Barnwell started reframing and replanking the boat. By 2008, he had taken ownership himself to see the restoration forward, working largely in his spare time with volunteers. In 2011 Al Declercq, president of Doyle Sails, bought BERNIDA and saw the restoration to its conclusion with Barnwell. Declercq sailed her to a first-place 2012 finish in the "shore course" of what is now called the Bayview Mackinac Island Race.

Then, in fall 2012, Declercq **donated the 32-footer to the Michigan Maritime Museum** in **South Haven**. This summer, the yacht was expected (pending U.S. Coast Guard inspections) to sail regularly off the museum's docks with a licensed skipper and one experienced crew giving four guests a taste of historic yachting.

Michigan Maritime Museum, 260 Dyckman Rd., South Haven, MI 49090; 269–637–8078; www.michiganmaritimemuseum.org.

In the news from the Northwest School of Wooden Boat Building above, **John Wesley Powell**'s western explorations are mentioned, especially his first-ever run of the Colorado River through the Grand Canyon. He had a life full of adventure (well told in Wallace Stegner's *Beyond the Hundredth Meridian*), and later directed the U.S. Geological Survey and served as the Bureau of American Ethnology at the Smithsonian Institution. In a most curious coincidence, he **died** on September 23, 1902, while at his family's summer place in—of all places—Haven, Maine, now a neighborhood of **Brooklin**, *WoodenBoat*'s home town.

Speaking of exploration and adventure in the arid West, the crew of the whimsical 40′ **wind wagon ASTRAKAN** built in Sweden, and written about in Currents in WB No. 228, inform us via Jens Langert that they **completed the trip**. They sailed across the Black Rock Desert to the 2012 Burning Man Festival. Top speed, 27 mph. Days, up to 120 degrees; nights, frigid. Mirages. Dust devils. No doubt the 50,000 festival participants will be talking about that one for a long time to come. A tip of the hat and raise of the pint to the intrepid desert sailors, if you will. The wagon now resides in a container in Nevada, for sale. "She does not leak and has no rotten timbers," says Langert, who has returned to his work as a rigger on the replica frigate HERMIONE project in La Rochelle, France.

Across the bar

■ **Richard E. Wood,** 64, March 24, 2013, Point Richmond, California. Canadian-born, Mr. Wood set out on a lifestyle of serious ocean cruising after moving to Nantucket, Massachusetts, upon graduating from Boston University. By the time he moved to Point Richmond in 1981, his accomplishments included a years-long voyage around South America. In the Bay Area, he joined with his Nantucket friend Alfred Sanford in founding Sanford-Wood Marine (which continues as Sanford Boat Company, Nantucket). Among the yard's constructions was FANCY, a

1984 yacht built in the unusual manner of finishing out her interior completely, including all systems, before sheathing the hull in cold-molded planking. In September 2012, Mr. Wood was named interim boatyard manager for Spaulding Boatworks, housed at the Spaulding Wooden Boat Center in Sausalito. At the time of his death, he was leading an upgrade of yard facilities in preparation for a reopening in April 2013. Mr. Wood owned many yachts during his lifetime and belonged to The Tahoe Yacht Club, San Francisco Yacht Club, Cruising Club of America, and Point San Pablo Yacht Club.

■ **Rodger Payson Nordblom,** 85, February 10, 2013, Palm Desert, California. Mr. Nordblom was a third-generation scion of a Boston-area real estate development company, a U.S. Navy veteran of World War II, and a 1950 Harvard University graduate who lived in Concord, Massachusetts, most of his life. Fond of the outdoors and adventure travel, he was active in the Wianno Senior class since commissioning the wooden-hulled ODIN, No. 162 of 1974.

■ **Arthur DeFever,** 95, April 10, 2013, San Diego, California. Trained in engineering at the University of Southern California and in naval architecture at University of California at Berkeley, Mr. DeFever began his career working for naval architects Carl Shield and Ted Geary. In the late 1930s, he designed commercial tuna fishing boats, 80′ to 181′, that were recognized for their seaworthiness. After designing military craft during World War II, he set up his own design office in 1946 on Shelter Island. In the early 1960s, members of a newly founded Offshore Cruising Association, impressed by his commercial boats, approached him about designing motoryachts based on the same principles for long-distance pleasure boat cruising. Six such boats were initially built, and soon demand increased. His early pleasure craft were built in both wood and steel; when production switched to fiberglass in the 1970s, DeFever maintained the earlier workboat-inspired characteristics. Some 3,800 boats have been built to his designs.

■ **Bill McCutcheon,** 79, November 11, 2012, Isle of Wight, England. Mr. McCutcheon was a renowned builder of racing dinghies, especially Cherubs, International 14s, and Moths by a variety of designers, including Bruce Kirby and Uffa Fox. His boats were known for fine craftsmanship but also for speed, and many of them are still competitive today.

■ **Charles Allan Moore,** 61, March 11, 2013, Port Townsend, Washington. Mr. Moore was the co-founder, with Jim "Kiwi" Ferris, of Edensaw Woods in Port Townsend in 1984. Mr. Moore was raised in Illinois and Wisconsin but in 1972 moved to Alaska, where he developed an interest in woodworking ranging from homebuilding to guitar making, and then boats. He first arrived in Port Townsend in 1982 to attend the Northwest School of Wooden Boat Building, where he met Ferris. When he returned permanently in 1984, the two started the wood supply business (which continues), trading off leadership so that each could go sailing for extended periods.

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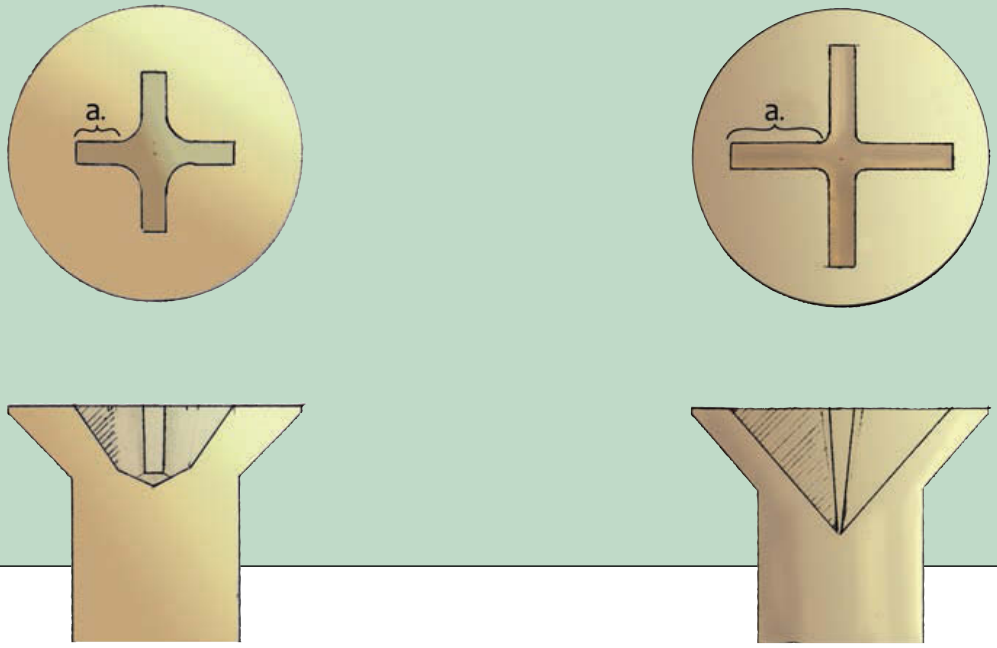
Maritime Museums

If you want to learn more about wooden boats, particularly about their origins and history, visit a maritime museum. Each of the museums listed here has something to offer the wooden boat aficionado — from half models and historical photographs to full-sized watercraft. Boatbuilding skills are sometimes taught under the auspices of maritime museums and there are often gatherings where people can rendezvous with their boats. Plan a summer visit to a maritime museum — call today for more information!



Screw Drives

Variations on a theme

Text and drawings by Harry Bryan
Photographs by Martha Bryan

A straight-bladed screwdriver engaging a slotted screw head is the oldest and best-known drive system for turning a wood screw down into a hole. But it's not the only one used in boatbuilding. There are three common drive systems for wood screws used in boat work, and all have good points and bad points, both when installing screws and when removing them. On the following pages, I'll explain the background, benefits, and drawbacks of these so-called "screw-drive" designs.

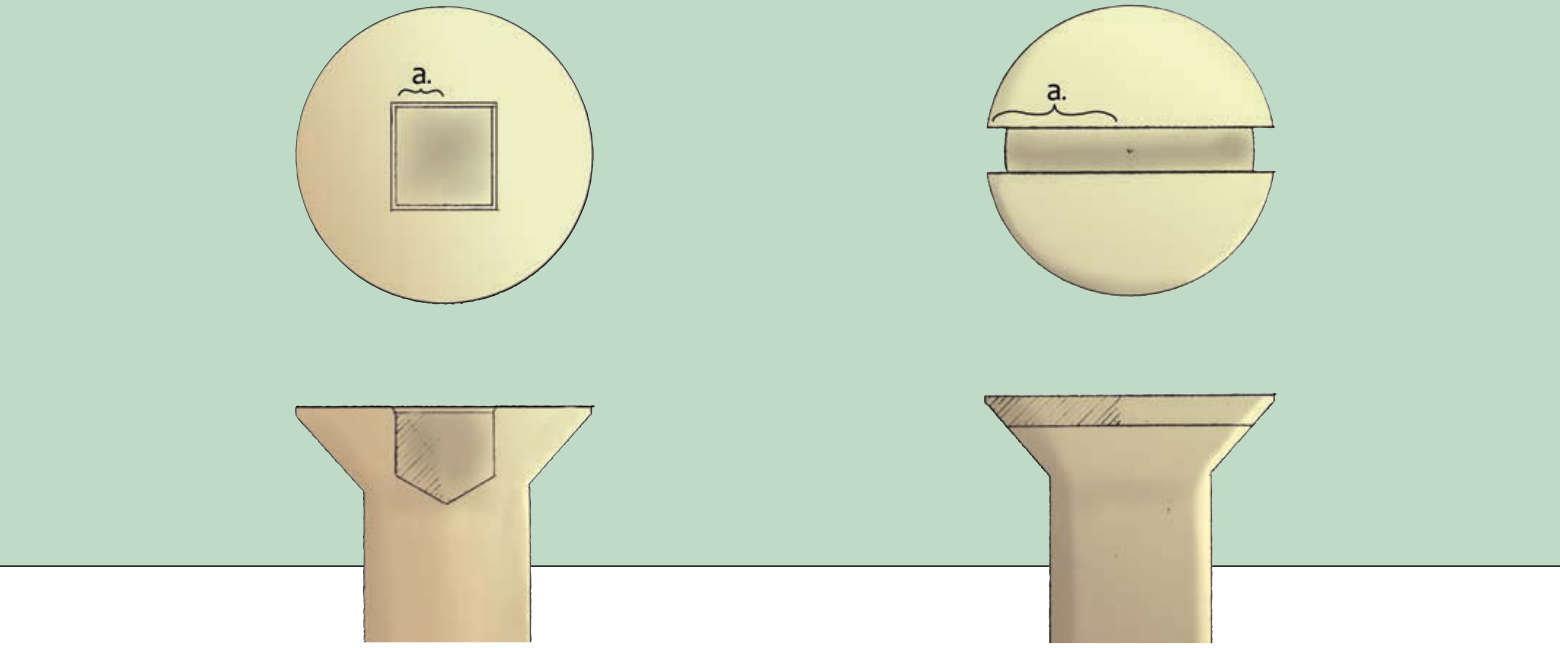
There are two broad types of screw head. One, the recessed-head variety, encompasses a family of screws driven with a bit that engages a socket that's been cold-formed in the center of the screw's head with a punch. The other is the faithful old slotted-head screw, whose drive slot is milled into it.

In the recessed-head family, there are many socket shapes available in the variety of screws sold at building supply stores; these include square, octagonal, hexagonal, star-shaped, cruciform (cross shaped), and more. However, this range of recessed-head drive types isn't available in the screws used in boatbuilding. Because of the economies of screw manufacturing, only square and cruciform heads are used in the types of screws that boatbuilders use almost exclusively—those with cut threads (rather than the more common rolled variety) made of silicon-bronze or stainless steel. It simply wouldn't be profitable for a mainstream fastenings manufacturer to invest in the tooling and materials for a market as small as wooden boat building. So while we may have our favorite drive system for mechanical work or house building, we wooden boat builders must choose between three types of recessed screw: square-drive, Phillips, and Frearson. Let's first consider the square-drive variety.

Square-Drive, or Robertson

If you're in Canada, don't make the mistake of calling these fastenings "square-drive." They are called Robertson screws here, after their inventor, P.L. Robertson. The popularity of this screw drive would likely have spread farther and faster had Robertson licensed his invention to manufacturers rather than kept exclusive control for himself. Henry Ford used Robertson screws in the manufacture of the Model T, but switched to other types when he could not obtain rights to the Robertson screw.

Living in Canada, where it is rare to find any other type of screw drive, I have driven many hundreds of Robertson fastenings. One significant advantage of them is that their stability on the driver makes relatively easy work of getting them into tight places, or starting them without a pilot hole. While this is not common practice in boat work, it is most helpful in building



Above—The principal differences between Phillips and Frearson screws (facing page) are: (1) The arms of the cross slots are shorter in the Phillips for a given-size screw, (2) the recess of the Phillips is not as deep, and (3) the radius of the corner where the slots meet is greater in the Phillips than the Frearson. The shaded area in the cross-section view of each screw type indicates the effective area of contact between the driver and the screw head. This area is designated by a bracket marked "a" on each top view. Phillips, Frearson, and square-drive screws have a total of four times the area shown, while slotted screws have twice the area. A comparison of these total areas shows that the Frearson screw has the most contact area by a considerable amount. Next is the square-drive, with about half the contact area of the Frearson. The slotted screw has one-third the contact area of the Frearson, while the Phillips has the least at one-quarter of the Frearson's area. The contact area times the distance between the center of this area and the axis of the screw gives an indication of the pressure applied to the metal of the screw when driving or removing the fastening. This may be the most important factor in whether old screws will back out or be destroyed in the attempt. The wide slots and great contact area of the Frearson screw show that it will be subjected to the least force per unit of area. The slotted screw will have twice this crushing effect, while the Phillips and square drive screws will have about three-and-a-half times as much.

molds and in installing supports and bracing, when pilot holes can be omitted.

Which brings us to the topic of cam-out. Cam-out refers to a screwdriver's slipping out of the screw head when excessive torque is applied—or, in the case of a slot-head screw, when there's misalignment between the bit and screw. Firm downward pressure and a near-perfect fit and alignment are needed with all screw types to minimize cam-out. Once cam-out occurs with a slotted screw, the driver will need to be placed back into the slot to continue driving. With a recessed screw, whether square, Phillips, or Frearson, the driver will jump a partial turn, then re-enter the recess to continue driving the fastening…or it will instantly cam-out again.

I have often heard that square-drive screws will not cam out. Compared with slotted or Phillips screws, they are indeed more resistant to this. However, if the bit is even slightly worn, or if the driver is not aligned with the fastening, cam-out can (and probably will) occur with the risk of serious damage to the screw's recess. Marine screws are made of relatively soft stainless-steel or bronze, making such damage a real possibility.

There is some concern over the difficulty of removing square-drive screws when it comes to repairing or restoring older boats. The alignment of bit and driver, so important to reduce damage to the screw, is difficult to see or feel with a screw head that's set deep in the wood. Also, the relatively small size of the recess in

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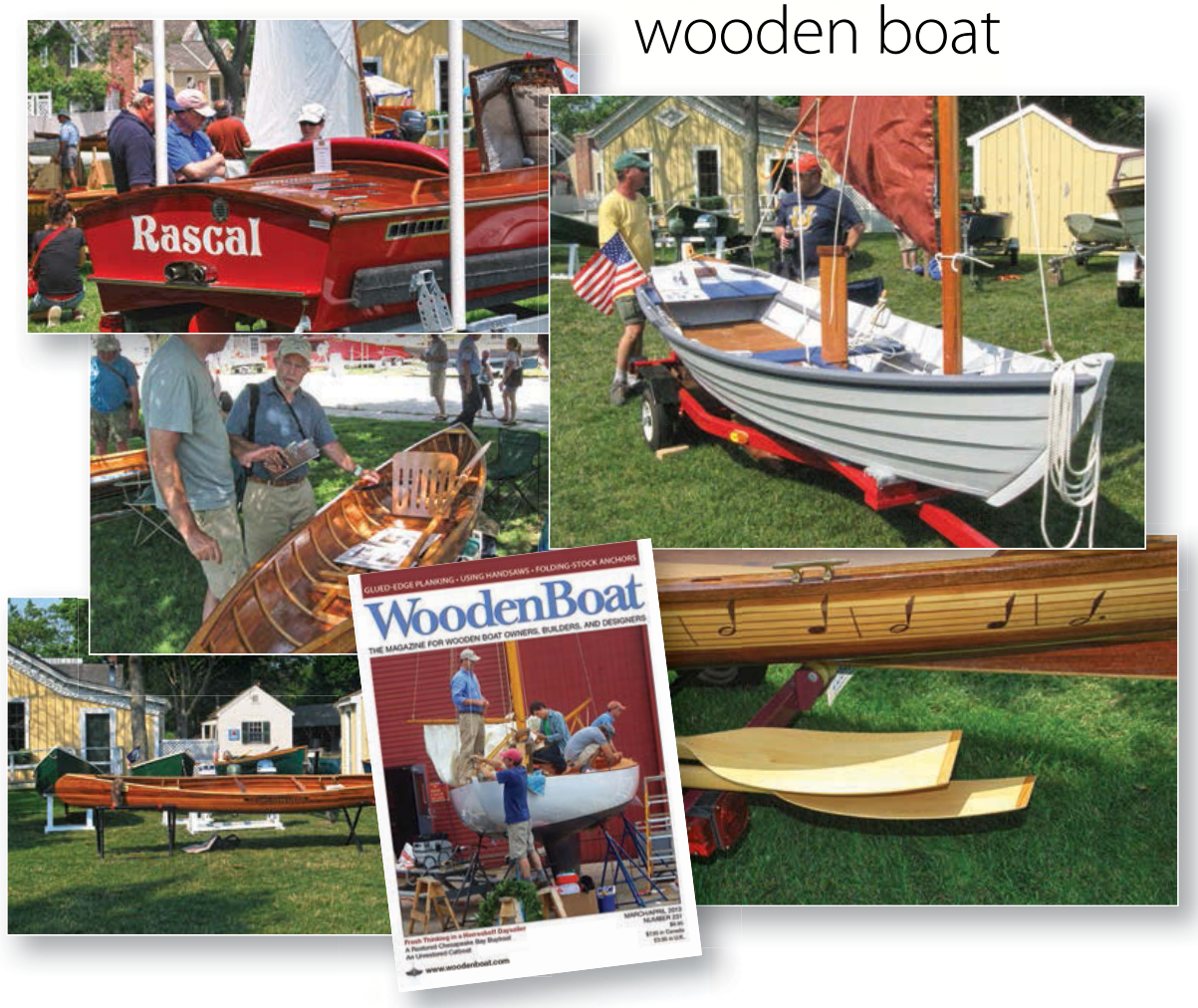

These boats were showcased in the "I Built it Myself" area at the 2012 WoodenBoat Show

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Section of a Frearson screw, showing that any size Frearson driver will fit any size Frearson screw. Note the considerable contact area available to the driver.

a square-drive screw translates into large pressures on the metal, which is particularly concerning if the recess is slightly worn. Furthermore, after several decades of saltwater immersion, bronze fastenings may lose the toughness needed to resist the high pressure of starting torque. On the other hand, the recess can be a good "center" for a drill bit, when drilling-off the screw head or using a screw extractor (see sidebar).

Frearson, or Reed & Prince

First, some clarification: Both names, Frearson and Reed & Prince, refer to the same thing. These screws look like the Phillips variety, which we'll cover next, but they are fundamentally different.

Shop-made Bits and Screws

Another benefit of the slotted screw and driver is that it is far easier to create a slotted head in the boatshop than it is other bit forms. While this is not something that is needed often, a hacksaw can quickly cut a slot in the end of a rod or bolt head to take a screwdriver if a wrench cannot be used.

As for bits, most of the ones made for power drivers are ground from ¼″ hexagonal tool steel, making the width of the screwdriver thus formed too narrow for it to be an effective tool for screws that are larger than No. 8. To make a proper bit for No. 10 and larger screws, cut off about 1½″ from any type of bit and, holding it with a pair of locking pliers, heat the cut end with a torch until it turns red. Use a hammer and small anvil to flatten the heated end to a screwdriver shape. Refine the shape with a grinding wheel and file. The bits I have made have proved to be tough enough to use without the need for hardening and tempering, thus simplifying the process. *–HB*

Drilling-Off Screw Heads

With practice, it isn't all that difficult to remove the head of a screw by drilling. Start with a ⅛″ drill to make a ¼″-deep pilot hole. Follow this with a drill of the same diameter as the shank of the screw, and the ringlike remains of the head will suddenly be clinging to the bit. After the head has been removed this way, it's often possible to remove the hardware or plank it was holding, and then turn out the remaining threaded portion of the screw with a pair of Vise-Grip pliers or with a dedicated screw-removal tool. *–HB*

John Frearson, an engineer from Birmingham, England, obtained a U.S. patent for his screw design in 1873, and for many years the manufacturer of the Frearson screw was Reed & Prince of Worcester and Leominster, Massachusetts. Hence, the two names.

The crossed slots of the Frearson screw are of the same width in all sizes, even though the lengths of the arms of the cross are greater in a larger screw. The profile angle of the driver is also the same in all sizes. Thus, while convenience and driving force may dictate an ideal driver size (there are three available), any Frearson driver is a perfect fit with any Frearson screw. In contrast, each size of Phillips screw requires a different driver, none of which is an acceptable fit with a Frearson screw.

As in the square-drive screw, the walls of a Frearson's recess are very slightly tapered to make it easier to insert the driver and to ensure a tight fit. The Frearson screw has significantly more contact area than that of a slotted, square, or Phillips screw. This, combined with the self-centering nature of a recessed screw and its resistance to cam-out, accounts for the loyal following enjoyed by this screw.

***Screw-driving bits*—From the left: Frearson, Phillips, square-drive, shop-made wide bit for large slotted screws, standard ¼" slotted bit.**

Left—Stripped contact surfaces on square-drive and slotted screws. The square-drive screw could not be removed with its driver, while the slotted screw was removed by the following technique, which usually works no matter how damaged the slot:

1. Use a bit brace and a bit that is nearly as wide as the screw head. If it is even slightly worn, file or grind the bit so that its edges are square and sharp.

2. Set the brace's ratchet for removal and place the bit squarely in the remains of the slot.

3. Leaning hard on the brace, lightly hit its handle repetitively with the heel of your hand, being very careful not to let the tool slip. At this point, you are making no attempt to start the screw; rather, you are trying to cut into the screw head and build up a slight wall in front of the bit. It may take 20, 30, or more hits before a sufficient wall is built up to turn the screw. The secret is a sharp bit, lots of pressure, and patience.

4. Gradually increase the strength of the blows on the brace's handle, and the screw should start to back out.

Phillips

Phillips-head screws are often confused with the Frearson type, but they are, in fact, quite different. The contrast between the two types is illuminating. As far as I have been able to determine, no bronze Phillips-head screws are available with the two properties important to wooden boat builders: (1) that part of its length (the shank) not be threaded, and (2) that the shank is the same diameter as the outside of the threads. I have found Phillips-head stainless-steel screws with these characteristics, although I've also found a good reason to avoid them: Of all the commonly available recessed screws, the Phillips is the most susceptible to cam-out.

It has been said that cam-out was purposely designed into this screw to prevent overtightening. This seems unlikely as Henry Phillips, in his 1936 patent application, says that with his socket "there will be no tendency of the driver to cam out of the recess." The success of the Phillips screw seems to have more to do with its promoter's business acumen than with any superiority of design. Phillips, unlike Robertson, licensed his patent to manufacturers, notably the automotive industry. The requirements for a sheet-metal screw in a vehicle are quite different from those of a wood screw driven deep

Driving Screws with Power

When I was 15 years old, I built a 13′ sheet-plywood dinghy on our front porch. (My bedroom, where an 8′ hydroplane was built previous to this, was too small for the new boat). Between 600 and 700 screws held the plywood to the frame, and I drove them all with a hand screwdriver. The memory of that project has helped me to accept the power screwdriver.

Long, heavy screws driven into hardwood require significant power, but for the majority of screws, too much power can be a problem. Our shop's favorite driver-drill is a wimpy old 9.6-volt Makita. We always use it on its low-speed setting, where it will drive up to a 2″ No. 14 screw. For small fastenings, we hold it loosely to feel when it's time to release the trigger. It's difficult to cultivate this sensitivity with more powerful drills.

When installing hardware, always finish tightening with a hand screwdriver. Once the screw's head fetches up on a piece of metal hardware, it stops moving downward, and any further turning will begin to destroy the thread that's been cut into the wood. One full turn too far will tear out the threads completely. For this reason, lining up screw slots on hardware for aesthetics should be avoided if the full holding power of the screw is desired. The clutch that comes with all driver-drills is not of much use for driving boat fastenings, as there is too much variation in the density of the wood, and thus the torque needed, to properly tighten the screw.

Small, cordless impact drivers have recently become popular for driving screws. The intermittent nature of the torque they apply allows the bit to continually reset itself, reducing the likelihood of cam-out. Drawbacks are that their considerable noise degrades the ambiance for other workers in the shop, and there is little feel when drawing up the screw.

No matter what the screw type, if much torque is required, it is still hard to beat the hand brace as a driving tool (see WB No. 226). *–HB*

into a piece of oak. The tip of a Phillips screwdriver is rounded, thus losing some potential contact area at the bottom of the screw's recess. This loss, combined with rounded corners where the slots come together, accounts for the frustrating tendency of the Phillips screw to cam-out in hard service.

Slotted Screws

Machine-made slotted screws have been in use for over 200 years. While the slotted screw has its problems, there are significant advantages in its design that should be considered before tossing it out as a holdover from a less-enlightened age.

Phillips, Frearson, and square-drive screws are self-centering. If the bit slips (cams-out), it still stays centered on the screw head. When a power driver (see sidebar, page 35) is used and the bit slips out of the recess, the resulting rat-a-tat sound indicates that the screw head is being abused; the hammering can round off its recess enough to make the screw impossible to drive home firmly—or to remove at a later date. In contrast, while it is easier to make a screwdriver slip out of a slotted screw, it is harder to ruin the screw when that happens. (It is, however, easier to damage the wood around the screw—though that likelihood decreases with experience.)

A near-perfect alignment, along with a good fit between screwdriver and screw, is the key to becoming proficient with slotted fastenings. Both Phillips and square-drive screws are slightly more tolerant of misalignment than are slotted screws, and for this reason they are apt to find favor with those who drive screws only occasionally. However, with enough experience, you can drive a slotted screw with just as much confidence as you can self-centering screws.

Much of the awkwardness of driving slotted screws comes with starting them, when the screw is most apt to be wobbly. The firm seating of a square or Frearson driver can be an advantage in this case. However, in boatbuilding almost all fastenings will have pilot holes large enough to give initial stability to the screw, largely canceling out this advantage.

The slotted screw is still much in favor with people involved in boat repair. Despite being filled with paint, putty, or an adhesive, slots are relatively easy to clean out using the tip of an awl or the corner of the screwdriver. But when a recessed-head screw is filled in or badly damaged, it will be extremely difficult, if not impossible, to remove the debris with a driver. With a slotted screw, even if the slot is abused to the point where it is only a rounded depression, it is still usually possible to back it out. If the drive is damaged beyond service, the head can be drilled off as described in the sidebar. While it is easier to center the drill in a recessed-head screw, a center-punch or wood plug—and a firm and steady hand—will help with slotted screws.

Appearance is another reason that we continue to use slotted screws in our shop. Screw heads are often left exposed, and thus become part of the look of the boat. Many boat designs, certainly our own, consciously evoke a certain era—an era when the slotted screws typical of one-off yachts were the norm. But other boats—particularly vintage production-built wooden boats from Canada—might have been built with square-drive screws. If you're concerned about such details as chamfers and tapers, then the look of the screw head is also important. Choose accordingly.

Harry Bryan is a contributing editor for WoodenBoat.

Dimensional Change in Glued Planking

by Richard Jagels

Matthew P. Murphy's intriguing article "Glued-Edge Carvel Planking" in WB No. 231 described the unconventional method that Artisan Boatworks of Rockport, Maine, uses to seal planking seams. Eschewing the usual method of caulking, Artisan Boatworks glues the seams with epoxy. Proprietor Alec Brainerd is quick to point out that key criteria need to be met in order for this method to succeed, including:

1. The use of northern white cedar or equivalent wood, dried to a moisture content (MC) of 10 percent.
2. Plank thickness not to exceed ¾".
3. Planks must be glued to stable timbers.
4. Thorough painting of both sides of planks to retard moisture movement.
5. Maintenance of the boat's MC above that at time of construction.

I would guess that some upper limit on planking width would also need to be established.

The article set me to thinking about the factors that affect shrinkage and swelling in wood and how that could apply to other boatbuilders who might want to attempt glued-seam planking construction. In WB No. 146, I touched on this subject, but I will expand that discussion here.

Most wood shrinks and swells very little in the axial direction parallel to wood fibers—less than 1 percent from green to oven-dry. An exception is found in juvenile wood of conifers. This wood can shrink and swell significantly longitudinally. Avoidance of rapid-growth wood close to the pith generally resolves this problem.

Perpendicular to the grain, wood shrinks and swells more in the tangential than radial direction, but this varies among species. The tangential direction relates

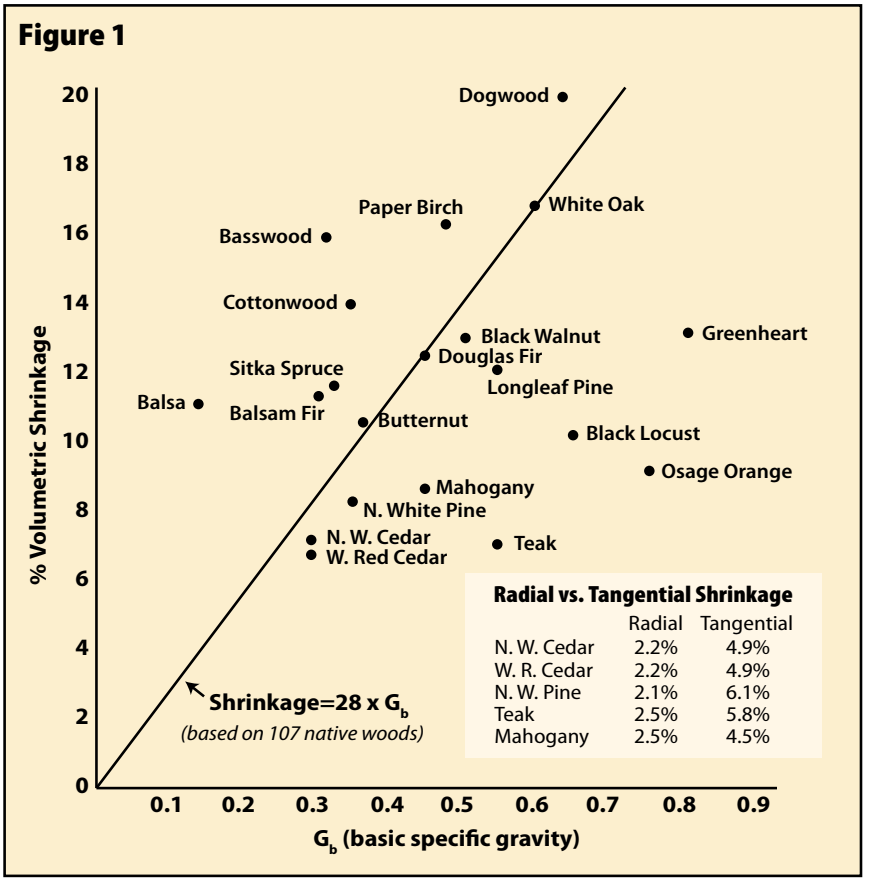

***Figure 1*—Shrinking and swelling are greater in high-density woods, but extractives in heartwood can ameliorate the effect of density. (Figure adapted and modified from Koehler, A. *The Properties and Uses of Wood,* McGraw-Hill, New York, 1924; page 54.)**

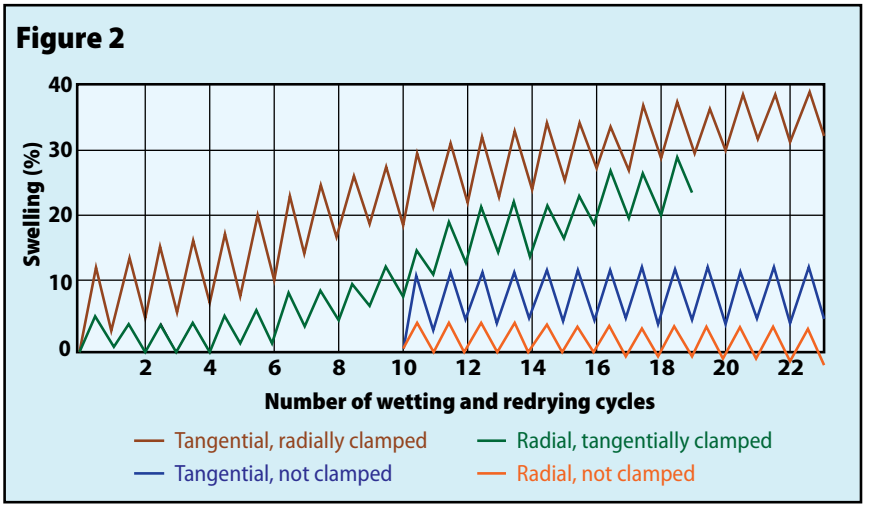

***Figure 2*—Repeated moisture cycling in wood that is restrained in one direction produces irreversible swelling in the unrestrained direction. (Figure adapted from: Kollman, F.F.P., and W.A. Cote. *Principles of Wood Science and Technology*. I. Solid Wood. Springer-Verlag, New York, 1968; page 215.)**

to flat-sawn planks, or those with growth rings more or less parallel to the width of the board; the radial direction refers to quarter-sawn stock, with growth rings perpendicular to the width. According to one reference, shrinkage from green to oven-dry conditions in flat-sawn stock can range from 4.2 percent to 14 percent, while quarter-sawn stock's shrinkage ranges from 2 percent to 8.5 percent. The difference between tangential and radial shrinkage also varies among species. In some, the difference is quite small. American hornbeam has a radial-to-tangential shrinkage ratio of just 1:1.27. On the other hand, in a wood like black willow that ratio is a hefty 1:3.0.

Figure 1 shows us that a major influence on wood dimensional change is density or basic specific gravity (G_b: green volume, oven-dry weight). A best-fit regression line shows that, on average, percent volumetric shrinkage from green to oven-dry can be calculated by multiplying G_b by 28.

For clarity, I have not plotted all of the woods on the graph, but have included some that fit the regression quite well, including butternut, Douglas-fir, and white oak. More revealingly, some of the woods diverge significantly from the regression line; those to the left of the line shrink *more* than would be expected, while those to the right shrink *less* than predicted by G_b.

All of the woods to the left are "white" woods that lack significant quantities of chemical "extractives" in the heartwood and are decay-prone. The woods to the right of the regression line contain significant quantities of extractives in the heartwood and have moderate to very high decay resistance.

Chemicals deposited in the heartwood fill cell wall voids that otherwise would be available to water molecules. As a consequence, the fiber saturation point (FSP) is lowered. The FSP is where all free water has been removed from green wood and any further moisture loss will come from cell walls and will initiate shrinkage. An "average" FSP is around 30 percent MC. A wood to the left of the regression line in Figure 1 might have an FSP of perhaps 35 percent, while a wood to the right could have an FSP of 25 percent or less.

During drying, less water is removed between MC 25 percent and 15 percent than between 35 percent and 15 percent; hence shrinkage is reduced in the former—even though it may have similar cell-wall volume. For example, compare mahogany to paper birch in Figure 1.

Two caveats here. First, chemical extractives are deposited when sapwood is converted to heartwood in the living tree. Therefore, sapwood will fit much closer to the regression line for those woods

found to the right of the line. Second, the graph plots volumetric shrinkage, which is a combination of shrinkage in all directions. Since wood shrinks very little longitudinally, volumetric values are basically a combination of radial and tangential shrinkage. As pointed out above, some woods shrink and swell similarly in both directions but most shrink considerably more in the tangential direction. Values for northern white cedar, western red cedar, northern white pine, teak, and mahogany are provided in the box in Figure 1. Although pine has greater tangential shrinkage than the cedars, if one could use quarter-sawn pine for boatbuilding, it should perform as well as cedar.

Teak and mahogany, though they are somewhat more dense, might also work, particularly since one of the key criteria of Artisan Boatworks' planking system is that the planking be glued to the frames. This begins to approach cross-lamination construction—which at one extreme becomes plywood. When the MC of plywood increases, the veneers are restrained from expanding laterally, but this initiates a stress that is relieved by strain or swelling in the plane normal to the surface (lamination thickness).

Experiments have been conducted to test wood behavior when mechanical restraint is applied in one direction and repeated wetting and drying cycles are applied. Figure 2 reveals how flat-sawn (tangential) and quarter-sawn (radial) boards respond to repeated moisture cycling when they are restrained, respectively, in the radial or tangential directions. The bottom two curves are for unrestrained boards while the top two are restrained.

After repeated cycling of MC, the boards undergo irreversible swelling (plastic strain) in the plane 90 degrees to the clamping pressure. Very likely, similar changes are occurring in Artisan Boatworks' planking. By keeping the planks relatively thin at ¾″ or less, the thickness swelling is minimized. To illustrate, we could choose an arbitrary 25 percent swelling from Figure 2, and calculate the potential irreversible swelling thickness for a 2″-thick plank and a ¾″ plank. In the former case, the plank could swell in thickness by 0.5″; in the latter case, the swelling would be only 0.1875″.

For anyone contemplating glued-seam planking construction, I would suggest following the general guidelines put forth by Artisan Boatworks and would add: (1) avoid sapwood, (2) use quarter-sawn planking if possible, (3) choose a wood with relatively low G_b and high extractive content.

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The Everglades Challenge in a Wooden Boat

300 miles of racing and adventure

by Tom Pamperin

The WaterTribe Everglades Challenge website describes the 300-mile Tampa–Key Largo race as "an unsupported, expedition style adventure race for kayaks, canoes, and small boats." I'd seen the Everglades Challenge from the sidelines in 2010, when I shuttled a truck and boat trailer to the finish line for Mike Monies and Andrew Linn, who were racing that year. Even as a spectator, I was intrigued by WaterTribe's eclectic community of boats, paddlers, and sailors—an endearingly oddball group that made me feel like less of a lunatic for wanting to spend days or even weeks at a time in small boats.

By the time I got to Checkpoint Two that year, I was already thinking about entering someday. I asked one competitor—a trim white-haired man in his 70s, a veteran of half a dozen Everglades Challenges—if there was anything he wished someone had told him before he did the race for the first time. He looked at me oddly for a moment, almost as if he were staring into a mirror.

"Yeah," he said. "I wish someone had told me, 'Don't do it.'" We both laughed.

When I asked WaterTribe founder Steve Isaac (aka Chief; tribal names are *de rigueur* for WaterTribers) about the Everglades Challenge, he told me what to prepare for: Anything. That, he explained, is what early March in Florida can give you, in the form of gales and calms, northerlies and easterlies, southerlies and westerlies, heat stroke and hypothermia, heavy surf and breaking waves. For the race, add to that sleep deprivation and hallucinations. And then there are the unmarked channels, swarms of mosquitoes, shallow water, and waist-deep mud.

"It's not a sailing race, it's not a paddling race, it's an adventure race," Chief insisted. To make sure the whole thing wasn't too easy, there were "filters"—bridges too low to sail under, channels too narrow to tack in, tides too strong to row against, and mandatory checkpoints and deadlines. And all boats had to be launched from the beach, starting above the high-tide line, without a trailer and without help. Once launched, racers have eight days to reach Key Largo.

Make it to the finish, and the reward is a shark's tooth and the respect of your fellow competitors. Row, sail, or paddle the 99-mile Wilderness Waterway through the Everglades interior along the way—including a mandatory quarter-mile portage—and you can earn a 'gator tooth, too. Opinion was divided about the possibility of getting a sailboat through the Wilderness Waterway, though, since sometimes paddlers had trouble getting *kayaks* through the narrow mangrove channels, particularly an overgrown stretch known as "The Nightmare."

It all sounded good to me. But the strip-planked 18′ boat I had been building was sitting through another Wisconsin winter in an unheated garage, still far from ready to launch. Fortunately my brother, Lance, had his Ross Lillistone–designed Phoenix III ready to go, and we had already sailed her all over the Great Lakes together (see Small Boats 2013). I knew if I offered to pay the entrance fee, Lance would provide the boat.

TOM PAMPERIN

***Above*—On the beach at Fort De Soto Park the day before the March 2 start of the 2013 Everglades Challenge, the author's brother, Lance Pamperin, tweaks rigging to prepare his Wisconsin-based, 15′1½″ LOA Phoenix III for six straight days of sailing. *Right*—The varied course winds through Florida's interior waterways, but also open water, between St. Petersburg and Key Largo.**

Getting ready for a race 1,200 miles away wasn't easy. "I thought you knew more about all this," Lance kept telling me when I couldn't answer any of his questions. Which passes are safe? How's the portage at Flamingo? How are the tides and currents? I figured we'd find out when we got there. My brother, though, tends to think ahead a little more than I do. "You could program the coordinates for some of those passes into the GPS," he suggested when we got together to sort our gear. But I didn't even know how to use the GPS. Neither did Lance, who had just pulled it out of the box. Somehow we never got around to doing anything except choosing our tribal names (Phoenix1 for Lance, Phoenix2 for me), tying a knife and personal locator beacon to each life jacket, making up our mandatory hypothermia kits (balls of dryer lint smeared with Vaseline as a fire starter, waterproof matches, space blanket, candle lantern), and rigging a set of wheels for the portage.

But we got to Fort De Soto Park near St. Petersburg the day before the race, put the boat on the beach at the end of a long line of other boats, and started piling up gear. Dry bags. Water bottles. Tent and sleeping bags, stove and food. Hypothermia kit. PFD with attached safety knife and PLB. It was reassuring to know that I'd be able to cut or burn something if I had to. I was feeling more prepared than usual. Lance kept saying how surprised he was that I didn't know more about the race. Now and then someone would stop to ask about the boat and tell us what a beauty it was. I wasn't sure how much that mattered but figured it couldn't hurt.

Everglades Challenge veteran Gary Blankenship (aka Lugnut), who this year was sailing with Chuck Leinweber (aka Chuck the Duck), the founder of the online magazine *Duckworks*, offered to do our mandatory safety inspection. Hypothermia kit? Check. VHF? Check. PLBs? Check. Reefing system? Check—one fairly deep reef, and one *very* deep reef that turned the 76-sq-ft balance lug into a 25-sq-ft lateen. Finally all our gear was piled aboard, so I wandered down the beach taking pictures of other boats and wondering what we were getting ourselves into. Lance kept fiddling with the boat to adjust sail ties, cleats, whatever. After a dinner of stuffed flounder and conch fritters with Gary, we returned to the campground. I put on a headlamp and tried to comment on the latest round of papers from a writing class I was teaching. Finally I gave up, turned off the light, and fell asleep to the sound of squabbling raccoons.

DAY 1 Fort DeSoto to Checkpoint One

TOM PAMPERIN

***Above left*—Because each boat must be self-contained, organization and preparation are the keys to success. "Filters," such as a mandatory ¼-mile portage, limit the size of participating boats but not their variety. *Above right*—For the author, the first day to Cape Haze Marina involved narrow passages, low bridges, and all-night rowing.**

We got up at 4:30 a.m. on Saturday, March 2, to pack up, drop the car and trailer at a long-term parking lot, return to the boat, rearrange gear, and make a final bathroom stop. It was a frantic rush, with no time for thinking. A diverse armada of kayaks, catamarans, sailboats, trimarans, canoes, and stand-up paddleboards stretched along the beach. It was still dark, and headlamps were bobbing and weaving among the boats. The sky grew lighter, revealing the Tampa Bay Bridge off to the east, and the wide expanse of Tampa Bay itself stretching southward. As the sun rose, Chief herded us together for a final talk and our group photo. At 7 a.m., people started rolling and dragging and pushing their boats to the water's edge. After most of the others had launched, we shoved some fenders under the Phoenix III's hull and rolled the boat into the water. Lance hoisted the sail, and I pulled us out into knee-deep water and hopped aboard. We were off, heading south across Tampa Bay, following the long line of boats already well ahead of us.

Our route to Checkpoint One, 65 miles away, would take us inside a long chain of barrier islands. We were sailing in protected waters with favorable winds, easy navigation, and comfortable conditions. We had time to relax and enjoy the sailing, reminding ourselves that we knew what we were doing.

Twelve miles later I jibed unexpectedly, clobbering Lance with the boom and knocking him half senseless into the cockpit—it was like getting hit with a baseball bat, he said later—and when he sat up 20 seconds later there was already a good-sized lump on his temple.

Eight miles farther south, while running down Sarasota Bay at 5 knots, I dropped the chart overboard. It sank before we could beat back to it. We stopped at a marina for a replacement, but all they had was a random collection of tightly rolled charts with no catalog or index. After unrolling a few and struggling to roll them up again when they weren't the ones I needed, I gave up and instead bought a copy of *Dozier's Waterway Guide* for $40. Its 540 pages carried a few mini-charts that would almost—but not *quite*—get us to a point where we could switch to the next full-sized chart in the succession of those we'd brought with us.

An hour before sunset, we nearly got swept under Blackburn Point Bridge. Rowing hard, I was just able to hold position against the sudden current while Lance dropped the mast. Afterward, he agreed that it might have been smarter to get prepared a little farther away from the bridge. Then it got dark.

The rest of the night passed in a blur of cold, exhaustion, and stupidity, including a near miss at another bridge where the chart reported a vertical clearance of 26′. I barely made it to the halyard in time to drop the sail before we were swept beneath it, our 13′ mast almost scraping the girders. Once we were safely past, I shuffled through the pages I had ripped out of *Dozier's*

LANCE PAMPERIN

In tight quarters or when the wind failed, rowing became a necessity. Here, Tom Pamperin rows out of Flamingo into Florida Bay.

but couldn't figure out where I had gone wrong. The mini-charts were almost too small to read by daylight, never mind by our headlamp's dim red glow.

We had a long slog through the Venice canal, where we passed a few kayaks, then lost the wind, and finally rowed off the pages of *Dozier*'s and onto the new chart: Lemon Bay, just 12 miles from Cape Haze Marina and Checkpoint One. Suddenly I started laughing.

"What's up?" Lance asked.

"We're back at Lemon Bay," I said. I had spent the last few miles navigating by *Dozier*'s mini-chart of Lemon Bay, too tired to realize my mistake. Now here we were again. "How many times do you think we've got to sail through here?" I asked Lance. The "26′" bridge, I saw, had a vertical clearance of 14′.

Too tired to think, we had kept rowing all night, even when we could have been sailing. Navigating by the Lemon Bay chart (for real, this time), we missed Checkpoint One at the Cape Haze Marina by half a mile and had to backtrack. We arrived at the checkpoint an hour after sunrise to find that even two 7′ prams had beaten us there. Twenty-four hours to go 65 miles. At this rate, we'd never make it. Too cold to care, we staggered ashore for hot showers, coffee, and our official sign-in with the checkpoint volunteers. I think we both would have been happy to quit except that we had no way to get back to the car. We were in it now; easier to press on than to drop out.

DAYS 2–5 Checkpoints Two and Three

TOM PAMPERIN

***Above*—Preparations for cold were as important as preparations for heat, especially when sailing late into the night or in the very early morning.**

But that was the end of the mistakes, the bad luck, even the bad weather. We left Checkpoint One a couple of hours later on a northerly wind under sunny skies and higher temperatures. Despite our layers of long underwear, fleece, and foulweather gear, rowing had been the only way to stay warm through the night. Now it looked as though we might return to Wisconsin with at least the start of a tan. We broad-reached down Pine Island Sound at 6 knots until a sudden squall found us just off Sanibel Island, sending the boat on a screaming reach across the wavetops; the GPS hit 13 knots before we managed to drop the rig. We sailed into the lee of York Island at 3 knots under bare poles and found a tiny beach among the mangroves just as another WaterTriber was leaving. We set up the tent and slept for the first time in 35 hours.

The next day, Monday, we headed outside along the coast. It was dark by the time we reached Big Marco Pass, where we'd hoped to cut in. By now, Lance had figured out the GPS, so we had a waypoint to aim for, but as we headed inshore we could hear roaring breakers ahead. Lined up on the channel markers a half mile out, we were already surfing down some big rollers. It was too dark to see exactly *how* big—4′? 6′?—but the mouth of

Big Marco Pass suddenly seemed like a bad place to be. We later found out that at least two other WaterTribers ran into trouble here. A double kayak had capsized and a Hobie trimaran flipped and was wrecked on the nearby rocks. Lance swung us around, and we headed offshore instead, where we ran out of wind and spent the night rowing around Cape Romano. All night the stars rotated around the sky above us, spinning slowly in their endless circles as we traded shifts to keep warm.

We row-sailed up Indian Key Pass on Tuesday morning accompanied by a few dolphins, reaching Checkpoint Two at Chokoloskee by mid-afternoon. From there we headed down the Wilderness Waterway. The first stretch was a series of broad bays that made for pleasant sailing, but at Last Huston Bay we ran out of wind and daylight. Unable to row against the incoming tide, we tossed an anchor overboard and slept on the boat for a few hours, tucked in among the mangroves. When the tide turned in the early hour of Wednesday, we rowed down the Chatham River back to the Gulf, mistakenly thinking we'd never make the remaining checkpoints in time unless we gave up on the 'gator tooth.

Once we got outside, a few hours of reaching southward along the coast at 5 knots brought us to Shark River, the entrance to Whitewater Bay. Here we cut inside, heading back into the Everglades instead of rounding Cape Sable. We ran down the bay at 6 knots and arrived at Flamingo and the final checkpoint at dark, having come almost 50 miles—a good trade for the 'gator tooth we wouldn't be getting.

DAY 6 Key Largo

LANCE PAMPERIN

***Above*—The author at the helm on the final day of the race, sailing in fine weather and making Key Largo in time for dinner. *Left*—Florida Bay can be challenging in anything but ideal conditions, which prevailed in the bay this year.**

Thursday we woke before dawn, got the boat onto its rickety portage rig (a 2×4 and two cheap wheels), and rolled her across to the marina on the Florida Bay side. By sunrise, we were rowing out into the narrow, twisting channels and bright blue waters of Florida Bay. Stray outside the marked channels here, and even a boat that floats in 6″ of water will be aground in thick mud that can make escape almost impossible. But the passes were well marked, and our timing was perfect: low tide, early morning, northerly winds. We rowed through a brief calm at Crocodile Dragover, a channel so narrow that the tips of both oars were outside the markers, and sailed into Buttonwood Sound later that afternoon in shorts and T-shirts, coming out of the final pass and pointing straight for the finish line at Key Largo's Bay Cove Motel.

By five o'clock Thursday evening, Lance and I were eating conch fritters at Mrs. Mac's Kitchen, after a middle-of-the-pack-finish, and we went home with the traditional shark's tooth necklaces. In all, 62 boats finished and 25 did not. We had an easy year, though, or at least a fast one. In 2012, the fleet hit brutal headwinds, and only 17 of 60 boats made it to Key Largo. Gary Blankenship and John Wright (aka Karank) won the class for small monohull sailboats, earning the peculiar distinction of the slowest-ever winning time by arriving in Key Largo just after midnight on Friday morning. Just one other boat in their class made it. Chief is right—anything can happen, and in the long run, it will. Some years favor paddlers, some sailors, and some seem to favor no one at all.

Other than the lost chart, our boat and gear held up just fine. When I finally got to a shower and rinsed the salt and grime away, I found a pretty good tan underneath. Chuck Leinweber convinced Lance to stack his boat on top of his Walkabout for the drive back to Fort De Soto, saving us 18 hours of driving and the cost of a rental car. Then there were those breakfasts at Mrs. Mac's and Denny's Latin Café—all in all, a successful rookie year. I'll have to come back for my 'gator tooth, though. I'm pretty sure I can do it next time.

Tom Pamperin is a freelance writer who lives in northwestern Wisconsin. He spends his summers cruising small boats throughout Wisconsin, the North Channel, and along the Texas coast.

To learn more about the Everglades Challenge and WaterTribe's similar small-boat adventure races, visit www.watertribe.org. Pay attention to warnings and the required safety gear. The equipment list may seem like overkill to some, but when WaterTriber Joseph Frohock (aka Puma) holed his boat and had it sink beneath him offshore this year, he needed the knife tied to his PFD to cut himself free of the rigging, and rescuers relied on his PLB to find him and bring him safely home.

Wooden Boats of the Everglades Challenge

Although production fiberglass boats make up the bulk of the Everglades Challenge fleet, a fair number of wooden boats compete as well. Typically, they make up about 10 to 20 percent of all entries, Chief figures. Here are a few examples that stood out this year.

B&B YACHT DESIGN'S CORE SOUND SERIES

CORE SOUND 20
20′ LOA, 6′3″ beam, sail area 155 sq ft

CORE SOUND 17
17′ LOA, 5′10″ beam, sail area 119 sq ft

TOM PAMPERIN (BOTH)

***Above*—The modified Core Sound 20 DAWN PATROL, which has a high cuddy that the builders added for shelter, took first place overall and set a record finishing time for monohulls. *Right*—The Core Sound 17 built by Phil Garland placed second.**

Those intent on actually racing the Everglades Challenge should take a look at the Core Sound series designed by Graham Byrnes of Vandemere, North Carolina (see www.bandbyachtdesigns.com). Monohull sailboats have won the Everglades Challenge outright only six times, and three of those victories were achieved in Byrnes designs—twice with Byrnes himself at the helm. Various B&B designs have accumulated ten finishes in the overall top five, along with six of the seven fastest-finish times ever recorded by monohulls. This year, a Core Sound 20 and a Core Sound 17 took first and second places overall, beating the previous record time set by Byrnes in a Core Sound 17 in 2006.

Though fast, the Core Sound boats are relatively inexpensive and easy to build. The lengths are 15′, 17′, and 20′ overall, and all three use a sprit-boomed catketch rig with unstayed masts. The V-bottomed hulls are beamy enough to stand up to their sail area, planing at 10 knots or better when the wind picks up. Construction is stitch-and-glue plywood. All three use a technique Byrnes calls the "butterfly method," in which the bottom panels are wired in place first and then the sides are taped in place at the bow but left spread open like wings, after which a lone builder can easily walk each side panel around to the transom, wiring the hull together along the way. Phil Garland, who took second place with Dan Neri in a Core Sound 17 this year, was impressed with the process. "It all sort of happens in about two to three minutes," he said. "It's really pretty amazing."

Byrnes makes a precut hull panel kit for the Core Sound 17 to speed things up even more. Kits are also available, and soon plans will be too, for the Core Sound 20mk2, a new version updated with a small cabin, water ballast, a self-draining cockpit, increased freeboard, and a mainmast tabernacle.

Alan Stewart, who won this year's Everglades Challenge with his father, Paul, in their Core Sound 20 named DAWN PATROL, seems to agree with Byrnes's claim that despite their speed, the boats aren't all-out racers. "In our boat we kind of lay back and do nothing while the boat goes fast downwind," Stewart said. Not a bad way to win races.

TOM PAMPERIN

At 7′9″ LOA, the glued-lapstrake Eastport pram needed some modifications to be suitable for sailing a 300-nautical-mile race.

CHESAPEAKE LIGHT CRAFT'S EASTPORT PRAM

7′9″ LOA, 4′ beam, sail area 42 sq ft

John Harris of Chesapeake Light Craft in Annapolis, Maryland (see www.clcboats.com), is less surprised than you might think to find out that a modified version of his balance-lug-rigged 7′9″ Eastport Pram finished this year's Everglades Challenge. "The amount of fun and capability packed into less than 8′ is hard to overstate," Harris said. "It seems a bit ludicrous from ashore, but when you're out sailing that little boat, you start thinking, 'You know, with a few dry bags and some tie-downs I could go a long way.'"

Which is exactly what Marian Buszko did, arriving in Key Largo a week after setting out from Tampa in his CLC pram ROCKING BABY. As final preparations began for the Saturday morning awards ceremony, Buszko was tending to his tiny boat in front of a growing audience of paddlers and sailors. "How many times were you scared out there?" someone asked.

"All the time!" Buszko said, laughing. "But hey, I'm here. I'm happy." He grinned. "I'm very happy." Later, Buszko good-naturedly blamed his wife for his unorthodox choice of cruising boat. "She says, 'You have this boat. Use what you have,'" he explains. So he did—with a few modifications. Buszko decked over most of the boat, adding flotation, storage, and even a sleeping platform. He also had a carbon-fiber mast made to reduce weight aloft. "With no modifications, she is absolutely unsuitable for this event," Buszko warned me. Still, here he was in Key Largo.

"The Eastport Pram is a good example of how even tiny boats benefit from thoughtful design," Harris told me. "But I think the takeaway here is that (A) Marian is a skilled and resourceful boatman, and (B) any boat in this size class that's carefully outfitted can be a cruising machine."

TOM PAMPERIN

David Wicks, a nine-time Everglades Challenge veteran, built a triple kayak from Pygmy Boats with his daughter, who was 11 at the time.

PYGMY BOATS' OSPREY TRIPLE

20′ LOA, 30″ beam, 13.5″ depth

It was Friday evening when David Wicks and Dan Lockwood arrived at Key Largo, paddling Wicks's Osprey Triple kayak from Pygmy Boats of Port Townsend, Washington (see www.pygmyboats.com). A number of other sailors and paddlers had gathered to watch; another bystander told me it was the duo's 12th finish. Someone called out as they neared the beach: "Time to retire that boat, isn't it?" Another voice answered, "Time to retire those paddlers!" Everyone laughed.

Later, Wicks told me that he and Lockwood, who have paddled double kayaks together for 40 years, have done the Everglades Challenge only nine times, not twelve. But Wicks's Osprey Triple is one of the few regularly appearing boats without a single DNF, not even from the notoriously tough 2012 race.

"It's a great family boat, but it's also a dynamite expedition boat," Wicks said, noting the Osprey Triple's comfort, load-carrying capacity, and stability in heavy seas. "We went through the waves of Big Marco River with no trouble," he continued, "while this year two other double kayak entries crashed and burned." With two paddlers, the boat moves along easily at 4 mph. Surfing downwind with a sailing rig from Pacific Action Sails, Wicks and Lockwood have hit 13 mph.

The Osprey Triple is remarkably versatile. Three can paddle in synch, a single paddler can handle the boat from the center cockpit, or two can paddle at each end, leaving the center cockpit clear for a child, a dog, or heaps of gear. Like all Pygmy boats, construction is stitch-and-glue, and the boat is available as a full kit or plans only. Wicks assembled his kit with his 11-year-old daughter.

(For a two-part how-to-build article on the Osprey Triple, see WB Nos. 131 and 132. For Wicks's account of the building the boat with his daughter, see www.duckworksmagazine.com/07/gatherings/ec/index.htm.)

WELSFORD WALKABOUT (stretched)

18′ LOA, 5′ beam, sail area 100 sq ft

"Walkabout's really a good all-around boat," said Chuck Leinweber, founder of *Duckworks*. "It sails well, it rows well, and you can put a lot of stuff in it." I'm not sure there's a better definition of a sail-and-oar beach cruiser, which is exactly what New Zealand designer John Welsford intended (www.jwboatdesigns.co.nz or www.duckworks.com). At Welsford's suggestion, Leinweber scaled his hull up to 18′ to make room for his crew, Gary Blankenship, and increased the sail area to about 100 sq ft.

The rest is faithful to the plans: plenty of flotation, an offset centerboard that allows a generous sleeping area, simple unstayed masts, relatively low freeboard, and a cat-yawl rig that offers real advantages for cruising. "That mizzen," Welsford explained, "is big enough to hold her head-to-wind while the coffee brews, the chart is consulted, or a reef is tied into the main." Construction is well suited for patient amateurs, with a flat bottom and glued-lapstrake planking installed over stringers. The stringers define the shape and hold the planks fair, meaning the planks can be fitted in short lengths without scarfing.

To get around the mizzenmast, which is stepped in a centerline tube, the Walkabout's tiller, which is fitted with a quadrant, pivots on the tube itself. Steering lines run from the quadrant aft to a rudderhead yoke. "That was the thing I liked least about it, going in," Leinweber admitted. "But once we got it sorted out, there was never a problem." Even better, by adjusting the steering lines to keep the rudder amidships while the tiller is pushed to one side, a passenger can sit in the center of the stern seat, providing better balance for rowing.

Perhaps one good way to judge a cruising boat's performance is the level of drama that it evokes. There wasn't any this year; whether rowing at 3 mph or sailing at 6 or 7, the adventure race was more of a pleasure cruise. "It was pretty pleasant the whole way," Leinweber said.

TOM PAMPERIN

A handy yawl rig of modest proportions makes the Welsford Walkabout well suited to the course.

REDFISH KAYAKS' SPRING RUN

17′9″ LOA, 23⅞″ beam
(a 16′ version is also available)

At the finish line in Key Largo, an elegant strip-built sea kayak stood out from the crowd of plastic boats. It was a 17′9″ Spring Run from the Redfish Custom Wooden Kayak and Canoe Company of Port Townsend, Washington (see www.redfishkayak.com). The Spring Run was drawn by Redfish designer Joe Greenley, who also teaches wood-strip kayak workshops at the Northwest School of Wooden Boat Building.

First-time strip-builder John Algera completed his Spring Run from a Redfish kit in about 14 months. He was in no hurry to finish: "The building was as much a joy as the paddling," he said.

But Algera is happy with the boat's performance, too. "It tracks well and in medium weather doesn't even weathercock that much," he said. And for this year's conditions—strong but mostly favorable winds—a sailing rig by Flat Earth Kayak Sails proved especially useful. "In some of those 20-knot winds on Sarasota Bay and Oyster Bay, I struggled to keep her straight since I was steering with my paddle," Algera said, noting that the boat is designed without a skeg or rudder. "The fact that she did as well as she did is a testimony to the design."

The boat's quality also impressed Algera. "The first day, I was surfing through Sarasota Bay and the front hatch was under water more than it was out." The result? Not a drop of water inside. Other kit components—the ability to choose your own strips for contrasting color and designs, the custom one-piece seat in lightweight closed-cell foam, and pre-laminated coamings—add to the appeal. And better yet, Algera was able to contact Greenley directly with questions throughout the assembly. "That was worth a lot," he said. —*TP*

TOM PAMPERIN

A Redfish rudderless kayak can be a challenge to steer for long hours in a blow but has a "no-moving-parts" simplicity.

Hemingway's PILAR

TONY ARRUZA

LEICESTER HEMINGWAY COLLECTION/ MIDDLEBURY COLLEGE

For a film-double, details help to "get it right"

by Hilary Hemingway

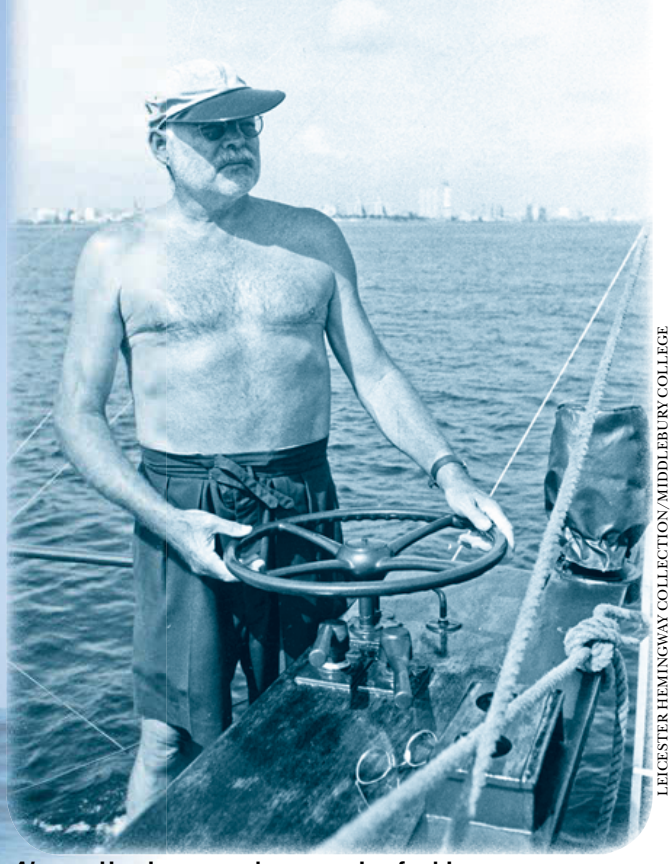
This is the story of two boats named PILAR: novelist Ernest Hemingway's original 38′ Wheeler Playmate of 1934, and a 34′ Playmate of 1933 that will serve as a credible film-double. Researching the original boat, and keeping in mind a Hemingway note about *The Old Man and the Sea*—"It's a great story if I can get it right"—linked the two boats together in such a way that the story of one cannot be told without the other.

PILAR is the crown jewel among artifacts preserved at the Finca Vigia Hemingway Museum on a hillside in Cuba. When he lived there, Hemingway used its four-story tower to check Gulf Stream conditions; if no whitecaps showed, he and his captain, Gregorio Fuentes, would head out for an afternoon of fishing. Today, PILAR rests under a canopy in a concrete cradle on a former tennis court, where she is viewed by thousands of Hemingway aficionados and sportfishing enthusiasts every year.

The film-double for PILAR was also built by the Wheeler Yacht Company of Brooklyn, New York (see sidebar, page 56. Launched as ELHANOR, she spent most of her life at Sodus Point, New York. After an 11-month, $250,000 makeover at Moores Marine in Beaufort, North Carolina, it's doubtful that Norman Vanderbilt, who owned her for 50 years, would recognize her. Transformed in November 2012, ELHANOR, now PILAR, will be used this summer during the filming of *Hemingway & Fuentes* in the Dominican Republic.

"PILAR is iconic," said Andy Garcia, the film's director. "She is the most recognized sportfishing boat in the world. So we went into this knowing her film double had to be highly detailed and authentic. The camera

***Above*—For an upcoming film about Ernest Hemingway's sportfishing days in Cuba, ELHANOR, a Wheeler Playmate of nearly the same vintage as the writer's PILAR of 1934 (inset), was reconfigured in exacting detail to capture the spirit of the famous boat. One detail that could not be changed in the 4′ shorter hull was the break in the sheer aft, which Hemingway had specified for PILAR.**



LEICESTER HEMINGWAY COLLECTION/MIDDLEBURY COLLEGE

TONY ARRUZA

***Above*—Hemingway, whose passion for big-game sportfishing played a leading role in advancing the sport in the early 1930s, became an early advocate of the flying bridge. He had one added to PILAR, complete with a Model T Ford steering wheel. *Right*—The film version of PILAR re-creates the appearance of the original steering and engine control linkages, along with details such as a powerful spotlight (visible in the middle of the photograph) operated from below.**

has to see her as PILAR, from the details in her close-ups to her silhouette in a wide shot." Garcia stars as Fuentes. Anthony Hopkins plays Hemingway and Annette Bening his fourth wife, Mary Welsh.

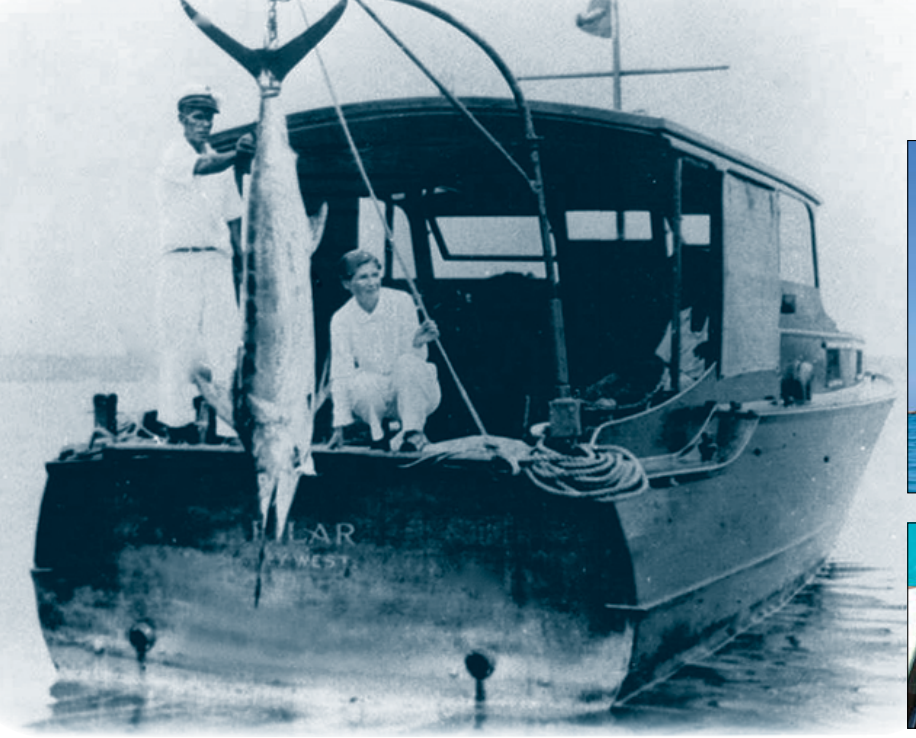
"Papa," as his friends knew him, bought PILAR in April 1934 for $7,455. He ordered a twin-cabin model because he wanted a large cockpit for fishing as well as accommodations for guests, though he himself preferred the open-air cockpit berths.

"I think Hemingway knew a lot about boats by the time he ordered his Wheeler," said Jim Moores, proprietor of Moores Marine (see WB No. 207). "His choice of a Wheeler shows it. Hemingway knew he needed a boat that could handle severe weather, which comes up fast in the Caribbean. I've been in the wooden boat restoration business for 35 years, and I've seen all kinds of yachts of that period, but when I look over at our Wheeler PILAR, what I admire most is her simplicity and elegance. It's pure genius."

Hemingway named PILAR after three strong women: The Spanish saint Our Lady of the Pilar in Zaragoza, Spain; the wife of Pablo in *For Whom the Bell Tolls*; and as a tribute to his second wife, Pauline, whom he had nicknamed Pilar. The boat stayed with Hemingway longer than Pauline—or any of his wives, for that matter. PILAR's fame began with Papa's magazine articles detailing the early days of big-game fishing, which he and other sportfishermen such as Mike Learner, Tommy Gifford, and Julio Sanchez pioneered in the 1930s. Their trial-and-error innovations, since incorporated into almost all sportfishermen, included billfishing outriggers, center-mounted fighting chairs, the flying bridge, and the broken sheer with a lowered transom.

My father, Les Hemingway, remembered his brother Ernest not as a bronzed giant fighting huge fish and telling tales in the roughest bars. "Papa was never like that," he recalled. "He learned by doing. He was both a good student, and an even better teacher." Hemingway grew up 2,000 miles from the ocean in Oak Park, Illinois. He was an avid freshwater angler, and after moving to Key West in 1928 he learned saltwater fishing from men who knew the Gulf Stream: Capt. Bra Saunders, a transplanted Bahamian; Charles Thompson, owner of a hardware store and a turtle cannery; and Josie Russell, a Key West rumrunner and owner of Sloppy Joe's Bar.

Russell and Saunders first took Papa to Cuba for marlin fishing in 1932. With their Cuban mate, Carlos Gutierrez, they boated 50 marlin in five weeks. Russell was no stranger to Cuban waters, having made hundreds of nighttime crossings in his 34′ ANITA for



TONY ARRUZA (BOTH)

***Above left*—To haul large fish aboard (as here with his second wife, Pauline, and Cuban mate Carlos Gutierrez) Hemingway had a davit installed, which he later removed in favor of a block-and-tackle rigged to the cabin roof. *Upper right*—Hemingway specified an almost full-width roller off the transom, a device he learned about from a rumrunning friend. *Lower right*—In conjunction with a low transom, the roller simplified the task of bringing aboard the enormous marlin Hemingway was after.**

ABOVE LEFT: LEICESTER HEMINGWAY COLLECTION/MIDDLEBURY COLLEGE

rum during Prohibition. Russell always thought black topsides would have been better for his purposes; the idea appealed to Hemingway despite its impracticality in the Caribbean heat, so he adopted it for PILAR. He also found that the modifications Russell had made for rumrunning—a lowered transom with a full-width roller that made cargo transfers easy—practical for fishing.

Hemingway specified a transom 12″ lower than usual, with a break in the sheerline at the cockpit's forward end. He had seen firsthand that a lower transom improved the cockpit for fishing and in conjunction with the roller made hauling a huge marlin aboard much easier. Lowering the transom on the smaller and narrower 34-footer that would be used as the film-double was impractical; instead, boatbuilder Nate Smith shaped the coamings to suggest a break in the sheer. "It produces PILAR's silhouette, but without lowering the transom," Garcia said.

Hemingway liked the transom roller enough to write it into *To Have and Have Not*, where its usefulness on Harry Morgan's boat extended to retrieving rum casks, boating marlin, and smoothly dumping a dead smuggler overboard. The original PILAR's roller, 8′ long and 4″ in diameter, was most likely recycled from a turtle cannery. Briefly in 1936, Hemingway added a small davit for hauling large fish aboard, but he removed it in favor of a simple block-and-tackle secured to the cabin roof. The new PILAR is fitted with an identical transom roller and block-and-tackle.

In Cuba in 1938, Hemingway hired Gregorio Fuentes as PILAR's captain, a position Fuentes held for more than two decades. Their adventures became a creative inkwell for adrenalin-pumping action in Papa's various novels and magazine articles. The forthcoming film, *Hemingway & Fuentes,* covers those years, with PILAR in a supporting role. During World War II, they patrolled Cuban waters watching for Nazi U-boats. In the 1950s, PILAR became something else to Papa—his sanctuary from intrusive fans, literary critics, and would-be biographers. If PILAR was Hemingway's sanctuary, then Fuentes was its priest, who made sure Papa's confessions never left the boat.

Since much of the film was to be set aboard PILAR, finding just the right boat was essential. Using the original was out of the question, of course. "I've always thought of PILAR as a major character in our film," said Garcia, who oversaw the film PILAR's transformation. Building a new cold-molded replica was briefly considered, but rejected. "We wanted a boat that had already lived, that had a history," producer Edward Walson said. "Like the weathered face of Santiago [in *The Old Man and the Sea*], we wanted a PILAR that had life experience. When you take hold of her helm, you can feel the history, it's tangible."

The search for a suitable boat intensified in 2008, when Garcia and I finished the screenplay. Wendy Schnur at Mystic Seaport pointed us to a register listing 50 Wheelers, but only six were from the 1930s and only two were 38′ Playmates. One had been "PILAR-modified" earlier and was on exhibit in the Bass Pro Shops headquarters in Missouri, and might be available for studio work but not for sea. The other was unavailable. (Another "PILAR" inside the Islamorada Bass Pro Shop is actually not a Wheeler but a 40′ Weeks.) With the film production clock ticking, Garcia reached out to Wes Wheeler and Pat Rybovich, grandchildren of famed boatbuilding families. Rybovich chased down VALHALLA, a 34′ Playmate, but the boat had just been through a six-year reconstruction and her owners were

COURTESY MOORES MARINE (BOTH)

TONY ARRUZA

***Above*—Purchased in New York, ELHANOR was taken by trailer to Moores Marine in Beaufort, North Carolina. She had been in the same family for 50 years. *Above right*—For her movie role, the boat needed replanking and reframing to make her ready for sea but also an extensive refit to make her as close as possible to PILAR. *Right*—Many details, such as her original Wheeler builder's plate, were almost identical to those found on PILAR.**

not inclined to part with her. Wheeler found more prospects. "I felt like a man on a mission," he said. "I spoke with family members, friends, yacht clubs, and antique boat clubs and looked at websites and eBay." One boat had been stored in an Ohio barn for years. AMIGO, a 38′ Playmate from Georgia, was in the middle of a major reconstruction at American Yacht Restoration in Palm Beach. Then he found ELHANOR, a 34′ Playmate that had been owned by a single family for 50 years in upstate New York. The owner was willing to sell.

"When we bought ELHANOR, she was in operational condition," Garcia said. "She had most of her authentic Wheeler parts, and the purchase price was reasonable." On the recommendation of Henry Pickersgill, who had surveyed the boat, they had her trucked to Moores in Beaufort for her transformation. Nate Smith, project manager at Moores, oversaw a team charged with making her not only seaworthy but also making her PILAR. They replaced 17 hull planks, replaced or repaired 30 frames, and rebuilt the transom. Below, they rebuilt the settee, the galley, and the pilothouse. "We put in new mahogany countertops, new plumbing and toilet, a new electrical system, a hidden air-conditioning unit, and a new galley refrigerator," Smith said.

Wheeler had a chance to take his father, Wesley Wheeler, Sr., 78, to the Moores yard to see the transformation. "My dad had tears in his eyes walking though the boat," he said. "Dad shared with Nate Smith and his carpenters how his father had designed both the 34′ and 38′ Playmates and had personally sold Ernest Hemingway the PILAR. I have been amazed at the detail both Andy and Ed went to in order for the film's PILAR to look just right."

New systems are hidden behind authentic woodwork, as are the latest communications and navigation equipment. Moores also put in a new Onan 6.5 MDKUB generator, tiny alongside the 305-hp SB 5.9-liter Cummins diesel that's in the center of the engineroom and works through a 2:1 reduction gear. Aft of the engine to port and starboard are twin 80-gallon fuel tanks. Hemingway had PILAR

TONY ARRUZA (ALL)

As refurbished, the movie PILAR has a full complement of modern systems, including electronics (far left) and navigation (right) but not going so far as to include a hard-to-hide fishfinder. All modern additions were cleverly hidden behind period-correct woodwork to avoid any appearance of anachronism.

The Wheeler Yacht Company, which was founded in 1910 and continued in business until 1965, specialized in finely crafted motoryachts. Known for relatively deep-V hulls and high freeboard that made them seaworthy and safe at sea, the Wheeler Playmates sold by the hundreds during the 1930s.

TONY ARRUZA

outfitted with four 75-gallon gasoline tanks feeding the centerline 75-hp Chrysler Crown main engine plus an offset 40-hp Lycoming used for trolling. Despite their different fuel capacities, the film version and the original PILAR have roughly the same range: 500 miles at 8 knots. "I ran her off Key Biscayne at Christmas," Garcia said of the new boat. "We had a decent chop but still made 16 knots easy. Her sweet spot I felt was at 12 to 14 knots cruising." Wheeler reported that in sea trials she reached 19 knots. "As I understand it, Ernest preferred to run PILAR at 8 to 10 knots. With displacement hulls, once you go over the design speed you drag your wake with you, and it makes for a wet boat."

Aboard the new PILAR, what catches the eye—and the camera lens—is her woodwork. From bow to stern, she was sanded, stained, and varnished. Her brightwork gleams. She's been fitted with new canvas matching the original colors. Her black topsides shine. The one original PILAR color that was rejected was her green deck paint, which simply didn't test well on film.

What set the original PILAR apart from any other Wheeler Playmate was her primitive flying bridge. The

A Long History—and a New Wheeler

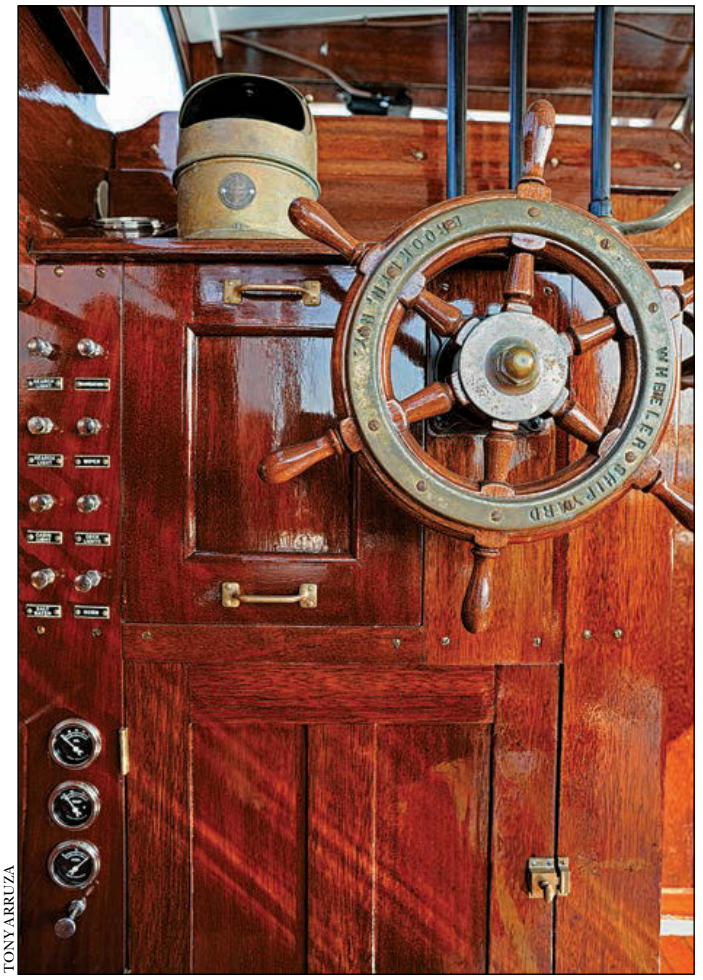
by Wes Wheeler

My great-grandfather, Howard E. Wheeler, founded a small boat-repair company in Brooklyn, New York, in 1910. But the Wheeler Yacht Company grew quickly, and soon turned to yacht construction. Only six years after its founding, as the United States joined the Allies during World War I, the yard secured an order to produce 110′ submarine chasers for the U.S. Navy. Pleasure boats, however, remained the core of the business, and with the Armistice the company returned to building yachts, with a specialty in powerboats.

The company established a reputation for building custom motoryachts of the very highest quality, using only the finest materials of the day: oak, teak, mahogany, cedar, bronze, and brass. Among these yachts was the Wheeler Playmate line, which my grandfather, Wesley L. Wheeler, designed. He gave the Playmate, like many of his hulls, a "semi-V" bottom to provide a clean entry with minimal roll, coupled with ample freeboard for safety in the open sea. Hundreds of boats like these were built in the 1930s for a discriminating clientele that demanded the finest money could buy. It was Wheeler's reputation for quality and seaworthiness that led Ernest Hemingway to the company. During his 1933 safari to Africa, he took with him a 1933–34 Wheeler catalog, from which he placed his order for his Wheeler 38′ Playmate, built as hull No. 576 and named PILAR.

All five of Howard Wheeler's sons—including my grandfather—worked for the company. My grandfather was a graduate of the Pratt Institute's naval architecture program and became the lead designer for the company. My dad, Wesley D. Wheeler, grew up in this environment, worked in the yard, and became a naval architect himself.

When the Second World War came, the company returned to war production on a massive scale, building 230 vessels, including 83′ cutters for the U.S. Coast Guard and 165′ rescue tugs and 136′ YMS minesweepers for the U.S. Army. The cutters became famous as the so-called "matchbox fleet," which secured its place in history by rescuing hundreds of soldiers during the Normandy invasion. By the end of the war, Wheeler



TONY ARRUZA

The originality of details in ELHANOR, including her wheel, compass binnacle, switches, and gauges, gave the boat a patina of authenticity that the film producers say they would have found difficult to reproduce in anything but another Playmate of PILAR's vintage.

idea of using the cabin roof as a vantage point for spotting marlin can be seen in photos of PILAR in 1935–36 in Bimini. Papa at first had locals sit on the roof to watch for strikes, but it didn't take him long to recognize the value of having an auxiliary helm on the higher vantage point. In late 1937, he asked Bra Saunders to build what he called a flying bridge. PILAR's flying bridge helm is to port so that it is aligned directly over the cockpit helm. The U-shaped railing, roughly 10′ long and 4′ wide, is made of 2″ galvanized pipe. At the forward end, a 4′-wide mahogany console is fitted with a steering wheel scavenged from a Ford Model T. The steering mechanism above was mechanically linked to the wheel below. Controls for both engines were led through ½″ galvanized pipes from the console down through the cabin roof and connected into the engine controls. A drink-holder shelf is within reach of the wheel.

The film version stays as close to the original as possible. For the film-double boat, "We had to fabricate our bridge using 1″ inside-diameter galvanized pipe," Smith said. "And then, after a lot of hunting in salvage yards and antique marine supply stores, we found the same ½-mile Ray Bridge spotlight and the Model T wheel." Although the steering system is hydraulic and both helm stations are functional, they work independently

had been awarded eight Navy "E" awards for excellence in support of the war effort. At its peak, the shipyard employed more than 6,000 people in the New York area and even had its own band and radio station. Including military and civilian craft, the company built more than 4,000 hulls.

With this history in mind, the Wheeler family has decided to make a new entry into custom boatbuilding.

I was happy to help Andy Garcia find ELHANOR, which has been transformed to PILAR for his film. I enjoyed following the progress by Nate Smith's team at Moores Marine, but when I saw her in the water, beautifully restored and steaming gracefully through the chop at 19 knots during sea trials, it was breathtaking. I was overcome with a sense of family pride. That day, I asked my father to help design a "new" 38′ Wheeler. We will call this the "Wheeler PILAR Model," because it uses my grandfather's original Wheeler Playmate lines and incorporates the exact dimensions and modifications of the original PILAR, which Hilary Hemingway and I were able to confirm by direct observation in Cuba. This new boat will be built of wood, perhaps at Moores Marine, and subsequent boats built to the design may be either cold-molded wood or fiberglass. My boat will have more power than the original PILAR, with twin screws driven

Inspired by replicating PILAR for film, the Wheeler Yacht Company founder's great-grandson intends to initiate a new Wheeler PILAR model for production.

COURTESY OF WES WHEELER

by 250-hp Yanmar engines. And, of course, she'll have modern equipment. But there is no need to change much else. My grandfather had it right 80 years ago, and it was good enough for Papa. This new boat is a tribute to my grandfather and all who love legacies.

Wes Wheeler is the great-grandson of Howard E. Wheeler, founder of Wheeler Yacht Company. He is an operations executive, currently CEO of Marken LLP, a global logistics company serving the pharmaceutical industry. He holds a BS in mechanical engineering and an MBA. He lives in North Carolina with his wife, Marianne. Inquiries about the Wheeler PILAR model should be directed to him at 1020 Pinehurst Dr., Chapel Hill, NC 27517; 919–606–5575; wes@wpwheeler.com.

TONY ARRUZA (BOTH)

***Above*—True to the spirit of the original PILAR, the flying bridge has a steering wheel recycled from a Ford Model T. *Right*—A fighting chair dating from before World War II and found in an antique store closely matched the one Hemingway had installed on PILAR in the early years after the war.**

of one another. "We wanted this boat not just to look like but perform like PILAR," Garcia said.

Most sportfishermen today are equipped with fishfinders, but to be faithful to the original the new PILAR will not have one. "We will find our fish the old-fashioned way, just like Papa," Garcia laughed. "I think the hardest part of this whole film will be finding the fish," Walson said. Papa faced the same dilemma during filming of *The Old Man and The Sea*: When the production company was unable to catch a 1,000-lb marlin off Cuba, Hemingway had them fish off Peru, where landing a 1,200-lb fish provided dramatic footage—though most of it was out of focus due to heavy seas.

To land a big fish, the new PILAR has the perfect fighting chair, just as Hemingway's boat did. He modified the cockpit after World War II, following Cuban sportfisherman and civil engineer Julio Sanchez's innovation of an amidships swivel-mounted chair, based on a barber's chair. An adjustable footrest and an angled back allowed the fisherman to pump the rod effectively when reeling in. Hemingway liked everything about it, but had a problem: PILAR had a 2,500-lb capacity icebox built into the cockpit amidships, with seats to port and starboard. He modified one of the existing seats, with a foot brace devised by Fuentes, mounted it on a taller pedestal amidships, and installed a separate icebox farther forward, to starboard, to replace the abandoned one.

For the film, finding the right fighting chair was a concern. "We looked at all the historical photos of PILAR's fighting chair, and decided we would probably end up custom-building it," Garcia said. But the Moores crew found a pre-WWII fighting chair nearly identical to PILAR's at a New England marine antique store.

Hemingway also added 15′ bamboo outriggers to PILAR, with their heels lashed near the foot of the mast. Later, he replaced them with box-frame telescoping outriggers, believed to be an early design by Tommy Giffords, mounted on the side decks on each side of the wheelhouse. The later outriggers were close to 25′ long, with a center pole that extended to 45′. Hemingway rigged them to be raised and lowered from the flying bridge. The film PILAR will match the later outriggers in design but will be made of bamboo.

"This boat is more than just a working prop," Walson said. "When you step on board, even if you are not an actor, you feel transported back in time. In films, some actors need to put on a costume to get into character, but when you step aboard PILAR, it really feels like you're in a different time and place. It's as if you've just stepped into a Hemingway novel. You could be a risk-taking, Tommie-gun-toting U-boat hunter, or a barrel-chested fisherman hooked up to the world's biggest marlin. It's a tangible magic aboard. It's where adventure happens."

Hilary Hemingway, Ernest Hemingway's niece, has worked as a writer of books, documentaries, television news, and feature films since 1984. Her background for this article comes from her love of boating, her book Hemingway in Cuba, *her PBS documentary* Literary Explorer: Hemingway's Cuba, *and her latest screenplay,* Hemingway & Fuentes, *co-written with Andy Garcia.*

Wes Wheeler, author of the sidebar on the Wheeler Yacht Company, also contributed to this article.

PILAR's Life at the Finca

"Remember to get the weather in your damn book—weather is very important." —*Ernest Hemingway*

HILARY HEMINGWAY

PILAR today rests under cover and well supported in a former tennis court at the Finca Vigia, which is the name Hemingway gave his home in Cuba. The house and grounds are now a museum devoted to the writer's life in that country, where he was much admired.

Weather continues to be important in PILAR's life at Finca Vigia. A month after Hemingway's death in 1961, his wife, Mary, returned to Cuba to read through Papa's will. Following his wishes, she formally handed over the Finca "for the welfare of the Cuban People." The home would become a museum. Another provision dealt with PILAR's future: "I have given to Gregorio Fuentes, of Pasuela Street 209, Cojimar, Ernest's yacht, PILAR, making known to Gregorio that he is free to dispose of the yacht as he sees fit," Mary reported.

Fuentes may have already felt a proprietary interest in PILAR, because for the previous 23 years he had worked, fished, cleaned, and cared for the boat as if it were his own. The only change was that now the humble fisherman became financially responsible for PILAR's fuel, maintenance, and repairs.

Strict fuel rationing that had been in place in Cuba since 1960 limited his range. Fuentes by all accounts kept PILAR anchored in Cojimar Bay. Two hurricanes in the 1960s may have damaged the flying bridge and transom; both had been rebuilt before Fuentes donated PILAR to the Finca.

In 1980s interviews, Fuentes described how he rode out hurricanes aboard PILAR at the mouth of the marshy river that feeds into Cojimar Bay. He would set two anchors off the bow, and rig as many heavy lines as possible to port, starboard, and astern, made off to nearby pine trees, pilings, even mangrove roots, until PILAR looked more like a black spider in a web than a boat. At some point, with storm damage beyond his financial ability to repair, Fuentes decided to give PILAR to the Finca. (There are conflicting dates, in 1963 and 1973, for the boat's actual arrival, which may have to do with the translation of "arrival," and "return.") In return for PILAR, Fuentes was given Mary's 20′ skiff, TIN KID, which he renamed GOMEZ.

After PILAR's repairs were completed, she was trucked to the Finca Vigia Museum and placed in a wooden cradle near the front gate, surrounded by mango trees. "PILAR was kept in running condition until 1979," said Ada Rosa Alfonso, the Finca Vigia Museum director. "And at least once [1977], PILAR was taken from the Finca to a shipyard and made ready for sea again." She was to have been used in an MGM film about Hemingway based on Mary's biography, *How It Was*. But after the project stalled, PILAR was returned to her cradle at the Finca.

In 1979, two monster hurricanes, David and Frederic, swept western Cuba with rain and high winds. The Finca's lush green trees were stripped bare. Hard immature mangoes turned into a barrage of natural cannon fire. Photos of PILAR after the storms show devastation consistent with high wind and flying debris: A plank peeled back to expose frames and fittings. Fist-sized holes splintered her transom timbers. Her cockpit canvas, once neatly rolled, hangs in shreds, and the proud flying bridge is left in a twisted heap of galvanized pipes on the aft deck. Inside the cabin are puddles of rainwater and clumps of debris.

If she were a yacht in ordinary use, PILAR would have been written off as a total loss. But the Cubans would not allow PILAR such a death; she was quickly taken to Chullima Shipyard for what they now refer to as the 1983 Restoration, which began in 1979. Fernando Blanco was the project manager, with Gregorio Fuentes as an adviser from start to finish. Given PILAR's age and historical value, she was rebuilt for a life on land, which

meant using heavier and stronger woods. The Cuban shipwrights spent five years meticulously rebuilding PILAR, reframing where necessary from the inside in order to preserve her original shape. They worked to preserve as much original material as possible, as is common in classic boat and ship restorations in museums throughout the world.

Wes Wheeler and I had a chance to see PILAR when we traveled to Cuba in March 2012. "I had seen plenty of photographs of PILAR in Cuba," he wrote, "but it was different when I caught a glimpse of her as I walked down the pathway from the house.

"I was overwhelmed with a sense of pride and family history. Then it hit me: Hilary and I were going to board PILAR, an honor few people are afforded, and for two hours we were allowed to look, study, and measure everything to see how years of restorations might have changed PILAR's dimensions compared to my grandfather's original design. But PILAR's measurements match perfectly, with one exception—the cockpit roof was 2″ shorter, 73″ instead of 75″. We would later see that in the 1983 restoration, the Cubans had rebuilt the cockpit roof, which explains this minor discrepancy.

"I had read that PILAR was missing her small, square builder's identification plate with No. 576. In the restoration photos, we saw where it had been. It was removed for safekeeping, just as Moores Marine had done for ELHANOR during her yearlong remodel. The plate may be lost or just misplaced within the Finca. I checked for other signs of Wheeler authenticity by inspecting the windows, doors, galley, and the binnacle's throttle mechanism and steering gear. They all were authentic Wheeler. I put my hands on the wheel and ran my finger over the engraved letters that read Wheeler Shipyard Company. The reality hit: This was the helm Papa himself had wrestled. I then reached down and opened the engine hatch. The museum's curator gave me a shocked look, but I couldn't stop myself. I saw the original Chrysler 75-hp still there, intact. So were the four 75-gallon fuel tanks, the steering gear, and two heavy old batteries. Aft of the Chrysler was a strange wooden box. It was braced with gussets fastened to the frames and stringers, so clearly it held something heavy, but neither Hilary nor I knew what it was. We wouldn't know until we saw photos of the cockpit with the hatch blown off that this was for the famous 2,500-lb icebox Hemingway had originally ordered."

As far as we could see, only one thing was missing from the engineroom: the auxiliary motor. We asked Ada Rosa what had happened to PILAR's second engine. She shook her head and said, "This is how PILAR came to us." Photos taken when PILAR arrived at the museum

show, clear as could be, that at that time she had only one propeller shaft, on the centerline. Perhaps Fuentes used the trolling motor to power his 20′ skiff—no one knows for certain. I would find it honorable if he did so, because in that way some small part of PILAR would have continued fishing, and Papa would have wanted that for his Cuban brother.

"Because of the missing motor, people have said we were trying to hide something," Ada Rosa said. "If we were, would I show you these photos? I am doing this because I hope we will work together in the future. The restoration of PILAR must continue, but there are things that cannot be found inside Cuba," and are unavailable as imports because of the longstanding U.S. trade embargo. A 1934 Lycoming 40-hp engine tops a list that also includes a prewar flying-bridge spotlight, two kedge anchors, a three-burner alcohol stove, and blue marble vinyl flooring for the saloon. The Finca museum officials, deeply concerned with authenticity, hope to find replacements sometime in the future, in a post-embargo lifetime.

After the 1983 restoration, PILAR was moved to a new location on Papa's tennis court, where she still resides. A dock was built around her to simulate a marina setting for visitors. Between 2002 and 2006, another round of restoration was completed, this time without PILAR ever leaving the Finca. A great deal of research and preservation work was done to find the right historical paint colors, and repairs were made to wood damaged by termites. Cuba's own Marlin Shipyard did the work, led by marine engineer Rene Guerra with research and recommendations by Dana Hewson of Mystic Seaport.

Back in the United States, we compared notes and photos with Andrew Miller and Nate Smith at Moores Marine. They could identify where wood had been replaced, but they could see that the keel and part of the house were original. The frames looked new and spaced farther apart than the originals. The hull planking was new, using Cuban mahogany instead of white cedar. The engine and the interior looked original, along with the transom roller, the wheel, and the binnacle.

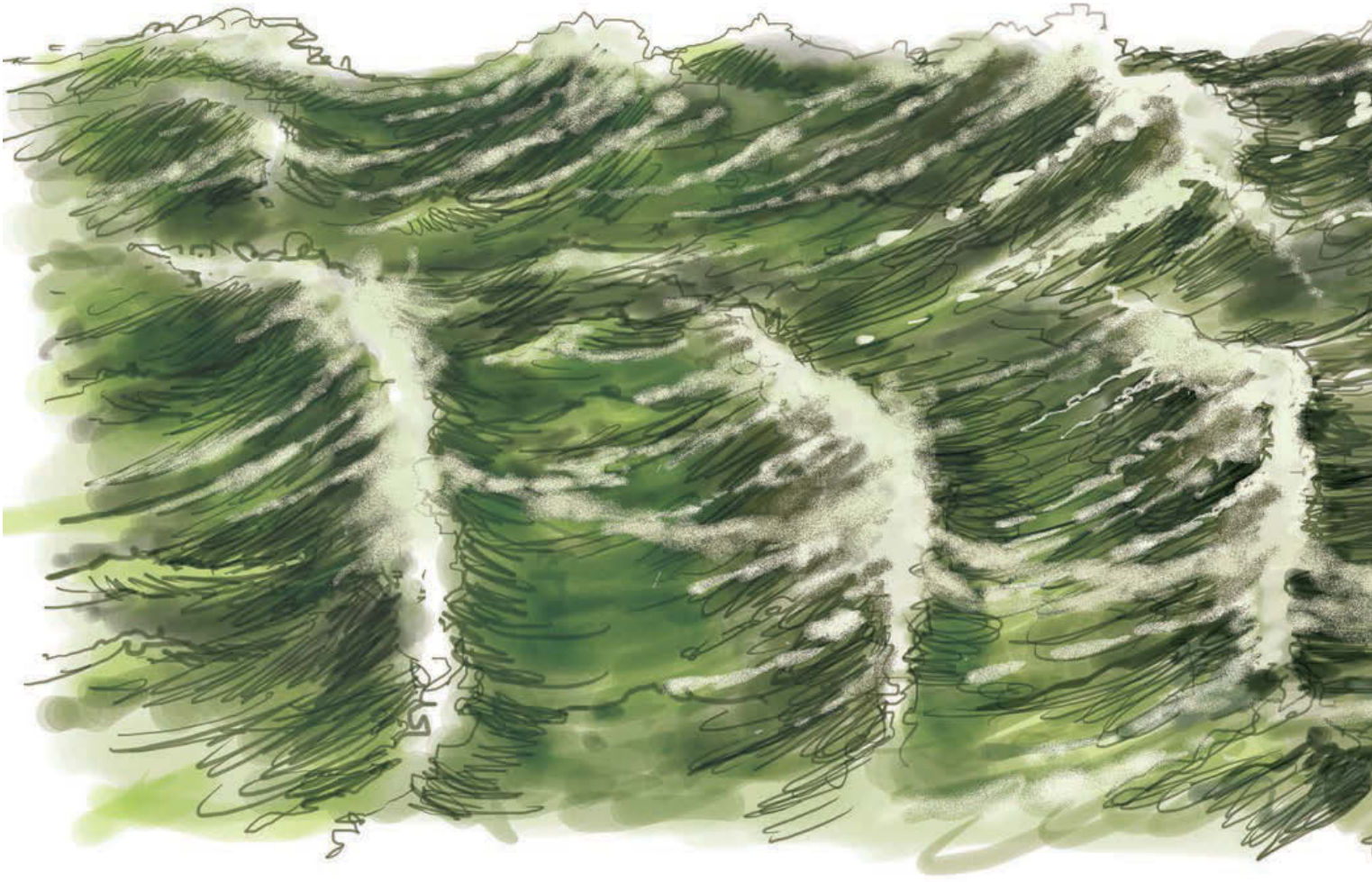
In the world of Antique & Classic Boat Society judging, a "preserved boat" is one with at least 60 percent of the original deck and topside planking. PILAR would be judged as a "restored boat"—but she would be in good company, since the USS CONSTITUTION is also considered a "restored boat" and no one considers Old Ironsides a replica.

Wes pushed Nate for a definition. "So technically, she still is PILAR?"

"Yes," he answered. "Her backbone and soul are PILAR." —*HH*

Lessons of the BOUNTY

Drawing experience from tragedy



Picture this: The ship was old, very old. Although she was tired and undercapitalized, she had recently been through an extensive shipyard visit, and a number of issues had been addressed. Arguably, she was in better shape now than she had been in a long time. Still, there was the possibility of issues emerging—issues that can always show up after a shipyard visit. There could be pump-clogging sawdust and shavings in the bilges. There was the possibility that something didn't get put back together correctly, or something didn't get tightened properly. This is always the case after a shipyard stay.

She got underway in a bit of a hurry, and she was short-handed. The average experience level was low: The crew consisted of a few with some experience and a few with little or no experience.

The long-range weather forecast was poor, even terrible. But the immediate forecast was for the wind to be favorable, and it was hoped that she could make a lot of miles early on, and then stay ahead or out of reach of the worst of the storm. Even if she did encounter the severe weather, the captain was confident that he and the vessel had been in worse conditions, and felt comfortable that they both could take it.

The second mate was a recent maritime academy graduate with some experience under sail and some in commercial vessels. He was comfortable at sea, but had very little experience in square rig. He was fairly new to the ship, so didn't feel inclined to question the decisions being made by the captain. He knew the weather was going to be bad, and somewhere inside he was questioning the decision to sail, but he wasn't about to doubt the person in charge.

The ship sailed, and it wasn't long before the weather deteriorated. A sail or two blew out and was wrestled in and secured. The bilgewater level began to

by G. Anderson Chase
Illustrations by Jan Adkins

rise as the ship began to work hard in the heavy seas, and the pumps were working equally hard to keep up. At some point the electric pumps failed, and it was uncertain whether or not the backup pump was keeping up. Things gradually were going downhill, and the crew was getting tired. They were also getting wet as the bilgewater began slopping up into their bunks from inside the ceiling planking. The decks leaked as they always did, and in spite of the crew having lined their bunks with plastic, most of the their gear was soaked, making meaningful rest even more difficult.

Then a crew member got injured, seemingly significantly. Now not only was one crew member down, but another had to attend to him. Resources were draining away fast.

The name of the ship was the REGINA MARIS. The year was 1981. And I was the second mate. We made it to Bermuda, but not a moment too soon.

I kept a journal on the trip I just described, and reading it now is just as eerie to me as my account above likely is to anyone who has followed the BOUNTY tragedy. While following the U.S. Coast Guard hearings on the sinking of the BOUNTY, I was haunted by déjà vu. During every hour of testimony I wondered, "Why didn't they speak up?," and "That sounds so familiar." Right up to the moment that BOUNTY's captain decided it was time to prepare to abandon ship, I can say, "I've been there."

Yet we didn't get to that point, and as a result I learned little. There was no traumatic stress, there was no press, there was no hearing, there was no public outcry, and there was no analysis. I always thought I had gained experience. Nietzsche said, "What doesn't kill you makes you stronger." That may be so, but we have extrapolated that to mean that such experience also makes you smarter.

Not necessarily. My experience on REGINA didn't make me much smarter, but it did make me bolder. The next time the forecast was bad I could say, "I've seen worse."

I knew two of BOUNTY's crew, and I knew her captain, Robin Walbridge. The two crew had been students of mine, and Robin was as kind and earnest a teacher as I have ever met. This tragedy hit me hard, and like a lot of people, I needed to find out what went wrong. I teach professional sailing at Maine Maritime Academy in Castine, Maine, and I needed to know what to tell my students about this accident. I wanted to extract the experience from it and pass it along.

On October 25, 2012, with Hurricane Sandy northbound over the Bahamas and already being dubbed either the "Superstorm" or the "Frankenstorm" by the national media, the tall ship HMS BOUNTY put to sea from New London, Connecticut, and headed south. The 50-year-old wooden ship, built as a movie prop, sailed almost directly into the storm and sank with the loss of two lives: the captain, Robin Walbridge; and one deckhand, Claudene Christian.

BOUNTY was sailing not as a U.S. Coast Guard–inspected Sailing School Vessel, but as an uninspected Dockside Attractions Vessel. As such, paying visitors were allowed aboard at the dock, but none were allowed to go to sea in her. Her voyage crew had to be composed of paid professionals and volunteers. In this case there were some of each, but only a few had significant offshore experience in this type of vessel.

Experience

Experience in a vacuum doesn't make us smarter. Experience has to be processed. It has to be considered with full disclosure. Perhaps writing in my journal accomplished some of that for me, because over the years I have gone back and reread that journal and appreciated how close we came. But that was nothing like what a serious debriefing might have accomplished. Whatever thoughts I may have had never got compared to and complemented by the thoughts that others onboard may have had. We all could have learned a lot from that trip, but I think we just got bolder.

Much of the evidence I heard in the BOUNTY hearings tells me that Capt. Walbridge had gotten bolder. On the last day of testimony, the chief mate described

a previous trip south in November when they sailed into the convergence of two northeasters and encountered winds and seas that were worse than what they saw in Hurricane Sandy. They suffered enough mechanical and structural failures in that storm to put them in about the same position I was in aboard the REGINA MARIS.

The mate went on to say that when he did, in fact, question the captain's plan to sail toward Sandy, the captain replied that he had seen worse than what was forecast, and it would be okay. I guess he had learned what I had learned from my "experience." We can take it. We're stronger now than we ever have been.

Word of BOUNTY's departure from New London spread quickly on the Internet, and observers tracking the ship's progress on this magazine's online Forum were shocked, even scared, by what was happening. Even before the distress call was made, 50 posts chastised Capt. Walbridge for his decision to put to sea and worried that there might be a tragic outcome; nearly 800 additional posts discussed the aftermath of the sinking.

Bridge Resource Management

In the old days the captain held all his cards close, and information about the coming voyage was given out on a need-to-know basis. The mates and the crew obeyed unquestioningly, and if necessary they would be expected to put their lives on the line for the safety of the ship.

But these aren't the old days. Now there's a new model called Bridge Resource Management (BRM, also known as Bridge Team Management). Today the captain is taught that his or her crew has useful information and experience of their own to contribute to the planning and decision-making process. Now, crews are expected to do what is required of them to the extent that it doesn't put them at significant risk of injury.

BRM is required to be studied by all who wish to be internationally licensed seamen, because it has been recognized that several heads are much better than one. The crew (or typically the officers) are expected to have done a share of the work to prepare for the passage, including reading relevant Coast Pilots and Sailing Directions, laying out courses, calculating tides and currents, and checking both the short- and long-range weather forecasts. (The specific tasks are delegated by the captain.) When done properly, this Bridge Team can amass much more useful information than any captain ever did alone. The decisions are then made by the captain, but with a great deal more confidence.

So we train our new ships' officers to be a contributing part of a team. But do we then hold them responsible for the decisions of the captain? Is the captain now just the president of a democracy? That can't be. The officers must be allowed, and encouraged, to contribute, and they should be allowed and encouraged to express their views, but in the end it must still be the captain's responsibility to make the decision, and he or she has the right to expect officers to support that decision…

…until those officers (and possibly the crew) feel that there is an inherently unsafe situation. It is a catch-22. You must contribute to the decision. You must expect the captain to make the decision. You must support the decision. But then, if you think that decision is dangerous, you must do something. And if doing something means refusing to sail, that could be defined as mutiny. It's a difficult spot to be put in. How do we train people to walk that line?

It requires a culture of professionalism and mutual respect, and that is much harder to teach than Navigation and Rules of the Road. An officer providing advice to a captain must have some tools to work with. One of those tools is referred to in a BRM course as a "shared mental model." You all should be thinking along the same lines, aware of the same plan, sharing the same goals and strategies for reaching those goals. Then, when reality is veering from the plan, you are empowered and expected to speak up.

On BOUNTY, the goal was a voyage to St. Petersburg, Florida. What was missing was a shared mental model of how best to achieve that goal. The second mate had laid out a voyage plan, but that plan had long since been abandoned. The chief mate's strategy was to avoid the storm, apparently by staying put. The third mate seemed not to be part of the plan. The captain had a strategy that involved toughing it out and sailing near, or even through, the storm. As a team, there was no common vision of the coming voyage. With no shared model, no one could say for certain when the model was failing.

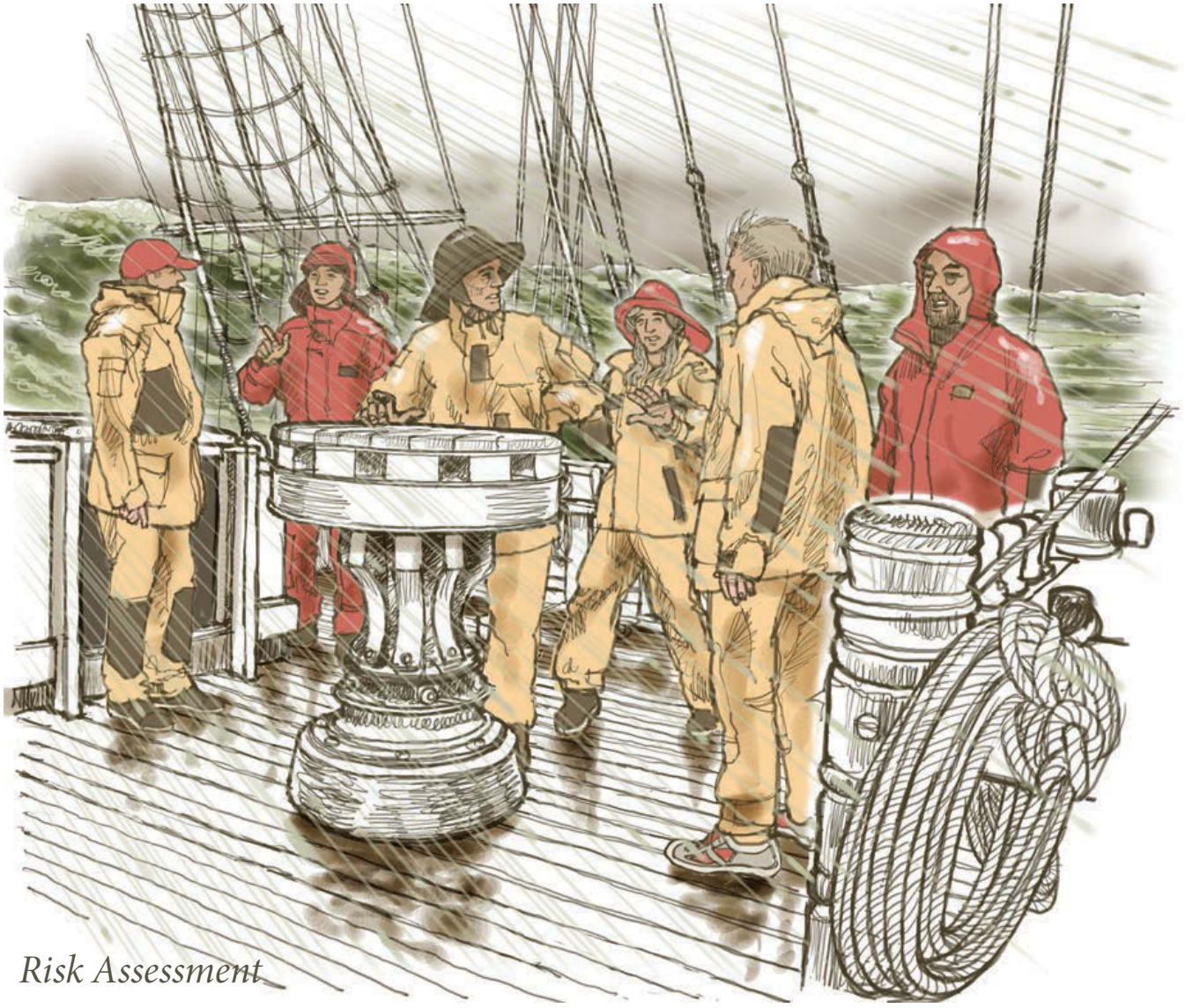
It's easy to say that when the pumps are not keeping up with the leaks, your plan is failing. But the failure of a plan should be detected before that. The whole idea of BRM is that someone will spot an error chain before it reaches the point of sinking—not at that point.

It was Capt. Walbridge's habit to hold a crew meeting on deck around the capstan before a major evolution to explain what was about to happen and turn it into a teaching moment. He held such a "capstan meeting" just before BOUNTY's departure from New London, but this time it was by request of the chief mate, who was concerned about the decision to sail, given the forecast. He felt that the crew deserved to hear about the upcoming weather and be offered the opportunity to stay ashore.

Risk Assessment

Every voyage carries a degree of uncertainty. In everything we do, and even when we do nothing, we assume a level of risk. So we manage risk every day. But when we are in a position where we are managing other people's risk, especially when we are engaging in activities that carry significantly elevated levels of risk, it pays to get more organized about it.

The U.S. Coast Guard knows a thing or two about risk. Many of their tasks involve substantial risk, and as a result, they have produced a formalized Risk Assessment Model that is employed before any significant evolution, such as a voyage. I have adopted and simplified



Risk Assessment

that process into a hypothetical re-enactment of the BOUNTY capstan meeting on the day of departure from New London. It could have gone something like this:

Captain to assembled mates, engineer, and bosun: "Okay gang, tell me what you know about the state of readiness of your department. We're talking about a 10-point scale here."

Bosun: "We've recently left the shipyard, so there is always a possibility of issues related to shipyard work. Detritus in the bilges, overlooked issues of tightening things, missed fastenings, that sort of thing. Since we have made a short voyage already, we are reasonably confident that all is well, and the vessel seems to be taking on less water than before. However, when we removed those planks for inspection we found a significant amount of rot, and we were unable to ascertain how widespread it was. It is possible that we have a significant structural problem, but we don't know. We also did a substantial amount of recaulking and were uncomfortable with some of the seams we worked on. I would take a point off our preparedness scale for these conditions."

Engineer: "We seem to have some problem in the bilge pumping system that we haven't identified. We may be pumping at a slower rate than before, and we are having a more difficult time keeping a prime on the pumps, and we don't know why. The two hydraulic backup pumps and the gas trash pump have not been tested in a long time. All of our generating and propulsion equipment is old, but seems to be working well. We have a problem with spare fuel filters due to having received the wrong ones. I would have to take a couple of points off for the pumping issues, unless we test those spare pumps, ascertain their effectiveness, and teach everyone to use them."

Third Mate (Safety Officer): "We have several new crew who have not participated in a fire or abandon ship drill yet. We have a relatively small crew, and all are pretty tired after the busy schedule of the past several days and weeks. The net level of experience on the vessel is

relatively low at this time. I would have to take a point off for tired crew and inexperienced crew, since they complement each other negatively."

Second Mate (Navigation Officer): "The voyage plan I laid out is no longer viable due to Hurricane Sandy. I have not laid out a new plan, but the captain has determined that a route out to sea to the east and south will give us the best options. I have not evaluated that plan, and I am unfamiliar with the forecast for Sandy. I would have to take a point off unless I have time to evaluate the forecast and the proposed route."

Chief Mate: "I concur with all the reports above. Due to the forecast for Sandy, it is reasonable to expect that we will encounter rough weather (possibly very rough) on this passage. A best-case scenario would have us skirting wide of the storm's reach but still feeling the effects that surround a hurricane, namely large swells and some wind. In the worst-case scenario we could expect gale, storm, or hurricane-force conditions. Given the potentially severe weather, the concern about rot and possible bad seams, the questionable state of the pumps, and the tired and inexperienced crew, I need to take another two points off for a convergence of issues."

Captain: "This brings us to a score of 3 out of 10. This demonstrates a very low level of preparedness, or a high level of risk. We must weigh that against the need to sail. Our need to sail is based on our desire to keep to our schedule of having a port visit in St. Petersburg next week. That could be rescheduled without a great deal of difficulty or loss of revenue. How do you think we should proceed?"

The advantage of this kind of an assessment process is that everyone sees their own issues in the context of other issues they may not have been aware of. If each department head thought theirs were the only issues, they may well have been lulled into complacency. But seeing all the issues in one basket gives everyone an appreciation of the sum total of all the various risk factors. In that light, a captain would have needed a very compelling reason to sail, which seemingly did not exist on October 25.

This process also provides a basis for mitigating the risks going forward. What was just laid out in the hypothetical discussion above was a work list to get the vessel ready for sea. The ideal response to the captain's final question would have been something like this:

> "Let's locate the best possible storm berth, batten down for a possible storm here, and give everyone some rest. Then let's find the problems with the bilge system, exercise the backup pumps (using that opportunity to train people in their use), get those spare filters, and conduct some drills. While we're at it, let's do some hurricane avoidance plotting as a learning experience."

It is important in this process to avoid getting fixated on numbers. This is not a precise mathematical model. Whether you take off one point or three, the idea is to talk about it and make everyone aware of your concerns, in the context of everyone else's concerns.

Earlier in the month of October 2012, BOUNTY had completed a substantial shipyard period in Boothbay Harbor, Maine. In the course of that yard period, the crew had removed a few planks from each side of the hull to investigate a suspect area. What they found was a surprising amount of rot, considering that that portion of the hull had been rebuilt only five years earlier. This raised questions that did not get answered. Due to time and financial constraints the decision was made to put her back together and take a closer look at the next yard period in a year or two. During the U.S. Coast Guard investigation of the sinking, there was a difference of opinion between the yard foreman, the yard owner, and the surveyor over whether that rot might have been structurally significant. The most that can be said at this time was that there might have been a problem.

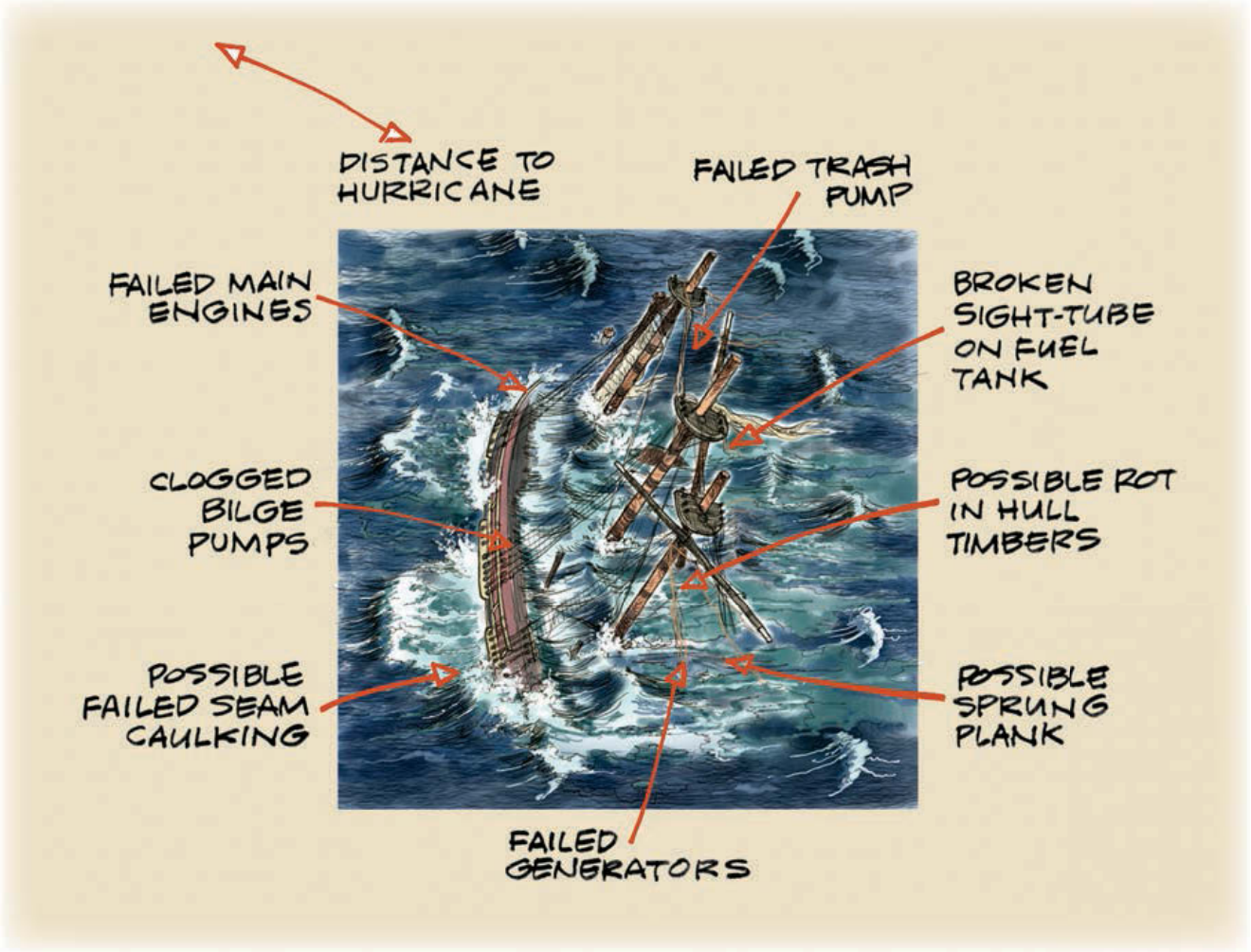
Also, while underway from Boothbay to New London, several of the crew commented that the bilge pumping system was not pumping at full capacity, and it was difficult to maintain a prime. Similar to the rot issue, the cause of this problem, or even the existence of the problem, was not determined before departure from New London.

Margins of Safety

Margins of safety are built into almost everything. We buy a piece of line two or three times stronger than its assumed maximum loading requires, so it can chafe halfway through and still hold. We buy an engine with three times the horsepower needed to move the ship at speed, so that when we are caught in a foul current or strong wind and are losing control we have that extra power to push us to safety. We buy an anchor four or five times the size we need to prepare for that day when everything goes against us and a big anchor is all we have left. Then we avoid areas of danger by a wide margin, so if something goes wrong, we have time to come up with a solution before we're in peril. Much as in risk assessment, you can't appreciate how much of your margin of safety you have used up without evaluating all the contributing factors.

BOUNTY was massively built. She could be half rotten and still be strong. Her bilge pumping system was designed with no fewer than four separate pumps, any one of which was expected to be sufficient. Then, just in case, another was put onboard as a spare. Numerous spare fuel filters were purchased, even though one was all that was theoretically needed. She had two main propulsion engines, and two generators, each of which was sized larger than necessary. The voyage plan stipulated a first leg to the east to gain sea room and to allow a turn farther east, or a turn west, as the track of the storm became better established.

All of the above provided the kind of margin of safety that we take for granted. It not only keeps us from sinking, but it keeps us from getting near that point. That separation is the cushion between us and disaster.



The rot that was discovered in the shipyard may have been significant, or it may not have been, compared to the overall strength of that massively built hull. But its existence, and the suspect nature of some of the seams, whittled away a little at the margin of safety.

On the voyage to New London, the bilge pumping system seemed not to be pumping at capacity, and it was difficult to keep the pumps primed. Furthermore, many of the crew were unfamiliar with the operation of the hydraulic-driven pumps, and apparently no one was familiar with the operation of the trash pump. Combined, these took a large bite out of her margin of safety.

The spare fuel filters that arrived turned out to be the wrong ones. In the end they seemed to work, but required careful attention to keep them from clogging. Another slice gone from the margin of safety.

The two engines and two generators may have run fine, had not the day tank's sight glass broken and drained away their fuel. Unfortunately, all that spare engine capacity had a common link, and it broke. The margin of safety at this point was whittled down to a hair.

Still, they likely could have made it if only they had stuck to their original margin of safety in terms of intended track. Had they not been so close to the storm by the time the engines and generators failed, they might have given the Coast Guard time to deliver some pumps, or to repair their own equipment.

Much like the risk-assessment process, you must be able to assess and evaluate all the things that make up your margin of safety, and acknowledge each failure of equipment or loss of function that chips away at it. It is critical that they be viewed in sum, not in isolation. If each person is aware of one issue, but nobody puts all the issues together, no one will appreciate the seriousness of the situation. It is a proactive process, not a reactive one. You must build in safety margins deliberately, and recognize them when they fall away.

As the ship was sailing from New London, a message was posted to the BOUNTY's Facebook page: "BOUNTY has departed New London CT...Next Port of Call...St. Petersburg, Florida. BOUNTY will be sailing due East out to sea before heading South to avoid the brunt of Hurricane Sandy. Rest assured that the BOUNTY is safe and in very capable hands. BOUNTY's current voyage is a calculated decision... NOT AT ALL... irresponsible or foolhardy as some have suggested. The fact of the matter is...A SHIP IS SAFER AT SEA THAN IN PORT!"

To Sea or Not to Sea?

It used to be an accepted standard that a ship was safer at sea than in port in the event of a severe storm. That is, in fact, still true. However, it used to be that the ship was more important to the owners than its crew was. Nowadays, our priority is to protect the crew first, and the ship second. This may require staying put even though the ship herself is threatened.

Still, it is an oversimplification to say that no one should leave port when there is severe weather in the forecast. There will be times when a ship is in an untenable situation in a poorly sheltered port, with no good alternatives within reach. When that is the case, everyone in the Bridge Team should be made aware of it from the time of arrival, so all can keep a weather eye out. Then when a storm is forecast, the decision can be made in time to permit a safe departure that will allow the ship to gain sufficient sea room to weather the storm with an adequate margin of safety. In that case, the ship will in fact be safely out to sea.

We can't distill these decisions down to a simple checklist. They need to be made based on a weighting of risk versus necessity, and they require experience, maturity, and judgment. If the principles of Bridge Team Management and Risk Assessment are employed, the captain should be able to make an informed decision that balances the risk of sailing against the risk of staying put.

By Sunday afternoon, the situation onboard was getting out of control. Something caused a sight glass on the day (fuel) tank to break, which in turn drained the fuel from the tank so the engines and generators ran out of fuel and died. Because they were diesel engines, their fuel systems must be bled before restarting, a tedious process on a good day, never mind in a 100-degree engineroom that was rolling heavily enough to upset even a strong stomach.

Bilgewater levels were rising steadily, and even though the second mate, through heroic efforts, managed to get a generator restarted, the pumps were clearly not keeping up. It wasn't long before the rising bilgewater overtook the last running

To Sea or Not to Sea

engine, and they were left without power. The chief mate suggested to the captain that it was time to make preparations to abandon ship, and after briefly resisting that idea, the captain did come to terms with the inevitable and ordered all hands to start donning survival suits and assembling on deck. A lingering question remains: Should that decision have been reached 6, 12, or 24 hours earlier?

Denial and Acceptance

An automobile accident happens so fast it's probably over before you know it's happening. If you wake up to find your house on fire, you don't take long to figure out what's going on. But a ship sinking at sea can be a slow process, and unless there is a catastrophic failure such as a major collision, you may be gradually overcome by events and it may be difficult to identify the moment when things have gotten out of hand.

They certainly did on BOUNTY. It's particularly telling that no one, in testimony, talked about feeling fear. The disaster slowly caught up to them, and suddenly they were awash. In a situation like that you must accept the possibility that things are getting out of hand as early as possible. At sea, help is a very long way away, and the earlier you can give notice the better the odds will be for help to reach you.

It is human nature to deny that things are that bad. The consequences of acceptance are awful to comprehend, and so we shy away from it. To pick up the radio and call the Coast Guard tells your crew that they may end up in the water soon, that their lives may truly be in jeopardy, and that the ship you have known, loved, and nurtured for so long may be about to vanish forever. It also tells people on shore that their loved ones are in a life-threatening situation with no guarantee of a safe outcome. Who wants to make that call prematurely?

In hindsight, and in the classroom, it's easy to know exactly when to take that step. But in the moment it can be very hard. The good news is that there is a mechanism to make it easier: the PAN-PAN urgent message format. These words, spoken on the VHF radio or sent by any other method, tell the recipient that you are in a difficult position, but not desperate yet. It allows you to get the attention of the people who can help without your having to declare a MAYDAY, which means that you are in a life-threatening situation right now. Having the PAN-PAN message option encourages you to get past the denial stage as early as possible and accept that you have a potentially dangerous situation on your hands. So alerted, help can be ready before it's too late.

Onboard BOUNTY, there may have been some disagreement about making the first call to alert the Coast Guard. As before, it would have been useful to take a Bridge Team Management approach, and a Risk Assessment approach, to evaluating the situation. It is much easier for a single person to remain in denial (as it appears the captain may have been) longer than a group. If the team were assembled and polled for the state of their respective departments, the picture may have been clearer, earlier.

The crew was finally instructed to muster on deck, don their survival suits, and prepare to abandon ship. Unfortunately, before an orderly abandonment could occur, the ship rolled heavily onto her side, throwing the crew variously into the water or onto the rig, which was now lying in the water.

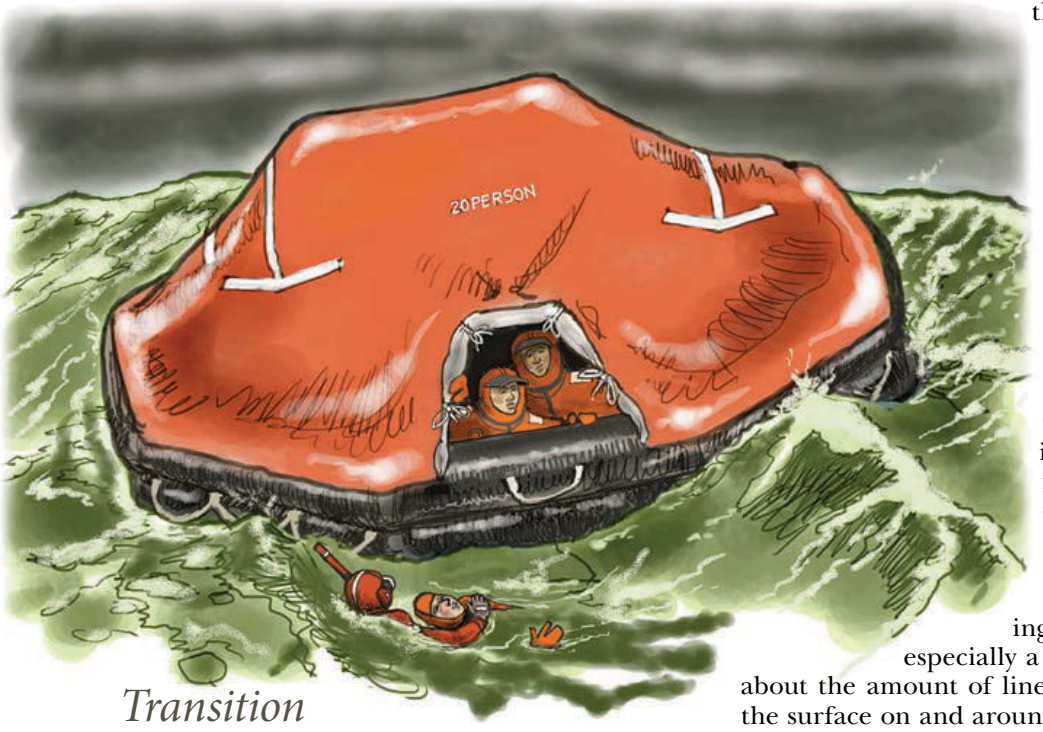
Transition

It has been said many times that "the time to abandon ship is when you have to step up into the lifeboat." Like most clever catchphrases, this one has its limitations, although it also has some merit. The idea is that you should never leave your ship until she is really, truly sinking because no matter how well equipped your lifeboat is, it isn't as well equipped as your ship. There are, indeed, many tales of ships found drifting whose crews abandoned them, only to vanish with their lifeboats.

Unfortunately, one good phrase can't fit all situations. On BOUNTY it suddenly became very clear that they should have abandoned ship a little earlier. You do need time for an orderly transition into your lifeboats or rafts. The way BOUNTY went down demonstrated all the problems that can accompany a last-minute transition.

BOUNTY lost stability as she filled, and finally rolled onto her side, throwing many of the crew into the water. Some who were still onboard became tangled in gear, and some were either tangled in or clinging to the spars

Denial and Acceptance



Transition

that were now in the water. Unfortunately for them, the ship rolled partially upright again, dragging them up into the air. They were then forced to jump into water that was now filled with debris that was being violently tossed around by the breaking seas.

Among those who were thrown into the water, many were beaten with floating debris, or by blocks and other gear falling from the rig. Two crew members clipped their harness tethers together to keep from being separated—seemingly a good idea. However, a heavy piece of the rig fell into the water between them, trapping them and dragging them down by their tethers. They were well underwater before one of them miraculously managed to free himself from his harness. The buoyancy of their survival suits was so strong that they were unable to release the clips on the ends of their tethers. A quick-release clip on the near body-end of a tether should be universal standard equipment. Curiously, it is a requirement on offshore racing yachts, but that detail has not yet made it into the mainstream of survival and harness technology.

With the ship on her side, the nettings that had been set up to keep crew from falling overboard now kept them from getting away. Several of the crew talked about feeling the suction of the water pouring into the ship; they had great difficulty swimming away from the ship because of it. Combine that with the general difficulty of swimming in an immersion suit, getting washed by breaking waves (making breathing difficult at best), and you have a terrible situation.

All of the above tells us that, in your abandon-ship drills, you should at least talk through all of these issues and plan where the best assembly point is on deck. Many drills have people muster amidships where the crew is most "protected." But the BOUNTY's lesson tells us that the well deck amidships may have been the most vulnerable spot because it left crew trapped between nettings and under a towering rig about to start falling down. In the BOUNTY's case, with hindsight, the best muster point would have been as far aft as possible.

The salient point is not that one place is always better, but that the abandonment process should be thought through considering the type of vessel, rig, and rescue platform available. It could be different under different conditions.

When you consider the amount of chaos surrounding a capsized or flooded ship, especially a sailing ship, you must think about the amount of line and other gear floating on the surface on and around the ship. Many crew found themselves becoming tangled again and again while trying to get away from the ship, and even while trying to climb into the life rafts. This begs for the installation of a knife on the outside of a survival suit as part of the standard equipment. It should be a blunt-tipped knife to avoid injuries, but it should be sharp, with a serrated edge capable of swiftly cutting a person free of entanglements. Bear in mind that the knife must be of a size and shape that a person can use while wearing the survival suit gloves or mittens.

With a knife available, one could also solve another problem that cropped up when the crew was trying to board the rafts. Their suits were partially filled with water, which of course ran down to their feet when they tried to climb up, or were pulled up, into the raft. With a knife, one could slash the foot of the suit to drain the water out. Better yet, the suit could be manufactured with a drainage zipper in each foot.

Very fortunately, the Coast Guard had been notified in time for them to fly a C-130 Search and Rescue aircraft to the scene, through darkness and hurricane-force winds, to monitor the situation and maintain a communication link. Even though they could not rescue the crew themselves, through a prearranged signal they were able to learn when the crew was finally thrown from the vessel and call for the rescue helicopters. The helicopter crews later stated that these were the worst conditions they had ever flown in.

Through truly heroic efforts and no small amount of good luck, these extraordinary people were able to fly to the scene and drop a rescue swimmer into that maelstrom to find and then lift the crew one-by-one to safety aboard two helicopters. Tragically, two BOUNTY crew members were missing, and as

fuel on the helicopters was running low, the Coast Guard crews were forced to make that most difficult decision of all and leave the area to fly back to shore.

But they didn't stop there. They came back out again as soon as possible and continued the search. They did manage to find one missing crew member, Claudene Christian, but she was pronounced dead on arrival ashore. The other missing person was Capt. Walbridge. He was last seen either on deck or at the navigation station, in a survival suit, but after two days of searching he was not found.

After

Finally, the crew was rescued and walking on dry land. It was not the end of the story. In many ways, it was just the beginning. There would be media attention, a U.S. Coast Guard hearing, post-traumatic stress, complicated group dynamics, and the terrible grief surrounding the loss of their captain and shipmate. The depth of their agony can only be understood by talking to the crew and seeing it in their eyes. They had lost, variously, a shipmate, a friend, a lover, a mentor, a father figure, and their captain. That loss would creep up on them and affect them in different ways, but it was universal.

The extreme difficulty of these first several days is difficult to imagine. The crew was, to varying degrees, traumatized, stunned, cold, wet, injured, sick, or just plain confused, and there were a lot of details that needed to be taken care of immediately. They needed rest, food, new clothes, identification, medical attention, cash, a place to stay for the short term, and travel arrangements after that. They also needed advice on dealing with the media and the flood of attention, wanted or unwanted.

To provide all of the above on very short notice, a vessel's home office needs to be prepared, and that preparedness can only be achieved by having a carefully thought-out Crisis Response Plan. Such a plan will also guide the principals of the organization. Imagine being woken from a sound sleep with the news of such a terrible tragedy, and immediately being asked to provide a long list of information, such as: crew list, contact information for next of kin, insurance information, and a media plan. You will face that terrible task of calling the families of the crew, including perhaps telling parents that a son or daughter is dead or missing. You might be asked for stability information, the ship's plans, an inventory of survival equipment and communications equipment, and vessel tracking data. The list goes on and on, and it may still be the middle of the night.

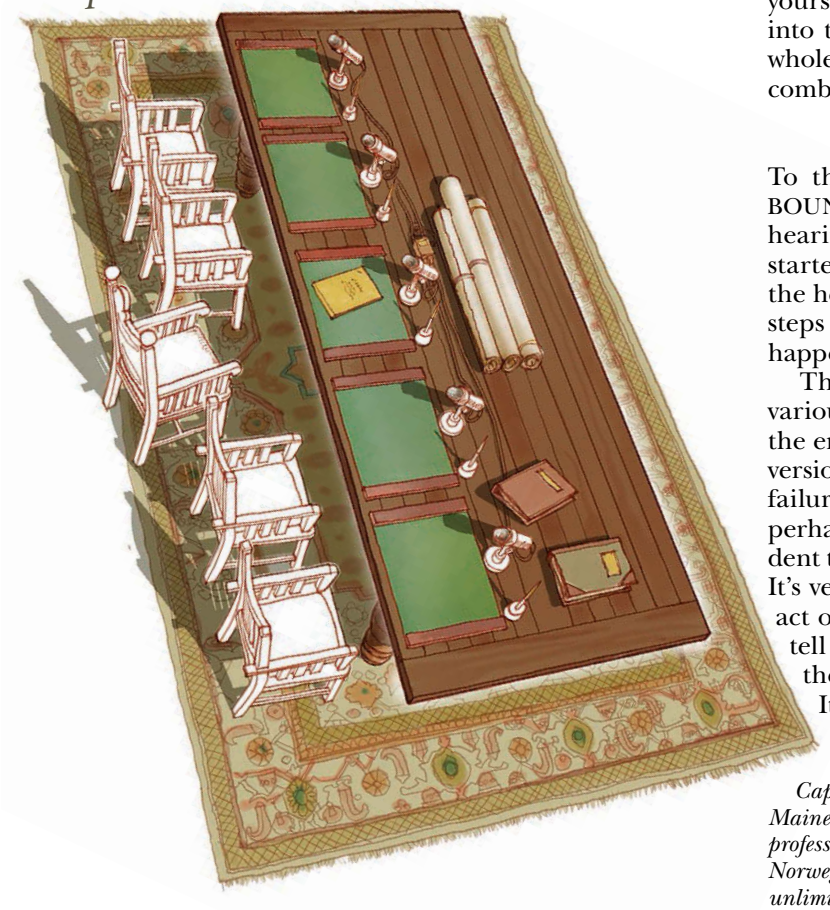
If you haven't ever planned for this kind of event, and actually practiced it by conducting an emergency drill, you may be instantly overwhelmed and project to the world an image of disorganization and incompetence. That could shift the media's attitude from one of sympathy to hostility very quickly, especially if in your groggy, panicky state you start saying things that don't come across as professional.

It is important to understand that once the rescue is concluded and all the lives that can be saved have been saved, the function of the U.S. Coast Guard shifts from rescuer to investigator. The purpose of the investigation is a positive one, but it will be very strenuous nonetheless.

The Coast Guard conducted interviews within a day or two of the rescue to try to get as much of the story as possible written down correctly before memories faded. And memories do fade. They also get muddled with other information that might not actually be a memory. This can lead to embarrassing testimony when the hearings finally get underway, since it may appear that you are contradicting your own testimony. One of the crew stated at the beginning of her testimony (at the hearing) that "whatever I told you in that first interview will be much more accurate than anything I can remember today." That is an excellent point to remember, both for the interviewer and the interviewee.

There is another point to remember: Stick to the facts. This applies to your comments to the Coast Guard, to the media, and to the lawyers. Don't editorialize. Don't give your opinions. If a sentence begins with "I think," it's probably not a good one. If it starts

After



with "I saw," or "I heard," it's better. Remember this: Whatever you think today will quite likely change by tomorrow. There are always at least two sides to every story, and over time you may come to realize that what you thought was not how it happened.

After an accident, some people always blame someone else, and others always blame themselves; most of the time they will both be wrong. Very few accidents have a single cause. If an investigation takes place, it will take time, but it will ferret out the whole story, to the extent possible. Keep your mind open; be prepared to learn that it didn't actually happen the way you thought it did.

As much as you should keep your opinions to yourself, there is an exception. Sharing all your thoughts with someone who can understand what you're talking about, and will keep it private, will help you cope with the emotional burden you are carrying. That might be a professional counselor, or it might be a close friend who knows something about the subject. If you think you are suffering from post-traumatic stress disorder, or if someone else tells you they think you are, you should talk to a counselor who specializes in that. PTSD is a serious condition, and the worst thing you can do is deny it. There are strategies for learning to cope with it.

There will be people who will criticize and perhaps condemn you, or someone close to you, for the accident. People are quick to jump to conclusions, and they are often encouraged by the media to do so. Somehow you need to steel yourself for that, and shelter yourself from it as best you can. Avoid getting drawn into the conversation. Remember, you don't know the whole story, and they know almost none of it. That combination cannot possibly be productive.

Experience, Revisited

To the extent possible, we all must learn from the BOUNTY's sinking. That is the point of a Coast Guard hearing. The lead investigator of the BOUNTY hearing started each day with a statement that the purpose of the hearing was to learn from the accident, to see what steps might be taken to prevent something like it from happening again.

The process of dissecting the accident to identify the various root causes is a painful one. It requires reliving the entire event several times while everyone tells their version of the story. It involves uncovering faults and failures in people you know and care about, including perhaps yourself. It's inescapable that for a bad accident to happen, someone probably failed at something. It's very rare for an accident to truly come down to an act of God, so prepare yourself for the inevitable and tell the whole story, including the failures, as you saw them. Don't try to hide them. Let the process work. It will, in the long run, be a healing process. From all of that will come experience.

Capt. Andy Chase is a professor of marine transportation at Maine Maritime Academy (MMA) in Castine, Maine. He began his professional seagoing career at the age of 16 as a deckboy aboard a Norwegian bulk carrier, and is a graduate of MMA. He holds an unlimited-tonnage master's license for power vessels, and master of auxiliary sail for vessels of up to 1,600 tons. He has sailed aboard tankers, container ships, tugs, freighters, and large, traditional sailing vessels of gaff and square rig. Capt. Chase was the subject of John McPhee's book about the U.S. Merchant Marine, Looking for a Ship *(Farrar, Straus, Giroux, 1990), and is the author of the textbook* Auxiliary Sail Vessel Operations *(see below).*

Further Reading

Auxiliary Sail Vessel Operations, by G. Anderson Chase (Cornell Maritime Press, 1997). Filling a longstanding void in nautical science literature, this book is an introduction to the fundamental principles and practices needed to work in today's commercial-sailing industry.

Bridge Resource Management for Small Ships: The Watchkeeper's Manual for Limited-Tonnage Vessels, by Daniel S. Parrott (McGraw-Hill, 2011). This is the first textbook to teach the concepts of Bridge Resource Management for limited tonnage vessels. Topics include resources integration, situational awareness, passage planning, communication, and other best practices as described in this article. The book also covers the concepts of over-reliance, stress, fatigue, complacency, and leadership. The book's author is a colleague of Capt. Chase at Maine Maritime Academy.

gCaptain.com. This maritime and offshore news website carried Mario Vittone's riveting and incisive interpretation of each day of the Coast Guard's hearings on the BOUNTY sinking. Enter "BOUNTY" into the site's search tool to see eight BOUNTY-related posts.

The Boat That Beat Hitler

SEATTLE POST-INTELLIGENCER

How nine young Americans won gold in 1936

by Daniel James Brown

Late on the afternoon of August 14, 1936, a cold, wet wind whipped down the Langer See southeast of Berlin. On a floating dock in the middle of the lake, nine American boys in ragged T-shirts and mismatched shorts huddled briefly in a stinging rain, draping their arms over one another's shoulders. Then they stepped gingerly into a racing shell—a long, sleek sliver of cedar that sat bobbing in the chop. Several lanes to their right more young men, wearing crisp white jerseys emblazoned with eagles clutching black swastikas, climbed into another racing shell. On the foredeck of a gray naval vessel behind them, a pair of German officers raised their right arms in the Nazi salute.

Two thousand meters down the lake, standing on the balcony of a boathouse, Adolf Hitler, Joseph Goebbels, and Hermann Göring raised binoculars to their eyes and peered up the way toward the starting line of the 1936 Olympic gold medal race for eight-oared boats. The crowd massed below them at the finish line, some 75,000 strong, began to chant "*Deutsch-land! Deutsch-land! Deutsch-land!*"

On a nearby rooftop, a middle-aged man in horn-rimmed glasses also raised binoculars to his eyes. Now an American, but originally English—and English through and through in his manner of speaking, thinking, and comporting himself—he cringed as he heard the crowd's chants. Like most Englishmen, by that summer he had come to think of Germany and this man Hitler as existential threats to his native land. German oarsmen had already won five gold medals in the rowing events that day, and each time he had been compelled to listen, gritting his teeth, as the crowd belted out, "*Deutschland, Deutschland über alles....*" Now, he was anxious about the upcoming race for eight-oared shells, by far the most important event of the day. The

***Above*—The 1936 U.S. Olympic eight-oar rowing team, from left to right: Don Hume, Joe Rantz, Shorty Hunt, Jim McMillin, Johnny White, Gordy Adam, Chuck Day, Roger Morris. Kneeling: Bob Moch.**

COURTESY OF JUDITH WILLMAN

COURTESY OF JUDITH WILLMAN

SEATTLE POST-INTELLIGENCER COLLECTION, MUSEUM OF HISTORY & INDUSTRY, SEATTLE

***Top left*—The American boys huddle around coach Al Ulbrickson before going for gold in Berlin. *Above*—Ulbrickson was serious, reticent, and tough. He dressed nattily to let his boys know he was all business.**

LIMPERT VERLAG GMBH

***Top right*—The Americans watch Germany score yet another rowing victory as Nazi officers salute in the background. *Above*—Hitler and his entourage watch the gold medal race from the balcony of a nearby boathouse.**

American crew—his crew—had been assigned the worst lane on the course, fully exposed to the brunt of the wind and rain. Worse, the boy wielding the critical stroke oar, Don Hume, was seriously ill with some kind of respiratory infection. Nevertheless, the man in the horn-rimmed glasses had a feeling that the eight-oared race might just quiet the German crowd. For one thing, he knew the extraordinary character of the nine young Americans who were about to go for gold. He also knew that the boat in which they were now sitting—HUSKY CLIPPER—was as good a shell as he could build. And as deeply modest a man as he was, George Yeoman Pocock knew that made it a very good shell indeed, almost certainly the best that the Langer See had ever seen.

A few moments later, at the starting line, the official starter called out "*Êtes-vouz prêts? Partez!*" and dropped a small red flag. In the rain and whip of the wind, the American boys never heard him and never saw the flag. It was only when they saw the boats to their right lurch forward that they realized the race had started. Their coxswain, Bobby Moch, screamed "Row!" and HUSKY CLIPPER sprang forward. But the boys at her oars were already behind in the race of their lives.

George Pocock had every reason to believe that HUSKY CLIPPER gave the American boys who rowed her an advantage that day. She was, by any measure, state of the art, a new milestone in Pocock's lifelong quest to perfect his craft.

Craftsmanship was everything to Pocock. As he would eventually say himself, years later when he was pressed to sell some Boeing stock that had become quite valuable, "My ambition has always been to be the greatest shell builder in the world, and without false modesty I believe I have attained that goal. If I were to sell the stock, I fear I would lose my incentive and

***Right*—George Pocock preferred to work with simple hand tools handed down from his father in England.**

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become a wealthy man but a second-rate artisan. I prefer to remain a first-class artisan."

Born in Kingston-upon-Thames in 1891, Pocock grew up among racing shells, hand tools, and wood shavings in the boathouse at Eton College, where his father, Aaron, was the principal shell maker. Aaron's own father had made his living hand crafting rowboats for professional watermen on the London waterfront. George's maternal grandfather had also designed and built boats, among them the LADY ALICE, the take-apart, or "sectional" boat in which Henry Morton Stanley had gone in search of Dr. David Livingston in central Africa in 1874. Boatbuilding was in George Pocock's blood.

By the time he was 15, George had formally apprenticed himself to his father, who was working side-by-side with him maintaining, improving, and increasing Eton's prodigious fleet of shells. In his off hours, George spent much of his time rowing in the company of—and continually outracing—Eton's aristocratic students. Among these were the young Anthony Eden and Lord Grosvenor, son of the Duke of Westminster. When they came to him for advice, he gave them informal lessons in the Thames-watermen style of rowing he had learned from his father and grandfather. In exchange, he learned from them how to speak the king's English with the crisp educated accent of their class.

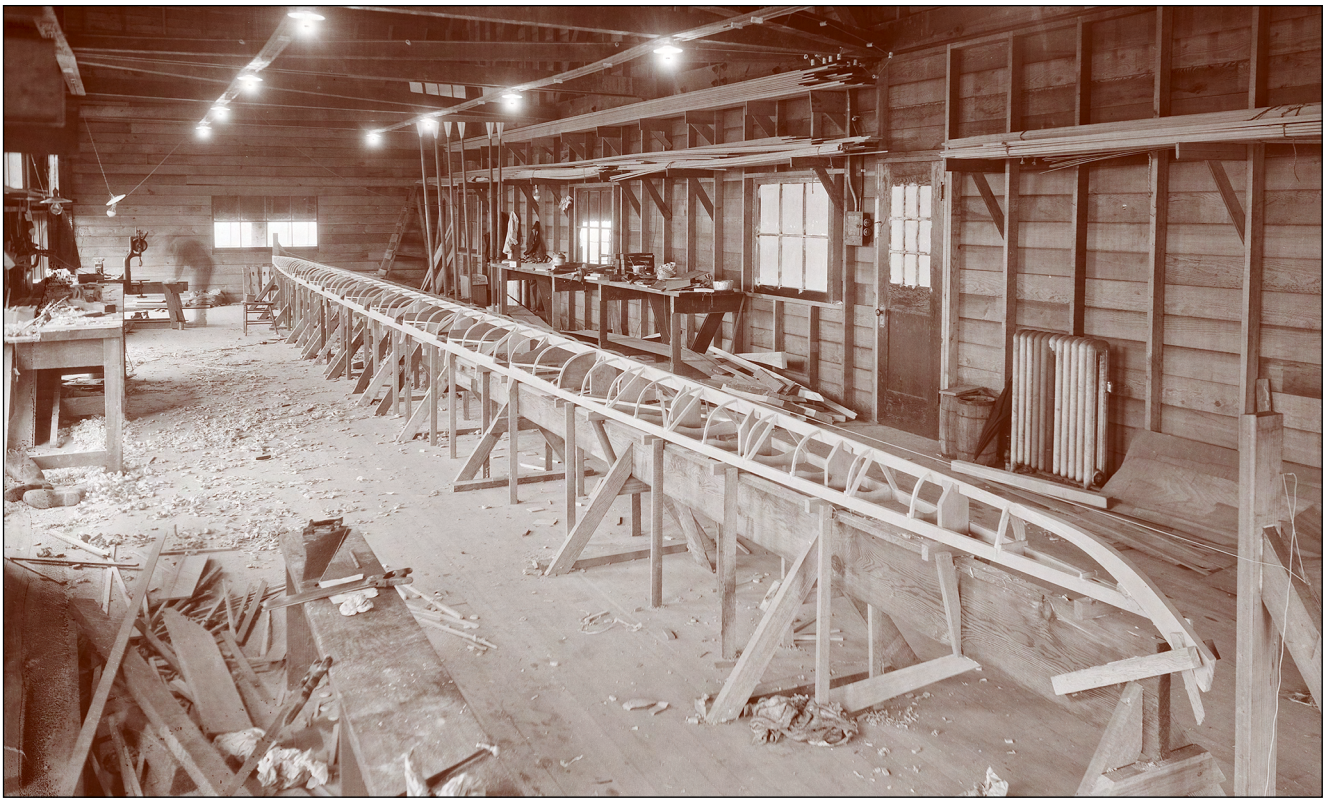
But when Eton laid off Aaron late in 1910, a serious financial blow fell on the Pocock family. To lessen the burden on their father, George and his brother Dick decided to emigrate to Canada to see whether they could find boatbuilding work there. It took them nearly two years of working at odd jobs in Vancouver, British Columbia, before they finally landed a contract building a pair of single sculls for the Vancouver Rowing Club at $100 apiece. The Pocock boys threw their hearts into the work, and the results were impressive. Word of their skill began to circulate throughout rowing circles in Canada and the United States.

In 1912 the wild-eyed and improbable figure of Hiram Conibear, the University of Washington's new rowing coach, entered the Pococks' lives. Rowing awkwardly—he was no oarsman himself—out to the floating workshop in Coal Harbor, where the Pococks plied their craft, he announced grandiosely that he wanted them to come to Seattle immediately to build a veritable navy for Washington—at least 12 and perhaps as many as 50 racing shells. The Pococks excitedly wired their father in England that they had found work enough for all of them. Aaron boarded a transatlantic liner, and the boys headed to Seattle where it promptly became apparent that Conibear had been a bit over-enthusiastic. For now Washington had funds enough to build only one shell, not 50, nor even 12. The boys wired their father, who responded forgivingly, "You must remember that Mr. Conibear is an American." Aaron returned home and Dick Pocock moved on to build shells for Yale, but George decided to stick it out in Seattle. It was there, working in a cold, drafty loft at the back of the University of Washington's shell house that, over the next few decades, he began to become a shell-building legend.

At first Pocock worked almost exclusively with Spanish cedar (*Cedrela odorata*) from South America for the skins of his shells, just as his father had done at Eton. Though not a true cedar, the wood had some resistance to rot, it was straight-grained, and it was relatively easy to work. But it was expensive to import, brittle, prone to split, and required extraordinary amounts of sanding to achieve the smoothness required of a racing shell. Worse, precisely matching the 60′ seams and nailing down the six planks required for the hull of a racing eight required hours upon hours of delicately driving and then filing off the ends of thousands of small brass nails. With every blow of his hammer Pocock risked shattering the fragile skins of his boats.

In 1913, Pocock's handiwork made its first appearance on the national stage, when Washington entered the Intercollegiate Rowing Regatta in Poughkeepsie, New York. It was an audacious thing for a western crew to compete in the IRA regatta. Only one western school, Stanford, had attempted it before, with dismal results. When Washington's varsity crew came in third in 1913, the result took East Coast sports writers and fans by surprise. Before the crew could even get home, the Seattle Chamber of Commerce had authorized funds for two more Pocock shells. Soon the University had a fleet of five, and Pocock, who by now had begun building shells for other colleges, felt that he was beginning to make headway in his chosen profession.

But it was in 1923 that Pocock's work really came into the limelight. Washington ventured back to



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***Above*—Pocock's well-lighted shop in the Washington shell house featured a long, well-supported beam on which he built his 62′ eight-oar cedar shells.**

Poughkeepsie that year, and this time their varsity eight flat-out won the main event—sweeping past Navy in the last mile in a sleek, newly christened Pocock shell. If Washington's third place finish in 1913 had surprised racing's Eastern elite, the Westerners' victory in 1923 stunned them. And it cemented Pocock's reputation. Orders from the East began to pour into his loft workshop in Seattle. Even Harvard ordered two, one of them for its annual head-to-head with Yale.

In 1927 Pocock made a fundamental change that would define the remainder of his career. He began fashioning his hulls from Western red cedar (*Thuja plicata*). The native cedar grew all around Pocock. Massive old-growth trees were still abundant on the Olympic Peninsula, and vast tracts of them still stood in the woods around Lake Cowichan just to the north in British Columbia. Pocock had long taken note of the durability and lightness of the old cedar Indian canoes that still occasionally plied the waters of Puget Sound. But among his contemporaries, the native cedar was widely regarded as suitable for only one purpose—splitting into roofing shakes and shingles. Finally, though, plagued by the expense of importing Spanish cedar, and by its brittleness, Pocock started experimenting with the local wood. He quickly found that it had all of Spanish cedar's advantages and few of its disadvantages. It was light and buoyant, strong but flexible, free of pitch or sap, and highly resistant to rot. It took a finish well, allowing him to polish hulls to a high degree of luster, essential for providing a smooth, low-friction racing bottom. Perhaps best of all, Pocock found that he could inexpensively obtain planks wide enough that a pair of them—just one on each side—could cover the entire hull. When the planks were milled down to a thickness of just 5⁄32″, the builder could simply steam them to shape and glue them to the ribs with no nails.

It was a singular breakthrough. One of his first cedar boats went to Harvard, and on its maiden voyage it took seconds off the Crimson's previous record. Another went to a South American customer who promptly wrote back ordering an additional shell and specifying that it be made not of Spanish cedar but of "Americano cedro." Within a year or two, few major crew programs would want anything but one of Pocock's new cedar shells.

In the spring of 1936, the University of Washington asked Pocock to build a new shell in which they could compete for a berth at the upcoming summer Olympics in Berlin. Pocock set about building a shell worthy of the occasion.

In the intervening years, he had begun to experiment with other western and northwestern woods. Now, working in his loft with vintage hand tools bequeathed him by his father, he fashioned two long gunwales from Sitka spruce, a material he used also for the keel, stems, deckbeams, and seats. He made the washboards from Alaska yellow cedar (*Cupressus nootkatensis*), a wood he favored partly for its lovely old-ivory color, and he used sugar pine for the stretchers against which the rowers would push their feet. For the skin of the hull he selected a book-matched pair of thin, wide western red

cedar planks from Lake Cowichan. For the ribs and stays, he stuck with ash from Indiana. He stretched silk fabric over the forward and aft watertight compartments to make lightweight decking; the cloth took on a rich golden color when impregnated with marine varnish. In place of the brass wheels on which the sliding seats in racing shells typically ran, he used a new product partially of his own invention—wheels made of pressed cotton fiber impregnated with phenol resin. In the water that would inevitably slosh into the boat they would run as smooth as silk. Then he applied coat after coat of marine varnish, rubbing each coat down with pumice and rottenstone, then applying another until the hull gleamed like a rich, red cedar mirror.

When she was done, the new shell was 62′ long and 24″ wide. She was not a great deal more than 200 lbs in weight, yet she was capable of holding eight large men and one small one—over 1,500 lbs of brawn and rippling muscle heaving and pulling in almost continual motion against wind and water. She was one of what Pocock called his "banana boats," having a slightly rockered profile from bow to stern. Early in his experiments with cedar he had found that it tended to expand just slightly with the grain when wet. Along the length of a 62′ hull attached to a dry ash frame, this had the effect of raising both bow and stern just slightly. Pocock felt that this imparted tension into the hull, like a drawn bow, giving the boat an extra measure of liveliness, a tendency to spring forward on the catch of the oars.

On March 28, 1936, Pocock had the boys from the University of Washington's varsity crew carry the new boat out of the shell house for its christening. With the shell on their shoulders, the boys marched under an arch of upraised oars held aloft by underclassmen, and proceeded down to the dock in a light snowfall. There, Pocock produced a jar of a mysterious fluid and poured it slowly over the bow, solemnly, intoning, "I christen this boat HUSKY CLIPPER. May it have success on all the waters it speeds over. Especially in Berlin." As the boys climbed into the shell for the first time they crinkled their noses, trying to make out the scent of the fluid Pocock had poured over the bow. Pocock chuckled and grinned, "Sauerkraut juice. To get it used to Germany."

From the moment Washington's boys climbed into it, HUSKY CLIPPER flew. Collegiate crews often form strong affinities for certain boats, and antipathies toward others. The year before, they had been assigned to a boat called TAMANAWAS. They had taken a dislike to it immediately. It just didn't seem to have the liveliness of the boat they had rowed up to that point, CITY OF SEATTLE, and they had taken to calling it, under their breaths, the TOMATO CAN. But HUSKY CLIPPER exceeded their expectations. They flat-out fell in love with her. In her they quickly found their swing—that elusive feeling of effortless grace that crews always aspire to and seldom find—again and again. And in

Four rowing legends nurtured by Washington's program in the 1920s and '30s, from left to right: George Pocock, Rusty Callow, Ky Ebright, and Al Ulbrickson.

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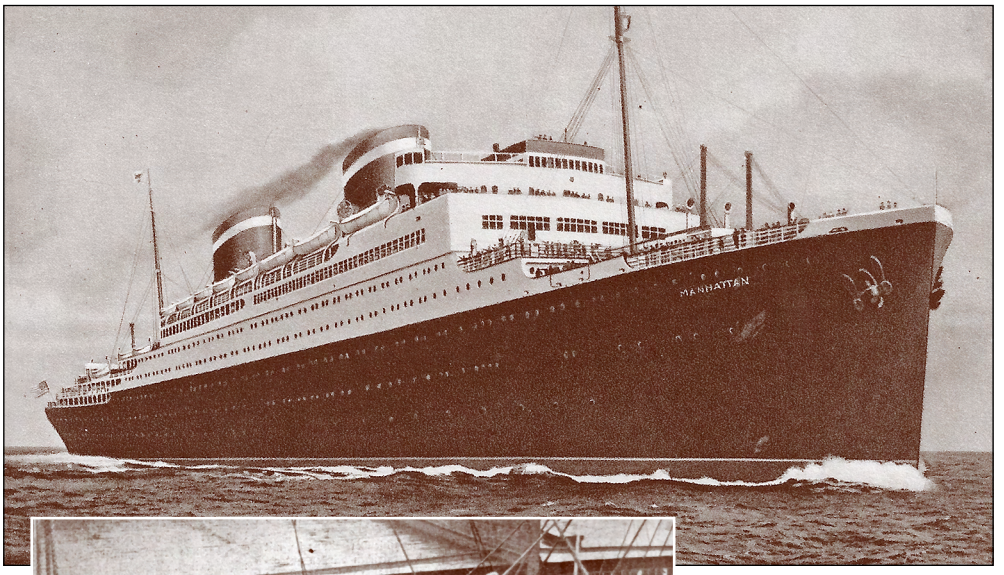

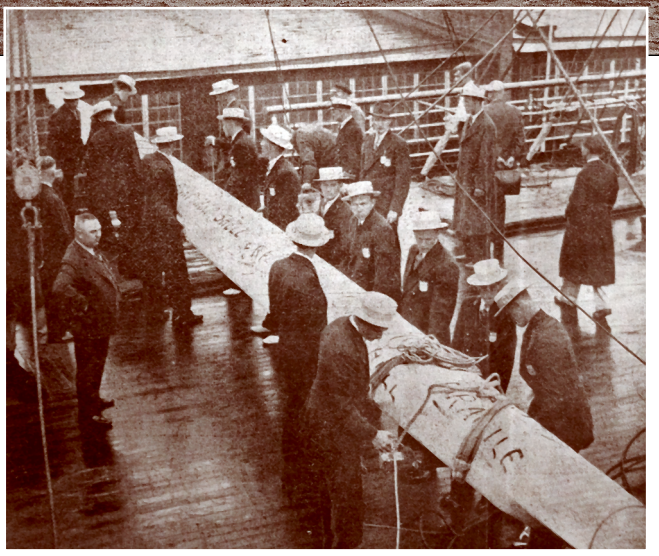

***Upper left*—Crossing the Atlantic in SS MANHATTAN provided a rare interlude of glamor and luxury for the hardscrabble boys from the Northwest. *Lower left*—Unloading HUSKY CLIPPER in Hamburg was a delicate and nerve-wracking operation.**

her they promptly began to knock down records. On April 12, in a time trial over a 3-mile course on Seattle's Lake Washington, they came in 13 seconds ahead of the previous course record. On April 18, they met their principal regional rival, California, on the same course, rowing before the largest crowd ever to witness a crew race in the Northwest—over 75,000 people. This time they smashed the record they had just set, peeling away another 24 seconds.

Then it was time to load HUSKY CLIPPER into a baggage car on the Great Northern's EMPIRE BUILDER and head east to row at the IRA regatta in Poughkeepsie. When they arrived, Pocock was pleased to find that he'd built 17 of the 18 competing boats. He quickly set about going from boathouse to boathouse adjusting riggers, making minor repairs, revarnishing hulls. He wasn't about to allow shabby boats with his name on them to appear out on the Hudson in the glare of the national media.

The varsity race at Poughkeepsie that year was, by any measure, one of the greatest ever rowed. It had gotten off to a late start, and as the boats entered the final mile of the 4-mile course a deep darkness had fallen over the river. Nearly 100,000 fans strained to see what was happening. California and Navy seemed to be running away with it. Washington had fallen near the rear of the field, three lengths back, and seemed to be limping toward the finish line, alone and all but disregarded. Suddenly Washington's coxswain, Bobby Moch, leaned forward in the stern of HUSKY CLIPPER and screamed, "Okay! Now! Now! Now!" and Washington surged forward, slashing the gap, closing relentlessly on the now-exhausted leaders, taking them down methodically, length-by-length and then seat-by-seat, and ultimately pulling ahead to win by open water in the last glimmerings of twilight before a dazed throng of astonished onlookers.

Two weeks later in Princeton, New Jersey, Washington rowed HUSKY CLIPPER to a relatively easy victory over a field of five other crews—the best in America—and won the right to represent the United States at the Berlin Olympics. In another 10 days, Pocock and the Washington boys found themselves maneuvering a flatbed truck carrying the shell through the traffic of New York City on their way to pier 60 where the SS MANHATTAN was being readied for departure to Hamburg. Unable to find a way to get the shell aboard, they finally resorted to sliding it up a baggage shoot, crawling on hands and knees, some of them pushing, some of them pulling. Then, holding it high over their heads they angled it all the way up to the boat deck, where they covered it with canvas and hoped and prayed that no one would mistake it for a bench and sit on it. Eight days later, the boys and their boat arrived in Grünau, the little village on the Langer See, where they would take on the best crews in the world.

From the moment she arrived there, HUSKY CLIPPER stood out at Grünau, where shells from around the world rested on racks in Haus West, the massive new limestone boathouse that the Third Reich had built for the Olympics. Though most of the other nations had brought reasonably up-to-date and well-built craft, the American team had—with the notable exception of the CLIPPER—shown up with an old, heavy, decrepit fleet of shells. The American single sculls, doubles, and fours were, as the American Olympic Committee would later write scathingly, "...as so much junk. We actually felt ashamed to have the foreign oarsmen look at our equipment." On average, the committee estimated, the American shells weighed 30 to 50 percent more than their competitor's craft. Pocock himself was horrified

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With the crowd in the stands above them screaming, "Deutschland! Deutschland!" the Americans, in the far lane, slice across the finish line a fraction of a second before the Italians and the Germans in the two nearest lanes.

when he saw the rest of the American boats. None of them, he was happy to say, were from his shop.

But the CLIPPER met a very different kind of reception. As she sat on her rack in Haus West, international oarsmen and reporters and coaches crowded around her snapping pictures and peppering Pocock with questions about her construction. Always interested in advancing the state of his art, Pocock answered their queries eagerly. Then he applied a final coat of sperm whale oil to the boat's hull, to provide a fast racing bottom, and settled down to wait for the big day.

Six minutes and 26 seconds after HUSKY CLIPPER lurched uncertainly off the starting line in the gold-medal race, she, the German boat, and the Italian boat all crossed the finish line within the span of a single second. The crowd continued to roar, "Deutsch-land! Deutsch-land! Deutsch-land!" On the balcony of Haus West, Hitler stood rocking back and forth, one fist raised. Göring slapped his knees in delight. Goebbels was jumping up and down. What had just transpired was what the American Olympic Committee would later proclaim, "the greatest international rowing championship in the history of the world." In the German boat, the stroke, Gerd Vols, toppled back into the lap of the number seven man. In the Italian boat, someone leaned forward and vomited. The American stroke, Don Hume, bowed his head as if in prayer. Nobody knew who had won.

When the loudspeakers finally squealed to life, it took the American boys a moment to understand what was being said. The bow of HUSKY CLIPPER had crossed the line six-tenths of a second ahead of the Italian boat, a full second ahead of the German boat. The crowd fell suddenly silent. In Seattle and in New York and in thousands of places in between, Americans who had been sitting clustered around cabinet radios in parlors and living rooms leapt to their feet and cheered, slapping each other's backs. In HUSKY CLIPPER, grimaces of pain gave way to broad white smiles. As the boys began to row the CLIPPER back to the dock, George Pocock pushed his way frantically through the crowd, trying to get to his boys—and their boat. On the balcony of Haus West, Hitler and his entourage turned suddenly and disappeared into the building.

After the Olympics, HUSKY CLIPPER returned to Seattle, completed another undefeated season in 1937, and then resumed her resting place on a rack in the shell house on the Washington campus. Every 10 years for the next 50, except in 1966, the boys who had rowed her to glory in Berlin hoisted her onto their shoulders, carried her down to Lake Washington, and took her out on an anniversary row as news cameras rolled. As their hair grew gray and their backs grew stiff, they rowed more slowly with each passing anniversary.

The CLIPPER, on the other hand, seemed to lose

***Right*—The four Olympians still alive in 2004, Bob Moch, Roger Morris, Jim McMillin, and Joe Rantz, gathered around HUSKY CLIPPER for one last photo together. Morris, the final surviving team member, died in 2009.**

DEAN RUTZ/*THE SEATTLE TIMES*

none of the vitality with which her maker had imbued her. For a number of years she was one of several Pocock shells that the University of Washington loaned to the crew program at Pacific Lutheran University in Tacoma. As Jim Ojalla, a Pacific Lutheran oarsman who learned to row in her as a freshman in 1966 and later rowed her in her final competitive race, said, "She was a joy to row. When everything was going right, her nose would rise out of the water and the bow pair would scream, 'We've got air!'—a rare thing for most crews but not for us in 'the CLIPPER.'"

When the era of fiberglass and carbon fiber began to dawn, HUSKY CLIPPER was finally retired but not forgotten. For a number of years, she was proudly displayed in the student union building at the University of Washington. Later, she hung from the ceiling in the Pocock Rowing Center in Seattle. Today, suspended by thin wires, she hangs from another ceiling in the light, airy dining commons of the Conibear Shellhouse on Washington's campus, a graceful needle of burnished red cedar and yellow spruce. Behind her Lake Washington, sometimes blue, often gray, spreads out beyond a wall of glass.

Every fall a day comes when legions of earnest freshmen—men one day and women another—file into the dining commons and sit nervously beneath her. Most of them are notably tall, a few of them notably short. They fill out registration cards and chatter nervously. They peer anxiously around the room, sizing one another up, weighing their odds. Then a coach steps in front of them and raises his hand and points at HUSKY CLIPPER. All at once they fall suddenly silent and peer upward as he begins to tell them where she came from, and what she means.

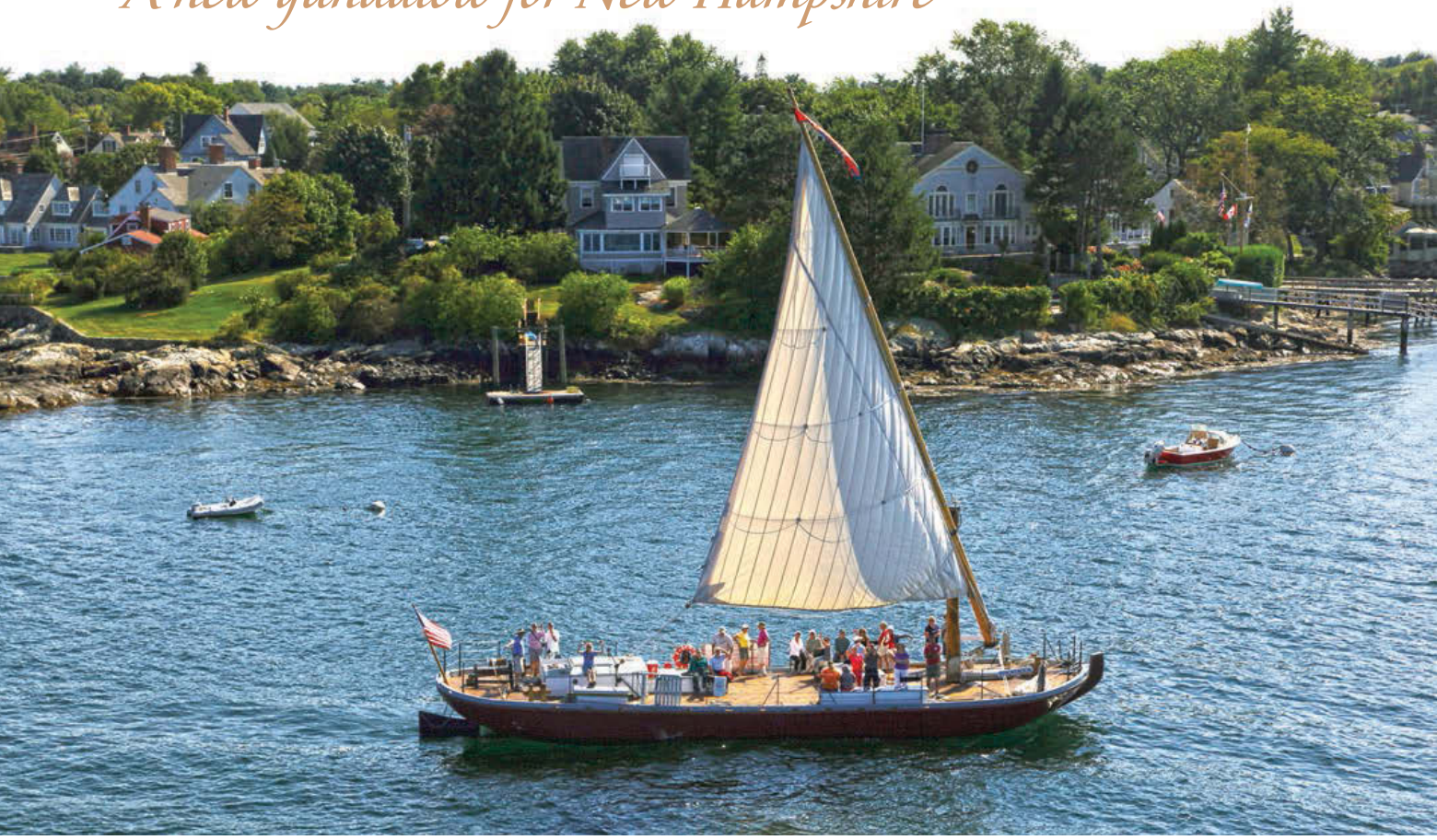
Daniel James Brown is the author of The Boys in the Boat: Nine Americans and their epic quest for gold at the 1936 Berlin Olympics. *Brown lives in Redmond, Washington, and can be found online at www.danieljamesbrown.com. This article is adapted and excerpted from* The Boys in the Boat, *by arrangement with Viking, a member of the Penguin Group (U.S.A.) ©2013 by Daniel James Brown.*

In 1956, 20 years after their gold-medal triumph, the boys—still hale and hearty—took their second anniversary row in HUSKY CLIPPER.

COURTESY OF JUDITH WILLMAN

PISCATAQUA

A new gundalow for New Hampshire



INTREPID AERIAL PHOTOGRAPHY; THE GUNDALOW COMPANY

by Jenny Bennett

The whole neighborhood, it seemed, had come out to watch. Slowly but surely, the tractor-trailer inched its long, heavy load down the narrow street, around impossibly tight corners, and at last onto the bridge that led to Peirce Island and the launching ramp. It was a happy, excited crowd of onlookers. Some were little more than curious passers-by, but many had waited for this moment with passion and patience for a decade or longer. This short journey from building yard to riverside was the culmination of years of effort—of fundraising in hard times, of defeating the naysayers time and time again, of sheer hard work and Yankee determination.

On the trailer sat an unlikely vessel called a gundalow—a riverborne cargo barge whose ancestry dates back over three centuries. As her merry band of followers crossed the bridge, a few eyes glanced back toward an older gundalow hunkered down by the wharf. Almost 30 years ago, the day had been hers, but this morning she lay uninvited, almost forgotten, a few hundred yards from the celebration. Yet without her, the new boat would never have been.

Gundalows, like so many working boats around the world, are unique to both time and place. The Piscataqua region of New Hampshire and Maine, settled in the 1600s, is an area of hundreds of miles of interconnecting waterways. Six principal rivers—the Salmon Falls, Cocheco, Bellamy, Oyster, Lamprey, and Squamscott—flow into the Piscataqua and, 12 miles downstream, into the Atlantic Ocean. On their way they pass through Great Bay and Little Bay—lakes of tidal water that drain to mudflats and salt marshes at low tide. At the rivers' navigable heads stand the towns of South Berwick, Dover, Durham, Newmarket, and Exeter; on the Piscataqua itself are Newington, Eliot, Portsmouth, Kittery, and New Castle. For some 250 years all were connected by the humble gundalow, a flat-bottomed barge capable of carrying heavy loads through the fast-running deep waters of the Piscataqua

***Above*—The PISCATAQUA, launched December 10, 2011, makes the most of a flooding tide and following breeze to sail up the Piscataqua River past New Castle, New Hampshire.**

NED THOMPSON; THE GUNDALOW COMPANY

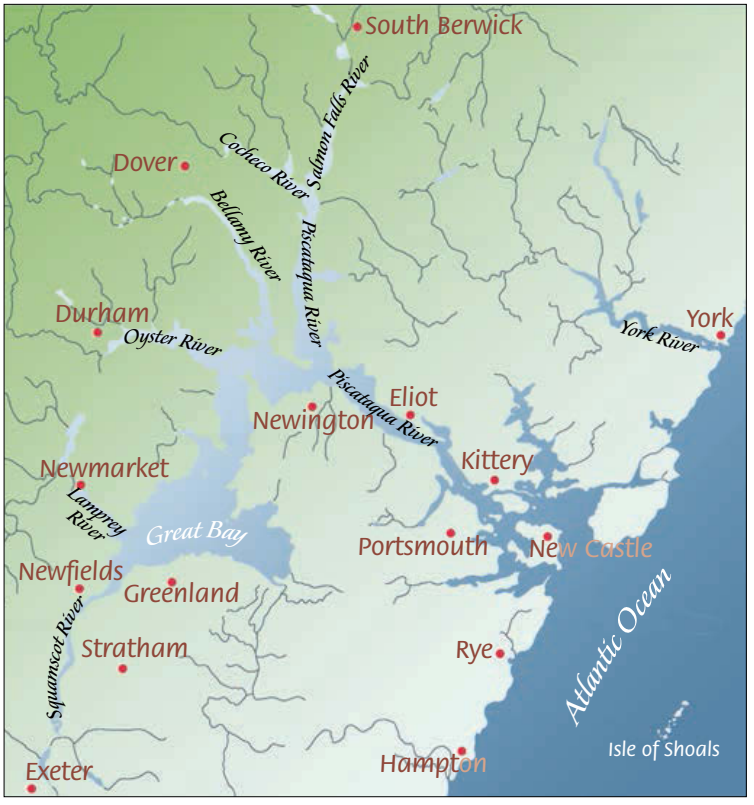
Her name not yet revealed, the new gundalow inches her way across the Peirce Island bridge leading from the historic South End district of Portsmouth, New Hampshire, where she was built.

as well as over the drying shoals of the bays and upper reaches of the tributaries. These boats were of simple construction, plank-on-frame without keel, often built by farmers in wintertime using lumber from their own woodlots. Launched in spring and worked hard, they had an average life expectancy of fewer than five years. When the rivers were free of ice from about March to December, gundalows carried agricultural produce to the towns; salt hay to the farms; bricks, coal, iron, cordwood, and raw materials to the mills at the upriver falls; finished products to the busy downriver port. Barely noticed by the general populace, the gundalow was the indispensable cog in the regional economic wheel.

In its earliest form the gundalow was little more than a flat-bottomed, deckless scow, without transom, rudder, or sailing rig, some 20′ to 30′ in length, with a draft of between 1′ and 4′ depending on load. With no sail it was carried along by the river's current and maneuvered with either poles or sweeps.

As the upriver settlements grew, so the gundalow became more sophisticated. By the early 1800s the boats were decked in the ends and, although still mostly without a true sailing rig, had a fixed rudder and a small cuddy cabin aft, and occasionally carried a square sail for downwind work. By the late 1800s boats of the type had grown to a length of about 70′, were fully decked for ease of loading, and had gained a leeboard and rig—a single lateen sail of about 1,000 sq ft bent to a long yard that pivoted on a rotating stump mast of some 12–16′ in height. When required, the counterbalanced yard could be swiftly lowered and raised again, allowing the gundalow to shoot under bridges or moor up beneath overhanging wharf buildings.

The rivers' currents, more than the vessels' sails and sweeps, were responsible for the gundalow's long success. The Piscataqua, in particular, is the second-fastest-flowing navigable river in the continental United States (bested only



The Piscataqua watershed, passing through New Hampshire and Maine, includes hundreds of miles of interconnecting waterways. Before the introduction of road and rail, these rivers and bays allowed communities as disparate as South Berwick, Maine, and Exeter, New Hampshire, to be directly linked.

by the Columbia River in the Pacific Northwest); as it flows through Portsmouth Harbor the river's current commonly reaches speeds of 6 knots and, in extreme conditions, has been recorded at 10 knots. Given a fair wind and tide, a gundalow could make the 25-mile journey from Exeter to Portsmouth in a little over two hours.

Viewed by many as not beautiful, the gundalow was perfectly suited for its purpose. Perhaps the best defense of the type was written by John W. Griffiths in *The Progressive Ship Builder*, 1875: "This crude apology for a vessel costs, when complete, about $1500 and we have no hesitation in stating that for river service such as is rendered by these vessels, the same amount of money cannot be invested in another type of vessel which can carry an equal amount of cargo in equal time on the same light draught of water and pass the bridge obstructions which may be encountered without necessitating the opening of draws."

Nevertheless, even as Griffiths wrote, the gundalows' days were numbered. The industrial age had transformed the region—manufacturing mills had sprung up; factories producing shoes, buttons, saddles, and printed calico had appeared; brickworks supplied materials to Boston and beyond; and the gundalows had multiplied alongside the industries. In time, however, those same industries would cause the decline in the gundalow as they sought more reliable, year-round transportation on the railroads and, ultimately, by road. Within 25 years of Griffiths's writing, the last working gundalow, FANNY M, was alone on the river. By the 1910s even she had been beached at Dover Point, never to work again.

Edward Adams—known locally as Capt. Adams—had built, owned, and worked FANNY M. As his days as a working boatman ended, the captain turned his attention to farming, logging, and maintaining his property at Adams Point on Great Bay. Then, in 1931, he decided to build a small pleasure gundalow for his own use—the 43′9″ DRIFTWOOD, which had a keel, bowsprit, and twin engines. Nineteen years in construction, she was launched on October 22, 1950—the Captain's 90th birthday. But someone had neglected to open the engines' cooling-water intake, and as she worked her way off the shore, her engines overheated and within half an hour of her launching she was limping home. Hauled out a week later, she was blocked-up above the tideline and abandoned. Edward Adams died the following spring, and DRIFTWOOD never returned to the river.

In 1976, Albert Hickey was living aboard the restored 112′ Hudson River barge RISING CASTLE moored at the Prescott Park Landing in Portsmouth, New Hampshire. He had previously owned and restored the 33-ton Banks schooner TAMARACK, as well as one of the last surviving steam tugs in Boston. Lately, he had been talking to his friend Dick Gallant about gundalows and how fun it would be to build one. The idle conversation swiftly became a passion.

Hickey and Gallant had a mutual friend, Cyrus Sweet. Sweet had a longstanding and "fine relationship" with the legendary New Hampshire boatbuilder Bud McIntosh. McIntosh had known Edward Adams; in fact, he and his brother, Ned, had helped Adams build DRIFTWOOD. Here was an unbroken lineage of gundalow construction stretching back over three centuries—and about to pass into oblivion.

As Sweet recalls, "Al and Dick asked me to lunch and talked me into involving Bud in the building of a gundalow. Before long all sorts of people were involved." Hickey went to Strawbery Banke, a museum neighborhood in Portsmouth, and convinced its board and then-director, Peggy Armitage, that the gundalow's construction would be a worthwhile educational exhibit for the museum. And so a building site was secured. "After all," says Sweet, "if it weren't for the Piscataqua and the river commerce, there'd have been no Portsmouth, no Strawbery Banke; and if not for the lowly gundalow, none of it, *none of it*, would have happened."

Within months of the board's approval, the Piscataqua Gundalow Project was formally incorporated; it was overseen by a board of trustees that included Hickey, Gallant, Bob Corell of the University of New Hampshire, attorney Thomas Dudley, and Sweet—then a trustee of Strawbery Banke. Bud McIntosh agreed to advise on the construction, and his friend William Baker of MIT had also been recruited. "Baker had done a lot of research on gundalows and their construction, and he and Bud had many heated arguments about the build," says Sweet. "There was one discussion that ran and ran: How big should the boat be? Bud thought only

NATHANIEL STEBBINS / HISTORIC NEW ENGLAND

A fully laden gundalow, carrying coal or stone, sails downstream in the late 19th century. Note the weighted yard and brail lines for easy yard-lowering and sail-furling.

RALPH MORANG (INSET: THE GUNDALOW COMPANY)

In 2009, two years before the new gundalow was launched, the CAPTAIN EDWARD H. ADAMS—named for the owner-captain of the last working gundalow (inset)—was still sailing, hosting programs, and being used as a valuable fundraising tool. Late in the year she was photographed from the plane of local philanthropist and environmental champion Tom Hass. Today the ADAMS is kept dockside but is still used for educational programs as she embarks on her fourth decade on the Piscataqua River.

about 35′ was practical, but the others wanted 70′. The others prevailed. Then the question was the construction method. The old boats were never expected to last long, but despite that everyone still wanted to build the boat in the traditional manner. We thought with modern chemicals—bottom paint and the like—and with proper care it might just last more than five years. But no one ever dreamed it'd still be here 30 years later."

The builders found wood in New Hampshire and Maine, and began felling trees in early 1979. Construction began soon after. While a set of drawings of FANNY M by Howard Chapelle—the Smithsonian's National Watercraft Collection curator—gave insight into construction methods, no official lines were ever drawn or used for the replica. Between 1979 and 1982, the grounds at Strawbery Banke echoed with the sounds of wood being shaped and fitted. Visitors were treated to the sight of builders Ellis Rowe, Bob Eger, and others wielding adzes, broadaxes, and great wooden mallets to hammer-in trunnels. Month after month the hull slowly took shape until on June 13, 1982, the CAPTAIN EDWARD H. ADAMS was ready to be launched. She was the first new gundalow to enter the Piscataqua River in 32 years.

A large crowd of onlookers gathered as the ADAMS was pulled slowly across the grass of Prescott Park by a team of 10 oxen. The rain that fell could do nothing to dampen spirits. John Hallett, master of ceremonies, announced, "Al Hickey had a dream, and finally it has come true." The boat was christened by Ada Lundholm, grand-niece of Capt. Adams, and a bottle of Great Bay water was broken against the cutwater. At 5:30 p.m., before an estimated 3,000 people, the CAPTAIN EDWARD H. ADAMS slid into the water.

Only after the launching did anyone seem to ask, "What now?"

For several years, the Piscataqua Gundalow Project owned the CAPTAIN EDWARD H. ADAMS. Later, Strawbery Banke took her on. She was moored alongside a pontoon dock at Prescott Park under the constant care of Michael Gowell. Every fall she was towed upriver to Sandy Point in Great Bay where, in conjunction with the Great Bay Discovery Center, she and Gowell ran programs for kids in which he talked about gundalows, rivers, history, and the environment. As Molly Bolster, today's executive director of the Gundalow Company, remembers, "Michael would row the kids out in a little rickety skiff, and I remember thinking it was an accident waiting to happen. It was crazy but fun. The kids loved it and it was magical, but it always felt like not enough."

Bolster had moved to the area with her family in 1991, when the ADAMS was nine years old. The Bolsters had come from Baltimore, Maryland, where Molly had worked both on the building of PRIDE OF BALTIMORE II as the purchasing agent, and on the LADY MARYLAND as an educator and deckhand. To this day she recalls her first experience on the ADAMS. "I remember stepping on board and hearing how they couldn't take her out, could only do dockside programs, and thinking what a shame they hadn't been able to figure out how to do both."

In 1995, Nick Brown joined Gowell to assist in the ongoing maintenance of the gundalow, but otherwise things continued as ever: Each year the ADAMS would be towed to York, Maine, to spend the winter at the historic John Hancock Wharf, and each spring she would be hauled out at Badgers Island on the Piscataqua: "We replaced planks and painted the bottom every year," says Brown, "and we replaced the stump mast a couple of times." But everything was done on a shoestring, working within the constraints of an annual budget of $5,000. "She was," says Brown, "a constant worry. But Michael would always make sure she was well painted and looked good. Everything was in its place, everything put away."

Sailing PISCATAQUA

The earliest gundalows were propelled by the river currents and, to a lesser extent, by sweeps and poles. When the rig was introduced, it was required to do two things: (1) provide downwind power, and (2) be quickly lowered when the vessel passed beneath a bridge. The answer was a unique lateen rig set on a tall yard and a stump mast.

PISCATAQUA's rig is largely traditional. The stump mast rises 20′ above the waterline, while the entire affair, when raised, reaches 62′ in the air. Most of the time the yard is left standing and the 900-sq-ft sail, when not needed, is furled by means of five brailing lines, their ends led to each side of the boat. So, with a full complement of students, ten lines—five to port and five to starboard—are hauled to brail the sail. When fewer crew are available, just two people can furl the sail, one hauling on brailing line No. 3, the other on brailing line No. 5 (the lowest of the brails). To set sail, the brails are cast off and the sail is hauled out by its sheet.

To negotiate bridges, the spar can be lowered and raised with a tackle. From its stowed position at the beginning of the season, the yard is raised by a ⅝″ steel chain halyard that also acts as a pivot. Once raised, it is permanently fixed. When lowered, the head of the yard is supported at the stern by a temporary crutch. When the downhaul tackle leading from the heel of the yard to the foot of the mast is hauled in, the yard's heel lowers as its head rises. Once the yard is raised, the downhaul is secured. To lower the yard—for rig work, or to shoot under a bridge—the downhaul is eased and the process reversed. On PISCATAQUA, the yard is tapered from heel to head and is hollow for most of its length; on the original gundalows the heels of their solid yards would have been weighted for counterbalance. A line led from the head of the yard to the sheet traveler is used to control the swing of the yard as it comes down or goes up. PISCATAQUA's yard can be raised or lowered manually by six people, or by three people using a tackle—but an electric windlass is used more often than not.

PISCATAQUA's stump mast, stepped in a tabernacle, also can be lowered to the deck. The yard is first detached from the mast by releasing its chain halyard and lowering it to the deck. The mast itself pivots about 2′ above deck in the tabernacle. A temporary gin pole attached to the mast at a 90-degree angle gives the crew more leverage to lower the mast.

INTREPID AERIAL PHOTOGRAPHY; THE GUNDALOW COMPANY

PISCATAQUA sails through Harts Cove headed upstream on the Piscataqua River. In the background can be seen Fort William and Mary, site of one of the earliest acts of the Revolutionary War when gundalows came downstream and launched an attack. They took the fort and carried away the British guns.

When sailing, PISCATAQUA's yard remains to starboard of the mast no matter which tack she's on—but it's free to pivot depending on the trim of the sheet. There is seldom any need to tack in the river, because most of the sailing is with wind and tide, in which case it is easier to jibe. Nevertheless, the gundalow will tack given optimum conditions: 15–20 knots of wind and calm water. At all times under sail the leeboard is lowered so it's approximately 35 degrees to the waterline; it is raised and lowered by a simple tackle.

PISCATAQUA can sail at about 65 degrees to the wind, and according to her captain, Matt Glenn, "she sails as well as any boat on the Piscataqua River.... Sometimes she will sail against the current, but the wind does tend to blow either straight up or straight down the river, and when it's in your face, then it's time to strike sail and row…or in our case, motor." —*JB*

With thanks to Matt Glenn.

The CAPTAIN EDWARD H. ADAMS had dedicated and passionate fans, but she also had her detractors. Never beautiful, she suffered from severe hogging that drew negative reactions from many. In the late 1990s, Brown measured the size of the problem. "I put the gauge alongside the sheer clamp almost end to end and in 60′ she had about 8½″ of hog. Someone decided we should try to correct it, that perhaps it was like a flatbed trailer that shows a reverse camber when light. So we put a load of granite on the middle of the deck and carried it around for a few years. Of course, it didn't work; all it did was push the boat down in the water so that a seam that had never been wet was now submerged and she leaked some more!"

Then, in 1999, a new director came to Strawbery Banke. Kathleen Mullins had come from heading the Montpelier estate in Virginia and knew nothing of the sea, the river, or its boats. The gundalow would have to find a new home.

The ADAMS was saved by a handful of local friends who formed the nonprofit Gundalow Company and took ownership of the boat in 2002. Among the members of the board were Molly Bolster, Joey Donelly, Cynthia Raymond, Cy Sweet, and Jeff Taylor. "Everything was wrong," says Taylor. "We didn't have a clear vision… really our only goal was to keep the ADAMS afloat. We

RALPH MORANG

Shipwright Dennis Glidden receives a plank from the steambox ready to fit it in the stern. While a small group of shipwrights were employed, around 5,000 volunteer hours went into the building of the new gundalow.

had no program, no money. But we knew we had to campaign the boat, we needed visibility; we needed to get it out doing things. It needed to justify itself."

They towed the CAPTAIN EDWARD H. ADAMS to towns around the Piscataqua region—to Dover and Exeter, New Castle and South Berwick, even up the coast to York. Wherever she went, kids and adults were invited aboard to learn about the Piscataqua's maritime history, its unique environment and challenges in the modern era, and to rediscover the role played by the humble gundalows.

"But," says Bolster, "it was never enough. I knew from the beginning that we had to build a new boat, that we were never going to make an impact if we couldn't get off the dock."

In 2005 the Gundalow Company hosted a forum at Great Bay Discovery Center to discuss the future of the organization. It was a day of two halves: In the morning those present were the board of directors and, as Jeff Taylor describes them, "the inner circle of friends." By lunch they had come to the inevitable conclusion: For the mission to move forward, they needed a new boat. In the afternoon, a larger group of people was invited, among them Maggie Rhinelander, Bud McIntosh's daughter. "She didn't speak," recalls Taylor, "and we all became more and more nervous. It was as if she thought we were about to take Bud's boat out and sink it into a mudflat somewhere. Then, maybe two hours into it all, she stood up and said 'Well, of course you need a new boat, you need a new gundalow.'"

As both Taylor and Bolster remember, the forum had quickly agreed that to get people out on the water was essential, but just how to do that had proved a more difficult question. They wanted to introduce more people to the Piscataqua watershed, to raise awareness of its unique environmental challenges. Could that not be done from a large motor launch?

"Well," says Taylor, "yes. But in order to accept that the watershed is in need of protection, you have to understand its importance to the region. Most of us, today, drive around the Piscataqua, over bridges, along highways, and we never see the water. You can visit Portsmouth, Dover, Exeter, Durham…all those towns and never realize they are on the water, much less that they are connected to each other. The moment you go out on the water in a boat from the past, it all suddenly makes sense. You understand why those towns are where they are, and how they were mutually supporting; it didn't all happen by chance. You can tell kids that same thing in a classroom, you can show them from any boat, but from a gundalow they can really begin to understand."

It would be almost six years before construction began. In large part, the delay was imposed by a board and staff who wanted to be very clear regarding why they were building a gundalow, how it would be funded, and how it would be used once launched. By 2008 most of the questions had been answered. The Gundalow Company and friends were building a new vessel to fulfill a new mission: "Protecting the Piscataqua region's maritime heritage and environment through education and action." As Bolster explains, "The new boat was a means to an end. In a way, when the ADAMS was built she was the end, but this time the boat was just a symbol, a tool to connect people to the place."

When it came to fundraising, the new message was a godsend, she says. "It blew away the barrier of 'the old wooden boat crowd'—the sense that you had to be 'in the club to be a part of this.' It opened up conversations with people who apparently had never cared before."

Simultaneously, another group of local organizations had come together under the name "Save Great Bay," and "suddenly," says Bolster, "everyone was talking about the state of the estuary. It was very exciting." Still, there were those who claimed the message could be told without a boat. Bolster disagreed and still does. "Recently we took a group of people from the Department of Environmental Services out on the river. We were passing the sewage plant on Peirce Island and one of the visitors said, 'I had no idea how close it is to the river…there's all those boaters and kayakers and the upwelling is right there.' In that moment he had proved that once you get out there all the ideas connect—to understand the water and its importance to the town, you have to get out there. You cannot see it from land."

The boat would be built in plain view at Strawbery Banke in the heart of the community, by local people and, where possible, of local materials. While in essence it would be a gundalow, in order to fulfill its mission it would comply with Coast Guard requirements for carrying passengers—it would have

Learning Afloat

MEGAN GLENN, THE GUNDALOW COMPANY

Educator-deckhand Heather Froumy assists a group of schoolchildren as they work the brailing lines.

A typical school program aboard PISCATAQUA lasts two-and-a-half hours. There are two principal stations onboard. At the first, students are engaged in hands-on activities ranging from analyzing water salinity and plankton, to examining and discussing oysters, lobsters, and local flora in the onboard tank; observing the weather; and considering the human impact on the river. Students are also introduced to the basics of navigation, steering, and sail handling. The second station, below deck, considers "human impact in the region over time." Here a three-dimensional model of the Piscataqua watershed is used to show students that human actions many miles away have an impact on the ecosystems of the rivers and seacoast—how we all live in and affect a watershed. *—JB*

an engine, lifelines, four watertight bulkheads. But it would be built of wood—oak planks on sawn oak frames—and would carry the gundalow's traditional lateen rig. As John Crandall, one of the Gundalow Company directors, put it at the time, "We want it to look, feel, and smell like a gundalow, but if there are things we can do to improve it so that it will last for 75 years, then we should do those things."

Harold Burnham of Essex, Massachusetts, was hired to produce preliminary drawings. Referring to Chapelle's lines of FANNY M, he drew up a 64′ vessel. The ends were pure Chapelle, but the new gundalow would be 6′ shorter than the original. Nate Piper, then serving as captain on the ADAMS, became project manager. In 2009, Paul Rollins, a local boatbuilder who had worked with Bud McIntosh in his younger days, hired on as master shipwright; as such, he was responsible for all the construction drawings.

While the builders sought wood for the project and staked out a building site at Strawbery Banke, fundraising began quietly but in earnest in 2009. The goal was to raise $1.2 million to cover not only the construction, but also the first year of maintenance and programming. It was a time of economic crisis in the U.S., when many nonprofits were closing their doors or dramatically reducing their programs. The Gundalow Company forged ahead, and in the fall of 2010 the Board of Directors determined there were sufficient funds to proceed: Construction would begin the following March.

Among the builders, the biggest concern was how to eliminate the hogging issues that had plagued the ADAMS. Early on, Burnham suggested steam-bending the bottom and side planking up and around into both ends instead of butting the planks into separate pieces carved for the bow and stern. To give even more strength, Piper and Rollins conceived a truss of diagonal oak braces set longitudinally at a 45-degree angle to the frames, running from the heel of one frame across the neighboring frame to the top of the next at the sheerline. The trusses would be let into the outer edges of the frames so that the planking would lie flat against both truss and frame. The whole structure would be through-fastened with trunnels.

The framing (double-sawn in the bow and stern) was 2″×8″ oak from western Massachusetts; the planking, also of oak, was 4″ thick in the bottom and 2½″ in the topsides. In the ends, the bottom planks tapered from 4″ to 2½″. Hackmatack for the knees came from Nova Scotia—although barely had the ink dried on the check used to pay for that wood when Rollins received a call from Burnham: "You have to come to Boston. They've found a whole gundalow kit, right here!"

In the process of tearing up a lot at the Charlestown Navy Yard near where the USS CONSTITUTION was berthed, a hospital-construction crew had discovered hundreds of board feet of longleaf pine, live oak, and white oak below the pavement. As Bolster tells it, "Mystic Seaport took a bunch of the bigger knees, and we took 24 of the little live oak ones." Those historic timbers would end up being alternated with the hackmatack knees along the length of the hull.

The pine for the deck came from storm-felled trees at Three Rivers Farm on the Cocheco River, and the trunnels were of black locust fashioned using the same machine as had been used for the CAPTAIN ADAMS. Other fastenings were of silicon-bronze. "It was a pragmatic decision," says Bolster, "to ensure her longevity. We were never dishonest about what we were doing, never said it was a replica. She's a reproduction, a new gundalow for a new era. Yes, she has an engine; yes, she has bronze fastenings. But she's built of big chunks of oak, with traditional joinery."

Nate Piper goes further: "You can walk around on the decks of the ADAMS and experience the feel of an original gundalow. But you can never go out and sail her and run with the tide and maneuver through the currents. By installing an engine and making the concessions the Coast Guard wanted, you can now take a gundalow up to the head of the river, shut off the engine, and run downstream like the old-timers; you

December 10, 2011. With the speeches over and the new vessel christened, the crowd awaits as PISCATAQUA slowly makes her way into the back channel at Peirce Island.

NED THOMPSON; THE GUNDALOW COMPANY

can really understand what they did and how skilled they must have been to do it."

No matter whom you talk to, there is an immense sense of achievement among those involved in the new gundalow project. "Nobody thought we were going to pull it off," says Piper. "From the earliest conversations, everyone had to be persuaded. But a lot of people put in a lot of hard work. In no small part the boat is here because Molly Bolster just kept saying, 'Yes, we will.'"

The gundalow took nine months to build. She was launched into the back channel between Peirce Island and Portsmouth's historic South End on a bright, chilly day, December 10, 2011. Speeches were made and the name at last revealed. In honor of all that had gone before her and in recognition of the role she was built to play, she was named, simply, PISCATAQUA. And she was beautiful. None but the builders had been quite prepared for this shapely newcomer. In shortening Chapelle's lines from 70′ to 64′, Harold Burnham had retained a pleasing sheer highlighted by the long, sweeping run of planking rising up to the stern and bow and the white-painted bulwarks contrasting with the barn red of her topsides. Overall she was, as one onlooker remarked, "a rare beauty—and a gundalow besides."

In the months that followed her launching, PISCATAQUA was rafted up to the old ADAMS while her builders attended to many unfinished details. Her inaugural public sail took place Memorial Day weekend, 2012. In her first season she hosted 300 trips for the public—three trips a day, five days a week. She has both motor-sailed and run with the currents under sail alone. She has hosted concerts, lectures, picnics, and, most important, introduced almost 2,000 children—mostly fourth and fifth graders from 60 of the region's schools—to the river and all its treasures. In 2013, PISCATAQUA will be running at full capacity: 80 school trips in spring and fall, 20 summer youth trips, and hundreds of public trips. And, in a nod of approval from the Coast Guard, PISCATAQUA's cruising limits have been extended beyond the mouth of the river to Odiorne Point in Rye, New Hampshire.

For Jeff Taylor, like so many others, PISCATAQUA has already more than lived up to expectations: "She is out there, on the river, day after day. Thousands have already been aboard her, thousands more have seen her from the shore and have wanted to get on board. By being so visible, she's reminding us all how important the river is, both for our past and for our future. Nothing could have done that better than a gundalow."

Jenny Bennett lives in North Hampton, New Hampshire, in the Piscataqua watershed. Her family owns a 26′ Bud McIntosh–designed sloop, which they sail from Harts Cove on the Piscataqua River.

With thanks to Molly Bolster, Jeff Taylor, Cy Sweet, Paul Rollins, Nate Piper, Nick Brown, Matt and Megan Glenn, Ned McIntosh, and the staff and Board of Directors of the Gundalow Company.

Welcoming the Public

Summer visitors to Portsmouth, New Hampshire, can sail aboard the PISCATAQUA Wednesday through Sunday, Memorial Day through October 31. Opportunities are available from mid-morning until dusk, and trips vary from two-hour sails at midday and in the afternoon, to a one-hour lunchtime sail on Saturdays, a three-hour brunch sail on Sundays, and two-hour sunset trips (including concerts, lectures, picnics) each day. Passengers can help raise sails, learn about the river's history and environment, or simply sit back and enjoy the ride. Tickets may be purchased either in the Gundalow Company office, 60 Marcy St, Portsmouth, NH 03801, or online at www.gundalow.org. —*JB*

For more information: www.gundalow.org; 603–433–9505.

Spirit of Tradition Yawl

A 21st-century classic

Design by
Rockport Marine Design

Commentary by
Robert W. Stephens

Spirit of Tradition Particulars	
LOA	65′7″
LWL	45′0″
Beam	15′7″
Draft	8′0″
Displacement	55,000 lbs
Sail area	1,850 sq ft

I'm a fortunate man. I just returned from a brief trip south, to sail in the Antigua Classic Yacht Regatta. Surely this is an event for every sailor's "bucket list." The fleet consists of a staggering variety of classic and classic-inspired vessels ranging from rough-hewn, colorfully painted native working craft to blindingly white-painted and gleamingly varnished legends of 20th-century yachting history to thundering modern classics racing under the Spirit of Tradition banner (a concept and name coined at the Regatta), flashing powerful modern hardware and carbon rigs. When the Caribbean weather fulfills its promise, the racing is simply epic—once you cross the slightly sheltered start line and poke your bow out past Cape Shirley, you are sailing in the full sweep of the tropical Atlantic Ocean, in the raw power of the Northeast Trades that have swept unhindered across three thousand miles of blue sea before your frail canvas tries to bend it to your will.

This year the weather fulfilled its promise. There was no question that we were sailing in big water: even aboard my ride, a luxuriously solid 88′ ketch, we were several times swept by boarding seas that overtopped our substantial bulwarks. Eight-foot waves were de rigueur, with the occasional set of several together that topped 10′. Winds were a steady 25

This 65′ Spirit of Tradition yawl from Rockport Marine Design combines modern rigging and materials with the appearance and rig of a classic yacht.

knots, gusting over 30. It was serious sailing, and it was dramatic to see these gorgeous treasures of our classic yacht heritage thrashing against conditions far outside their comfort zone, and loving every minute. And their crews were equally enthusiastic—for many it was the thrill of a lifetime to challenge the sea and return invigorated. Compared to sailing in northern climes, the fact that you can take a soaking without being chilled to the bone is, of course, a great boon—foulweather gear is unnecessary, as a passing squall will wash the salt from your skin and the sun will soon bake you dry.

All of this is a long introduction to our subject—a 65′ yawl drafted by the talented staff at Rockport Marine Design. A design office within the deeply experienced boatbuilding firm of Rockport Marine, this crew has firsthand knowledge of what it takes to build a classic, as they have been intimately involved in the restorations of so many. Designers Sam Chamberlin and Brendan Riordan have worked side-by-side with Rockport Marine's dedicated craftspeople, supplying the design support to bring such legends as the S&S yawl BOLERO and the Fife schooner ADVENTURESS back from the brink (both yachts were in the fleet in Antigua this year).

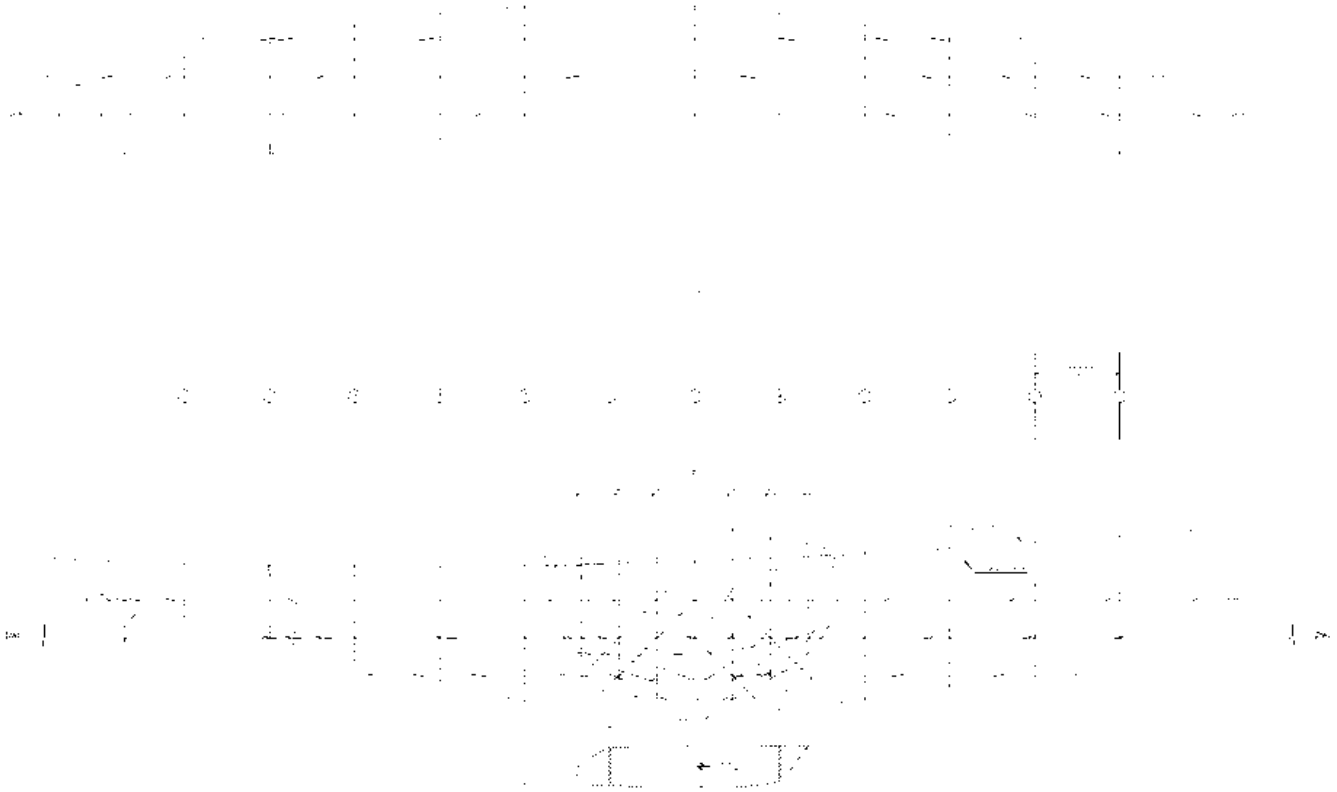
While restoration has been their bread and butter lately, Rockport Marine also has an impressive stable of new-builds in the Spirit of Tradition fleet to its credit. This latest offering shows they have not forgotten how to work with more modern techniques and materials, while preserving the appearance and feel of a 75-year-old classic.

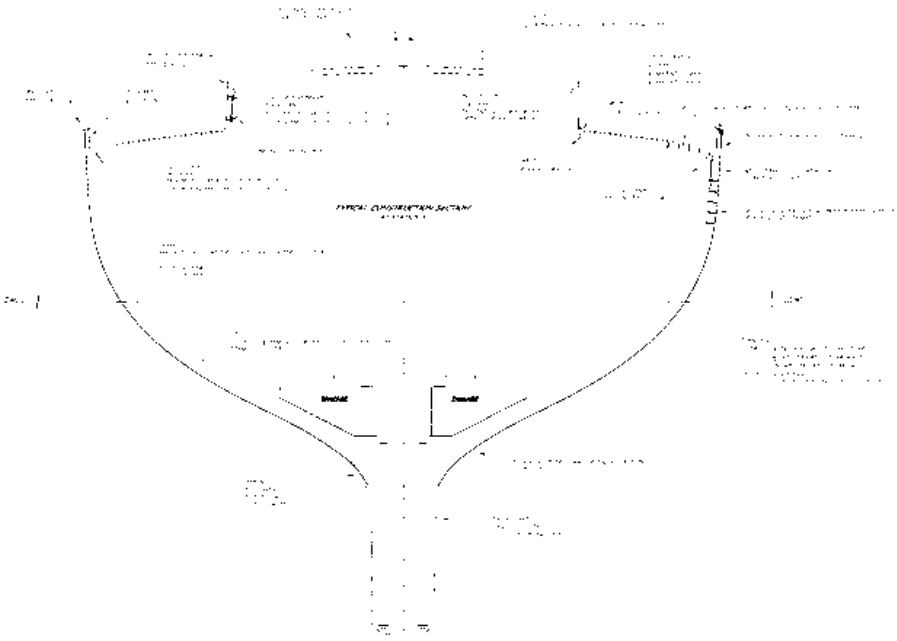
In many ways, this yawl is representative of the Antigua Classic fleet. She's clearly of a style developed in New England and northern Europe, primarily intended for inshore sailing, and although fully capable of sailing across oceans, she would not be the most comfortable choice. The big water of Antigua (or the Bermuda Race, or any true ocean sailing) will tax her ability to keep her crew dry and sheltered. For true passagemaking, there's no substitute for really generous freeboard—it keeps the decks dry, adds reserve buoyancy and stability in a knockdown, and enhances the room below for living and storing cruising gear.

But high freeboard just doesn't *look* very good! So it's a rare commodity in a fleet whose top priority is classic style and grace. Similar thinking applies for our yawl's long and graceful spoon bow and counter stern—these look terrific, but are not advantageous in big water. But we love them so much that we won't give them up, and for an occasional sojourn in the big stuff, we won't suffer too much for their sins.

Our 65-footer has slightly greater freeboard than many true classics; careful treatment of a recessed bulwark and covestripe help her carry this with aplomb. The bulwark is tall enough to make a real difference on deck as well—it's a great foothold and contributes greater security than a simple toerail. A low, classic cabin trunk and relatively shallow cockpit complete the image of a boat from the '30s or '40s rather than a contemporary yacht.

A close look at the deck hardware and rigging details shows us that we are seeing something of a more recent vintage, however. The main shrouds are set well inboard of the rail, to allow closer sheeting of an overlapping genoa jib. In truth, this style of sailing speaks to a crew more comfortable with styles of 20 years ago rather than at the cutting edge—modern raceboat theory has sail plans sized so that overlapping headsails are unnecessary, and



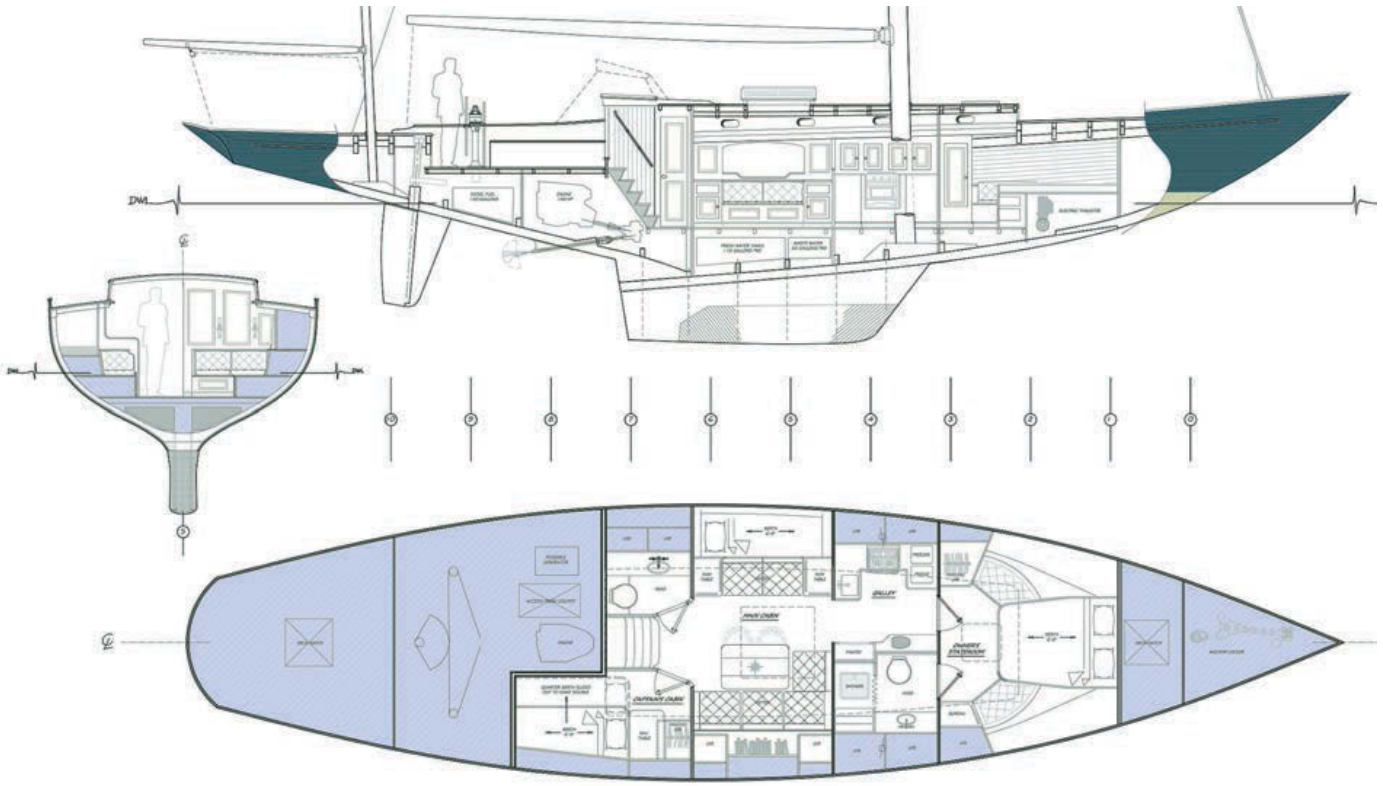


The yawl's graceful lines are drawn out into classic overhangs, while a long fin keel promises good windward performance and a steady helm.

shrouds are again placed at the rail, for lighter, less heavily loaded rigging and faster, easier tacking than pulling a big genoa through the foretriangle then winching it in at great muscular cost. But then, modern raceboat theory has no place in it for a yawl rig.

The mizzenmast will contribute more style and maneuverability than additional boat speed. Its ability to support a mizzen staysail will give at least the illusion of increased speed on a broad reach. A carbon mast will reduce the risk of the splinters flying, which we witnessed in several cases in Antigua where the combination of hull speed, big waves, and the load of a mizzen staysail was just too much for the overworked mizzenmast to withstand. The mainmast is also of carbon, conferring lighter weight and more dependable strength. The biggest plus this yawl will realize from the carbon mast will be the reduction in pitching moment achieved by lowering her gyradius. This is especially advantageous in vessels with long overhangs, and pays big dividends in big water.

Our yawl's lines show a graceful hull of moderate proportions and clean, smooth diagonals (nice to see diagonals in a lines plan these days!). There's an unusual twist in the after sections, so the counter is flatter than the midsection. It'd be interesting to see a diagonal that passes through the turn of the bilge back here. A moderately long fin keel will deliver good windward performance with a steady helm, and



The accommodations, too, combine contemporary elements with classical ones: The saloon layout and forward galley hark back to the 1930s, while the centerline double forward will be of great comfort for coastal cruising.

a sizable skeg-hung rudder will ensure pinpoint maneuverability. The skeg again speaks to an older style of design—a modern spade rudder is more conventional nowadays, and overbuilding in a carbon shaft alleviates the concerns we had 20 years ago about unsupported blades breaking off. In fact, I think it's harder to engineer a skeg that will actually lend meaningful support and protection to the rudder than to design a sturdy and dependable spade rudder.

Below, Chamberlin and Riordan have done a masterful job of blending the best of traditional and modern layouts. The arrangement is expansive for a yacht of 45′ on the waterline—all the spaces are generous, and no attempt has been made to shoehorn extra cabins and berths into a limited space. The forward galley and rectilinear saloon with pilot berth are straight out of the '30s, while the owner's cabin with centerline double will be well received at a 2013 boat show. For gracious living on the hook, and for accommodating a couple with a full-time captain and occasional overnight guests, the layout will be delightful. This interior further solidifies the yawl's mission as a coastal cruiser. Offshore the roominess will become a liability, the owner's cabin will be untenable, and the cook will curse the forward galley.

Her construction shows the hallmarks of modern wooden yacht construction as refined in the top boatyards of Maine over the past two decades—sturdy laminated frames supporting a laminated backbone and a cold-molded skin consisting of diagonal "veneers" of thinner planking sandwiched between thicker layers of longitudinal strip planking. This method has proven to be not only the fastest and most efficient way to create a complex shape, but also stronger than competing methods of building with laminated wood. The longitudinal planking best resists the large forces imposed by rigging and seas, and the thinner diagonal layers handle the relatively smaller torsional loads on the hull. At 55,000 lbs displacement, the yawl is moderately light, but not a featherweight: she will perform well in the milder conditions in New England waters, and have enough beef to absorb the greater stresses of big water with comfort and security.

This boat will be a fine addition to our yachting heritage; I hope someone steps forward to build her, so I can enjoy the experience of watching her poke her nose out past Cape Shirley and bash her way out to the turning mark, before surfing the rollers down to Old Road Bluff with the quarter wave climbing over the bulwarks and the rigging not humming, but *roaring*.

Bob Stephens is a partner at Stephens Waring Yacht Design, in Belfast, Maine. He's been designing Spirit of Tradition boats since before they had that name.

Chautauqua Lake's Great White Fleet

CHAUTAUQUA INSTITUTION ARCHIVES

A fabled destination's wooden steamships

by Norman Ward

After the Civil War, Americans discovered the summer resort as a means of escaping the oppressive heat and choking coal smoke of burgeoning industrial cities. Such resorts were often located on the shores of mountain lakes, where cooler temperatures prevailed and where opportunities for outdoor recreation abounded. Summer communities of opulent and grand Victorian homes and hotels sprang up, and the steamboats that brought visitors to these villages were their only link to the outside world.

Chautauqua Lake, in the extreme southwest corner of New York State not far from the cities of Cleveland, Ohio, and Pittsburgh, Pennsylvania, became known very early as one such summer escape. The lake, which sits at an elevation of 1,308′, is 2 miles wide, approximately 20 miles long, and consists of two basins of similar size joined by a 1,000′-wide narrows. The water depth averages about 30′ in the western basin, with a maximum of some 65′ to 75′, and in the eastern basin the average is 12′ with a maximum of about 30′. Despite the fact that its headwaters are only about 7 miles from the shores of Lake Erie, the lake drains through the Mississippi River complex.

Chautauqua Lake was soon ringed by numerous villages, including one that became home to one of the best-known resorts of the Victorian period—the Chautauqua Institution. Founded in 1874, the Institution (see sidebar, next page) gained worldwide fame for its focus on culture, religion, education, and the arts. As the Institution's fame spread, so did the reputation of the lake itself. Soon, tens of thousands of people retreated each summer to Chautauqua's shores, arriving by rail and transferring to steamboats sailing on schedules from village to village. As demand surged, Chautauqua Lake's fleet of steamboats increased.

The first steamboat on Chautauqua Lake was CHAUTAUQUA, a side-wheeler launched in 1828. Steamboat design continued to evolve through the 19th century, and it had barely reached its adolescence even by the end of the Civil War. Designers and engineers continued to develop innovations in hull shape, drive systems, and engines. As they wrestled with questions of configuration, size, power, maneuverability, cost, upkeep, and dozens of other factors, a design coalesced in the last decades of the 1800s for the classic screw-driven Chautauqua Lake steamboat, the successor to the earlier stern-wheelers and side-wheelers. Screw-driven steamboats had relatively deep-draft hulls, modest

***Above*—The second CITY OF BUFFALO, shown leaving the Old Pier Building at the Chautauqua Institution (which also kept an extensive small-boat livery), was launched in 1890 at the beginning of the heyday of the Great White Fleet. She was mid-sized at 125′ LOA, but to many she was the quintessential Chautauqua Lake steamer.**

beam, reasonable freeboard, and graceful sheerlines. Most of the boats had two decks, with a pilothouse on a truncated hurricane deck. Most were propelled by a single screw, and their stacks were typically forward of amidships. The larger steamers of this design were capacious; the CITY OF CINCINNATI, for example, could carry 800 to 1,000 passengers.

The lake's passenger traffic was greatly augmented by the founding of the Chautauqua Institution in 1874, and the steamboats flourished. The Institution was a magnet that attracted many thousands of people to Chautauqua Lake, spreading the area's reputation as a destination, and with them the Great White Fleet expanded to meet the demand. The steamships transported thousands of people to, from, and around the lake. The fleet and the Institution had a symbiotic relationship that profited both. Indeed, it could be said that neither the Institution nor the fleet would have realized its full potential without the other.

The steamboats were something more than just a simple water-taxi service. They were a vital component of an extensive economic enterprise that centered on the lake and especially the Chautauqua Institution. With the increase in the resort economy came more hotels, restaurants, picnic grounds, railroads, amusement parks, theaters, and all the consumables required to house, feed, clothe, educate, and amuse the thousands of people who came to Chautauqua Lake.

Throughout much of the steamboat era on the lake, two dominant companies competed to pick up customers at railroad terminus points for routed trolley lines and excursion trains, and for transfer service for rail lines. Aggressive competition between the fleets resulted in impromptu races, fistfights, deliberate rammings, suspected sabotage, probable arson, reports of pistol shots, and other "sports."

FENTON HISTORY CENTER


Steam-Boat

CHAUTAUQUA.

UPON Chautauque Lake, Wilson, Master, has commenced her regular trips between Jamestown and Mayville. She will leave Jamestown every day, at 7 o'clock, A. M. and arrive at Mayville at ten o'clock. She will leave Mayville the same day, and arrive at six o'clock in the evening. She will, after convenient landing places are prepared, call at Fluvania, Ashville, Bemus', and Long Point. The boat is well fitted up for passengers and freight.

Parties of Pleasure

will be accommodated. From the interesting situation of Chautauque Lake, and the country upon its borders, it is believed that the boat will be liberally patronized.

Jamestown, July 15, 1848. 21tf

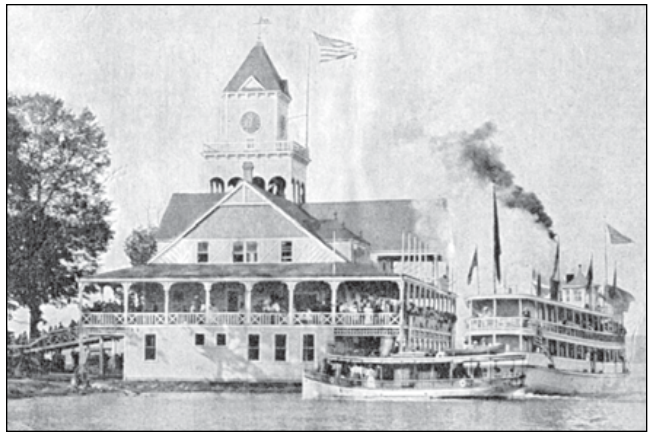
***Right*—The first CHAUTAUQUA, a side-wheeler, initiated steamboat travel on Chautauqua Lake beginning in 1828. *Above*—Launched in 1863, the second CHAUTAUQUA is considered the first of the Great White Fleet boats. She sailed until August 4, 1871, when she was destroyed by a boiler explosion that killed 9 and injured 17.**

Of the 15 large steamships on the lake during the golden age of the Great White Fleet, as the lake's steamboats came to be called, 13 were built entirely of wood; one, the second CITY OF BUFFALO, was sheathed in steel; and another, the CITY OF JAMESTOWN, had an all-steel hull. (Boats were often renamed, and the same name was often reused on succeeding boats; for convenience, I use the most common name for each boat.) Given the newness of the technology, the fierceness of the competition among the boats, and the density of the lake traffic, it would be reasonable to expect that the lake's steamers would have experienced a significant number of accidents and incidents. Yet during more than a century of steamboat navigation on the lake,

Making "Chautauqua" a Household Name

Continued on next page

Large and small steamboats served the Chautauqua Institution. Here, the second CITY OF BUFFALO shares the dock with the CELERON. The CITY OF BUFFALO was one of four steamboats designed by Capt. J.W. Pierce, all of which were similar in proportion and shape.



JAMESTOWN POST-JOURNAL

the big boats suffered only four fatal accidents. The most significant was the 1871 boiler explosion aboard the second CHAUTAUQUA, which obliterated the forward half of the boat and claimed the lives of nine people, including several from a very prominent Cleveland family. Seventeen others suffered significant injuries. Another of the fatal accidents occurred when a crewman on the COL. PHILLIPS named Jesse VanCise—my great-grandfather—was lost overboard.

The Great White Fleet era that began with the launching of a second CHAUTAUQUA in 1863 reached its pinnacle in 1891 and 1892, when 10 of the 15 steamboats built for the lake were operating simultaneously. But even as it reached its apex, the steamboat business showed signs of overproduction, with a glut of steamboats competing for what had become a fairly stable number of customers. As the numbers of passengers per boat fell, the response of the steamboat companies was to lower rates in order to attract more passengers, with the competition quickly following suit. Soon ticket prices dropped precipitously, and with them the profitability of every competitor. In 1892, one of the companies, Almet Broadhead's Chautauqua Lake Navigation Company, stabilized the situation by buying up most of the competing boats. This consolidation effectively ended the steamboat wars.

Competition in a different form came with trolley lines along the lake, among them lines developed by Broadhead family companies, which began to supplant the steamboats. The arrival of the automobile in the early 20th century brought an even more crippling form of competition. The steamboat era went into decline, but the Great White Fleet hung on well into the 1920s. By the end of the period, one steamer had exploded, five had been dismantled, and nine had burned. The last remnant of the steamboat era on the lake was the crumbling CITY OF JAMESTOWN, which had taken her last run in 1963 and was broken up in the early 1970s.

Norman Ward was born and raised on Chautauqua Lake, where he developed a lifelong interest in the steamers. He now resides in Indianapolis, Indiana, with his wife, Nan.

For More Information:

- **The Lawson Center,** *Bemus Point, New York* (www.thelawsoncenter.org).
- **The McClurg Museum,** *Westfield, New York* (www.mcclurgmuseum.org).
- **The Fenton Museum,** *Jamestown, New York* (www.fentonhistorycenter.org). The CITY OF JAMESTOWN's steam engine is on display on the grounds. The Center has also published *Chautauqua Lake Steamboats*, a history.
- **Bemus Point [New York] Historical Society** has a 14-volume *Chautauqua Lake Steamboat Scrapbook* with hundreds of steamboat images, histories, and newspaper clippings.

Continued from preceding page

JAMESTOWN POST-JOURNAL

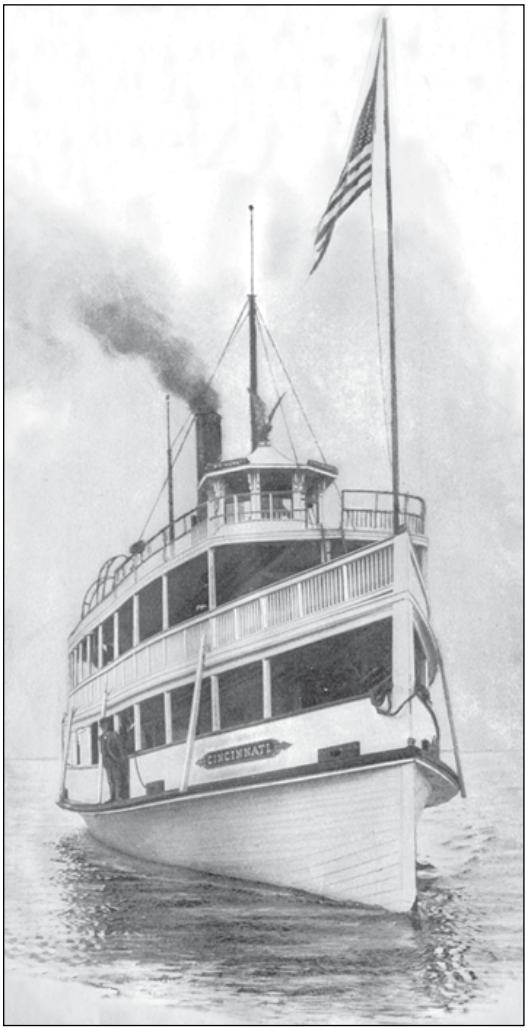
The second JAMESTOWN, the largest of the Chautauqua Lake steamers, threads through "the outlet" at the east end of the lake. Built in 1875, with a third passenger deck added in 1878, the 175′ LOA stern-wheeler could carry some 3,000 passengers. She caught fire and burned at her berth in 1892.

The CITY OF NEW YORK, a 132′ propeller-driven steamboat launched in 1880, is shown here moored at Celeron, a lakeside community popular among visitors for its amusement park, picnic grounds, and theater. The town dock was served by an urban railway.

DANA BELT COLLECTION

CHAUTAUQUA INSTITUTION ARCHIVES

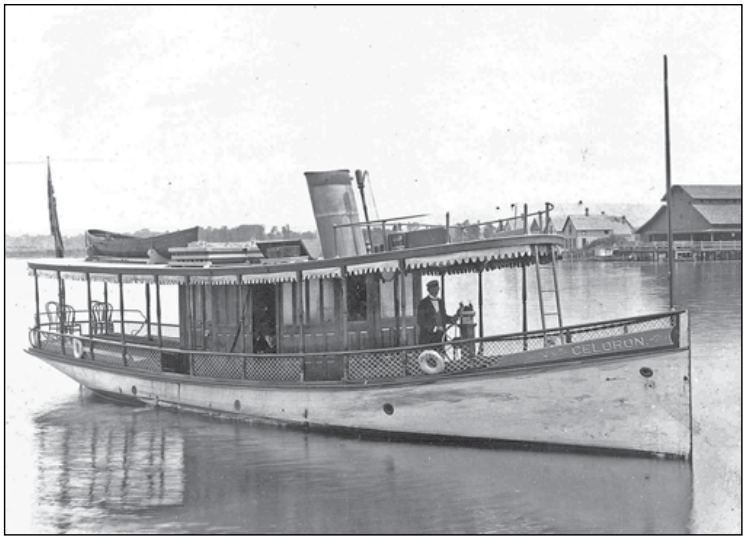
Arrivals and departures from the Chautauqua Institution dock were busy times. The village accommodated not only scholars visiting for stays of a couple of weeks but also summer residents whose hefty steamer trunks arrived with them.



JAMESTOWN POST-JOURNAL

The CITY OF CINCINNATI, a 132′ screw steamer designed by Capt. J.W. Pierce, had a long and distinguished career. A crew of 12 built her at Burroughs Brothers shipyard in 25 weeks during the dead of the winter of 1881–82 without the benefit of power tools. She was fast, with fine lines and a 400-hp steam engine turning a 5′6″ propeller. With carpets, fine upholstery, colored glass clerestory windows, and fine furnishings, she was a favorite of the fleet, carrying up to 800 passengers. She served from 1882 until 1927, after which she was used as a fishing camp until burning in 1938.

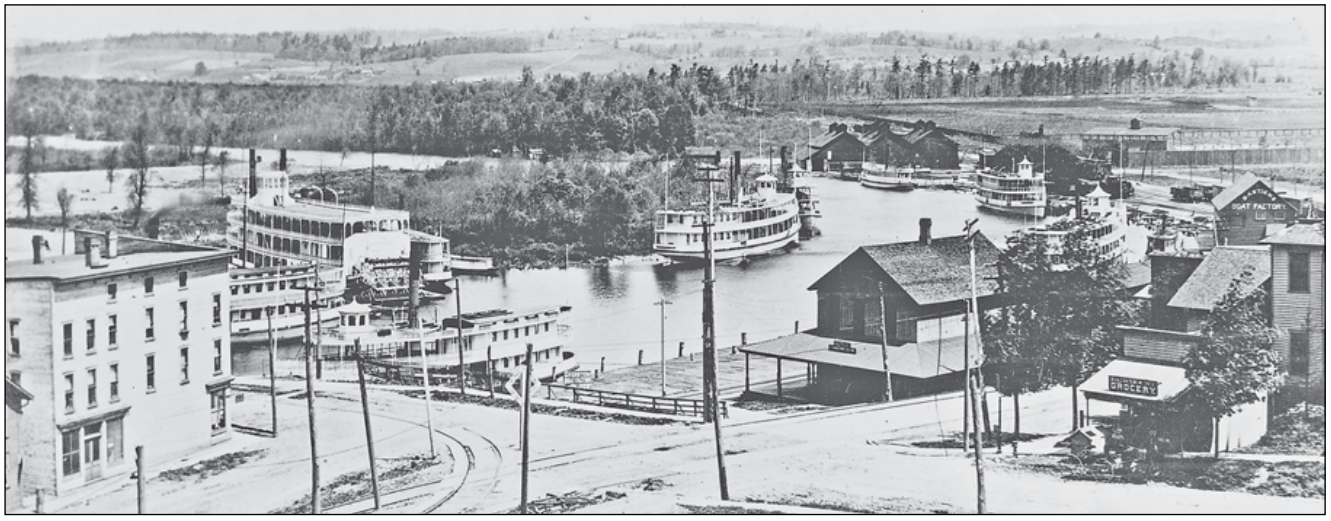
The small, fine-lined steamer CELERON, distinguished by her raking stack and open deck plan, served as a ferry in the lower part of Lake Chautauqua, along with sistership GREENHURST, from 1895 until 1912.



FENTON HISTORY CENTER

Lake Chautauqua steamers were usually hauled out and launched sideways, probably because the Jamestown yards were located on the lake's narrow outlet. Here, the 100′ CITY OF PITTSBURGH, a fairly small steamer of the fleet, is hauled out for work.

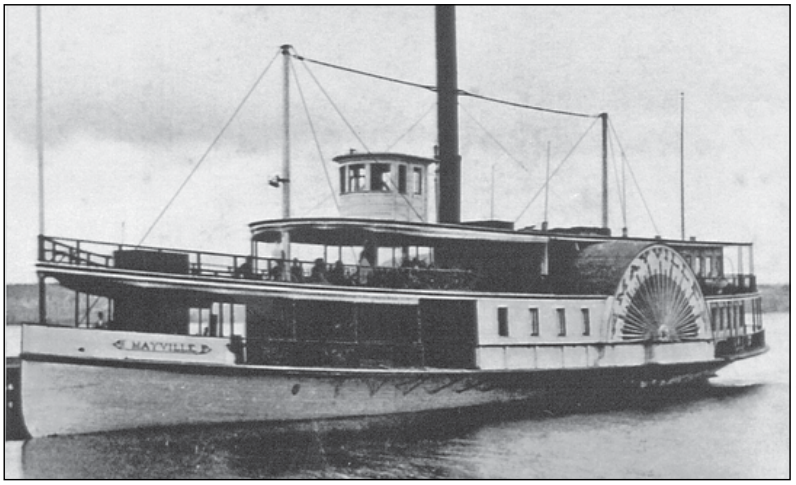
FENTON HISTORY CENTER



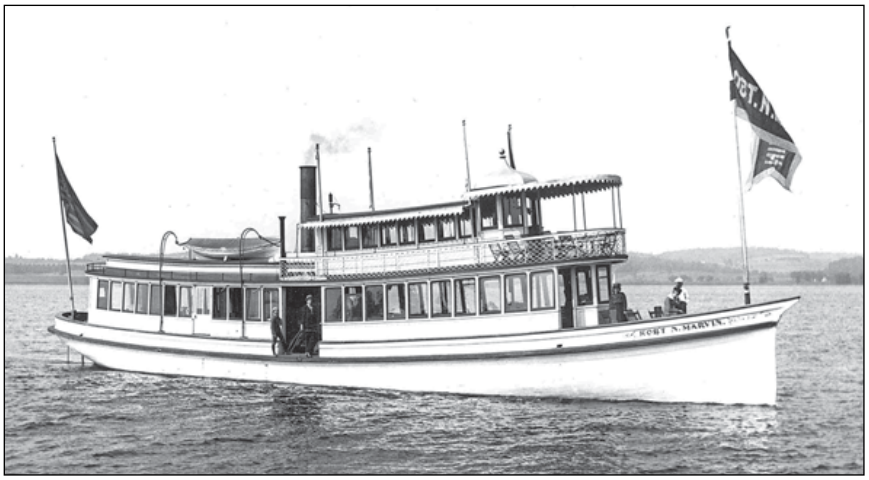
JAMESTOWN POST-JOURNAL

Steamboats line the waterfront at Jamestown, in the narrow Chautauqua Lake outlet. Jamestown was the lake's largest commercial center, with rail connections to larger cities such as Cleveland and Pittsburgh. The steamers shown, clockwise from the foreground, are the CITY OF PITTSBURGH; the CITY OF CINCINNATI; the second CITY OF JAMESTOWN, a stern-wheeler; the small GRIFFITH alongside JAMESTOWN; the CITY OF NEW YORK; the CITY OF CHICAGO; VINCENT; the CITY OF CLEVELAND; and the second CITY OF BUFFALO.

MAYVILLE, built in 1876, was the last of the side-wheelers to serve on Chautauqua Lake, and because she had a reputation for being slow and maintenance-intensive, she was in use for less than a decade. Before her, four other large steamboats on the lake were side-wheelers, two were stern-wheelers, and two were propeller boats; after her, all were propeller boats except for one stern-wheeler. Advances in technology in steam engines and especially in drive systems overtook boats such as MAYVILLE by the time of the golden age of the Great White Fleet. Decommissioned in 1885, she served as a carpenter shop until 1891 and was broken up in 1892.



DANA BELT COLLECTION



FENTON HISTORY CENTER

The ROBERT N. MARVIN (better known by her later name of CITY OF ROCHESTER) was another of the small steamboats that supplemented the fleet of larger steamers. Built in 1890, she continued in ferry service until 1915, and later in her career her upper deck was removed, making her far less attractive.

Edited by Robin Jettinghoff

These pages along with the Boat Launchings section of www.woodenboat.com are dedicated to sharing news about recently launched boats built or restored by our readers. If you've just launched a wooden boat, please write us at Launchings, WoodenBoat, P.O. Box 78, Brooklin, ME 04616 or email us at launchings@woodenboat.com.

Please include the following information: (1) the boat's length and beam; (2) the name of its design class or type; (3) the names of the designer, builder, owner, and photographer; (4) your mailing address along with an email address or phone number; (5) the port or place of intended use; (6) date of launching; and (7) a few sentences describing the construction or restoration process. We prefer digital jpeg images at 300dpi. Please send no more than five photographs and enclose a SASE if you want anything returned.

IRIS MORRIS

Above—George Klitsch of Valrico, Florida, found Edwin Monk's design for this 15′4″ sloop in the 1958 issue of *Boats You Can Build*, a publication of *Popular Mechanics* (No. 592). George built LIL TYKE's hull with marine plywood on fir frames, covered with epoxy and fiberglass. He made the centerboard from 3/16″ aluminum, and bought the used sails on eBay.

PETER JONES

Above—On July 4, 2012, Peter Jones of Auburn, Alabama, launched M'MBA, a modified Joel White–designed Catspaw dinghy he built over six years from plans purchased at The WoodenBoat Store, (www.woodenboatstore.com). He made the modified four-strake, multichined hull from okoume plywood on white oak frames. M'MBA rows and motors well. Peter hasn't finished the sailing rig, though he's replaced White's centerboard with leeboards.

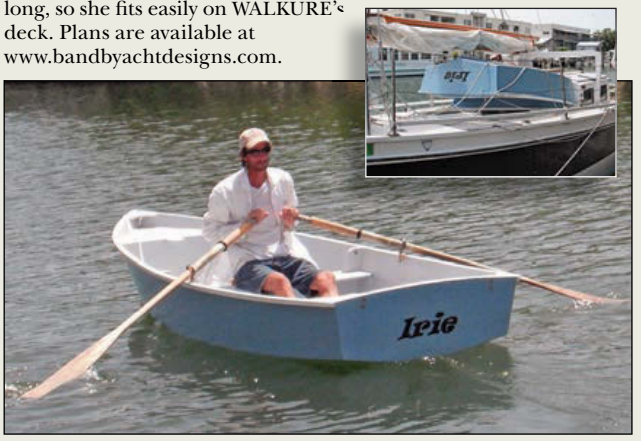
Below—At age 79, Henry Vokey of Trinity, Newfoundland, laid the keel for this 44′ schooner of his own design. Working summers for the next three years, he built her from local juniper and spruce with 1¼″ planking on 2¾″ sawn frames. The sails were from Nova Scotia. Henry launched LEAH CAROLINE on July 7, 2012, in Trinity Bay, Newfoundland. Contact Henry at sharonvokey@gmail.com.

DENNIS FLYNN

Below—Chip Trebour designed this 15′6″ canoe himself with TurboCAD, and notes that he went a little crazy on the tumblehome. LUCILE is strip-planked with western red cedar, has decks of burled maple, walnut stems, and mahogany seats and yoke. The mahogany gunwales have two maple pinstripes. Chip plans to fish from LUCILE near his home in Richmond, Virginia.

CHIP TREBOUR

Below—Dave McBride, who with his wife, Connie, lives aboard their 29′ Bolger Sharpie, WALKÜRE, built this 11′ Spindrift nesting dinghy as a tender for their floating home. He built the stitch-and-glue hull with ¼″ meranti plywood and epoxy. Designed by Graham Byrnes, IRIE separates into two pieces, the larger just 5′7″ long, so she fits easily on WALKÜRE's deck. Plans are available at www.bandbyachtdesigns.com.



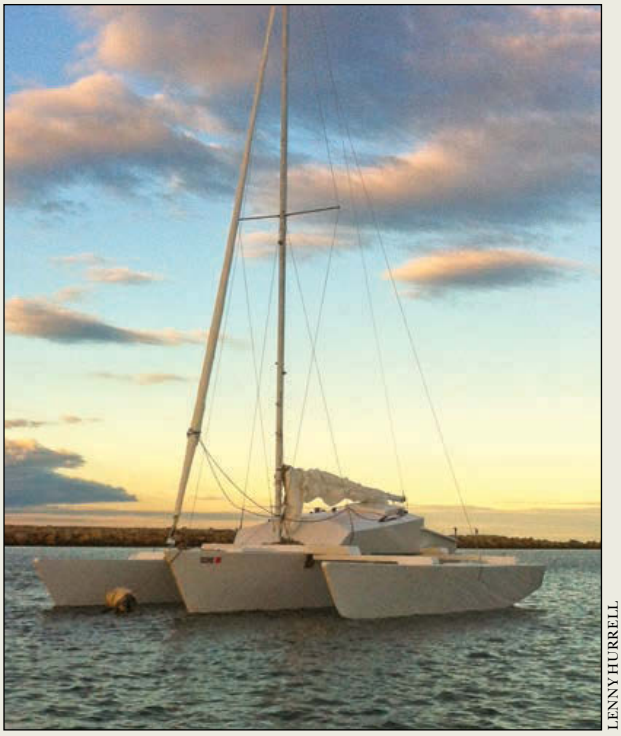
CONNIE MCBRIDE

Below—After Rob Caveney of Kailua, Hawaii, built his 19′ Whitehall, he had a bit of a challenge getting the boat from his yard to the water, which was down a steep slope about 50′ away. Unable to carry it down, he rigged a zipline launcher. Rob built the Legacy Whitehall (www.legacywhitehalls.com) from ¼″ marine plywood and recycled mahogany.

ROB CAVENEY

Below—YE OL BOAR is a Wa'apa outrigger canoe built by Pelle Petterson of Dalby, Sweden, from plans in *Building Outrigger Sailing Canoes* by Gary Dierkings. The plywood main hull has three 8′ sections, making it 24′ long, or 16′ long with the center section removed. Pelle launched YE OL BOAR in August 2012 on Lake Mälaren near his home. Contact Pelle at dalbynybygget@live.se.

GUNILLA NEHLIN



LENNY HURRELL

Above—Lenny Hurrell of Saco, Maine, launched the first Seaclipper 24 trimaran at Camp Ellis, Maine, last September. Designed by John Marples for amateur construction, TYJ (24′ × 16′4″) was built from marine plywood on Douglas-fir frames. Lenny had help from friends Mike Martel and Brad Lodge. They'll be sailing on Saco Bay this summer. Plans are available from www.searunner.com.

KAREN JUBERT

Above—Bill Bearce of Medway, Massachusetts, built this 9′6″ launch by eye and without plans, from plywood and mahogany recycled from a demolished house. Bill restores vintage outboard engines and powers the ABBY ELLA, named after his two granddaughters, with a 1963 5.5-hp Evinrude. He launched her last summer on Highland Lake in Washington, New Hampshire.

Below—JULES, a modified Laker 13 designed by JEM Watercraft (www.jemwatercraft. com), is the creation of Robert Thayer of Kauai, Hawaii. He built her from okoume plywood for fishing in calm waters. Robert's modifications include raising the sheer, and adding flotation chambers and an ama. The ama is connected with a 'midship aka to allow paddling clearance in the bow and stern.

ROBERT THAYER

MIKE CRUDEN

Above—RUFF N READY is Mike Cruden's new 15′ Diablo skiff. With plans from www.instantboats.com, he built parts in his basement over the winter, then assembled them in his garage in the spring. He bought most of the materials at a local lumber supplier, stressing that "there's not a fancy piece of wood in her." Last spring, Mike launched her on Great Sacandaga Lake in New York.

Below—Bill Hendry built this Simmons Sea Skiff over 18 months from oak, marine plywood, and epoxy. He modified the plans by adding foam flotation and a fish well, extra frames, sharper rakes at the bow and stern, and a net-throwing platform. Bill powers SEA SALT with a 25-hp Johnson outboard. Plans are available at www.capefearmuseum.com.

TREVOR HENDRY

CAROLINE SANTILLI

Above—"Every time we left the mooring, my 24-year-old daughter would sing 'WEEEEE!'" John Laupheimer of Weston, Massachusetts, writes about his new 21′ Alden Indian, named WEEEEE! While the plans (www.woodenboatstore.com) called for traditional lapstrake construction with ⅝″ pine planking, he chose glued-lap with ⅜″ sapele instead. John was grateful to the WoodenBoat Forum community for their help. Contact John at j.laup@comcast.net.

Right—Seeking a lightweight dinghy for his 40′ Rhodes cutter, NARWHAL, John Lunde of Washington, New Jersey, asked Greg Rössel, a Whitehall aficionado, for help. Greg modified a Platt Monfort (www.gaboats.com) Whitehall design, deepening the keel and adding extra frames, floorboards, and a cover of Dynel on the Dacron hull. Though 70 lbs, instead of Monfort's original 30, it still stows easily and handles beautifully.

JOHN LUNDE

Below—Jeanne and Tony Zucker rescued this GP14 from a barn in East Tennessee. Jack Holt designed the GP14 (14′ × 5′1″) in 1949. The Zuckers believe their boat was built by Bell Woodworking of Leicester, England, in the 1950s. They repaired the boat's rot, replaced the transom and floorboards, and stripped and refinished the hull. They sail out of Concord Yacht Club in Knoxville.

KEVIN JOHNSON

ALLEN ZWICKELL

Above—Moores Marine in Riviera Beach, Florida, spent nine months on a structural refit of LIBERTY before launching her last February. She is a 68′ John Trumpy half-flush-decked cruiser, originally launched as SERENO III in 1954. LIBERTY is one of only three yachts of her particular type. Her owners will keep LIBERTY in Palm Beach, Florida. For more information, visit www.woodenboatrepair.com.

Right—Jaymian Friesen of Bronze & Bevel in Steinbach, Manitoba, Canada, recently restored this 10′ rowboat. He believes it may be a Peterborough Auto Boat. Among other things, he replaced several planks, repaired rot in the rails and stem, built a new seat for her, and refinished her interior with linseed oil. Contact Jaymian at jaymian@gmail.com.

KELLY FRIESEN

CHARLOTTE WIGHT CHABOT

Above—When Jeff Chabot was 14, one of his neighbors bought this 19′ Lyman Runabout. Jeff said he wanted to own that boat one day, and when his neighbor turned 89 not long ago, he sold the boat to Jeff. Jeff rebuilt the Chrysler 318 engine, installed new seats and decks, and refinished her. He relaunched SNOOKY POO TWO on Lake Winnipesaukee, New Hampshire, last summer.

Hints for taking good photos of your boat:

1. Pictures need to be at 300 dpi or larger to be printed in the magazine. Send no more than five unretouched jpgs. 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 no more than five. Include some action shots and some of the boat at rest. Pictures in a vertical format are also welcome.

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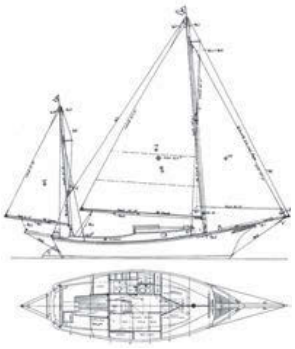

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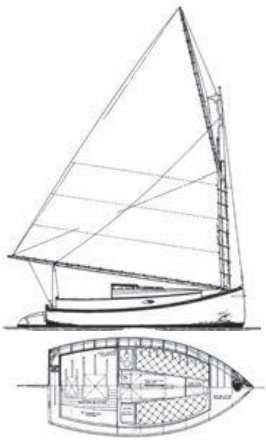

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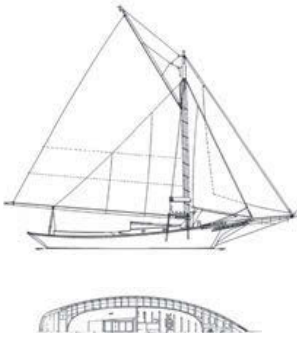

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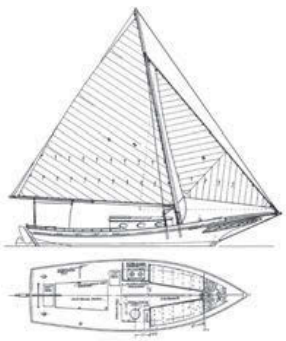

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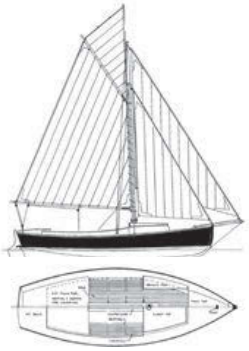

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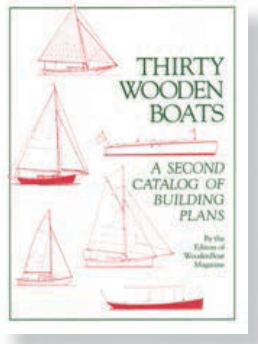

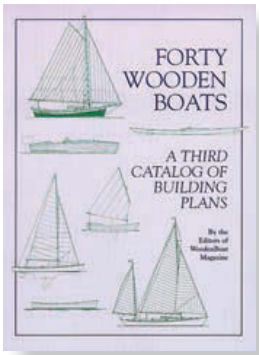

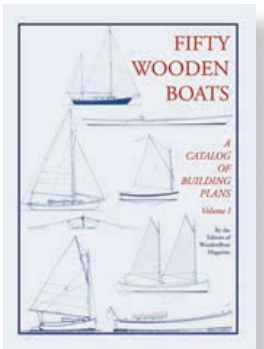

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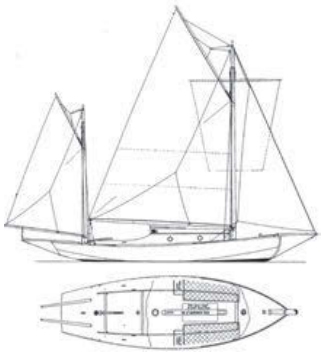

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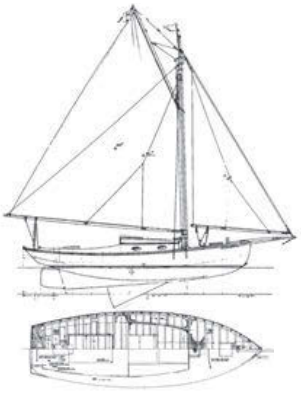

26′ Gaff Sloop
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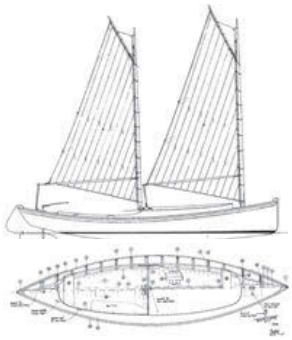

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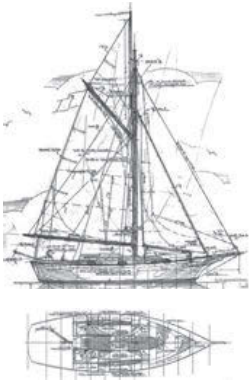

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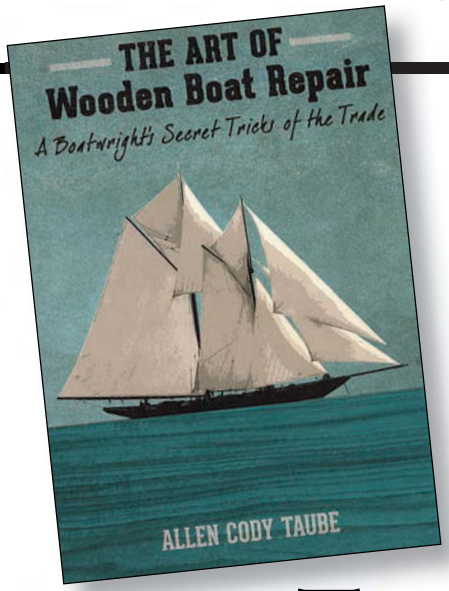

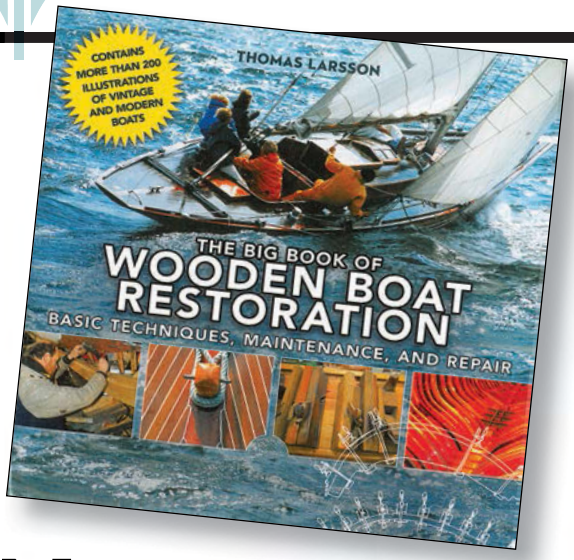

Two New Repair and Restoration Books

The Art of Wooden Boat Repair: A Boatwright's Secret Tricks of the Trade, by Allen Cody Taube. Granny Apple Publishing, Sarasota, FL, 2013. ISBN: 098–8–99–100–4. 183 pp., $19.95. *Available from The WoodenBoat Store, www.woodenboatstore.com.*

The Big Book of Wooden Boat Restoration: Basic Techniques, Maintenance and Repair, by Thomas Larsson. Skyhorse Publishing, 307 West 36th St., 11th Floor, New York, NY 10018, 2013. Originally *Stora boken om träbåtsrenovering.* ISBN: 978–1–62087–051–8. 240 pp., $24.95. *Available from The WoodenBoat Store.*

by Greg Rössel

New wooden boat construction is a linear type of activity in which each step follows the next in a logical sequence, with each piece carefully fashioned to match the previous one. The builder has the luxury of selecting the quality of the wooden stock and the fastenings to hold them together; everything is done in an orderly fashion that balances stress. A steamed frame installed on the port side is mirrored by one on the starboard. A plank bent to one side is (generally) matched by one on the other. It's contemplative, dependable, and controlled.

Repair and restoration are not like that at all. The tasks don't flow in a logical order. Indeed, as Forrest Gump might say, it's "like a box of chocolates. You never know what you're gonna get." Boat repair can be like the ten-minute job to fix the little rot spot behind the kitchen sink that ends up with you taking out the entire wall. Often, it's not only trouble that the repairer faces, it's unknown trouble.

When a customer delivers his beloved one-design to the repair shop to address a mysteriously misshapen hull that weeps continuously, the builder is presented with a plethora of unknowns that need to be diagnosed before the boat goes into surgery. Forensic inspection of the hull may reveal frames that, though originally lithe and supple, are now dry and brittle as the Pharaoh's mummified bones. How about the fastenings? Have those brass planking screws that were state-of-the-art in 1930 now been transmogrified into pink mush? Or perhaps instead

of screws, the planking is held with ring nails which, while easily installed, are now obdurately anchored to the oak keel and will resist any attempt (outside of blasting) at plank removal. A plank at the turn of the bilge that was a challenge during building can turn into the shutter plank from hell when it comes time to replace it. Then, probing further, have those "rust-resistant" iron keelbolts corroded and expanded to twice their original diameter? Tapping the keel with a mallet, does the wood ring true or does it produce a dull thunk that might indicate the keel has the punky consistency of an old jack-o-lantern? Does the boat have twist, or has the keel hogged—and why? And that is just the beginning.

It's often been said that you can learn a lot more by repairing a boat than by building new. There is certainly the opportunity to find out what techniques and materials work in the long term. But it can prove an expensive education if you get the diagnosis wrong. This is where it helps to have some good advice from someone in the trade—something that sometimes is hard to come by.

Recently, a couple of new books with reliable and pragmatic advice on the topic have been published, from voices on both sides of the Atlantic. There are differences in approach and technique (and commonalities as well) between the authors. Boat repair is a trade of troubleshooting and invention, and each person involved in it will have his own technique that has proven effective for him. The books' introductions set the tone for the authors' approaches to their craft.

From Sweden comes Thomas Larsson's *The Big Book of Wooden Boat Restoration: Basic Techniques, Maintenance, and Repair*. Larsson trained as a construction engineer but since 1974 has been renovating wooden boats full time. He begins his book at a logical place: proper maintenance of the vessel, both in the water and in winter storage on land, that can help avoid many problems before they ever get started. Coming from Sweden, which has weather conditions not unlike what might be found in the northern United States and Canada, his advice resonates. He discusses dealing with leaks, keeping the bilge clean, proper covers in the summer and winter, support stands, ventilation, and more. At this point, he also deals with the preparation and application of common finishes: oil, paints, and varnishes.

He then wades into the sticky question of the use of glue. Here Larsson stakes out his philosophy for the traditionally built boats he repairs: "As far as I am concerned, the renovation of old boats is about replacing or repairing parts that are damaged and that no longer measure up. It can be rotten wood or freeze-damaged wood or an otherwise weakened structure. Often in renovations, you have to remove poor repairs and find your way back to the original structure and build on that." Larsson does not treat epoxy as a miracle cure but as a useful tool for judiciously strengthening otherwise weak construction.

He follows this with a comprehensive primer on wood—its structure, strength, moisture, shrinkage, how and why it rots, and what wood should be used and

where. Most of the recommended woods are familiar to boatwrights on this side of the Atlantic, although the common names may be different; Oregon pine in Europe, for example, is called Douglas-fir in the United States. The worldwide trade in lumber has homogenized the availability of many of the species such as teak, the mahoganies, iroko, and such. Other woods mentioned such as Wych elm and ash are more of a European application, but the principles set forth in the chapter generally apply everywhere and are well worth knowing. The same can be said for the very comprehensive chapters on fastenings and galvanic action. Nothing makes one more an activist on the matter of using the right metal in the correct location than the business of boat repair. If you are interested in why your screws and rivets work, here's a good place to start.

The second book is *The Art of Wooden Boat Repair: A Boatwright's Secret Tricks of the Trade*, by Allen Cody Taube. A graduate architect of the Rhode Island School of Design, a marine surveyor, and a licensed 100-ton captain, he has 40 years of hands-on construction and repair experience. Taube's tour of the trade begins with a bit of philosophy on approaching the job and the sustainability of wood construction. He then leaps into tools—which ones to get and why—and proceeds to the proper hauling and support of the vessel on land and setting up an alfresco work space. With that done, Taube takes the reader into the nitty-gritty of basic hull survey.

Here, he makes a strong argument for prioritization and organizing a plan of attack. What has to be done now, what can wait until next season? How much money is it going to cost? Taube writes, "This part of the haulout is most important. It will ensure that you do not bite off more than you can chew. It is easier to tear your boat apart than it is to put it back together." He continues, "Many a boat has had to be abandoned and died at a boatyard because the owner tried to do too much at one time."

How do these two books compare? Frame repair and planking is a good topic on which to begin the answer to that question. Both authors offer strong, practical solutions to dealing with frames, be they laminated, sawn, or steam-bent. Additionally, Taube offers a couple of innovations I have not seen before. One is "the portable stringer method" to assist in "in-place" bending of replacement frames. Shop-built U-shaped hangers are affixed to the sides of the frames adjacent to the broken one. A portable "stringer" threaded through these hangers then provides clamping pressure for steamed replacement frame fed underneath the stringer. Taube also provides plans for a dandy home-made, high-capacity, portable electric steam generator. Larsson offers his inventions as well, including a wonderfully effective prebending lever for steaming frames, and techniques to repair steel frames in wooden boats—which are common in his native brackish Baltic Sea. He also has a number of useful techniques for frame template making.

Taube includes over 50 pages on the topic of replacing carvel planking, including techniques for surveying and the safe removal of the planks, spiling, wood selection, beveling, butt blocks, and effective methods to cajole a heavy shutter plank into place. There is also information

on caulking, gluing new edges onto old planks, and the installation of graving blocks (aka dutchmen). Larsson's plank repair section has far less on carvel construction but covers other topics such as lapstrake (clinker) planking, employing vertical scarfs in carvel planking, and dealing with the heartbreak of a failed glued scarf joint.

As noted previously, the authors have varied approaches, and due to the sort of vessels they work on, the menu of topics covered is not identical. That said, both are strong, practical reference works and the differences aren't those between east and west. Instead, they are complementary, and both books would be useful in a repairer's library.

Greg Rössel is a contributing editor for WoodenBoat.

Milwaukee 18-Volt Lithium-Ion Caulking Gun

Reviewed by Bruce Halabisky

I once saw, in a museum, a ladle specifically designed to pay the seams of a ship's deck with hot pitch. Made of cast iron, it had a long handle, a generous bowl, and an elongated spout to help funnel the pitch into the deck seam. This ladle was apparently a great improvement over the earlier method of dipping a mop into a kettle of hot pitch and swabbing the seam. In *The Repertory of Patent Inventions of 1826*, which includes drawings of the long-spouted ladle, a Mr. Richard Soaper of the Royal Dockyard notes that "the mop presents so large a surface to the air that in cold weather the greater part of the pitch congeals on its surface, thus occasioning a very serious loss of time."

Of course, these days very few vessels' decks are payed with hot pitch. Rather, a range of modern mastics are delivered in either a 10-oz rigid plastic tube or a 20-oz "sausage"—a long plastic bag crimped at both ends.

It is in the deployment of these modern caulking compounds that Milwaukee's 18-volt lithium-ion caulking gun is a force to be reckoned with. If a sodden mop of congealing pitch is at the bottom end of a scale of instruments with which to fill a deck seam—with the cast-iron ladle and the $10 hardware store caulking gun landing somewhere in the middle—then surely near the top is the Milwaukee 18-volt lithium-ion caulking gun.

Recently, I had the job of caulking a teak deck with 3,000 linear feet of deck seams, and decided that a project of this magnitude warranted something more powerful than a hand-powered caulking gun. As the boat I was working on had an air compressor, a pneumatic gun would have been a cheaper option, but in retrospect I can see that dragging an air hose across a freshly caulked deck would have been troublesome. I purchased the Milwaukee 18-volt caulking gun, and as a backup I also ordered two high-quality hand-powered caulking guns. (Here I refer to caulking as the application of a seam compound and not the driving of cotton or oakum between the deck planks.)

When the day to caulk the deck arrived, I was fortunate to organize a team of six caulkers into three teams with a gun assigned to each—one person to lay down the caulk and the other to run over the bead with a putty knife and clean up the excess, the idea being to caulk the whole deck in one eight-hour day. This also allowed for a fair comparison of the hand-powered guns to the Milwaukee. For this job, sausages of Teakdecking Systems seam compound were used. The Milwaukee was fitted with a sausage adapter kit, which made an already formidable gun, fire engine red and 34″ long not counting the plunger rod, look like something Rambo might pack into the jungle. It was hard for the two hand-powered teams not to feel somewhat inadequate.

For all its heft and muscled appearance, the gun's controls are basic: There is a trigger with a safety lock and a variable-speed feed control numbered one to six. Switching between the hand-powered guns and the Milwaukee, my first impression was that the Milwaukee deployed compound more quickly and precisely. The gun has an anti-drip feature which makes for a smooth transition when starting new seams. After a few hours of caulking with all three guns, I challenged my fellow caulker, Claud, to a race down adjacent seams. He had the Milwaukee and beat me by 40 percent, with a judge declaring each bead of caulk to be of equal quality.

In addition to speedy deployment, the Milwaukee takes very little effort to pull the trigger, as one would expect from a powered gun. This wasn't a huge factor in my trial, as the ambient temperature the day we caulked the deck was around 85°F, but I can imagine on a cold New England morning the extra power of the 18-volt battery making a significant difference.

The Milwaukee gun that I purchased came with only one battery but managed to go the whole day on a single charge with a half-hour top-up during the lunch break. I found that a speed setting of two (out of six) was about all I could keep up with, although, again, I'm sure temperature would be a factor in choosing a feed rate.

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Aside from a stellar performance the day we caulked the deck, the Milwaukee has two drawbacks. First is the price. At $245 for the bare gun without a battery or sausage adapter, it is a hard sell against a $20 hand-powered gun. In our case the price was justified because the extra speed saved money in labor costs and allowed us to finish caulking the deck before an evening rainsquall that would have compromised the whole project while we waited for the seams to dry out.

The second misgiving is the gun's weight. At 8 lbs 4 oz with a full sausage compared to 3 lbs 12 oz for the hand gun, it is not one's hand that becomes fatigued after a few hours but one's arm and back from hefting such a load. This was not so much a factor once I figured out how to rest the tip of the gun on the edge of the seam while laying down a bead of caulk, but after a full day of caulking the hand guns felt feather-light in comparison to the chunky Milwaukee.

For smaller jobs, the price and weight of a Milwaukee cordless caulking gun may not justify its purchase. However, for bigger jobs, a 40 percent increase in speed could make it a worthwhile investment. I felt the added control of the motorized feed made for a better job with less chance of air being trapped in the caulking and, I hope, less chance of water penetrating the deck.

I would like to someday pay the seams of a deck with hot pitch, just to try it. I'm sure hot pitch smells wonderful and is not nearly as toxic as today's chemical seam compounds. I'd probably hunt down a spouted ladle rather than try the mop method. But given that the next deck I seal will most likely be with modern goops in tubes and sausages, having the Milwaukee 18-volt caulking gun will be the way to go.

Bruce Halabisky is a regular contributor to WoodenBoat.

The Milwaukee 18-volt Cordless Lithium-Ion Caulking Gun sells for $245 for the bare tool; a kit containing the gun, battery, charger, and 20-oz. sausage carriage costs $369. For details, visit www.milwaukeetool.com.

BOOKS RECEIVED

Chasing Alaska: A Portrait of the Last Frontier, Then and Now, by C.B. Bernard. Published by Lyons Press, an imprint of Globe Pequot Press, P.O. Box 480, Guilford, CT 06437, www.globepequot.com. 288 pp., paperback, $16.95. ISBN: 978–0–7627–7846–1. *In 1999, the author left a good job in New England to work as a reporter in Sitka, Alaska; drawing on that experience, this book is a portrait of that area's beauty, history, culture, and people.*

A Sailor's Valentine and Other Stories, by Craig Moodie. Published by Concord Epress, 152 Commonwealth Ave., Concord, MA 01742, www.concordepress.com. 224 pp., paperback, $14.00. ISBN: 978–0–9847078–5–0. *A collection of haunting short stories about fishermen in the waters off Cape Cod, Massachusetts.*

The Lost Art of Finding Our Way, by John Edward Huth. Published by The Belknap Press of Harvard University,

79 Garden St., Cambridge, MA 02138, www.hup.harvarc edu. 516 pp., hardcover, $35. ISBN: 978–0–674–07282–4 *A comprehensive history and explanation of cultural navigatio techniques—finding one's way by natural phenomena—use by humanity for centuries before the invention of navigation tools and technology.*

In Shoal Waters, by A.C. Stock. Published by Lodesta Books, 71 Boveney Rd., London, SE23 3NL, U.K www.lodestarbooks.com. 220 pp., hardcover, £1 ISBN: 978–1–907206–18–4; paperback, £10. ISBN 978–1–907206–22–1. *The story of 60 years of explorin England's eastern and southern coasts in a Fairey Falco named SHOAL WATERS.*

How the Winds Laughed, by Addie Greene. Publishe by the Fuze Publishing, 2305-C Ashland St., No. 31 Ashland, OR 97520; www.fuzepublishing.com. 236 pp paperback, $14.95. ISBN: 978–0–9849908–6–3. *The sto of Addie Greene and her husband, Peter, who set out in 197 on a circumnavigation aboard a wooden P-28, a Swedis racing boat.*

Conflicting Loyalties: A Civil War Sea Saga, by Hibber V.B. Kline III. Published by www.thebookpatch.com.25 pp., paperback, $14.99. ISBN: 978–1–6203016–8–5. *well-researched historic novel set aboard a naval vessel off th coast of West Africa in 1861; news of the political crisis at hon divides the crew.*

Sea Folk, by Jim Wellman. Published by Flanker Press, P.C Box 2522, Station C, St. John's, NL, A1C 6K1, Canada 220 pp., paperback, $19.95. ISBN: 978–1–77117–224–(*A departure from the author's Final Voyages series,* Sea Fol *explores the lives of 23 men and women who make their liv from the sea in the waters from Nova Scotia to Vanuatu.*

Found at Sea: The Expanded Log of the ARCTIC WHALE to Overnight on Cava, by Andrew Greig. Published b Polygon, an imprint of Birlinn Ltd., West Newingto House, 10 Newington Rd., Edinburgh, EH9 1QS, U.K www.polygonbooks.co.uk. 72 pp, £8.99. ISBN: 978–1 84697–269–0. *A collection of poems recounting a sailing tr in a small open boat from Stromness in the Orkney Island north of the Scottish mainland, to spend the night on th deserted island of Cava.*

The Gurob Ship-Cart Model and Its Mediterranea Context, by Shelley Wachsmann. Part of the Ed Racha Foundation Nautical Archaeology Series. Published b Texas A&M University Press, John H. Lindsley Building Lewis Street, 4354 TAMU, College Station, TX 7784 4354, www.tamupress.com. 324 pp., hardcover, $75.0 ISBN: 978–1–60344–429–3. *The Gurob ship-cart model wa found in 1920 in Gurob, Egypt; the author's investigation of at the Petrie Museum in London in 2005 began seven years research on its historic significance.*

Men of Iron: USS CONSTITUTION's War of 1812 Crew by Matthew Brenckle, Lauren McCormack, an Sarah Watkins. A project of the USS CONSTITUTIO Museum, P.O. Box 291812, Boston, MA 02129, www. ussconstitutionmuseum.org. 72 pp., paperback, $10.00. ISBN: 978–0–615–67206–9. *Created by the USS CONSTITUTION Museum; describes the lives of the sailors who served aboard Old Ironsides during the War of 1812.*

A Book of Voyages, edited by Patrick O'Brian. Published by W.W. Norton & Co., 500 Fifth Ave., New York, NY 10110. 368 pp., hardcover, $25.95. ISBN: 978–0–393–08958–5. *A collection of writings about voyages mostly taken during the 17th and 18th centuries. These are some of O'Brian's favorite tales and may have served as inspiration for the voyages of Capt. Jack Aubrey and Steven Maturin.*

Pirate Alley, by Stephen Coonts. Published by St. Martin's Press, 175 Fifth Ave., New York, NY 10010. 320 pp, paperback, $26.99. ISBN: 978–0–312–37284–2. *A chilling tale of a modern-day cruise ship attacked and captured by Somali pirates.*

CHANCE ALONG: A Wind Worth Waiting For, by Christina L. and Kirby G. Salisbury. Published by Mill City Publishing, 212 North 3rd Ave., Suite 290, Minneapolis, MN 55401, www.millcitypublishing.com. 308 pp., paperback, $15.95. ISBN 978–1–93493–765–5. *While living in Belize, the authors built the Pete Culler schooner CHANCE ALONG; she is now 25 years old, and the authors still live aboard her.*

DVD

Harold & Lorna: World Water Speed Champions. Produced by Bill Plumstead and Harold T. Wilson, Muskoka Film Works, 14109 5th Line, RR2, Rockwood, ON, N0B 2K0, Canada; www.haroldandlornamovie.com. 80 minutes, widescreen, $25.95. *Harold and Lorna Wilson were world champions in motorboat racing in 1934, 1935, and 1939; documentary footage, early photographs, and conversations with the Wilson family bring their story to life in this film, which also includes special features on the restoration of MISS CANADA IV and the making of the movie.*

Dreamboats of Muskoka. Directed and produced by Denis O'Neil, 1262 Minnewaska Trail, Mississauga, ON, L5G 3S5, Canada; bobmageevoice@gmail.com. 55 minutes. *A pleasant and engaging look at the history of boatbuilding around Lake Muskoka, and the adjoining Lakes Rosseau and Joseph; Ditchburn, Minett-Shields, Greavette are just a few of the boatbuilders from that area.*

CD

The Idiodyssey, by The Bilge Pumps. Produced by Ibidis Mortem Productions, 2217 Florida Ct., Grand Prairie, TX 75050–1700; www.thebilgepumps.com. 19 tracks, 57 minutes, $12.99. *An entertaining, surprising collection of traditional and original songs of the sea and shore from a group based in Texas; the group's sense of humor is supported well by lively vocals and strong, interesting instrumentation.*

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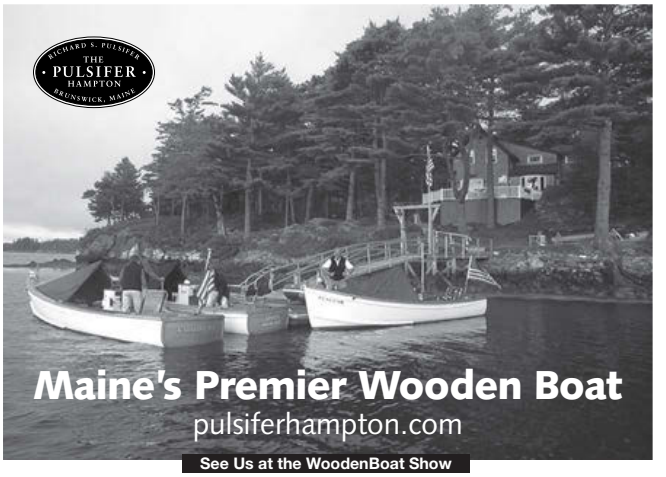

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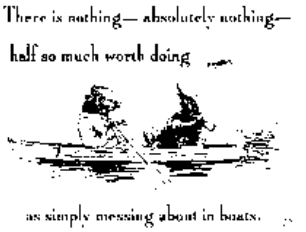

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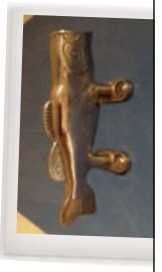

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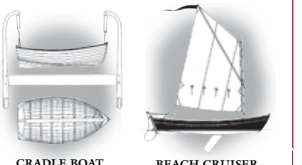

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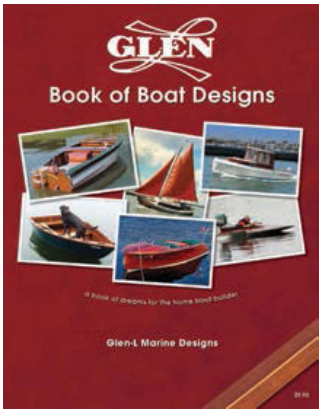

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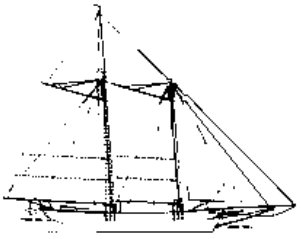

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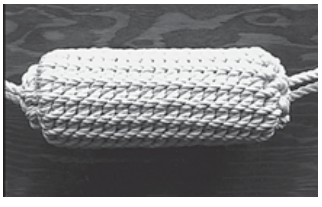

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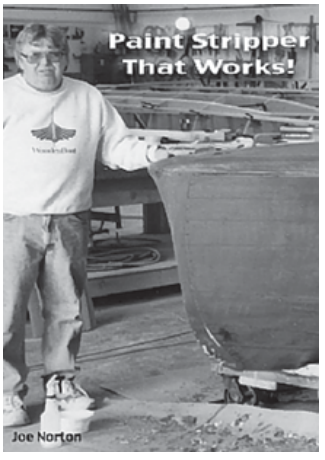

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1908 RICE BROS. 27′ LAUNCH. See picture at www.farrinsboatshop.com, or call 207–563–5510.

DARK HARBOR 17, 1914—Completely restored, 26′ gaff-rigged knockabout sloop, $19,500. www.mainetraditionalboat.com, 207–322–0157, traditionalboat@uninets.net.

OUGHTRED 18′2″ "ARCTIC TERN"—This boat has everything! A stunning, Oughtred-designed, lapstrake double-ender. Traditional lug sail by Nathaniel Wilson. All bronze hardware. Okoume marine ply with white ash, oak, and walnut trim. Bristol finished. Northern white cedar floorboards. Custom boat cover. Motorwell for a new Honda 4-cycle 2-hp outboard, with motor storage compartment, retaining the handsome sheerline when sailing. Custom galvanized trailer with shocks. Traditional spun Dacron running rigging from Classic Marine. Positive flotation. Two rowing positions complete with 10′ Douglas-fir oars. Kirby traditional paints, colonial cream, with accents of bronze green. This is one beautiful boat! Asking $16,900. taras@hbci.com.

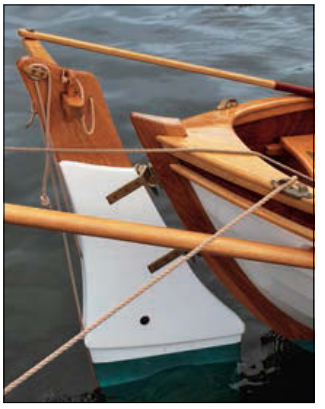
31′ SKIFF CRAFT, AMISH-BUILT, 1986—Fir on white oak. Twin 318 Chryslers, low hours. Lots of "Mahogany." Just refinished. $35,000. OH. redrocks@centurytel.net, 970–903–0746.

17′ CUSTOM BUILT DOUBLE-ended rowboat—Old-growth western red cedar strip-planked, covered with fiberglass and epoxy. Sliding seat, Merry carbon oars, airtight storage fore and aft. Never used. In storage, Monroe, WA. $7,500. Joan Wilcox , 425–374–7937, jamesbwilcox@comcast.net.

ROZINANTE—L. FRANCIS Herreshoff's design No.98, 28′ light-displacement canoe-yawl. New traditional construction by professional shop. Please call for details, and specifications. 860–535–0332, www.stoningtonboatworks.com.

See Us at the WoodenBoat Show

THIS LAUNCH IS CURRENTLY being restored by IYRS—Her lines are spectacular, and she has the beautiful, and classic, double open cockpit arrangement with amidships steering station. She will be powered with a 40-hp Yanmar engine. $98,000. Located in RI. info@cppyacht.com, 207–236–2383.



"PATINA," 19½ CALEDONIA YAWL—The ultimate picnic craft. WoodenBoat Show winner, and on 2010 show poster. With trailer. 203–834–2032, edsegen@optonline.net, www.facebook.com/segenyachts.

1962, 40′ RICHARDSON Double Cabin Cruiser—Twin 350s. $19,900. Durham, NH, 603–848–7152.

65′ LOA GAFF-RIGGED PINKY schooner, 1967, "La Revenante"—Longleaf pine on oak. Extensive refit 2005-2010. New sails and running rigging. 90-hp diesel. Historical appearance. Lying Kingston, Ontario, Canada. $95,000 CDN. antiquebikeguy@gmail.com, 819–647–5544.

Built by Townie Luddington (founder of the first airline on the East Coast) and taken to and launched at the races in Santa Barbara 1927. Sold to famous Santa Barbara resident Hap Hazard (Hazard Moving Company) and used by Charles Lindbergh. Sold to Hollywood Museum after WWII and exhibited there for many years. Gray Phantom 8, installed in 1936. Recently gone through and found A1. Recent varnish and new upholstery, newly nickeled trim. Sitting on custom trailer. $130,000.

jisenbarger6496@gmail.com
260-494-5625

WINTHROP WARNER, 39′10″ Cutter—Built by Paul Luke in 1947, designed by Winthrop Warner in 1941. (See *WoodenBoat* issue 75, page 34). "Mary Loring" is in good condition, new sails 2011, new standing rigging in 2012. She has participated in most Classic Wood Boat races in Western Long Island Sound during 17-year ownership. "Mary Loring" is great to go safely cruising in all kinds of weather, a yacht to be proud to own, and sail. The coal/wood stove in the cabin enables one to cruise comfortable thru December when it's cold outside. Selling price: $49,000. Call 201–768–9450 or cell 551–404–2010. See web site http://stan14.purehost.com.

ROYAL LOWELL 30′ Wooden Lobster Yacht—Cedar on oak, bronze fastened. Available at present stage of completion or with option for completion. $75,000. Traditional Boat, LLC, 207–322–0157, www.mainetraditionalboat.com.

Boats For Sale
continued

30′ SAILBOAT FRAME—Deck, bow to stern 30′; beam 10′. Great project start. Stored inside. ronnyweems@sbcglobal.net, 316–655–5320

17.5′ OSPREY 1986 WITH TRAILER—Mahogany construction, brass hardware, newer sails, garage-kept, good condition. Asking $6,000, New London, CT. bryanatyson@gmail.com.

HERRESHOFF 12½, "EVENFALL"—Restored 1992. Original hardware, carefully maintained. Excellent condition. Shorelander trailer. $17,500. Photos available. pjapph@rit.edu. See www.woodenboat.com/herreshoff-121/2-0. 585–248–5022.

KEN BASSETT-DESIGN "LIZ," 18′ rowing shell—White cedar planks, cherry fit-out. Piantedosi Row Wing. New boat built by Sutherland Boat & Coach, 2006, never been in the water. $10,500. 607–838–3025.

"EUPHRATES," 1949 MATTHEWS 40′ classic motoryacht—Beautiful 10-year restoration. Available for purchase in Newport Beach, CA. $140,000. Would consider 50/50 partnership. Bob Hersh, PrimeTime Yachts, 949–675–0583, 949–278–6764, robert@primetimeyachts.com.

25,′ 1949 CHRIS-CRAFT Sportsman—Completely restored. $129,500. KJR032@gmail.com, 866–540–5546.

"UTILIS" IS FOR SALE—29′ × 6.5′ × 10.5″ leeboard sharpie. See *Boats with an Open Mind* by Philip Bolger. Professionally built and finished. Fiberglass/epoxy over fir ply, old-growth vertical-grain fir stringers and frames. Launched 2009. Standing-lug yawl rig. Manchester sails. Water ballast. Four 6′9″ berths with custom cushions. Large opening side, front windows. Custom canvas. Includes old but serviced custom trailer. Always maintained, always stored inside, excellent condition. Very comfortable, fast, and strong. $17,500 or best offer. Call 614–208–9308 for more information and photos.

WORKING ANTIQUE 23′ MacKenzie, 1951—Restored over 37-year single ownership. 150-hp gas inboard. VHF, fish/depth-finder, GPS. hdrinker@comcast.net, 413–219–9416.

1953, 27′ SHEPHERD—Completely rebuilt in 2006. Chrysler M47Ss, freshwater cooled, bronze-rubber impeller water pumps, electronic ignition. Low hours since rebuild. Varnish stripped, recoated, 15 coats hi-gloss. Hardware rechromed. Bimini top enclosure, isinglass panels. Full boat storage cover. Jupiter, FL $118,750. Doug, 954–303–4349, gdougieg@aol.com, www.photobucket.com/babalu_photoshoot.

40′ KINNEY CUTTER, 1986—Jespersen-built, cold-molded cedar and mahogany. Great offshore capability. $125,000 CAD. Victoria, BC, Canada. Visit www.celeste2.com for detailed info, or call 250–592–0726.

1963 OHLSON 36′ SAILBOAT—Don't miss this one! Hull freshly painted, and in good shape. $7,500. 843–246–9927.

WoodenBoat Classified ORDER FORM

Please circle the issue(s) in which you wish this ad to appear. Example Mar/Apr is one issue.

NOTE: Ads received after the deadline may be placed in the following issue

Issue Date — Mar/Apr	May/June	July/Aug	Sept/Oct	Nov/Dec	Jan/Feb
Deadline — Jan 7, '13	Mar 5, '13	May 6, '13	Jul 8, '13	Sept 5, '13	Nov 5, '13

- Boats advertised for sale must have wooden hulls.
- One boat per ad. Limit: One photo per ad.
- "BOATS FOR FREE" ads are FREE!
- All ads are prepaid.

- Phone number = one word; email or web address = one word. All else: a word is a word. WoodenBoat does not use abbreviations such as OBO, FWC, etc.
- Please print clearly—WoodenBoat is not responsible for errors due to illegible copy.

Suggested Category _____ Please include ad on a separate piece of paper.

WORD COUNT _____ x $2.75 = $_____

+ Photo ($75) ☐ Yes ☐ No = $_____

x # issues _____ = $_____ **TOTAL**

Payment must be in U.S. funds drawn on a U.S. bank.

NAME _____ Date _____

Address _____

Telephone _____ Email _____

PAYMENT METHOD ☐ Check ☐ Money Order ☐ MC / VISA / AMEX / DISCOVER # _____

Exp. Date_____ Signature _____

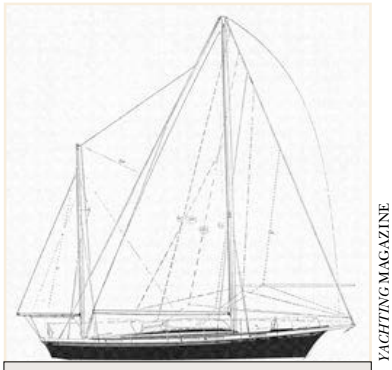
Rates expire November 5, 2013

INDEX TO ADVERTISERS

FLAME *A Different Kind of Racing/Cruising Yawl*

MIKE WICK

FLAME, owned by only two families since her launch in 1954, offers full standing headroom and loads of space for cruising.



YACHTING MAGAZINE

FLAME
Particulars

LOA	37′9″
LWL	30′9″
Beam	11′
Draft	6′3″
Displ	22,400 lbs
Sail area	775 sq ft

Designed by Dunham & Timken, West Mystic, Connecticut

Built by Mystic Shipyard, West Mystic, Connecticut, 1954

by Maynard Bray

FLAME was nearly new when my wife, Anne, and I, as newlyweds, moved to Mystic, Connecticut, in 1956. Back then, the boat was still the pride of the yard that built her. With her maroon topsides and white rolled-in sheer, she'd bring you to a halt for a better look at her many unusual and well-executed features. Gil Dunham and his partner John Timken, for whom FLAME was built, each owned smaller boats of their own design also built by Mystic Shipyard, so FLAME came from lots of firsthand experience all around.

I wish I'd known Messrs. Dunham & Timken, because they produced some extremely interesting designs—all a little off-beat, but invariably incorporating unique ideas, the hollow keel of FLAME being one of them. The sole of her cabin as well as the engine, tanks, and batteries, were placed down inside this wide, planked-up appendage, just above the ballast. Going down instead of up meant you got full standing headroom without high freeboard or a tall trunk cabin. FLAME's profile is pretty sleek.

Her arrangement plan shows three distinct compartments. Besides the conventional main cabin (always any boat's chief gathering place below deck), there's a double berth under the foredeck and a pair of quarter berths bordering the cockpit, with a place between them (under the bridge deck) where you can fully stand up—thanks to the hollow keel.

In 60 years, only two families have owned FLAME: John Timken for the first 14, and the Wicks ever since—first Pip, then his brother, Mike, who has her still. Beginning with the Bermuda Race her very first year, this boat's voyaging has ranged widely, with several trips to the Caribbean, more races to Bermuda, and much cruising in Maine. Not surprisingly, she's been altered over the years. For example, her masts, although still deck-stepped, are taller; her companionway hatch now slides fore-and-aft instead of athwartships; and her galley is aft rather than forward. FLAME's topsides were strip-planked using resorcinol glue and have held up well, whereas the carvel-planked keel, which leaked, has been given a cold-molded overlay.

As for performance, she's reported to be great under sail except to windward where the full-bodied keel creates more than the usual drag. Under power, because the propeller is aft of the rudder, maneuverability isn't great. These are small matters, however. For her size, FLAME offers loads of space for cruising and an attractive appearance that, with the concave bow and transom, turtleback sheer, and hard bilges, is truly unique.

Maynard Bray is WoodenBoat*'s technical editor.*

For more information or to inspect FLAME (which is hauled out at the G. Winters Sailing Center, Riverside, New Jersey), contact owner Michael D. Wick, 134 East Main St., Moorestown, NJ 08057; 856–222–1216; mikewick55@yahoo.com.

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

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