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WoodenBoat

THE MAGAZINE FOR WOODEN BOAT OWNERS, BUILDERS, AND DESIGNERS

Traditional Rigging in the Modern World
Lake Geneva's Newest Sandbagger
A Fast Sloop by Bob Perry

SEPTEMBER/OCTOBER 2016
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FEATURES

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Page 110

DEPARTMENTS

READER SERVICES

TEAR-OUT SUPPLEMENT Pages 16/17

Getting Started in Boats:
Night Falls

Jan Adkins

Cover: The re-created East Indiaman GÖTHEBORG reached 12 knots in boisterous conditions in the South China Sea on her 2007 return to Sweden from China. Jens Langert, who specializes in traditional rigging, was aboard as rigging master and bosun for the voyage.

Pages 82

Photograph by Robin Aron Olsson

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EDITOR'S PAGE

The Point of the Spear

Jens Langert, the Swedish rigger profiled in this issue (see page 82), makes a striking observation regarding the role of historic ships: "Ship construction in the 18th century," he says, "was at the point of the spear of the era's existing technology, like the aerospace industry of our own times. It brought together the best engineers, in workshops with colossal budgets that had the most cutting-edge experts of the times flocking to them."

The point of the spear…the cream of the crop…the cutting edge…. Call it what you will, but shipbuilding and boatbuilding have begat great innovation in every era. In our own times, when manned flights into Earth-orbit are now second-page news and a probe orbiting the planet Jupiter enjoys a profoundly short news cycle, innovations and breakthroughs in the engineering of boats, ships, and yachts rate hardly a mention. But as I page through this issue of the magazine, I'm struck by the ingenuity on display from several eras.

Consider the sandbaggers on page 34. They were the racing machines of the late 1800s, and were meant to squeeze every bit of speed potential from their hulls—through shape, rig design, and the brute force of lumping 1,500 lbs of sandbags across their cockpits with each tack. Crowds of people turned out for sandbagger races, and much money changed hands with the results. It was great sport.

Then there's the schooner BOWDOIN (page 72). Her remarkable career began in 1921 when the Hodgdon Brothers launched her from their East Boothbay, Maine, shop for Donald B. MacMillan, who proceeded to make multiple trips in her to the Arctic. BOWDOIN's rugged hull was meant to be squeezed out of the ice, rather than be crushed by it, in much the way a watermelon seed takes flight when pressed between thumb and forefinger. What a leap of faith! What a testament to the engineering of the vessel, which was not confirmed by computer modeling: It was proved only when the ice began to form around her.

Moving into the 1940s and 1950s, we encounter Ted Hood, who appears as a young man at the helm of the International One Design–class sloop PRINCESS on page 22. Leslie Jones, a Boston-area photographer who captured many of the major events and personalities of his time (1917 through the 1950s), got that shot as well as many more of the innovators of his time. Hood revolutionized the sailmaking industry with his adoption and manufacturing of Dacron sailcloth. His later endeavors in yacht design and yacht hardware included a defense of the AMERICA's Cup; they helped to create the modern sailing industry and one of his boats broke the record for a solo-nonstop circumnavigation. His influence is profound and perhaps under-recognized.

In fact, much of the genius in 20th-century marine-engineering innovation is under-recognized, due partly, as Jens Langert implies, to the eclipsing technological innovations in other fields—especially aerospace. Airplanes began capturing the popular imagination in 1903, when the Wright Brothers made their legendary flight. How could a sandbagger compete for attention? Charles Lindbergh (Leslie Jones photographed him, too) flew from New York to Paris in 1927, galvanizing world attention and opening a new era of exploration. A frozen-in schooner, while still captivating, did not have the same star power. The Apollo 11 mission landed two men on the moon in 1969, throwing a long shadow over all other technological breakthroughs of the time. How could Hood's grooved headstay or a ball-bearing roller furler compete?

Genius boatbuilders, riggers, and innovators still walk among us, many of them toiling in tiny shops and garages. Jens Langert is one of them. While he may not be backed by the great budget of an 18th-century rigger, his knowledge is profound and rare. You need look no further than the cover of this issue to confirm it.

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PT-658

Dear Editor,
Thank you for the excellent article on WWII American PT Boats published in WB No. 251. I am writing to add the Herreshoff Manufacturing Co. (HMCo) to the record, on page 66, of Vosper boats built in America.

Herreshoff built 100 wooden vessels for the military during WWII, including 28 Vosper "Motor Torpedo Boats" (MTBs) for lend-lease; 8 for Britain and 20 for the Soviet Union. Building from a nucleus of supervisors and 30 master craftsmen, the company increased to a workforce of 400. It was not easy; turnover was high, with many employees leaving for military service. By the time war production ended, more than 2,000 had been employed at the yard.

Vosper was a private British design first delivered just before the war's start in 1939. Herreshoff built the MTBs to drawings prepared by the Annapolis Yacht Yard and a small cadre of HMCo workers trained at Annapolis before the start of construction in Bristol, Rhode Island.

The boats were powered with three 1,350-hp Packard engines, each driving through a reduction and clutch to a propeller. The design speed was 40 knots, and they carried aviation gas for a range of 500 miles. Two smaller Ford engines provided quiet cruising. The boats were armed with four 50-caliber machine guns, two torpedoes, depth charges, and smoke generators on the stern. They were crewed by two officers and eight men.

HMCo built the British MTBs right-side up in the South Construction Shop. The Soviet MTBs were built in a production line, also right-side up in the lower yard at Walkers Cove with many pieces formed in quantity from molds and patterns. The keels were white oak and the frames were built up of plywood and mahogany sawn to shape. The hulls were double-planked mahogany fastened with a reported 43,000 rivets. The decks were mahogany-faced plywood.

The Soviet MTBs were initially delivered in eight months, from lofting to delivery, and this quickly improved to five months. Construction times were probably even less, as photographs show mostly completed MTBs in outside storage possibly awaiting delivery of government-furnished armament and outfit. Labor and material costs escalated over time. The British MTBs were delivered in the first half of 1943 at a price of $87,000, while the one-year-later Soviet deliveries were priced at $103,299.

War records of these boats are incomplete. We do know that two British boats were lost in the Mediterranean; one from grounding and one from air attack. Twelve of the Soviet boats have been tracked; one was lost to a mine explosion and eleven were scrapped in 1955.

John Palmieri
Curator Emeritus,
Herreshoff Marine Museum

RAGMEG's Odyssey

Having read the article in WB No. 251 on the Odyssey of RAGMEG, I'm perplexed. Why is it that Bob Germann decided to sail the boat from Halifax rather than truck it to the ICW? Further, why would he leave when the spray was "icy" and the water 37 degrees, and him without at least a 3.4 wetsuit, booties, body-surfing fins, and a hood? Did he

know about all the pot warp between him and said ICW? He had suffered at least one heart attack sailing a schooner rig, and knew that regular trips to the fore would have to be made to reef and douse. He crossed between a tug and barge?! His luck was the work of a divine presence?! I don't think so. More likely it was the result of the Canadian Coast Guard, the Maine lobsterman, a container ship, and Mexican fishermen. This story sort of reminds me of the guy who left King Harbor in Redondo Beach, California, in an Etchells 22 to sail down the entire West Coast to Cape Horn, which he was going to round and then go up the East Coast of South America. He never made it to the Horn and was never heard from again. I wonder why.

Way to go, Bob. Put yourself and a lot of others in jeopardy, or at least considerable inconvenience, so that you can have your goofy adventure.

Don Kelly
Manhattan Beach, California

Dear *WoodenBoat* Editors,
My subscription was running out, and I admit it: I was considering not renewing. But then I read Bob Germann's article, "RAGMEG's Odyssey," in the July/August issue (WB No. 251). It's a heartwarming, inspirational story with terrific illustrations by Jan Adkins. My subscription has been renewed via your website (www.woodenboat.com).

David Lind

RESOLUTE

Dear *WoodenBoat*,
I enjoyed reading about Ryan Larrabee's lobsterboat, RESOLUTE, in the July/August issue. A week before reading the article I happened to be in Stonington, Maine, and observed RESOLUTE offloading its catch for the day. One thing intrigued me: while hand-loading lobsters from the holding tank into multiple boxes, the two crewmen never had to reach more than 12–15″ in order to pick up the catch. Ryan stood on the opposite side of the holding tank and occasionally turned a lever that appeared to raise the catch closer to the surface, allowing the crewmen to easily reach in and pick up lobsters for transfer to boxes. I'd be interested in knowing how that mechanism operates.

Bill Honan
Annapolis, Maryland

Johns Bay Boat Co. built that custom lobster tank, which is equipped with a false bottom. Ryan is turning an Acme-threaded rod with a crank at its top. There's a nut fastened to the underside of the false bottom, and the threaded rod passes through this nut. Turning the rod raises the bottom. —*Eds.*

Some Good News

Dear Editor,
When I watch the morning news, I'm left unsettled and wondering where we are headed. Then, after breakfast, I sit down with my current issue of *WoodenBoat* and read about Jennifer Larrabee's family completing their lobsterboat, RESOLUTE, the students of the Great Lakes Boat Building School, and the restoration of PT-658, and I feel better. Thanks.

John Boylston
Dresden, Maine

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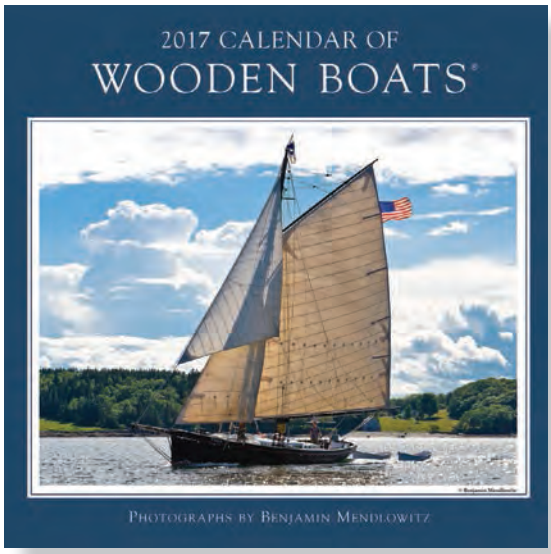
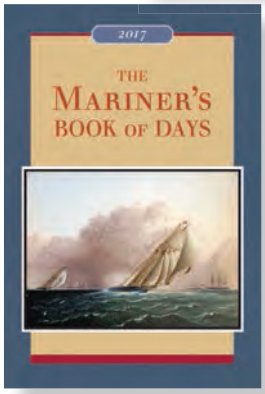


Calendar of Wooden Boats

Vela, a 50′ gaff sloop is the cover gal this year. As you go through the months you'll find the exceptionally high standard imagery of Benjamin Mendlowitz and helpful descriptions of Maynard Bray. Other fine boats include *L'Hermione* the 145′ frigate that made her way to Maine, a 34′ lobsteryacht, a Great South Bay catboat, an interior shot of *Neith*, the 53′ Herreshoff cutter, a Shellback dinghy with young crew, and more. Opens to 12″ x 24″.
#800-217 **$16.95**

The Mariner's Book of Days



After Uncle Pete's retirement, and a couple of years of not being published, this handy engagement calendar has finally returned! Once again you can get your "fix" of fact, fiction, and folklore and write down your appointments and reminders. 76 pp., #808-217 **$16.95**

Classic Motorboats

Looking for varnish? You've come to the right spot. You'll see a 1947 Greavette 19′ Runabout, a 1967 Riva 22′ Ariston, a 1929 Ditchburn 36′ launch, a 1930 Dodge 28′ Model 6, and more. Wall calendar opens to 14″ x 22″. #801-217 **$14.95**

Classic Sail

Photographer Kathy Mansfield captures a dozen boats for your visual pleasure. The 2017 group focuses on the big yachts we all dream of sailing but not having the yard bill. Wall calendar opens to 14″ x 22″. #806-217 **$14.95**

Wooden Canoe

Wonderful photos of a variety of canoes—a pair of Old Town canoes from the 1930s and 1940s, a 1905-ish Gerrish, a 16′ Charles River-area courting canoe, and even birch bark canoes from Ferdy Goode and Steve Cayard. Wall calendar opens to 12″ x 18″.
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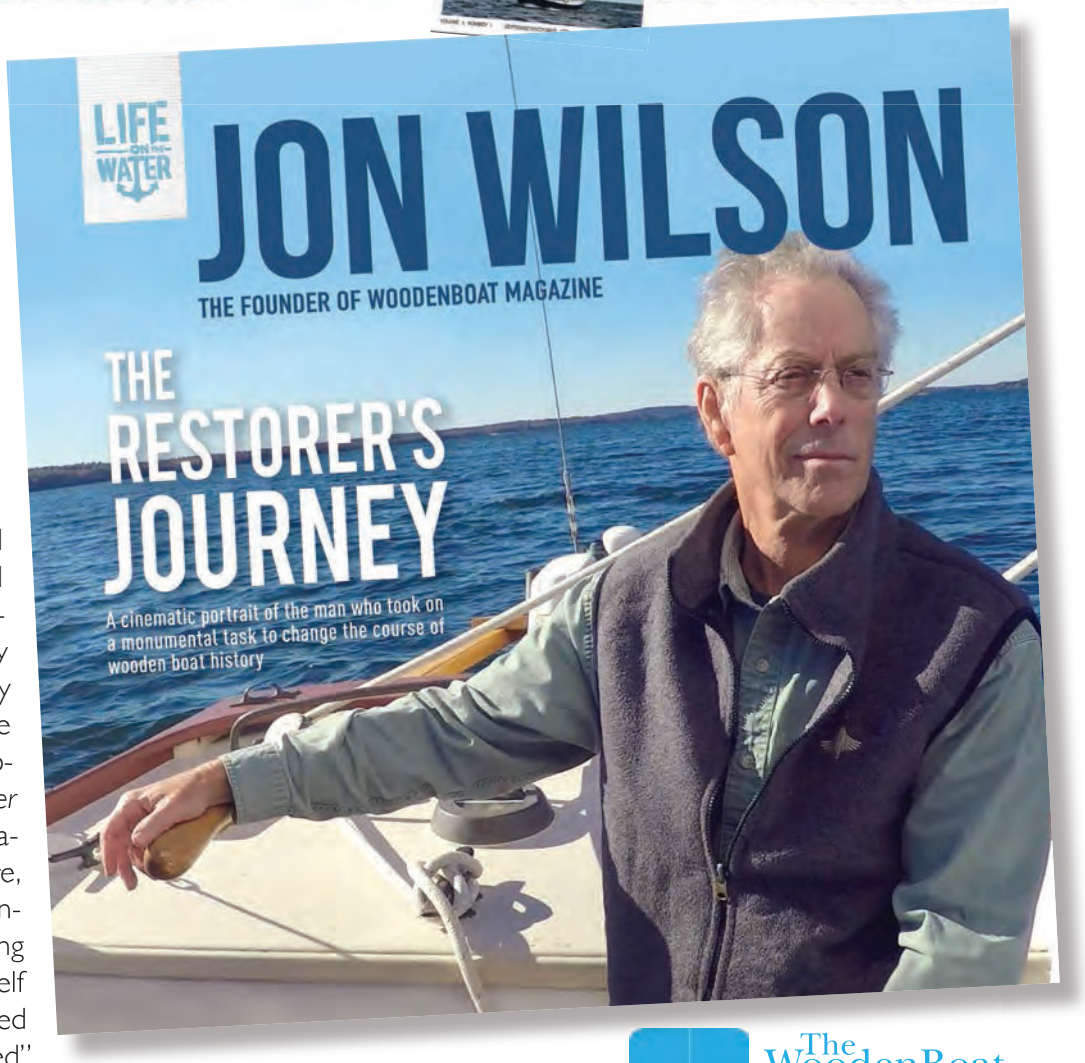
A FILM BY LIFE ON THE WATER

Jon Wilson – The Restorer's Journey is a cinematic portrait of the man who took on a monumental task to change the course of wooden boat history. Jon's passion for the preservation of wooden boats has inspired generations of boat builders, boat owners, and boat dreamers. When he launched the first issue of *WoodenBoat* magazine in 1974, he had no idea how the effect would ripple out into the hearts and minds of hundreds of thousands of readers on every continent. Jon subsequently expanded the reach of the magazine through book publishing, *Professional BoatBuilder* Magazine, the mail order catalog, The WoodenBoat Store, producing the annual WoodenBoat Show and by establishing the WoodenBoat School. Self taught and self made—guided by mentors who "appeared" just as he needed them—Jon Wilson will leave an indelible mark on the boating world and beyond. Runtime: approximately 35 minutes.



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TOM WILLEY

TOM WILLEY

COURTESY OF THE CENTER FOR TRADITIONAL LOUISIANA BOAT BUILDING

***Top*—The hand skills involved in building functionally beautiful birchbark canoes drew Steve Cayard (top inset) into dedicating a lifetime's worth of work to their construction. Passing along the skill has been equally important to him. *Above*—The traditional pirogues of southern Louisiana made local boats the object of 40 years of dedication for Tom Butler, who runs the Center for Traditional Louisiana Boat Building in Lockport.**

Drawn onward by a life's work

by Tom Jackson

There is no entry-level job for certain kinds of work. Searches of the Occupational Outlook Handbook come up blank. No college catalog has course descriptions, no clear career path is laid out by mentors or counselors. I frequently encounter reminders of these facts.

I saw it plainly in **Steve Cayard** this year. He is a **Maine birchbark canoe builder** who had one of his boats on display at The WoodenBoat Show in late June at Mystic Seaport, Connecticut. For a long time, I have been putting together the show's skills demonstrations, which I believe to be central to such an event's purpose. I knew of Cayard's work, which was the subject of a fine article by Jerry Stelmok in WB No. 181, so I made an overture to him about demonstrating the traditional "crooked knife" used in his type of construction. This shaped knife, historically fitted with blades of beaver teeth and later of steel, cuts on the draw stroke, precisely and powerfully. When Cayard walked into the demonstrations area with a quartered northern white cedar log about 5′ long and a shaving horse, I began to wonder just how much he could really accomplish in an hour. But he proceeded to split out a clear flitch and set to the task. He efficiently trimmed the piece down to a thickness of ⅜″, first using a drawknife and then taking finer and finer shavings with the crooked knife. Soft-spoken, he described what he was doing in clear and careful detail, taking questions with a natural ease as he tapered the sides of the frame, or rib in canoe parlance. The resulting rib was perfectly proportioned and beautiful to look at. Its surface had the characteristic sheen of blade-finished wood. Its rightness was instantly recognizable.

Cayard started building birchbark canoes in the 1970s. It must come as quite a surprise even to him that nearly 40 years have gone by since his first attempts. Asking him about his work now is like asking him how it feels to breathe, or

what was the significance of this morning's breakfast. "I was always interested in doing this," he told me later. "It was an outgrowth of stuff that's always attracted me—spending a lot of time in the woods and working with my hands." The canoes are beautiful to look at, and their surprising lightness is a delight.

Faraway in Louisiana, nearly 40 years have also gone by for **Joseph T. Butler—Tom**, as he's always known—in a very different environment, involving very different kinds of historic boats. In 1978, **he founded The Center for Traditional Louisiana Boat Building** while working as an associate librarian at Nicholls State College (now University). I have never met him, just as I had never met Cayard, but we hear from Butler from time to time about the center's programs and collections. The center was an outgrowth of his own captivation with the simple pirogues and distinctive historic boats of his area of south Louisiana. Students at the college have been holding pirogue races since the 1960s, and he had a hand in starting an oral history project to document boatbuilders in the region who specialized in that type of craft. For the most part, these are humble boats, used for lumbering, fishing, hunting—the kind of boats that become an outgrowth of daily life. The center is part museum, part boatbuilding center, and its boat collection ranges from a dugout canoe of the early 1600s to pirogues from still-living boatbuilders.

Though not a boatbuilder himself, Butler foresaw that as lifeways transformed in the middle of the 20th century, boatbuilding traditions were in danger of being lost. "It was started in 1978," Butler said, "but it didn't get moving until I retired, and the mayor of this town [Lockport] reached out, bought a building, and invited me over. It's full of boats—every damn kind of boat you can think of," he said.

I have never been to Louisiana, but I envision shallow lakes and inlets, tangled waterways amid twisted mangrove roots, and trees hung with moss; I imagine salt marshes, oyster shoals, and warm gulf waters, the kind of place posing unique requirements and almost demanding that a unique culture flourish there. Butler wasn't willing to let the boats he admired simply fade into the past. Like the birchbark canoes of Maine, these boats might be considered humble, but their builders drew from nature exactly the right materials and used them in precisely the right ways, making capable boats that were perfectly suited to their environments and their builders' needs.

The closer you look at boats like these, the more complex they become. The more you discover, the more there is yet to learn. In time, appreciation matures into a sense of wonder.

Cayard and Butler no doubt share an admiration for a particular kind of craftsmanship, but they also share a sense of obligation to pass traditions to others. Cayard has taught not just at WoodenBoat School but also directly with Wabanaki people, most notably David Moses Bridges, who is the subject of a new film about restoring birchbark canoe building, despite personal obstacles, as a native craft. In Louisiana, Butler's center not only celebrates historic boats but brings students into workshops to build new ones.

They may feel solitary sometimes, these two. But they are not. The single issue of *WoodenBoat* that you hold in your hands introduces any number of their kin: a Swedish kid who went on to specialize in historic ship rigging; brothers who turned a passion for runabouts into a company in Gar Wood's wake; a "gypsy itinerant shipwright" who found his best career path was to hit the road. In every case, the common denominator is determination, intellectual curiosity, the mastery of a skill, and maybe some luck. These careers didn't necessarily start with a job, and at the start few would have dared to predict the outcome. Like Cayard and Butler, such people may have a simple but powerful attraction to skill, which draws them onward.

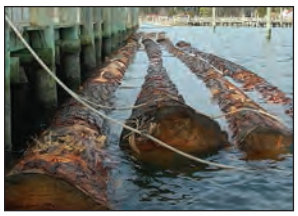
In time, they achieve competence in craftsmanship. They eventually go beyond that, achieving mastery. Some transcend even mastery and achieve something more. They are keepers of the flame.

Tom Jackson is WoodenBoat*'s senior editor. For more information, see www.stevecayard.com and www.nicholls.edu/boat/index.html. For Tom Willey's film about the work of David Moses Bridges, see www.vimeo.com/ondemand/rhythmsoftheheart/145928079.*

Around the yards

■ The **Chesapeake Bay Maritime Museum** in **St. Michaels**, **Maryland**, in May 2016 hauled out its "queen of the fleet," the **1889 bugeye EDNA E. LOCKWOOD**, for a **two-year restoration** that has been years in the planning.

EDNA E. LOCKWOOD is the last of the log-bottomed Chesapeake Bay bugeyes still sailing. She was built on Tilghman



COURTESY OF CHESAPEAKE BAY MARITIME MUSEUM (BOTH)

***Above*—The 1889 bugeye EDNA E. LOCKWOOD has been hauled out for an extensive reconstruction at the Chesapeake Bay Maritime Museum. The last of her type, she was built in the unique Chesapeake style of log-bottomed construction. For the project, nine loblolly pine logs (inset), all about 55′ long and 3′ in diameter, were donated to the museum to be shaped into a new bottom.**

Island for oyster dredging—an occupation for which she, like all others of her type, was expected to have a lifespan of about 20 years. Remarkably, she continued dredging for nearly four times that long, finally retiring in 1967. The museum, founded in 1965, came along just in time for the bugeye to be donated to its collections, in 1973. The museum's boatyard was founded at about the same time, and during a 1975 restoration the nine pine logs that made up EDNA E. LOCKWOOD's bottom were left intact while the work focused on significantly rebuilding the boat from the waterline up. In the intervening years, however, iron sickness and rot have taken their toll on the bottom logs. The current restoration focuses on completely rebuilding the bottom, following original techniques as closely as possible.

A two-year search for suitable timber turned up a rare stand of loblolly pines in Machipongo, Virginia. Donated to the museum for the project by the Paul M. Jones Lumber Company of Snow Hill, Maryland, the **harvested logs**, averaging **55′ long and approaching 3′ in diameter**, were delivered in March and sunk in the Miles River to keep them from drying out. A National Historic Register vessel, EDNA E. LOCKWOOD was hauled out earlier, in February 2015, for laser scanning and photogrammetry documentation by Todd Croteau of the National Park Service. Her condition was also analyzed and reviewed during a forum of restoration experts held at the museum earlier this year.

The work was expected to begin in earnest in September, after the conclusion of site preparation, which included installing a new WoodMizer sawmill. The first order of business will be to build a new log bottom separate from the boat. According to Michael Gorman, boatyard manager and leader of the restoration project, the logs, or "cants" will be shaped before being fastened together. "Historically, the builder already had the shape of the hull in mind and would chop down the trees and work the logs down in the woods, then drag them to the boatyard," Gorman said. To the extent possible, the CBMM builders will use traditional methods, including following the trunnel and metal drift pin fastening patterns as recorded in X-ray imagery of the existing hull. However, instead of ⅞″-diameter iron fastenings, for longevity the yard will use either bronze or Monel, a decision that is still pending.

After the log bottom is completed, EDNA E. LOCKWOOD's upper works will be stabilized and braced so that the frames connecting the bottom to the topsides can be cut strategically, allowing the old bottom to be removed as a unit. CRMM President Kristen Greenaway said that the bottom—which Gorman called simply "the last original log hull in existence"—would remain intact as a permanent exhibit in the museum, installed under a glass floor that will allow visitors to view it from above.

Gorman said that after the bottom is removed, a hydraulic trailer will used to position the new bottom under the hull. There, it will be carefully jacked up to mate with the upper hull. Traditionally, frames extended onto the log hull but without full-width floor timbers; however, for stability the 1970s restoration used floor timbers. Gorman said the restoration would allow a return to the original framing style. Most of the topsides and deck, very little of which is original material, will be retained, but stem and sternpost replacements are expected.

The work will be done by **three shipwrights** assisted by **four apprentices** as part of the yard's continuing program of passing skills on to next-generation builders. Gorman, a graduate of the Landing School in Maine, himself served an apprenticeship at the museum boatyard before joining the staff. "We have the talent and the means to build a log bugeye, but it has to come out as EDNA E. LOCKWOOD," Gorman said. "She was built by eye out of logs, using hand tools, and although there's not a lot of original fabric left, we have to have the shape intact. Doing right by the boat is a little bit intimidating. Log construction is a lost art in a way, and it's really, really exciting for me." To prepare for the project, the boatyard built a new log canoe, BUFFLEHEAD, a considerably simpler construction with a bottom shaped out of three 26′-long loblolly pine logs. The canoe was launched in April 2015, the first newly constructed log canoe since 1979.

A **2018 relaunching** is expected for EDNA E. LOCKWOOD. "We're really using the boat as a symbol of life and work," Greenaway said. "It's an incredible narrative and symbol of the Chesapeake Bay, the last historic sailing bugeye in the world." In 2019, EDNA E. LOCKWOOD is expected to make a grand tour of Chesapeake Bay.

Chesapeake Bay Maritime Museum, 213 N. Talbot St., St. Michaels, MD 21663; www.cbmm.org; 410–745–2916.

■ At **D.N. Hylan & Associates Boatbuilders** in **Brooklin, Maine**, a rare **Charles C. Hanley cat-yawl** is nearing **completion of a long-term restoration**. The boat is **MOLLY B**, built in 1927 at the Hanley Baker Yacht Basin in Quincy, Massachusetts, and said to be the last Hanley yacht. She is 27′9″ LOA with a distinctive tumblehome stem; her beam is 12′. Forming a large oval shape, her trunk cabin sides continue aft to form cockpit coamings, giving her cockpit and interior enormous volume. Her centerboard-up draft is only 2′6″. The Hylan yard first started working on the boat in 2009, and over the years the work has included substantial hull restoration.

"We've been working on her for 10 years on and off," yard manager Ellery Brown said. "Right off, Doug Hylan built a new centerboard, because that was just falling apart," but the boat was plainly in need of more care. During the past decade, she was very lightly used for only one season, spending the rest of her time comfortably stored in a suitable barn. The restoration has proceeded in periodic bursts. One such effort involved replacing frames and floor timbers. Another was the reconstruction of the deck and deckhouse, using white oak for the bright-finished cabin sides and coamings.

Her bottom and topsides were also completed in the earlier rounds of work. "We used the MP&G method," Brown said, speaking of a technique used by the Mystic, Connecticut, restoration boatyard [see WB No. 189], so "they've

TOM JACKSON

MOLLY B, a 1927 C.C. Hanley–designed cat yawl 27′9″ LOA, is nearing the completion of her restoration work at D.N. Hylan & Associates Boatbuilders in Brooklin, Maine.

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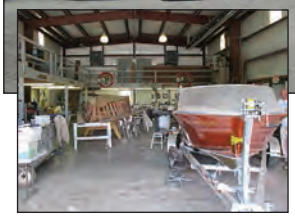
basically been skim-coated with epoxy. We slaved on those topsides. Because there was old planking mated with new planking, and the thickness of the old stuff had been faired so many times that it was quite a bit thinner than the new, we were making up differences that way. There would have been no way to get fair topsides without all that epoxy." Splines were used on a couple of upper seams. Battening off for fairness, the crew identified low spots and filled them by troweling on thickened epoxy. After it set and was reapplied as necessary, extensive longboarding faired the topsides to an impeccable appearance, without further thinning of the planking.

After a five-year hiatus, MOLLY B came back to Hylan's this year for the final push, with a view toward relaunching in time to participate in the 2016 Eggemoggin Reach Regatta.

Owner Robert Baird was a co-founder of the Utah company Historical Arts & Castings, Inc., which among other things specializes in reproduction architectural metalwork, so his expertise came into play for bronze fittings throughout the boat. Original fittings were restored and new ones custom-made. A bronze deck-level mast collar, new portlight rings, new bowsprit fittings, and other pieces closely match the boat's style. Large deck prisms that bring light below are retained with bronze rings. The centerboard trunk is a bronze fabrication, the bronze steering gear has been updated, and the cabin has a bronze skylight.

Much of the original rig was retained. "We did our usual," Brown said; "we moved the chainplates inboard of the toerail, and blocked them off the planking." One former owner reported improved handling using a jib with its tack taken to the stemhead, so a new plank bowsprit has been added to improve the jib's set. The spars, of various vintages, are being retained, at least for the time being. A July relaunching was planned, but interior refit was expected to continue on a yet-to-be-determined schedule.

D.N. Hylan & Associates Boatbuilders, 53 Benjamin River Dr., Brooklin, ME 04616; 207–359–9807; www.dhylanboats.com.



JOHN MARPLES (BOTH)

Moores Marine has consolidated its boatbuilding facilities at its Beaufort, North Carolina, yard, closing a seperate facility in Florida.

■ Word comes from Trumpy yacht reconstruction specialist **Jim Moores** that his company has consolidated all of its operations at **Moores Marine Yacht Center,** the facility it opened in **Beaufort**, **North Carolina**, nine years ago and later augmented with an additional five-acre marine center, bringing its total size to 17 acres. The company had been based in Florida since 1986, but the pressure of waterfront redevelopment at the city of Riviera Beach threatened to encroach on its operations, including, Moores reported, a threat of eminent domain proceedings. In 2005, he was smitten with North Carolina while visiting a relative and eventually found a boatyard for sale in Beaufort. "We have been open for almost a decade now," Moores said in a press release. "It was always my plan to move to Beaufort, and this year I finally did it."

Moores Marine Yacht Center, 1201 Sensation Weigh, Beaufort, NC 28516; 252–504–7060; www.woodenboatrepair.com.

■ **Mark Evans** writes from Kent, England, with news that he has hung out his shingle as a **small-craft designer** under the name of **Kentish Boats**. A mechanical engineer by training, he has been experimenting with design for some 15 years, with an emphasis on light plywood-epoxy construction techniques. He sent plans and an instruction book for his Bounty design, a dinghy that could double as a yacht tender. Variations include a partial deck or undecked type. The plans include a building jig of panel construction, with flanges from the athwartships panels inserted through slots in side panels, wedged for a firm fit. The construction sequence is unusual in that it proceeds right-side up over the building jig, with the stem, transom, and permanent bulkheads filleted to the broad bottom panel. The glued-lapstrake planks go over the bulkheads and molds, after which the temporary molds are removed. After the interior fitout is largely completed, the hull is turned over for filleting, finishing, and sheathing in fiberglass cloth set in epoxy up to the top of the garboards. After the keel and rubrails go on, the boat is returned upright for the remainder of the interior fitout and finishing. The instruction manual, 45 pages, is written in very clear English, with on-point photographs, and the plans are neatly rendered. A kit is also available for Bounty, and in North America the distributor is Hewes & Co. of Blue Hill, Maine, which also markets kits by such designers as Iain Oughtred and François Vivier. Kentish boats also has plans and kits for a 16′4″ motorboat and a 23′ trimaran.

Kentish Boats, www.kentishboats.co.uk.

■ More news from England: **Deep Blue Engineering Ltd.** has begun manufacturing **traditional windlasses**. They look and operate like the manually operated windlasses found on large historic craft, but they can also be powered by electricity or hydraulics. The company, which has specialized in undersea equipment, turned to windlass manufacturing because of founder David Webster's frustration in finding a suitable

Frustrated by his search for a suitable traditional windlass, David Webster started manufacturing them at the company he founded, Deep Blue Engineering in Millbrook, England.

COURTESY OF DEEP BLUE ENGINEERING

Getting Started in Boats

from the Editors of WoodenBoat *Magazine*

Volume 58

Night Falls

Night Falls

Text and Illustrations by Jan Adkins

By and large, we're diurnal critters. Sunlight illuminates our environment.

As you get started in boats, most of your adventures will be day excursions. But life on the water can't run on a timetable. Wind, tide, weather, and mechanics mesh inconsistently, and you'll be night-running soon enough. With time and experience, cruising into the night will delight you more and more with an almost magical beauty. You'll discover that you can adapt nocturnally using low technology to mime night-creature senses.

We can't avoid dispelling the dark, however. Seeing visual marks of safety is a necessity. We need to see where we're going, *and we need to be seen*. Your boat isn't the only half-blind voyager on the water, so be sure to light up!

Land Time vs. Sea Time

Even though boating with friends is a prime joy, a prudent skipper will warn his crew and guests against the demands of land time. On a boat and under way, rigid schedules are invalid; old Poseidon keeps his own haphazard clock ticking and tocking unevenly as the sun and moon and wind gyres compete. The linear ratchet of meetings and dinners ashore is chancy. If one of your mates has a 4 p.m. shore appointment, strongly suggest that a boating adventure may be inadvisable. There are no timetable promises afloat.

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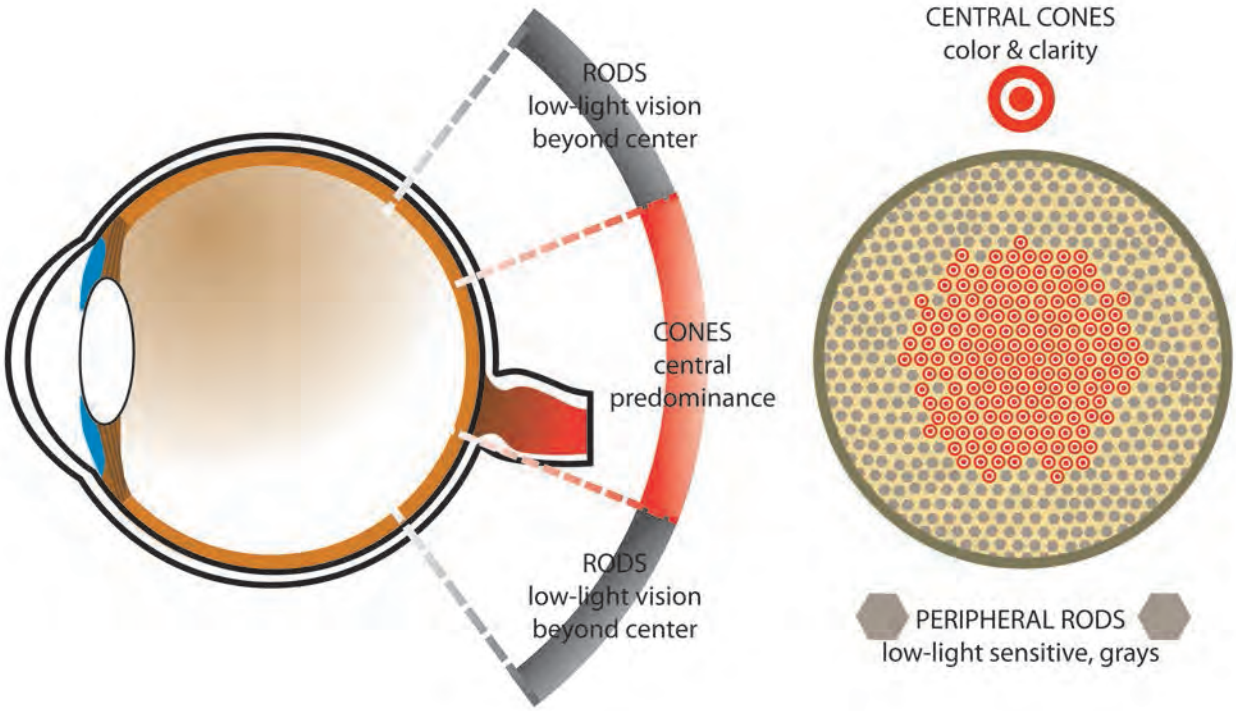
Night Vision

If you could persuade your cat to talk, it might be an excellent mate for the night watches. Cats see well in dim light, even starlight. They possess six to eight times more dim-light receptors than you and have a special re-reflecting layer, the *tapetum*, that increases light capture. But don't give cats too much credit; your eyes are more focused and more discerning than theirs.

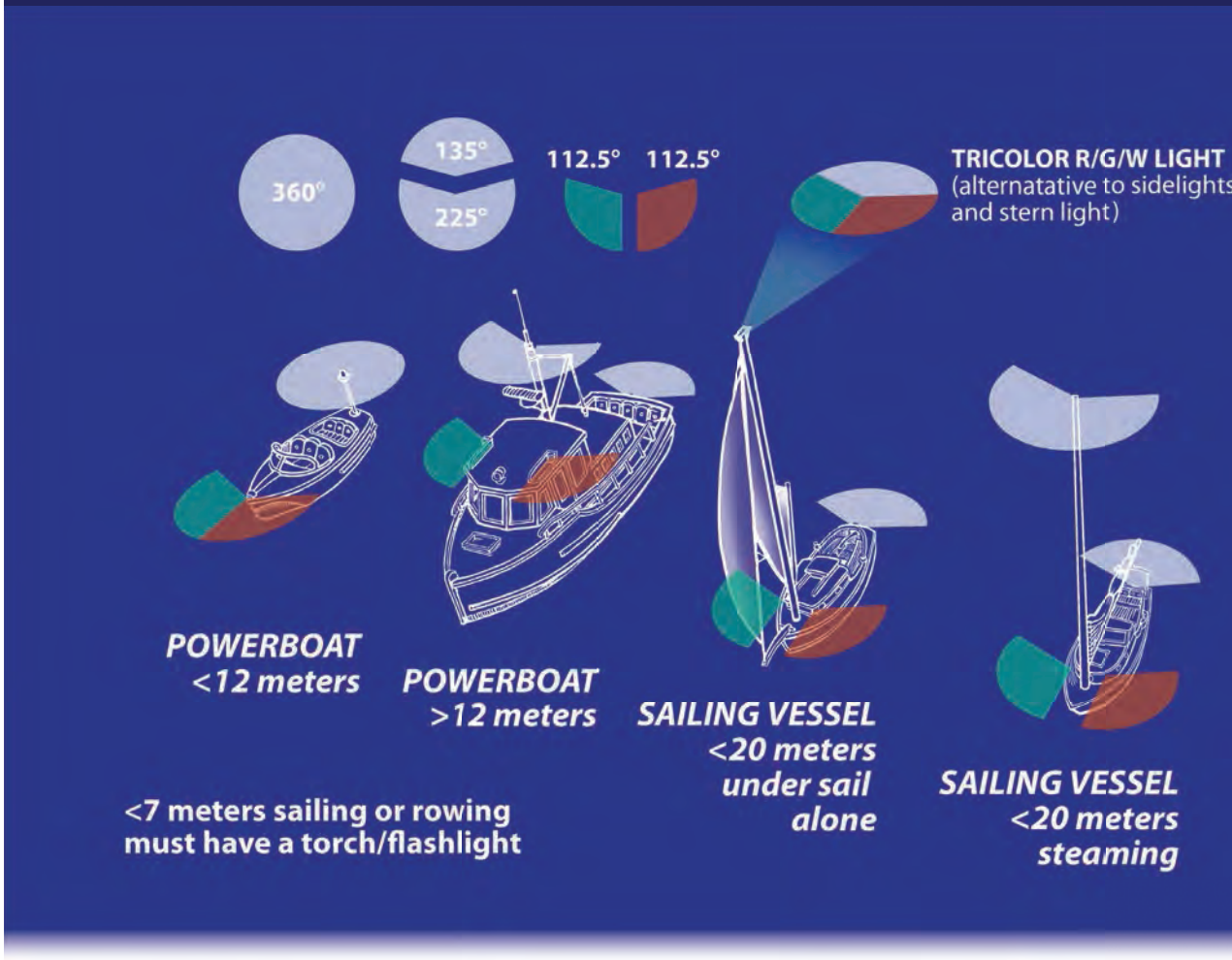
The sun puts out a full range of light at different wavelengths. We adapted over billions of years to utilize only a fraction of these wavelengths, and we're blind to the rest. What we call "visible light" has wavelengths about the size of our eyes' two receptor types, the rods and cones. Both are sensitive in different ways. Cones differentiate light by intensity and wavelength, allowing us to see in colors. Rods are more sensitive, but only to intensity; in dim light, we see in shades of gray, and a lack of rods around the center of our vision register as a central blind spot. In fact, because of this blind spot, sailors familiar with the graveyard watch learn to look not *at* a place or object but *to one side* for a more detailed view.

A remarkable thing about rods is that they improve in the dark. Your peak night vision develops over 15 to 45 minutes. The "reset" button is any glare of "white" light; a foolish shipmate turning on a flashlight or "white" cabin light will set your night vision calibration back to square one. You can't underestimate hazards in the night watches. You need every advantage, so educate the whole crew on the importance of light discipline.

Rods and cones are sufficiently different to allow a useful deception. Rods are blind to visible light in the red wavelengths. Without compromising night vision, you can use a (dim) red light to examine charts, check the engine, read, and make coffee. Rods are most sensitive to blue-green light, so beware of electronics with green lighting, which will kill night vision. And beware of the full-color displays of a chart plotter. Submarine crews switch to red interior light before surfacing at night so it won't take 45 minutes of adaptation to see danger from the conning tower.

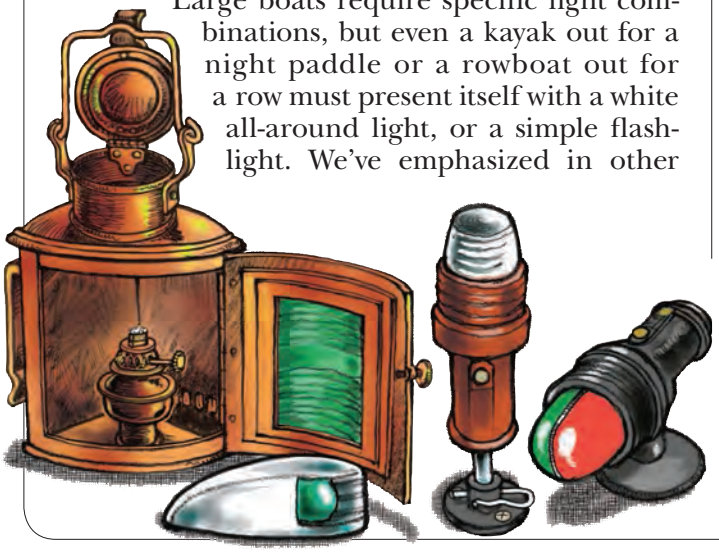


See and Be Seen

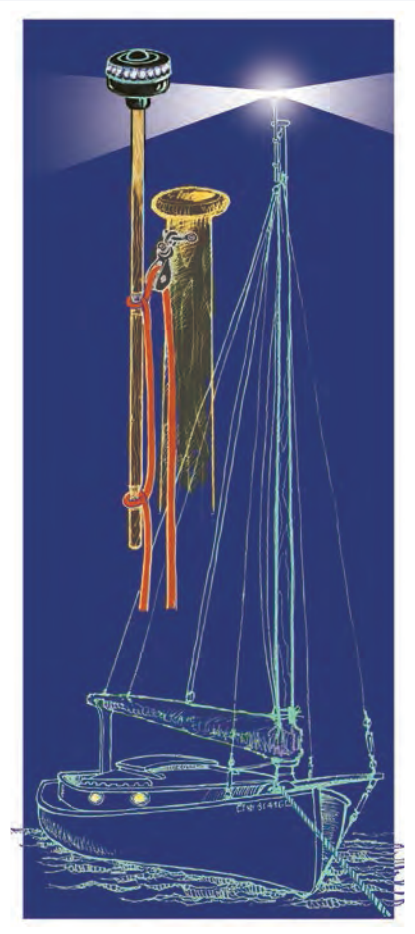


Running Lights and Anchor Lights

Every boat venturing on the water near or after dark is required to carry lights to proclaim its presence and its course. Large boats require specific light combinations, but even a kayak out for a night paddle or a rowboat out for a row must present itself with a white all-around light, or a simple flashlight. We've emphasized in other *Getting Started* booklets that the light signals of commercial craft—fishing vessels, tugs, ferries, barges, tankers, and others—are distinctly lit to warn you away from danger. A comprehensive chart of commercial lights should be part of your cockpit gear. The simple chart shown here details required lighting for a few example boats, ranging from a kayak to a bluewater passagemaker, under way and at anchor. For an exhaustive list of regulations pertaining to navigation lights required on your boat, please refer to the International Regulations for Preventing Collisions at Sea 1972 (Colregs) or Parts C and D or this resource from the United States Coast Guard: www.navcen.uscg.gov/pdf/navrules/navrules.pdf.



See and Be Seen



Above— When kayaking at night, you could voyage with just a flashlight at the ready. The paddler illustrated has gone above and beyond to stay safe on the water. *Right*—This catboat does not have a permanently installed masthead light, but has sufficiently followed the regulations with an all-round, battery-powered LED installed on a pig stick.

See and Be Seen (Continued)

Searchlights

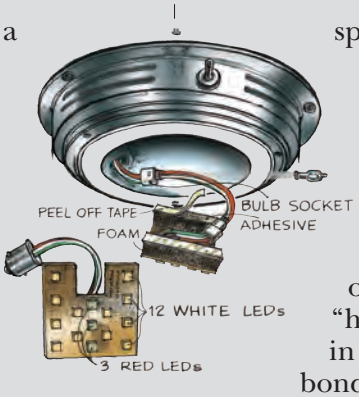
You round a mark and lay a new course, trending toward green can No. 5 (G5), which has no beacon light, almost half a nautical mile away. The chart suggests that wandering off course would be a rocky hazard. Seeing G5 is critical. You want a strong light with a tightly focused beam—not a task light, but a tool for piercing the dark. You're in luck on two counts: (1) the current generation of searchlights is powerful and prices have come down; and (2) a bit of industrial magic is on your side.

Choosing a searchlight is not simple, and we can only suggest a few considerations. Do you want your searchlight to be battery-powered, rechargeable, or plugged into the boat's power? Do you want a searchlight that floats? How sturdy should it be? What level of dollar investment can you make? How precise and efficient is the light's reflector in focusing the beam?

We can relieve you of one decision: LED versus incandescent bulbs. Incandescent light bulbs, the Edison type with which we're most familiar, create light by heating a thin, delicate filament to white heat. Most of an incandescent's energy is consumed in heat production. The LED is a "cold" light, a product of quantum physics, requiring much less power for light, wasting very little in heat production. It has the additional advantage of being "solid state": there's no thin wire filament to break. LEDs have a phenomenal service life, measured in years and not hours. They were once expensive and dim, but their light output has grown enormously in the past few years and unit costs have plummeted. LEDs are simple, draw little current, and seldom break.

Light-Emitting Diode Theory

Electronically, a diode is a two-pole electric device that passes current in only one direction. Creating diodes from semi-conducting material (the basic and miniaturizable structure of computers and all modern electronics) reveals an unusual phenomenon. One side of a silicon matrix is mixed or "doped" with traces of elements that have a surplus of easily transferable electrons. Electrons have a negative charge so this is the "N" (negative) side. The other, "P" (positive), side is doped with elements that have incomplete electron orbit shells—spaces wanting to be filled, called "holes" by fanciful physicists. Current set up from the P to the N side repels both "holes" and negative electrons, so there's no flow. Current from the N to the P side attracts both and flows merrily. With some diodes, however, when a positive "hole" meets a negative electron in a neutral no-man's-land, a stable bond is formed, requiring slightly less energy than the sum of both components. This surplus energy is emitted as a photon, a particle, or wave, of visible light. (Is it a particle or a wave? It's both. Ask a physicist and prepare for confusion.)

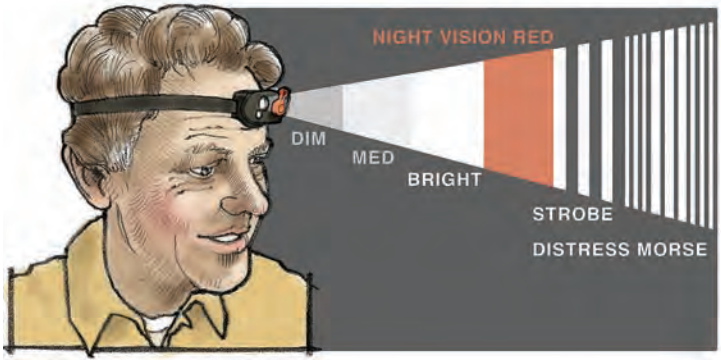


Personal Lights

Through the night watches, a boat is an archipelago of night-vision-safe lights: compass, cockpit instruments, red navigation table lights, running lights, red bunk reading lamps, occasional "on" or "off" indicators. The crew moves from one island of light to another. But every crew member should be prepared to shed light on a specific task—a loose fitting on the foredeck, a protruding cotter-pin on a shackle. Experienced sailors carry such essential items as a knife, pliers, marlinespike, and perhaps a screwdriver. Add to these a personal light that will allow expeditious solutions to small problems.

Night watches aren't the only times to carry personal light. Plenty of inquiry into bilges, engine spaces, lazarettes, and deep cupboards goes on through the day.

What are the criteria for a personal light?



It should be small and lightweight, easy to grab, easy to put away. It should be battery-powered or rechargeable, and it should ride with you in a quick-draw sheath or be clipped securely inside a pocket where it won't catch at shrouds or corners. Brightness and battery life count: it should be bright enough for long enough.

The breadth of choices in personal lights is daunting. Consider, however, that one light may not cover all situations. Danger to the helmsperson's night vision is an overriding factor: if a personal light is bright white, or if it won't shift to night-red reliably without dithering, you may wish to keep a pair of personal lights in your duffle—a white task light and a red night light.

Some of the best task lighting is worn as a headband so it focuses directly on what you're viewing, leaving hands free for work. Some headband lights have both white and red settings, but be certain the difference in control buttons is positive and straightforward.

Many personal lights have several settings for intensity, color, attention-attracting strobe, and even Morse SOS Mayday signals. These are just dandy, *if* the controls differentiate plainly.

Man-Overboard (MOB) Lights

Every crew member should wear or have immediately to hand a life vest equipped with a loud-as-hell whistle and a very bright light. Strobe lights use circuitry to concentrate maximum current for tiny moments of very bright light. When you choose the light that will call attention to you when you go overboard, you'll be confronted with a steep range of prices. Make your decision with this in mind: just how much reassurance do you want with you on the dark water?

Additional Lighting

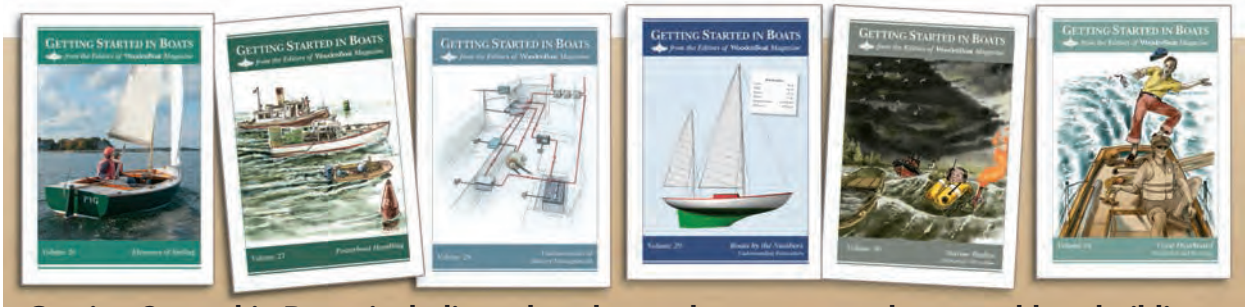
Spreader Lights

There are reasons for deck-wide light, and they're rare but compelling. An emergency repair may benefit from such illumination. A possible impending collision might require that you light up like an excursion boat. The prudent mariner weighs the need for light against the certain night-blindness that will follow it. It's not uncommon to ask the helmsperson to keep eyes closed during a brief bright-light interlude, just as it's possible to use a spotlight with one eye closed. Preserve your night sight jealously.

There's another curious spreader-light phenomenon that affects morale more than immediate peril: Turning on the big lights during a blow emphasizes the drama and danger of a storm enormously by giving nearby breaking seas a fearsome aspect. It's an impressive contrast, something a wise skipper considers before hitting the light switch.

A Word on Kerosene

We've been hard-nosed scientific about LEDs in most marine applications, and we stand by it. But there is an argument for traditional kerosene lamps in some limited, controlled uses. Face it: it's a flammable liquid, and that's a contraindication. Still, the golden glow of a traditional tubular-wicked saloon lantern is charming and distinctive, and there are vintage boats that would sink of shame without their kerosene running lights and their hoistable anchor lanterns. We're *WoodenBoat*, we are the keepers of the traditional flame, but in getting you started in boats we are obliged to urge prudence and safety. Be vigilant, be seen.



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

TOM JACKSON (BOTH)

Continuing restoration on USS CONSTITUTION at the Charlestown Navy Yard in Boston, Massachusetts, has included extensive repairs to the cutwater. The final timber in that assembly (inset) was made of a large white oak lamination from Sentinel Structures in Peshtigo, Wisconsin.

windlass for his own boat. "Several years ago, I searched for a period windlass to use on my 95-year-old gaff ketch OUR LIZZIE," and although one was found its body was cracked, rendering it unsalvageable. "I decided I'd try to make a similar one because I liked the design, and that is how it all started," Webster said. "Since then, I needed a small windlass for my 33′ gaff cutter ALICE, so I got to work designing and making one." Other variations followed, adhering to the general pattern of using modern engineering and materials for "tried-and-tested traditional designs."

David Webster, Deep Blue Engineering Ltd., Multihull Centre, Foss Quay, Mill Rd., Millbrook, PL10 1EN, England; www.deepblue engineering.co.uk.

■ In late May 2016, the haulout of the 1797 frigate **USS CONSTITUTION** reached its halfway point. She is now more than one year through a two-year restoration in drydock at the Charlestown Navy Yard in Boston, Massachusetts. In the current round of work, her sheet-copper sheathing was removed and work began on plank replacements and repairs to the cutwater, or upper stem. Work on the cutwater, which is getting its most extensive reconstruction since 1927, was nearing completion as of early July. The cutwater is made up of a puzzle of timbers, and the repair pieces are a combination of live oak that Naval History & Heritage Command Detachment Boston had on hand from previous rounds of work and laminated white oak from Sentinel Structures in Peshtigo, Wisconsin. In early July, the final cutwater piece was being shaped from a laminated timber and made ready for installation, replacing a previous laminated piece. As of early July, 80 planks also had been replaced, using solid white oak below the waterline and laminated white oak above it.

The ship is surrounded by scaffolding, and the working yard is closed off to the general public. But she is visible enough to get a good sense of her below-the-waterline shape, and people can still get aboard via a companionway, although only to access the spar and gun decks.

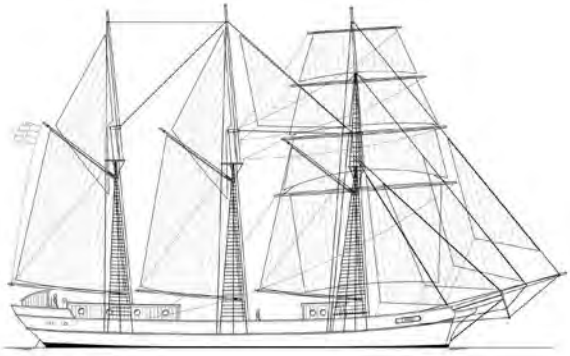
For USS CONSTITUTION visitation information, see www.navy.mil/local/constitution/visitors.asp. For restoration information, see www.ussconstitutionmuseum.org/restoration/blog.

Offcuts

■ Since writing about the pulse of far-flung **cargo-carrying ventures** in Currents in WB No. 247, we've heard of two more ventures along those lines:

—Representing the ambitious end of the cargo-under-sail spectrum is **CEIBA**, an **envisioned three-masted topsail schooner**, 106′ LOD, whose construction is planned by **Sail Cargo, Inc.**, in **Costa Rica**. The company as of this writing had a Kickstarter campaign under way and was also expected to start selling shares. The business model includes the combination of sail training with cargo carrying, following a pattern that has emerged in Europe with Fair Transport, TransOcean Wind Transport, and others. The managing director of Sail Cargo is Danielle Doggett, founder of Topsail Rigging Inc., and the lead shipbuilder is Paul DeNoble, a veteran of not only TRES HOMBRES but also the HMS ROSE conversion and the Swedish East Indiaman GÖTHEBORG, which graces *WoodenBoat*'s cover this issue. Expected to be three years in construction, CEIBA will be framed with timbers of angelique, planked with Costa Rican teak, and bronze-fastened. Following the emphasis on "green" transport, the ship will have an electric auxiliary engine. The company's focus is on cargoes that are equally "green," and it also intends a reforestation program in Costa Rica to more than compensate for the trees used in construction. Internships during construction and during voyaging are envisioned. For more information, see www.sailcargo.org.

—On the other end of the spectrum, a small-craft cargo-carrying venture in New York seems to have hit a trifecta of positive green-ness: A **solar-powered canal boat** built in a **youth wooden boat building program** at Maple Hill High School incorporating "STEM" curricula—that's science, technology, engineering, and math, for the uninitiated—to **carry cargoes of recycled cardboard** along the Erie Canal. *WoodenBoat* reader Jim Keene sent us a digital clipping from



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The Albany Times-Union, which reported that David Borton's 39′ SOLAR SAL, with a strip-built and fiberglass-sheathed hull, is powered to a cruising speed of 5 mph by a single electric motor. Its battery bank is supplied by 16 large solar panels on the flat cabin roof. SOLAR SAL carried its first cargo in October 2015, and at the helm was Borton himself, a retired professor from Rensselaer Polytechnic Institute. He traveled from Waterford to Buffalo, a one-way distance of some 320 miles, and picked up 12 tons of recycled cardboard for shipment to a paper mill in Mechanicville, which isn't far from Waterford.

■ A **new organization**—the **Classic Yacht Owners Association**, based in **Newport**, **Rhode Island**—has been formed with the goal of building a national community of classic sailing yacht owners in the United States. The **president** is **Clark Poston**, formerly of the International Yacht Restoration School, also in Newport.

"It was a group of people, all yacht owners who campaign their boats, who were talking over last fall about how the organization of the series of regattas, in the Med in particular, is so well organized and productive," Poston said. Mediterranean events include some 14 regattas, all of which are well attended. "It's a real world-class program," Poston said. "One of the goals that we have is to look at that level of participation and engagement." By working on scheduling, logistics, ratings, European participants in such events as Antigua Race Week might continue on to other events. Also, "There was a feeling that if we could 'improve up' on that aspect of the New England series, it might support and promote new boats built or new restorations and thereby support the overall industry. They decided there was a need for a critical mass." The objective is to help yacht owners network together, increase participation in regattas and events, and foster contacts among owners, restoration specialists, institutions such as Mystic Seaport and the Massachusetts Institute of Technology's Hart Nautical Collections, and anyone else interested in classic yachts built before 1970, not just in wood but also in metal and fiberglass. A "spirit of tradition" category for new yachts that honor the classics is also envisioned.

One potential role, Poston said, was seeking consistency from one regatta to the next over rating rules for racing yachts and definitions of such things as the spirit of tradition category. "One of the things that we can do is look at

ANDREW BREECE

The Classic Yacht Owners Association has been founded to facilitate networking in United States regattas among classic sailing yacht owners, inspired by the success of regatta series in the Mediterranean and elsewhere. Here, KAIROS (left), CORAL OF COWES (center), and ATREVIDA (right) race at Antigua Race Week in 2015.

that through modern eyes, to see if there are things we can do with the categorization, to have a more equalized and more fun regatta event," he said. "The intention is to be as inclusive as we can. One of the goals is to help this group grow." He pointed out that one-design classes such as Six-Meters and Twelve-Meters generally have class associations of their own, monitoring such things as ratings and measurements, a consistency lacking in regattas that very often involve one-off custom yachts.

Given the growth of interest in classic yacht restoration, the association could also serve as a clearinghouse of information, Poston said. "So much of what happens in this industry happens through networking. A lot of the work that goes on is word of mouth and reference, and with the ability to provide a ready and user-friendly network, that would enable somebody looking for a really nice project to see what's out there."

Clark Poston, President, Classic Yacht Owners Association, 1 Washington St., Newport, RI 02840; 401–855–0146; www.classicyachtownersassociation.org.

■ The extensive **Mariners' Museum Library** in **Newport News**, **Virginia**, is closed during an **extensive remodeling** project that promises a much-expanded facility. The library, housed at Christopher Newport University, closed in April. The staff moved the collection of some two million books, periodicals, manuscripts, maps, charts, plans, and photographs to climate-controlled storage away from the construction. **Reopening** is expected in **fall 2017**.

The Mariners' Museum, 100 Museum Dr., Newport News, VA 23606; 757–596–2222; www.mariners.org.

■ Totally the **keyboard's fault**: Errata from Currents in WB No. 251 called to my attention via astute readers, including a collective howl from Australia, are that Capt. James Cook explored but did not circumnavigate Australia in ENDEAVOUR, and the engine in EVELYN S. at the Michigan Maritime Museum was manufactured by a company properly spelled Kahlenberg.

Across the bar

■ **Derek Paine**, 84, April 10, 2016, Greystones, Ireland. Disappointed by being turned away from British Navy service because of his color-blindness, Mr. Paine remained in his native town in North Wicklow, on the shores of the Irish Sea south of Dublin, where he worked in insurance and finance concerns until a hostile takeover forced him into early retirement. His lifetime pastimes included furniture restoration, building ship models and ships in bottles, local history, and above all restoring and building small craft, especially the iconic 14′ Water Wags (see WB No. 249). He was a key figure in the revival of the type, documented as the world's oldest one-design sail racing fleet. He restored 15 historic Wags himself and built four new ones. In Greystones, he was active in civic and local historical associations and published seven books of photographs documenting Greystones and its vicinity in the late 19th and early 20th centuries.

■ **Alan T. McDonough**, 79, May 21, 2016, Hingham, Massachusetts. The co-founder of the sports apparel company Eastern Mountain Sports, and later The Rugged Bear for childrens' outdoor wear, Mr. McDonough was an avid sailor and a longtime member of the Wianno Senior Class Association.

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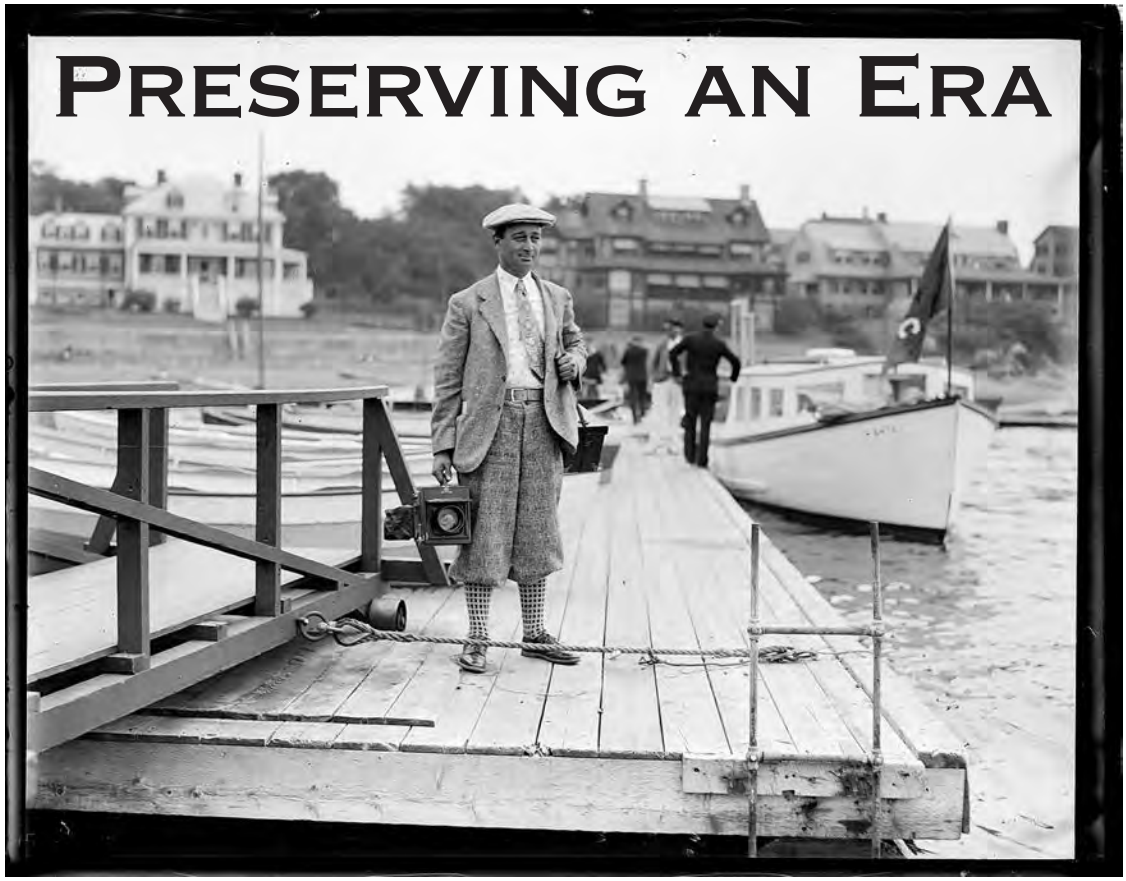

The yachting photography of Leslie Jones

by Matthew P. Murphy

Leslie Jones (1886–1967) was a staff photographer for *The Boston Herald Traveler* from 1917 to 1956. Although he had a penchant for photography during his school days, he began his career as a patternmaker, freelancing as a photographer as he could. After losing two fingers in an industrial accident, he turned to photography full time. During his 39 years as a cameraman (his preferred title), he made more than 40,000 images, which included everyday events (car wrecks, dog portraits), common figures (laborers, casual tennis players, recreational swimmers), and major events and celebrities of his era (Charles Lindbergh, Calvin Coolidge, Amelia Earhart, Babe Ruth, Joe DiMaggio, and Donald B. MacMillan, to name but a few).

Jones had a particular interest in yachting and covered racing at Marblehead, 20 or so miles northeast of Boston, throughout his time with the *Herald Traveler*. He captured an element of humanity often lacking in the yachting photography of the previous era. While his predecessors made boat portraits, Jones told stories—comedies and tragedies—through images. The photographer's personality is echoed in the faces of his posed subjects, who are nearly always smiling, as if in conversation with the viewer.

My own interest in Jones's work is part personal. My father and grandfather were members of Marblehead's Corinthian Yacht Club in the 1950s, and my father, Francis Murphy, a devout powerboat man, often carried Leslie Jones aboard his boat (first a 24′ Chris-Craft, LOUISE; later an ACF power cruiser, LOUISE II). While neither LOUISE seems to have made it into any of Jones's images, it's fun for me to imagine that some of the photographs in the Jones archive were taken with my father standing just feet away from the photographer.

The Jones archive is held by the Boston Public Library. While Jones's family maintains the commercial rights to the images, they also seek to have them enjoyed widely by the general public. The following is but a brief sampling of Jones's stunning visual record of a bygone era.

***Above*—Leslie Jones, a staff photographer for *The Boston Herald Traveler* from 1917 to 1956, is shown here on the occasion of the 1929 Corinthian Yacht Club–sponsored International Series at Marblehead. The series was sailed in 30-Square-Meters and attracted crews, and boats, from Sweden and Germany. Jones's yachting images form a comprehensive photographic record of mid-20th-century yachting at Marblehead and surrounding towns.**

The 1929 International Races

The boats of the 30-Square-Meter Class, affectionately called "squeaks," were brand-new to the United States in 1929, having been inspired in September 1928 by the arrival of a "squeak" called GLUCKAUF II. Her owner, Dr. Hans Stinnes, was a German yachtsman and frequent visitor to Marblehead. Stinnes sold the boat to designer L. Francis Herreshoff, who then changed her name to VISITOR and showed and campaigned her around town, drumming up interest in the class.

The 30-Squares caught on quickly, and on Wednesday, December 19, 1928, the Corinthian Yacht Club's commodore, Joseph Santry, received an official challenge from Germany: Stinnes and his compatriots suggested the Corinthian host a regatta for the class in the 1929 season. The Germans further offered to make overtures to various northern European crews. The Corinthian pounced on the opportunity.

During the winter of 1928–29, Marblehead-area sailors commissioned four 30-Squares for the 1929 International Series. Perhaps most notably, Sis Hovey (inset), daughter of Marblehead yachtsman Chandler Hovey, hired L. Francis to design ORIOLE (above), and was thus poised to become the first American woman to compete in an international regatta.

The Germans sent three boats to compete in the 1929 International Series for 30-Square-Meters: GLUCKAUF V (G-50), HATHE (G-48), and KICKERLE (G-53). They were shipped aboard the cargo steamer HARBURG in late July, and arrived in Boston during the first week of August. The crews traveled separately from their boats aboard fast passenger steamers. The first crew to arrive was KICKERLE's—Oskar Gleyer (skipper), Henry Rasmussen (one of the partners in the Abeking & Rasmussen shipyard), and Richard Spelling—who landed in New York on August 4. GLUCKAUF V's team, Hans Stinnes (owner and skipper), Emily Frey, and Dr. Wilhelm Von Grolmann, arrived two days later in Boston. HATHE's crew, Johannes Theede (owner and skipper), Hans Carl Ruedel, and Paul Lubeseder, arrived in New York on August 9.

BACCHANT, the Swedish contender, was designed by Gustav Estlander, a Swede, who eventually came to be known for Square-Meter-type hulls of extreme length. Her sail plan differed radically from the other boats: Her mast was stepped farther forward, the boom angled up sharply to the mast, and the mainsail reached neither the top of the mast nor the end of the boom. She cut a deceptively awkward figure but proved a force to be reckoned with in the prevailing light airs at Marblehead.

CARA MIA

After retiring from the insurance business in his mid-fifties in 1941, Harold Wheelock raced at least twice a week for more than two decades. His Q-class sloop, CARA MIA, was designed by Frank C. Paine and launched by Lawley in 1929. She was the "undoubted queen of the fleet," according to one of her regular crew and admirers, Lloyd Bergeson, writing in WB No. 116 about his formative sailing years in Marblehead. "She was impeccably maintained," Bergeson recalled, "and with her white topsides and scrubbed white pine decks was a sight to behold underway or at her mooring."

The boat epitomized the Q class, and the "elegance and simplicity obtainable under the Universal Rule. Her racing successes at Marblehead led to the adoption of her hull form as the basis for the design of the Paine-designed J-class AMERICA's Cup contender YANKEE in 1930." Alas, that 1941 season would be the swan song of the Q class, which dissolved during World War II and did not rebound in the boom years that followed.

The 1929 International Series saw 11 races sailed over 10 days, and BACCHANT won six of them—and she did not sail in the five matches composing the team-race series. She no doubt would have won those if she had sailed them, wrote Leonard Fowle in *The Boston Globe*, for the boat proved to be superbly adapted to the light airs of Marblehead. She was skippered by her owner, Eric Lundberg (center, opposite page), with a crew of Carl Plym (right; her builder) and Sven Renman, the three of whom we see here collecting their silverware.

Lundberg received the Hovey Trophy, the Williams Trophy, the Marblehead Cup, and the Corinthian Yacht Club Cup. He took all but the Marblehead Cup—a perpetual award that remained in town—back to Sweden. Plym and Renman received silver cups presented by Chandler Hovey. The visiting yachtsmen were feted at a dinner at the Corinthian Yacht Club on the final evening of the racing, with the officers of the British Light Cruiser Capetown in attendance, as well as the flag officers of the Corinthian and Eastern Yacht Clubs.

Don McNamara and BANTRY

John J. "Don" McNamara (in hat, on deck) tends to his 210-class sloop BANTRY at the Corinthian Yacht Club float, ca. 1955—the same summer he defended his Manhasset Bay Challenge Cup title by a wide margin. This prestigious prize, first offered by New York's Manhasset Bay Yacht Club in 1902 for the then-in-vogue 30′-waterline sloops, progressed through a number of classes over the years, including Q-, P-, and R-boats. Boston-area boats had had great success in Manhasset Bay Challenge Cup competition during the R-boat era, but by the time McNamara first challenged for, and won, the trophy in 1953, it had again been firmly ensconced in Manhasset Bay. Hurricane Carol put McNamara's title defense on hold in 1954, but his victory on August 31, 1955, cemented his position as the "East Coast's 'hottest' skipper," according to *Globe* sailing writer John Ahern. Only a week before winning that second Manhasset Bay trophy, McNamara had won the 210 National Championship for the second time—the first having been in 1951.

McNamara won a bronze in the 1960 Olympics in Tokyo, sailing with his brother, Richard, and Joe Batchelder. He'd also taken up ocean racing by then: In 1961, he skippered Boston Yacht Club Commodore E. Ross Anderson's magnificent Alden-designed schooner LORD JIM in the Marblehead-to-Halifax Race. In that fogbound dash up the Nova Scotia coast, LORD JIM lost a photo-finish to the legendary Burgess-designed schooner NIÑA, then owned by Decoursey Fales. (Both boats have only recently met their demises. LORD JIM, after grounding in Brazil during a circumnavigation, was impounded by an unscrupulous boatyard and left to wither to the elements; NIÑA, also on a circumnavigation, disappeared without a trace in 2013 while sailing from New Zealand to Australia; see WB Nos. 237–238.)

McNamara took up competitive rowing later in his life, and he was training to row in the veteran singles division of the Head of the Charles Regatta in 1986 when he died in his sleep at age 54 on October 21, of an undiagnosed blood-pressure ailment.

Panther

By the early 1950s, Marblehead's powerboats would band together near the race courses, standing by in case a rescue was needed. On Wednesday, August 11, 1954, a severe squall tore through the fleet. Many boats lowered their sails and waited it out, but many others were caught off guard. More than 70 capsized, and the squadron pulled at least 40 sailors from the water. The hardest-hit fleet was the Town Class. Notable among the rescuers was Vance Smith in the 38′ power cruiser PANTHER.

Over the years, Smith became something of a legend for his patrolling of race courses in PANTHER—so much so that in 1951 he was awarded the Leonard Munn Fowle Trophy for "outstanding service to Race Week"—a rare honor for a powerboat man. In numerous news reports of storms, capsizes, and other mishaps, Smith's name appears as the rescuer. Perhaps none was so colorful as the time he plucked Bob Coulson and crew Thacher Loring and John Newman from the water off Marblehead Lighthouse. It was August 13, 1949, and Coulson's 210-class sloop, WILLOW WAND, was literally bombed and sunk just before the start of a race. The skipper of a competing boat, Sears "Nick" Winslow, tossed a lit cherry bomb in WILLOW WAND's direction, intending for it to explode in midair—a harmless prank. But the firework hit the water undetonated, and the flat-bottomed 210 sailed over it. Then the bomb went off, blowing a one-foot-square hole in the boat's bow. Coulson soon realized he was sinking, and put the boat about. As he headed for the harbor, the 210 settled by the stern, gear drifting all about it, until only the mast—with Coulson gripping it—was poking from the water. That's when Smith arrived on the scene in PANTHER. He got a line to the swamped boat, took the three drenched but unharmed sailors aboard, and towed their damaged boat to Marblehead Yacht Yard for repair. Winslow, clearly embarrassed by his lapse of judgment, offered Coulson his own boat for the remainder of the racing.

Hurricane Carol

In late August 1954, a hurricane began intensifying off the coast of Jacksonville, Florida. A slow-moving storm, it took four days—100 miles per day—to move from there to Cape Hatteras, where it was expected to take a northeast track out to sea and well east of New England. It didn't. Instead, traveling its next 400 miles at night, it switched to a more northerly heading and accelerated, reaching Long Island in just 12 hours. The hurricane-tracking technology of the day relied upon visual observations from airplanes, and the storm's unexpected shifts in speed and course were not apparent until early morning on Tuesday, August 31, when the Boston office of the United States Weather Bureau issued a region-wide gale warning at 6 a.m., when many area residents were still asleep. Only later was the gale warning upgraded to a hurricane—one that would, just hours later, topple the steeple of the Old North Church in Boston's North End. By the time the impending crisis was apparent, the center of the storm was only about 100 miles from Marblehead.

Gusts to 120 mph and 5′ waves raked Marblehead Harbor, which "took the worst beating of all," according to *The Salem News* the day after Hurricane Carol wrought historic damage on the North Shore. Marblehead had the highest concentration of boats, and also the most expensive ones.

Among the storm's casualties was Kenneth Magoon's magnificent ketch MOHAWK, which parted her mooring and fetched up on the rocks near Fort Sewall. She'd had a bad stretch of luck: Three years earlier, she'd parted her mooring during a storm and grounded near the Eastern Yacht Club. Fred Dion, owner of Dion's Yacht Yard in Salem, would purchase her wreck after Hurricane Carol—along with three others from that storm—for rebuilding and subsequent resale. (Fred had made a small fortune with this business model by purchasing government-requisitioned yachts after World War II.)

The beach at Fort Sewall, not far from where MOHAWK lay, collected a raft of debris—the remains of small boats and their gear. There were oars, life preservers, spars, and other equipment, and the shattered remains of 210s and 110s.

A WW I Subchaser

On February 3, 1917, the United States officially broke its ties with Germany after a protracted period of neutrality and attempted peace brokering in the European conflict, which had begun in 1914. German U-boats, trying to cut supply lines from North America to Britain, had in 1915 sunk the British passenger vessel RMS LUSITANIA, killing 126 Americans. Responding to American protests, Germany agreed to not target passenger liners—for a time. In early 1917, Germany revised its policy to one of unrestricted submarine warfare, and on April 6 the United States declared war. The months that followed were a time of preparation and uncertainty.

Many yachtsmen had initially questioned the propriety of launching their boats with the country at war. But Secretary of the Navy Josephus Daniels and Assistant Secretary Franklin Delano Roosevelt were convinced of the value of civilian yachting during that time, as long as professional sailors and those of draft age, 21 to 31, were not engaging in the pastime. A number of the Eastern Yacht Club's most prominent members, including Henry Morss, established a fleet of coastal patrol vessels such as this one, for use by the First Naval District, headquartered in Boston. Morss himself ordered a new patrol boat, KANGAROO, from the Herreshoff Manufacturing Co.

Harry E. Noyes was, by 1937, controlling director of Quincy Adams Yacht Yard, which that year launched for him a new 72′ L. Francis Herreshoff–designed ketch, TIOGA. She was—and remains—a stunningly beautiful boat, designed without regard to the constraints of racing rules.

Her predecessor, launched in 1924, was the 50′ schooner JOANN (see WB No. 244), which was inspired by a ship depicted in a painting owned by her co-designer, Waldo Brown. That ship, the CLARENCE BARCLAY, was a sleek 325-ton pilot schooner that Brown's grandfather had built and launched in 1856 in Salem. In 1924, Brown and Herreshoff were both employed by the design firm of Burgess, Swasey & Paine, and they collaborated closely on the design of JOANN, which combined progressive yacht features with a classical appearance. Brown sold JOANN in the early 1930s, and she eventually went to the West Coast where, under the ownership of the charismatic actor and schoonerman Sterling Hayden, she sailed as BRIGADOON—the name she still carries.

After Brown sold JOANN, he commissioned a 57′ centerboard refinement called TIOGA, which he eventually sold to Harry E. Noyes. Smitten by her beauty and speed, Noyes commissioned a larger refinement that he also named TIOGA. Like JOANN, this new 72-footer was designed without regard to shape-constraining racing rules; even so, immediately after her launching, she began winning races. To this day, she hasn't stopped her winning ways: She's been called TICONDEROGA for most of her life, and today is one of the most widely recognized classic yachts in the world. But in the late 1930s, she was a family yacht.

Ted Hood and Bradley Noyes (son of Harry E. Noyes), who became fast friends in the late 1930s, were in their youths competitive swimmers as well as sailors. Later in life, Hood recalled: "I was most interested in sailing, but was also on the Corinthian Yacht Club swim team when the pool opened. On team competitions between the Scituate Yacht Club and the Magnolia Beach Club, we would commute by boat from Marblehead [in TIOGA].… The boat trip was a lot of the fun of going to the swimming meets." Perhaps that was true for Hood and Noyes, who would go on to become accomplished sailors and collaborators. But Noyes, in 2016, recalled that "it was really rough, and the kids were all seasick and they didn't swim too well!"

By 1954, Bradley Noyes had a new TIOGA (see WB No. 205), a 50′ K. Aage Nielsen–designed yawl, and he hired Hood to build her sails. She was the first of a series of four Noyes-owned, Nielsen-designed TIOGAs. Hood later designed a 60′ motorsailer for Noyes, who recalls the Dutch-built boat, launched in 1971, as being one of his favorites.

International One Designs

New York yachtsman Cornelius Shields spurred the creation of the 33′ International One Design (IOD) class in 1936 with his commission of a boat called AILEEN, designed and built by Bjarne Aas of Fredrikstad, Norway. An IOD fleet was formed at Marblehead in 1939, and the timing was perfect: The town's old one-designs were growing stale, and the town's top sailors were ready for a fresh boat. Here, the early fleet hardens up just after the starting gun, with the Corinthian Yacht Club Race committee boat in the foreground.

Robert Leeson was instrumental in bringing the IOD to Marblehead: The very first one to arrive in the harbor was for his daughter, Marion, an accomplished sailor in her own right. The new boats were imported through the Boston brokerage office of naval architect E. Arthur Shuman. The Leeson IOD, along with two others, arrived in Boston on the freighter TORTUGAS on May 16, 1939, and was towed to the Graves yard at Little Harbor for rigging. The other boats in that shipment were PERIWINKLE, for William L. Pitcher—to be sailed by his daughter, Frances Copeland—and POMPANO, for Caleb Loring.

Exploring the Leslie Jones Collection

To explore the photographs shown in this article in greater detail, visit www.woodenboat.com/extended-content. You'll find there links to the individual images as they appear in Digital Commonwealth (www.digitalcommonwealth.org), a collaborative database of historic material related to Massachusetts. You'll also find a link to the entire Jones collection.

Ted Hood in PRINCESS

Ted Hood had been dabbling in sailmaking in 1949 when he built a new mainsail for his green-hulled IOD, PRINCESS (sail No. 47), that he sailed with his brother, Bruce. That was only the fourth sail he'd made, and his previous ones had been for smaller 110s. This larger IOD mainsail required greater space to build, and so he'd laid it out on the newly installed dance floor of the Corinthian Yacht Club—the same floor on which he'd meet his future wife, Susan Blake, at a dance in 1952. In a few decades, he'd be the most successful sailmaker in the world.

Hood had developed an eye for sails as a child, when his father, Ralph Stedman Hood, purchased the R-boat SHREW during the Great Depression. The boat's performance was hindered by poor-quality sails, and were a frustration for her demanding crew—which included Ted, along with Standish Pigeon, who worked for his family's Pigeon Hollow Spar Company—a Boston-based, multi-generation maker of wooden spars for yachts, commercial vessels, and airplanes.

In 1956, sailing with his friend Bradley Noyes, Ted won the Mallory Cup (sailing Blanchard Senior Knockabouts), which was then the North American Men's Championship trophy; that same year Noyes won the Astor Cup, one of the major trophies of the New York Yacht Club, with Hood-built sails driving his TIOGA. This victory earned Hood the attention of New York yachtsman Alfred Lee Loomis, who was convinced he would have beaten Noyes but for those Hood-built sails. Loomis thus commissioned Hood to build sails for his 60′ yawl GOOD NEWS, and this association led to Hood building sails for, and crewing aboard—along with Noyes—VIM at the dawn of the 12-Meter era of the AMERICA's Cup. Noyes would later serve in the afterguard of the Hood–designed and –skippered NEFERTITI during her unsuccessful 1962 bid to defend the Cup. He later skippered in the aluminum-hulled, Sparkman & Stephens–designed Cup defender COURAGEOUS.

Such was the position of Ted Hood in history: As a young man, he sailed alongside one of the preeminent builders of wooden masts. As a mature businessman, he helped propel the yachting industry into modernity—as a yacht designer, developer of sailing gear, and sail (and sailcloth) maker.

On Thursday, August 11, 1938, Leonard Fowle, writing for *The Boston Globe*, lambasted the top sailors of the Marblehead Town Class fleet for a bout of poor sportsmanship—"[o]ne of the poorest pieces of sportsmanship in the history of Marblehead Race Week," no less. The incident involved the treatment of three 16½′ sloops from the Wollaston Yacht Club called "Winabouts."

Built by Marcus Lowell and his son Percival ("Pert," to all who knew him), the first Winabout, a smaller 16-footer—had been launched in 1932 and followed by a succession of identical boats. In 1936, a group of Marblehead sailors visited the Lowells seeking a modest daysailer to suit Depression-era budgets. They settled upon the Winabout design, because its dory-style construction was quick to build and inexpensive, its shape was stable and relatively fast, and its deck and coaming promised to keep crews dry and comfortable. The Marbleheaders requested a 6″-longer hull, and they altered the rigging, added some sail area, and adopted it as their own. They named the new fleet the Town Class. In its first year of racing—1936—it appears in the standings as the Town Class Winabout.

Meanwhile, a Boston-based concern called New England Marine Co. was marketing three models of Winabout designs built by Lowells: a 16½-footer identical to the Town Class but with more sail and called the Massachusetts Bay Winabout; an 18-footer called the Commander; and a 17-footer called the Commodore. This was confusing: In those days, Marblehead Race Week was open to all fleets, and in 1938 there were four Winabout classes of different sizes competing: The 16½- and 18½-footers listed here, as well as the original 16′ Winabouts and the Town Class. While the historical record is sketchy, the Wollaston boats seem to have been virtually identical to the Town Class and distinct from the others, so the three young Wollaston skippers petitioned for, and won, permission to sail against the "Townies" in Race Week in 1938.

The Wollaston boats began cleaning up during the first few days of racing, and the Town Class establishment protested. However, the Town Class sailors agreed to settle the matter if the sails of the Winabouts were measured and found to be within the specifications of the Town Class. They were, and that should have been the end of the matter. But the still-irate Town Class Association barred the Wollaston boats from their fleet anyhow. Then the Corinthian Yacht Club Race Committee stepped in.

The Committee ruled in favor of the visitors from Wollaston, saying that the Town Class association had overstepped its bounds. The Wollaston Winabouts were thus grudgingly admitted back into the Town Class. The three Wollaston skippers, feeling unwelcome in the Town Class, chose to join the regular Winabout fleet for the remainder of the racing that week—a move that Fowle lamented, for there would be "no contest." And there wasn't: The Wollaston boats dominated the smaller, less-powerful Winabouts—an outcome that one would think would have agitated a few Winabout sailors to protest, but there was no subsequent reporting on this debacle. This incident appears to not have set the course for the Town Class's personality, for the fleet is now roundly considered to be one of the friendliest one-design groups in existence, anywhere. Pert Lowell's son-in-law, Ralph Johnson, builds and sells fiberglass Town Class sloops today in Amesbury, Massachusetts, under the shingle Pert Lowell & Co.

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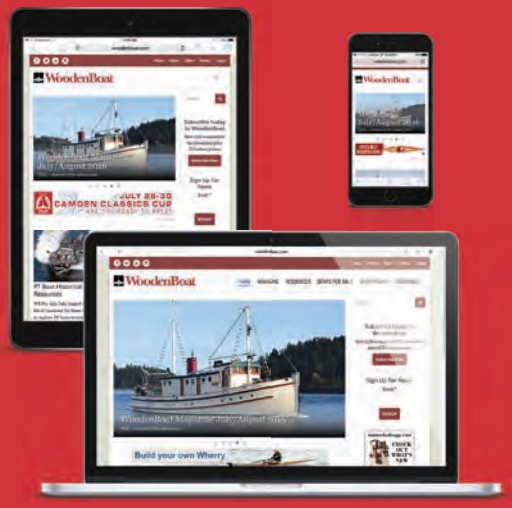

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The Savage Squall of July 4, 1928

The racing at Marblehead on July 4, 1928, began with a steady southwesterly and flat seas, but ended with a savage thunder squall that broke masts in some of the larger boats and capsized most of the 13 O-boats racing near Tinkers Island. It also capsized a 50′ power cruiser, with tragic results.

The O-boat, an 18′ Alden design, was the hot racing class for young sailors at that time. It had first appeared a few years before, and enjoyed immediate popularity at yacht clubs around Massachusetts Bay. The boats were small enough to be managed by a youthful crew, but large enough to provide security. With nearly 200 sq ft of sail driving them, they also provided some excitement—although a little too much of it on that fateful Independence Day in 1928.

At around 3:30 p.m., thunder began rumbling in the western sky, and a half hour later a westerly squall erupted over the harbor. Seas piled up and simply swamped several of the boats. Others were laid over on their sides. When the squall had passed, nine O-boats were swamped, capsized, or sunk near the turning mark, Pigs Rock bell. Astute observers in the harbor took notice of the initial thunder and made a beeline for the race course in club launches, saving all of the sailors—though not all of the boats.

Only two of the capsized O-boats had been towed to the harbor by sunset that evening, and they arrived to a grim scene opposite the Corinthian Yacht Club: The 50′ power cruiser PIRATE had also capsized in the squall, near Nahant, and had been righted and towed to the floats at the Marblehead town landing. Throngs of people watched, stunned, as police swarmed over the wreckage and recovered three victims from the yacht's cabin. In a 1984 letter to his sister-in-law, Elli Thayer, former O-boat sailor Bob Thayer wrote, "I'll never forget the drowned bodies being removed from the cabin and laid out on the public landing…."

Matthew P. Murphy is editor of WoodenBoat. *Portions of this article are adapted from his forthcoming book,* Marblehead's Corinthians, *which chronicles the history of the Corinthian Yacht Club.*

Particulars

LOD	28′4″
Sparred length	63′3″
Beam	12′4″
Displacement	5,000 lbs
Sail area	975 sq ft
Draft	centerboard up 2′
	centerboard down 6′

TATTLER II

A new sandbagger for Lake Geneva

by John Summers
Photographs by Alison Langley

The low, white-hulled boat measures more than 63′ from the tip of her bowsprit to the end of her boomkin, but less than 30′ of that is the hull. The cockpit is smaller still, so the 11-man crew makes a crowd as they get her under way. They all know exactly what to do, however, so the close quarters are filled with deliberate activity. After the sails are raised, the skipper pulls the massive tiller to his chest and the boat begins to fill away. As she heels to the breeze, a barked order sends the crew to their stations. The mainsheet man trims his sail, and the port and starboard jib tenders haul in and make fast their sheets. In the center of the cockpit, four crewmen on the windward side bend toward the centerboard trunk to receive the 50-lb bags that three others hoist up from the bilges. They pile them three high, end to end, along the windward side deck, hard against the coaming. When the last of the 30 bags have been passed and stacked, the men in the bilge join the others on the high side. With their knees on the cockpit seats, they hike to windward, their stomachs pressed to the wet sandbags as the lee rail dips and the boat picks up speed. At a word from the captain, the helm is put down, and seven crew and 1,500 lbs of gravel quickly change sides again.

That was the scene aboard the sandbagger TATTLER on August 22, 1892, when she was on her way to defeating EXPERT and PRECEPT to win Lake Geneva's coveted Sheridan Prize. The trophy was named after Civil War hero Gen. Philip Sheridan, an early visitor to this growing Wisconsin summer colony. After the race, her

***Above*— The sandbagger TATTLER II was launched into Wisconsin's Geneva Lake in early June. There's a long sandbagger tradition in the town of Lake Geneva dating back to the 1870s.**

TATTLER II is meant to evoke all of the excitement of an original sandbagger, but to also allow a few passengers to simply enjoy the ride rather than labor to keep the boat upright. Builder Steve Van Dam calls the new design "gentrified."

name was engraved on the base of the trophy, where it joined those of the other sandbaggers that had dominated sailboat racing on the lake since the mid-1870s. The first of the type on the lake was NETTIE, whose sterling-silver model adorns the trophy, first awarded in 1874.

The sandbaggers came to Lake Geneva from New York City (see WB No. 118). The wide shallow-draft centerboarders had evolved from working oyster sloops whose crews never missed a chance to see whose boat was faster. The racing boats substituted bags of sand or gravel for cargo, and the sizes of both rigs and crews grew steadily in the search for speed. They raced head to head, in classes based on hull length. In the years following the Civil War, the wealthy new summer people brought their sporting passions and financial resources to Lake Geneva, and yacht racing flourished as the area earned a reputation as "Newport of the West." The sandbagger EXPERT dominated the Lake Geneva fleet for several years until O.W. Norton, determined to beat her, bought TATTLER sight-unseen by telegraph and had her shipped in from Long Island Sound. Racing was a serious business, and by the time TATTLER won the Sheridan Prize in 1892, an account in the *Chicago Herald* noted that the sandbaggers had "uniformed crews, professional skippers, sand ballast in bags, hollow spars, and all the niceties and ethics of the sport."

The sandbaggers' extravagant requirements for brute force and large crews were difficult to sustain, and by the 1890s interest in racing them had begun to decline. By the end of that decade, they were eclipsed by the low, sleek half-raters built to the Linear Rating Rule. These were supplanted, in turn, by the classes of the new Inland Lake Yachting Association, founded in 1897. This group fostered development of the sailing scows for which these waters have become famous.

By the turn of the 20th century, the sandbaggers sailed no more on Geneva Lake. That was where things stood until just a few years ago, when Charles Colman began thinking about a new boat.

Colman freely admits that bringing a new sandbagger to life on Geneva Lake is "close to the craziest project I've ever done." He comes from an old Lake Geneva family, and their boating legacy is all around

The Sheridan Prize, Lake Geneva Yacht Club's premier trophy, was first offered in 1874. It is adorned by a silver model of the sandbagger NETTIE. The original TATTLER won the prize in 1892.

TATTLER II's builders: Steve Van Dam (right) founded Van Dam Custom Boats in Boyne City, Michigan, in 1977; his son, Ben (background), is now the company's president.

him. The family's old Chris-Craft Sea Skiff is still in service on the lake, though now owned by someone else, and Colman's father's photographs hang on the walls of the Lake Geneva Yacht Club. A self-confessed "wooden boat guy," his proudest memory is of winning the 1978 Sheridan Prize with his father, Walter, and brother Jeff, sailing the E scow TOMAHAWK. There are two modern wooden powerboats at his dock: NEENEMOOSHA, an evocation of a Muskoka launch by the renowned Canadian builder and restorer Peter Breen; and NOKOMIS, a Van Dam runabout. It was NOKOMIS that was to lead, in a roundabout way, to the new sandbagger.

Casting around for a boat to replace the Chris-Craft, and wanting something more substantial than their Boston Whaler, Colman sought advice from a local marina operator, who suggested that he visit Steve Van Dam of Van Dam Custom Boats in Boyne City, Michigan (see WB No. 195). Van Dam builds exquisitely executed boats inspired by history but unabashedly modern in their construction and performance. Arriving at the shop after a nine-hour drive, Colman and his wife, Dianna, were given a tour, during which they saw a limousine-style hardtop runabout Van Dam had built for another customer.

By Van Dam's reckoning, 200 of every 2,000 email queries his shop receives turn into phone calls, and about three of the phone calls result in shop visits. Half of those visits lead to orders for boats. One of these was Colman's. He waited an hour on the drive home before asking Dianna what she thought of the boat. She liked it. They called Van Dam from the car to place the order.

A decade after the runabout was launched, Colman began thinking about a new boat project. He was intrigued by some of the launches that once ran on Lake Geneva, but he also couldn't stop thinking about NETTIE, the sandbagger atop the Sheridan Prize. He is keenly interested in the history of the lake, and wants to share it with as many people as possible.

At the time, he was developing tendonitis from playing the guitar and trimming the mainsheet on E-scows, so he was looking for a different sailing experience. His friend and fellow Lake Geneva Yacht Club member Ellen Bentsen began researching NETTIE and other sandbaggers, and suggested that they make a trip to Mystic Seaport in Connecticut to see ANNIE. This venerable sandbagger, whose acquisition in 1931 began Mystic's watercraft collection, had already inspired others to build new boats of the type. BULL and BEAR, scaled-down versions of a sandbagger called SUSIE S. (launched as BELLA in 1870), were built in the mid-1990s (see WB No. 135).

The Colmans went to Mystic with Steve's son, Ben, who is the Van Dam company president, to see ANNIE

Van Dam built much of TATTLER II's hardware, including the roller-bearing mainsheet car (left) and the cranse iron (right). Much of the hardware follows traditional designs but is made of modern material.

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TATTLER II is more of a big dinghy than a yacht. The lengthy bowsprit and boomkin are held in place by custom fittings that allow easy removal. The deck resembles painted canvas, but is made of plywood and Dynel.

for themselves. They went over the boat in detail, took photographs and measurements, and ordered a copy of the plans from the museum's Ships Plans collection. It all looked good until the sail plan arrived. As Colman tells it, "For the next four conversations, Steve Van Dam said, 'Charles, you're crazy.' And I finally said 'Steve, if you keep telling me I'm crazy, I'm not going to do this project.'"

The discussions that followed are at the core of this intriguing new boat. Colman's ambition to share a historical Lake Geneva sailing experience with a wide audience converged with Van Dam's interest in building new boats that embody the spirit of tradition. Van Dam's first concern was safety, since his name would be on the boat. Colman wanted a boat that brought history to life but could be sailed by a smaller crew with some passengers who wouldn't need to participate fully in sailing if they didn't wish to. It was one thing to have the boat be a sandbagger, but he didn't want his crew to have to *be* sandbaggers as well. As the originals carried a racing crew of up to 12, he also didn't want to limit his sailing opportunities by having to persuade 11 friends to join him each time he left the dock. In his words, "I'm hoping that both the wooden boat community likes it…and that people who go out in it don't have to do too much."

The changes began with the rig. With careful attention to preserving the original proportions, all of the dimensions were scaled back 15 percent, giving the boat a sparred length of "only" 63′3″ on a waterline of 28′4″ instead of the original's sparred length of nearly 75′. To keep the crew size down and eliminate the need for shifting ballast, 1,400 lbs of lead was faired into the bottom of the massive, L-shaped centerboard. To ensure that the crew who did go sailing would want to come back another day, they added a hydraulic ram to raise and lower the ballasted centerboard. To ensure that other boats at the dock would be safe from puncture wounds inflicted by the magnificent bowsprit, they added a small electric motor driving a propeller in an aperture fitted into the rudder and skeg. The batteries

The mast and boom are both built of Sitka spruce; the mast is hollow, but the 300-lb boom is solid. The main topping lift is thus critical to safety, and is labeled in red.

C60 Trident Pro 600 Chronograph

Christopher Ward

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Steve Colman takes a turn at the helm soon after TATTLER II's launching. Colman is a student of Geneva Lake's yachting history, and in building TATTLER II he wished to share this passion with others.

for this motor are housed beneath the sole, where they also act as inside ballast.

The hull, Van Dam says diffidently, was "just building boats" (albeit to his company's customarily high standards of fit and finish), but the rig was more of a challenge, so the new sail plan and stability calculations were reviewed by naval architect Eric Sponberg. Just as in the late 19th century, no one wants to capsize a 5,000-lb sandbagger. Even with the reduced rig and the lead in the centerboard, the boat is really more of a big dinghy than a yacht. The mast is built of hollow, glued-up Sitka spruce; the boom is also glued-up Sitka, but solid.

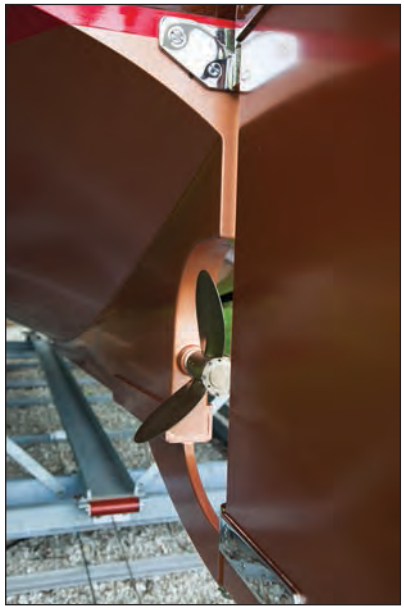
The hardware and fittings evoke the originals but are made of modern materials. There are no winches, so the sailing forces are managed with multi-part purchases and ample crew. Raising the sails uses a lot of modern synthetic line running through stainless-steel Harken blocks and belayed in line clutches. The mainsheet and jibsheet blocks run on old-style horses, but are modern roller-bearing units built by Van Dam. The mast hoops are aluminum, but they're covered with hand-stitched leather. The shrouds are set up with deadeyes and lanyards, but they're made from an exotic, heat-treated synthetic braid.

Van Dam describes the boat as "gentrified," and says "what we did doesn't detract from what the boat is, but we've changed the jewelry on it a little bit. It was kind of yachty before, but we've taken it up a whole other level."

It wasn't just performance that drove the design and construction decisions. Colman and Van Dam went to great lengths to ensure that the finished boat would evoke the feeling of the original. For example, the cold-molded hull is immaculately fair, as are all of Van Dam's boats, but she carries external chainplates that extend below the waterline, preserving an important historical detail at the expense of some speed. The plywood-and-epoxy centerboard trunk is finished on the exterior with mahogany raised-panel joinery. Controls for the electric motor and hydraulic ram used for raising and lowering the centerboard are housed in a discreet pedestal at the aft end of the trunk. The bowsprit and boomkin are secured with custom stainless-steel fittings that allow them to be easily removed for trailering or storage. The plywood-and-epoxy deck is sheathed in buff-painted Dynel to capture the look of the original canvas.

The boat will live on a marine railway at the Colmans' lakefront home, and this is where she was launched on June 10, 2016. Champagne glasses in their hands, the assembled guests gathered on the lawn underneath a tree for the christening. Branches had been trimmed just a few days earlier to allow the masthead fittings to clear as the boat came up the railway.

After talking about his own boating history on the lake, Colman acknowledged those who made the project happen: researcher Ellen Bentsen; Steve Van Dam, his wife, Jean, and their son, Ben; Van Dam Custom Boats Project Manager Thor Purinton and apprentice Steve Kim; and the ever-patient and supportive Dianna. Among the guests of honor was AMERICA's Cup winner Buddy Melges, the legendary "Wizard of Zenda," who took the helm for the inaugural sail.



***Left*—The mast hoops, like the boat's other hardware, take their aesthetic cues from older designs but are thoroughly modern; they are built of hand-leathered aluminum. *Right*—An electric motor helps with close-quarters maneuvering, in which the bowsprit can become a lance. The propeller is let into an aperture in the skeg.**

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Buddy Melges, Olympic medalist, AMERICA's Cup Hall of Fame inductee, and champion of numerous one-design classes, hails from Lake Geneva. He took the helm for TATTLER II's inaugural sail.

The morning was hot and sunny, but calm. The flag at the end of the dock was motionless. As the crew prepared to cast off, someone asked Melges what time they would have wind. Without missing a beat, Melges, who may have spent more time on the waters of Lake Geneva than on its shores, said, without missing a beat "about ten after ten." By 10:09, the line of a freshening westerly could be seen advancing up the lake.

There is no question that, even with all of her modern conveniences, TATTLER II takes considerable effort to get under way. With her long bowsprit, boomkin, and boom, leaving and returning to the dock requires a good plan and a steady hand, notwithstanding the electric motor and a huge barn-door rudder. Neighboring boats and pilings are in some danger until she's completely clear. All of the sheet clutches are labeled in black except for one in red, and Colman tells his crew that it is the most important one on the boat: the main topping lift, which supports the 300-lb boom until the mainsail is set. With the main up, the nimblest member of the crew goes to the end of the bowsprit to unstop the jib. During the launching, this duty fell to Ben, but Colman is recruiting an agile young local sailor to take his place as "boat monkey" for the remainder of the season.

Under sail, TATTLER II is a magnificent sight. From a distance, her low, broad rig is evocative of an earlier era. You could spend a lot of time just watching the plumb stem slice through the water. From inside the cockpit, the long, steeved-down bowsprit and boomkin go on and on, and you can alternate your gaze between those arcs and the sweeping curve of the rail and the upward kick of the sheerline toward the bow. If you get tired of the view outboard, you could always look down and admire the joinery of the mahogany gratings that Van Dam made for the cockpit sole, or the rhythm of the beaded Douglas-fir vertical staving that lines the cockpit.

She handles well, albeit a little deliberately, but trouble awaits the skipper who doesn't ease and trim as well as steer, for the rig will overwhelm the rudder if both are not used in tandem. Colman is searching for an appropriately sized ratchet block for the mainsheet so nobody gets their shoulder dislocated in a puff. The windage of her rig, even with the sails down, can make docking an adventure in a breeze but, as Colman has discovered, the large rudder offers some unusual possibilities for backing up to the pier.

The original TATTLER was raced for a few more years after her Sheridan win, and her time on the lake drew to a close along with the era of the sandbaggers. She was scuttled on New York State's Chautauqua Lake in the early 20th century. O.W. Norton had moved there and built a house after leaving Lake Geneva in 1899. With his own health declining and his sons unable or unwilling to invest the time required to sail and maintain such a boat, he decided to give her a dignified end.

The naval architect Douglas Phillips-Birt, in his *An Eye for a Yacht* (1955), could have been discussing Colman's project to bring TATTLER back to Lake Geneva when he wrote, "The pleasure derived from looking at a yacht is compounded of two elements. Firstly there is the appreciation of form as such, the perception of beauty in the blending curves of stem, stern and sheer.... Secondly, there are...memories awakened, the history which is recognized in her form. A yacht...holds a looking glass to the past."

TATTLER II is the embodiment of Charles Colman's vision of getting people out on Lake Geneva in a historic boat. She does, indeed, hold a looking glass to the past.

TATTLER II lives on a marine railway at the Colmans' lakefront home.

John Summers is a boatbuilder, small-craft historian, watercraft blogger, and museum curator who lives in Burlington, Ontario.

A Maritime Archaeology Mystery

WoodenBoat Editor Matt Murphy recently sent me this note: "Josh Guyot, a friend from Deer Isle [Maine], showed me a piece of driftwood he and his six-year-old son, Alden, found on the beach behind their house a few days ago. It has some rather intriguing notches and curves, but is so worn that I don't think one could make any conclusive statements about where it might have lived in a boat—or whether it lived in a boat—based on these features alone. But there's a square-cut copper nail poking out of it, which further stirs the imagination. Such nails were common in Scandinavian boatbuilding, and I do know of at least one Scandinavian pilot boat that came to grief in those waters within the past few decades. And in 1836, ROYAL TAR, carrying a load of circus animals, sank in the area. (The incident inspired Chris van Dusen's children's book, *The Circus Ship*, of which Alden is a fan, and I believe he'd be beside himself if he thought he'd found a piece of the actual vessel.) All of this sets me to wondering: What secrets can driftwood hold? Can species—and perhaps country of origin—be determined conclusively by laboratory analysis of semi-decayed, weathered driftwood? How long does it take a submerged timber, in Penobscot Bay, to reach the state of decay of the piece Josh and Alden found? Is it more likely from the recent pilot boat sinking (15 years ago), or the 1836 ROYAL TAR?"

I love "woody" mysteries, so even though I was beginning to work on a different column, I dropped that and jumped into this detective story.

The photo shows the side of the hunk of driftwood that has two rounded notches, the one to the right being deeper and more pronounced. The surface of the wood is weathered and on close examination contains tiny entrance holes filled with a white substance. Also in the photo, lying on top of this wood, is a tapered spike with no head that I removed from the driftwood, leaving a remnant square hole, stained black, in the broken-off piece of the driftwood shown above the spike.

The spike measures about 3¼″ (8.25 cm) in length and the square cross-section measures about ⅜″ (1 cm) on each side near the head. The spike appears to have been sand-cast into the taper seen, with no evidence of further pounding or rolling to create the shape.

I sawed an end off the driftwood in order to attempt an identification of the species, and the view of this cross-section can be seen top right in the photo. Here, we can see that much of the interior is riddled with large holes, filled with a white substance. These are channels, the classic shipworm damage most likely caused by *Teredo navalis* (see "Wood Technology," WB No. 245).

Except for this extensive shipworm damage and the surface weathering, the wood is surprisingly sound and very hard, with no sign of decay by fungi. I could see from the sawn cross-section that the wood contained quite wide rays. This immediately made me think that it might be an oak—but what kind? Microscopic examination revealed that the wood was semi–ring porous, which is not usual for red or white oak. It showed not only simple wide rays but also aggregate rays, containing cell fibers and parenchyna cells. This meant it could be only one wood: live oak (*Quercus virginiana*), a species that I discussed in WB No. 247.

Possible Source

So, what might be the source of this maritime archaeologic artifact? Let's look at the two possibilities suggested in Matt's email. Could it be from a Scandinavian pilot boat? Matt notes that square-cut copper nails were commonly used in Scandinavian boatbuilding. But close examination reveals that this is not copper but rather a copper alloy with a brassy color. Also, it is not technically a nail, since it has no head. The spike is also unusual in that it was cast into the tapered shape we see. More typically a square or round rod would be cast, cut into lengths, and points and heads hammered into shape (see *Ships' Fastenings: From Sewn Boat to Steamship* by Michael McCarthy, Texas A&M Press, 2005).

The second reason this driftwood is not likely a portion of a Scandinavian boat is that live oak is an American wood, and very little of it was ever exported.

What about ROYAL TAR, the ship that caught fire and sank with its cargo of circus animals and many

RICHARD JAGELS

An unusual bit of worn driftwood that captured a family's attention turned out to be a piece of live oak with an unusual cast copper-alloy drift pin driven into it. The drift was withdrawn from a square-shaped hole in the piece shown at top left, and an end-cut piece, shown at top right, helped prove that it was a live oak and showed extensive worm damage.

of its 93 passengers? ROYAL TAR was built in 1835 in a shipyard operated by William and Isaac Olive in Carleton, New Brunswick. It is unlikely that a Canadian shipyard in the 1830s would have had access to a highly valued wood from the American south—a wood coveted by the U.S. Navy. Remember, the United States had been at war with Great Britain and the colony of Canada just a few decades earlier.

Another argument against this being an artifact from ROYAL TAR is the extensive shipworm damage. The ship sank in 1836, only one year after her launching. This degree of shipworm damage could not have occurred in just one year. And, once the vessel sank, reduced oxygen levels would have restricted marine borer activity. Finally, the rounded notch worn into the wood, in my opinion, is most consistent with some object rubbing over the wood for quite an extended period of time—like rope, cable, or some kind of large-diameter hawser. I don't think this could happen in just one year—especially with a wood as dense as live oak.

Wrap-up

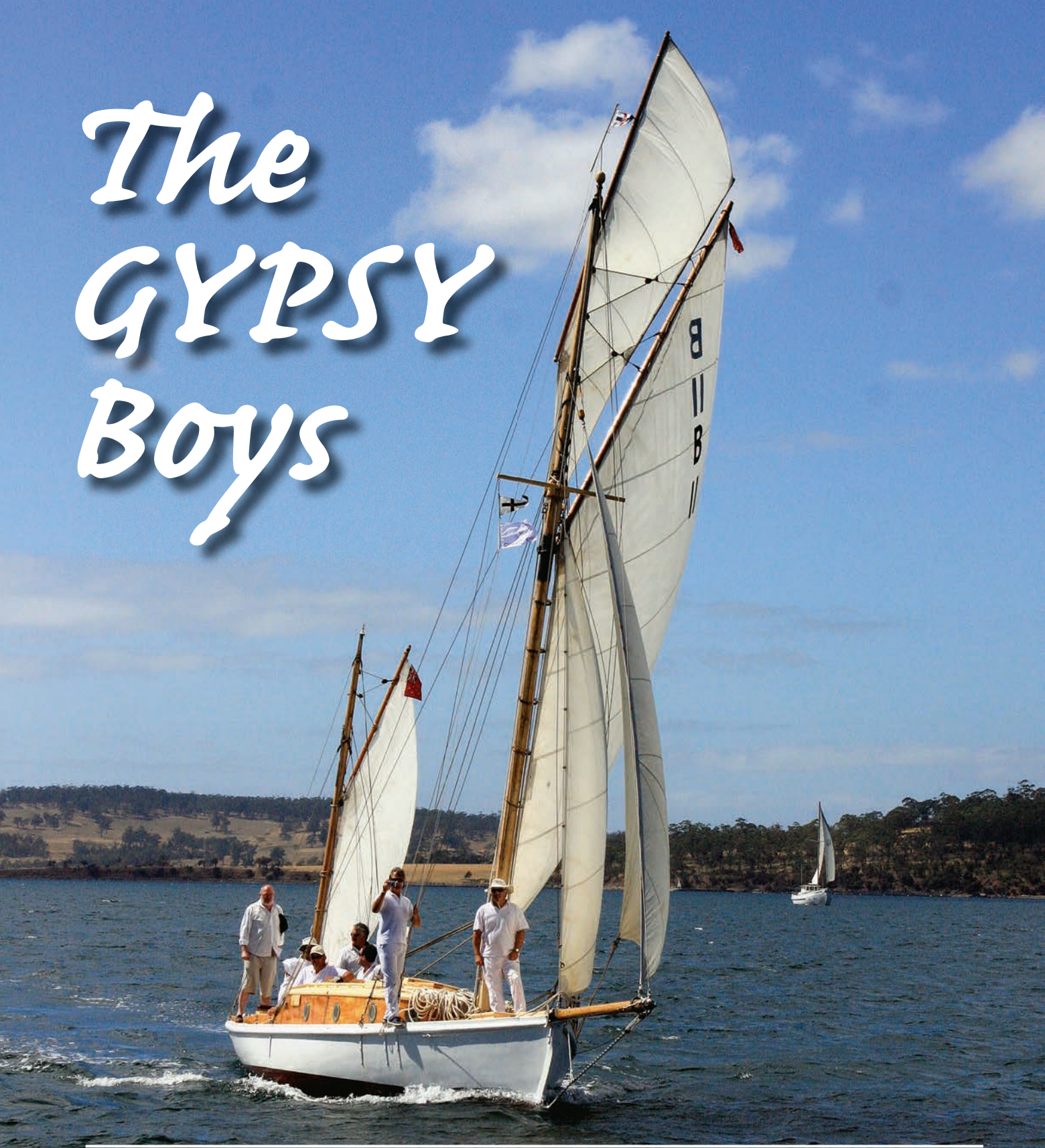
The evidence I have outlined suggests to me that the marine artifact, because it is live oak, came from an American-made ship—most likely a naval vessel. The size of the rubbed notch suggests a large hawser and hence a large vessel.

A metallurgical analysis would be necessary to determine the composition of the cast spike. If cast of "mixed metal," then the spike is likely brittle. Typically, wooden mallets were used to drive these so that they would not shatter. The casting marks are not damaged on this spike's head, suggesting it was driven by a wooden mallet. The fact that the spike was cast into its final shape, rather than being reworked from bar stock, suggests a large shipyard that could cast its own hardware—evidence consistent with a U.S. Navy shipyard. Metallurgical analysis could help narrow the range of possible dates. For example, mixed metal (mostly copper and tin) was used in the late 1700s, but Muntz metal (copper and zinc, 60:40) wasn't invented until 1832. The spike could also be naval brass (consisting of copper, zinc, and tin) or some other alloy.

Ninety-nine times out of a hundred, a chunk of driftwood on a beach would have little to reveal about past history. By sheer luck, this was the one percent.

Dr. Richard Jagels is an emeritus professor of forest biology at the University of Maine, Orono. Please send correspondence to Dr. Jagels by mail to the care of WoodenBoat, *or via e-mail to Senior Editor Tom Jackson, tom@woodenboat.com.*

The GYPSY Boys



A 102-year-old gaff yawl and Australia's spirit of "mateship"

by Bruce Stannard

JOHN REDEKER

There are very few boats, anywhere in the world, that can claim to have had the same crew for half a century or more, but the 36′ yawl GYPSY, the grand old lady of the River Derwent in Hobart, Tasmania, certainly is one of them. Although she is devoid of all but the most basic creature comforts, she nevertheless enjoys the rare distinction of being a truly happy boat, a fun vessel that inspires adoration among the same sailors who not only race and cruise aboard her but also help to maintain her, year after year. A gaff-rigged icon with her lofty jackyard topsail, her traditional simplicity invariably provokes joyous shouts of admiration from those who see her heeling bravely with a bone in her teeth on a blustery Derwent day.

GYPSY defines the very essence of "mateship," the uniquely Australian cultural identity in which egalitarianism and unshakeable loyalty lie at the heart of profound and lasting male friendships. Her crewmen—and yes, there have only ever been *men* in her racing and cruising crews—are inheritors of a camaraderie that has its roots in the harsh pioneering traditions of Australia's early colonial era, when bonds forged in adversity often meant the difference between life and death.

One hundred years ago, it was Australians' overwhelming loyalty to each other that inspired extraordinary acts of bravery and enabled so many to survive withering fire from Turkish and German guns at Gallipoli Peninsula. Jack Knight, one of the two brothers who first sailed GYPSY, was among the first of the young Anzac troops to be bloodied on that fatal shore. An artilleryman who was commissioned a First Lieutenant in the field, he fought with distinction on the Western Front. Jack was wounded and lying on a camp stretcher when a German artillery shell exploded in the muddy trench. He never recovered from the mental and physical anguish of that experience.

Returning to Tasmania after the war, he and his brother, Sid, who were racing sailors before the war, sought solace afloat. Soon, they found their perfect vessel, a 36′, deep-keeled cruising boat, at Murdunna at Norfolk Bay on the Tasman Peninsula. Launched unfinished in 1914, she spent her first four years lying idle, and unnamed, under canvas while the Great War raged on and on. The Knight brothers bought her in 1918 and christened her GYPSY, reflecting their hearts' desire to wander unhindered among the pristine, island-studded waters of southeastern Tasmania.

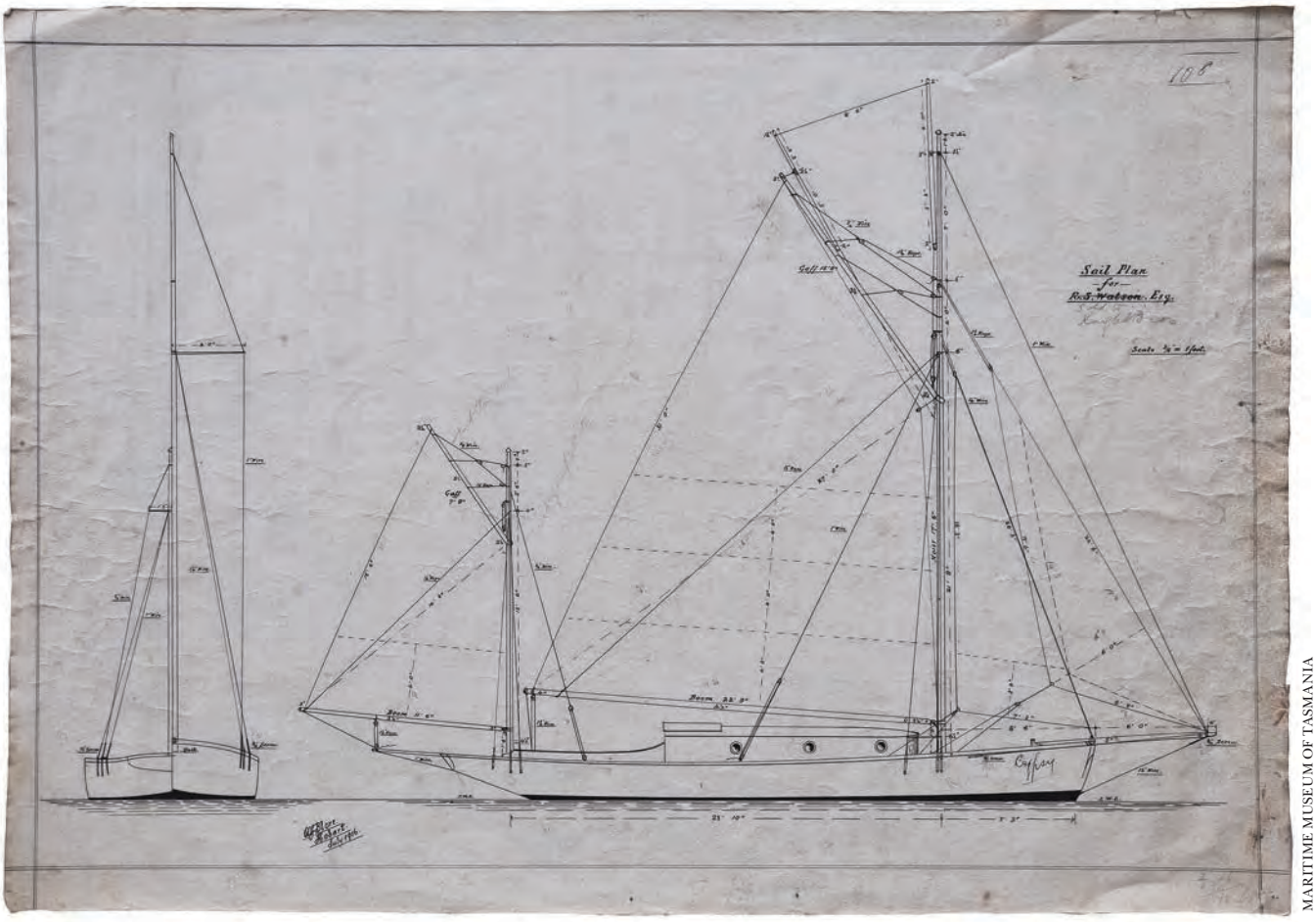
STEVE KNIGHT COLLECTION

GYPSY's current owner's grandfather, Doug Knight (left), and great-uncles, Sid Knight (center) and Jack Knight (right), posed for a portrait in the family garden at Mount Stuart in Hobart, Tasmania, shortly after Jack's return at the end of World War I in 1918, about the same time that Jack and Sid bought GYPSY. The yacht has been in the same family ever since.

As keen as they were on cruising, the Knight brothers also had racing in mind. They commissioned Alfred Blore, a highly regarded Hobart designer, to enhance the yacht's performance. Blore removed her lead keel and reconfigured her ballast around a formidable Huon pine centerboard trunk carrying a drop-style 6′ × 9′ centerboard fashioned from four planks of 1½″-thick Tasmanian oak, iron-fastened. Sail plans in the Tasmanian Maritime Museum show that Blore also beefed up her rig, adding the jackyard topsail to her mainmast.

***Previous page*—In regatta whites, GYPSY's crew, all of whom have sailed with her for years and many for decades, puts GYPSY through her paces on a fine racing day in the D'Entrecasteaux Channel during the 2010 Kettering Wooden Boat Rally. *Right*—Believed to have been taken just before the boat's launching in 1914, this photo shows the yacht, then unnamed and unfinished, on the foreshore on the eastern side of Norfolk Bay at Taranna, on the Tasman Peninsula. She may have been rolled along the road to the launching place.**

STEVE KNIGHT COLLECTION



MARITIME MUSEUM OF TASMANIA

STEVE KNIGHT COLLECTION

***Above*—At the request of Jack and Sid Knight, yacht designer Alfred Blore of Hobart designed alterations for GYPSY in 1918, including hull changes and the sail plan shown here, to improve sailing performance. David Payne of the Australian National Maritime Museum in Sydney believes GYPSY is a scaled-down version of the Walter Reeks's 41′ ARETHUSA design of 1909, and in 1914 Blore may have worked in concert with Reeks to downsize the design for the original builders. *Left*—Doug Knight drives a wooden tap into a keg of beer, probably one of about four GYPSY typically carried to an annual "campfire social" outing run by the Royal Yacht Club of Tasmania. The photo is from the 1940s, and current owner Steve Knight, Doug's grandson, still has the tap.**

Although she is 36′ on deck, GYPSY has a sparred length of 50′ and sets about 2,000 sq ft of canvas.

GYPSY's crew have not all been dyed-in-the-wool sailors, but they have been, first and foremost, mates, and therein lies the key to her 100 happy years. In the Australian tradition, mates are not only easy in each other's company, they also allow themselves to be the butt of a good-natured *chiaking*—the teasing and banter that strip away pretension and leave no room for superficial distinctions based on wealth, education, or social status. In the close confines of the cockpit or the saloon, mateship allows the crew to open up about

KRAIG CARLSTROM

Particulars	
LOA	36′
LWL	30′
Beam	10′6″
Draft	(board up) 4′6″
	(board down) 9′
Sail area	2,000 sq ft

In the late 1950s, GYPSY made the conversion from cotton sails to synthetic. The first Dacron sails were made by Doug Job, a cousin of the current owner's father. "Doug was the first sailmaker trained in Hobart," Steve Knight reports, "and he told me all prior sailmakers had learned learned their trade aboard square-rigged ships and had left the sea to settle in Hobart."

things they might never discuss even within their own families. It is a form of therapy borne of intimacy and the certainty of safety. The "Cockpit Rule" simply states that, "What's said on GYPSY, stays on GYPSY."

With her long bowsprit and her jaunty boomkin, GYPSY is a throwback to a time before labor-saving contrivances such as winches, electronics, or hydraulics were ever dreamt of, let alone allowed to intrude upon the pure conviviality of voyaging under sail. GYPSY is a block-and-tackle boat, powered as much by brute strength, old-fashioned seamanship, and human ingenuity as she is by the wind. With no modern conveniences of any kind, she remains blissfully original and, with the exception of Blore's alterations, just as she was when she slid down the ways in 1914 at her builder's yard at Eaglehawk Neck, the narrow isthmus on the wild and beautiful Tasman Peninsula. And that is the essential allure of this remarkable yacht. She is a time capsule, a window on a vanished world. All Knight family owners since 1918 have recognized and valued her plain and simple originality. Apart from routine maintenance, they have all been staunch in their determination that nothing whatsoever is to be allowed to dilute the well-worn character she has developed in over a century of sailing.

Her current owner, Steve Knight, a Hobart lawyer who is also chairman of the Australian Wooden Boat Festival, has had GYPSY for 40 years. He inherited her after his father, Barry, a lieutenant commander in the Royal Australian Navy Reserve, suffered a massive heart attack at sea at age 41 and died. It happened just a few days after Steve turned 17. Steve recalls the moment when Maurie Laing, one of his father's older crewmen, called at the Knight home to offer condolences. "Maurie was a lovely old bloke," Steve says. "He came in, took his hat off, and said to my mother, 'I suppose you will be selling GYPSY now.' Straightaway, I piped up and said, 'No, no, no. I'll be taking over as skipper.' I hadn't discussed that with my mother. I simply assumed that I would be carrying on the family tradition. Well, the old chap who had been in my grandfather's crew and had spent perhaps 50 years on the boat, fixed me with a look of utter incredulity. And then he smiled. I was clearly my father's son. I must give credit to my mother. She allowed me to step into my father's shoes. That was a big step-up for me, a great boost to my confidence as a young bloke. Somehow, all the other old-timers stuck with me. They forgave me my youthful impetuosity and they allowed me to grow up at the helm."

Steve, of course, has been on and around GYPSY since he was a toddler. "One of my vivid childhood memories," he says, "is being under the boat in the slipways at Battery Point wrestling with a two-handed antifouling paintbrush. I would have been about eight. I can still smell that red British Torpedo brand antifouling." During a Derwent fishing expedition, he and his brother were sent below and wedged between two of his grandfather's beefy crewmen when a big sou'wester came through. "I remember seeing the other crew out in the cockpit in their oilskin jackets as green water came over the side. Two things in particular stick in my mind. One was that I thought it was so bloody unfair that we young blokes weren't allowed to be out there in the maelstrom. The second thing is that I couldn't figure out the source of the strange masculine odor that pervaded these old fellas. I subsequently realized it was

KRAIG CARLSTROM

GYPSY has tight but sociable accommodations, with table leaves and a glassware rack attached to the centerboard trunk. Two tackles, visible at each end of the centerboard slot, raise and lower the "drop board." The chart tube, whose end shows at the upper right corner, was handmade by one of the "old" crew, Percy Pelham, a "very clever sheet-metal tradesman," according to owner Steve Knight. Left to right are longtime crew Nigel Granger, Dave Farmer, Tony Evans, Iain Weir, owner Steve Knight, Anthony Croome, and Colin Allen.

the pungent smell of the beer they had been drinking and the fish they had been cleaning. Being out there among the men was my idea of heaven. It still is. GYPSY has always been a 'boy's boat.' I hope she always will be. We do take the women out a couple of days a year, but she is not geared for the ladies. There are no facilities and absolutely no privacy onboard."

Steve recalls how older crewmen tested him as a 16-year-old by announcing on the eve of his first Opening Day Regatta that they were all going ashore to the pub. He was expected to carry on hanking on the jibs and making things shipshape in their absence. He did just that, and when they eventually came back on board there were winks, nudges, and knowing smiles all round. "Everyone gets on so well together," he says. "There is very little shouting, and no one bellows orders or bosses anyone else about. Everyone knows their jobs and just settles down to enjoying the sailing." Steve learned how to handle GYPSY the hard way, by trial and error. "Maurie Laing used to say the two most useless things on a boat are an umbrella and a book on sailing, so I just picked it up as I went along. I've been the skipper for 41 years now and I'm still learning. That's one of the wonderful things about GYPSY."

More GYPSY Boys

Iain Weir

Also known as VULM—"Very Useful Little Man"—Iain has been a GYPSY crewman for 37 years, during which he has missed only three of the annual cruises. A 58-year-old Navy veteran, he runs the foredeck and is also the expert rigger aboard, splicing rope and wire and renewing standing and running rigging as required. "I also sand, paint, varnish, varnish, and varnish," he said with a mischievous grin. "I take things out and I put them in again. Mostly I just have fun." Iain says there is a special magic about GYPSY. "When I walk on board, I become totally absorbed in her history. She is not some inanimate object. She has a soul. And if you are lucky enough to be a GYPSY crewman, you also become part of the GYPSY family. The crew is a surrogate family for me. Steve is the lynchpin that holds us all together. He is a great bloke, and a great skipper."

KRAIG CARLSTROM (ALL)

Malcolm Little

Malcolm, who is Steve Knight's brother-in-law, has been a GYPSY crewman for 25 years. When asked what he does on board, he answers promptly: "As little as I can." Having served his time on the foredeck, he now works in the cockpit, trimming the mizzen and working the running backstays. Malcolm says Steve's "character and commitment" keep the GYPSY crew together. "Steve is one of those very personable guys who is very easy to deal with. It's always a great pleasure to be in his company and in the company of everyone in the crew." Malcolm, an automotive industry manager in real life, is responsible for making one of the very few changes to GYPSY's rustic simplicity: he gutted the "dangerous and impractical forepeak" and lengthened the side bunks to accommodate three crewmen each, sleeping head-to-toe. He also describes himself as a "hunter-gatherer type," and his fishing keeps the crew well supplied during cruises.

KRAIG CARLSTROM

To say that GYPSY's crew know their way around the boat would be a gross understatement: they have sailed together for decades, and six of them have been at it for at least 50 years. At the boat's centennial celebration in 2014, more than 150 crew, former crew, and descendants paid their respects.

GYPSY was designed by Walter Reeks, the English-trained naval architect who was Australia's first designer of real distinction. She was built of Huon pine by William Ball, a sawmill operator with an interest in boatbuilding, and Winward Tatnell, a local blacksmith. Tatnell's descendants maintain that she was built beside the blacksmith's shop at Taranna, then rolled along the road on greased poles to her launching site on the gravelly beach on the southern shore of Norfolk Bay. She was originally powered by a twin-cylinder, 8-hp Sterling engine made in Buffalo, New York.

The Knight family has cherished GYPSY ever since she came into the family. The year of her first race, 1919, is inscribed on the polished boss of her handsome brassbound wheel. Under a succession of Knight family skippers, GYPSY dominated racing on the Derwent throughout the 1920s and 1930s. She still holds many titles won at the Royal Hobart Regatta and won the Royal Tasmanian Yacht Club's Centenary Race in 1980 and the Bicentennial Gaff-rigged Race in 1988.

Steve is the family's fourth-generation skipper. GYPSY passed from his great uncle, Sid, to his grandfather, Doug, then to his father, Barry, before him. The 2016 season was his 41st year at the helm. He hopes that future generations of the Knight family will eventually take over.

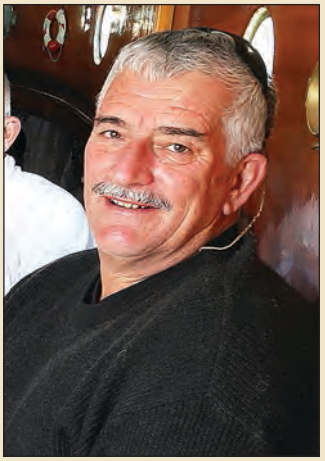
Six of GYPSY's crew have been with her for 50 years or more. Wooden boat builder Anthony Croome, at 60 her oldest crewman, has sailed with Steve Knight for 34 years, most often on the foredeck handling the jib and staysail but sometimes in the cockpit trimming the mainsheet or tending the running backstays. In the early years, he recalls, each weekend during the racing season he made a four-hour, 400km (about 250-mile) drive from Wynyard on the northwest coast all the way to Hobart on the southeast coast to sail with GYPSY, sleeping aboard after the round-the-buoys racing and

Anthony Evans

Nicknamed "Tone on the Phone," Anthony is a 20-year GYPSY veteran—a relative newcomer. A shift worker who has spent most of his working life as a laborer in the Hobart zinc works, Anthony says GYPSY welcomes crewmen from all walks of life. He is a hands-on, practical fellow who takes a particular pride in maintaining GYPSY's brightwork. Varnish is his passion. Each winter he is hauled aloft in the bosun's chair to sand the mainmast and mizzenmast and hauled back up again to give them two coats of varnish each. He does the same with the booms, gaffs, bowsprit, and boomkin. "GYPSY is an historic vessel," he says, "and I am proud to be part of her crew and delighted to play a part in making her look good." Anthony earned his moniker when he came aboard with a cell phone. The crew gave him such a merciless hard time that he now leaves the offending object in the toolbox whenever he goes cruising.

Colin Allen

A friend of Steve's since the third grade, Col at 60 is the longest-serving GYPSY crew member, a regular for 45 years. He started as a 13- or 14-year-old, and being invited to join the permanent crew, he says, was like being admitted to a very exclusive club. "GYPSY is a men's shed on water," he says. "You can say and do as you please in the certain knowledge that the Cockpit Rule applies. You learn the value of mateship, of tolerance, and you develop a deep understanding of each other." Col has been on 23 consecutive GYPSY cruises. "For those 10 days," he said, "the GYPSY Boys are a family and GYPSY is our home. She has her own special presence, but it is the men aboard her that make her what she is. It is a genuine privilege to be aboard."



—BS

driving home again on Sunday morning. He regards his time with her as one of his life's greatest experiences. "I had grown up sailing dinghies," he said, "So when I started on GYPSY, it was all about the sailing. But as time has gone on, I have been gripped by a powerful sense of ownership in which I now have an intimate knowledge of that boat. She's not fancy; far from it. She's the most basic boat you could imagine. There's no head, and only the most rudimentary sink in what is laughingly called the galley. I describe her as 'a two-man tent on the water.' And yet, one of the lovely things about GYPSY is her simplicity. You look into the companionway and you see the centerboard trunk and seats port and starboard. That's where we sleep, head-to-toe on either side, three guys on either bunk. There's no privacy, but no one cares. She is a blokes' boat, plain and simple, and that's the way we like her."

According to Anthony, sailing GYPSY is simplicity itself. "This is about as far as you can get from modern push-button sailing. We look at the sea state, the sky, and we know instinctively what to expect. When we go to sea, we don't have to worry about electronics packing up or winches failing. All we have to keep an eye on is the weather. So there's no pressure. This has led to a fabulous environment for us to share some of our innermost thoughts. Sometimes when things aren't too good, we have all revealed ourselves to our best mates. Men rarely do this. If anyone is feeling particularly down, we all tend to joke, and that is a very comforting and easing way to help deal with the issues that we talk about. Only the passing of time can give you that really deep connection. The experiences we have had together as a group of men are really quite extraordinary. When we are out sailing, I have often thought how lucky we all are to share this simple pastime on this fabulous old boat. GYPSY has been a bit of a safe haven for all of us."

Anthony points out that there has never been a great turnover in GYPSY's crew. "Blokes come aboard and they stay," he says, "because they want to stay. They realize that something special is going on aboard this little wooden boat. The only reason blokes leave is because they die. And even when they die, their shade is still on board. We still refer to 'Maurie's bunk,' even though Maurie hasn't slept in that bunk for nearly 40 years."

In 2014, the Knight family held a 100th birthday party for GYPSY, inviting current and former crew members and their families as well as descendants of the original builders. "We finished up with more than 150 people," Steve says. "I couldn't believe how many came to pay tribute to our lovely old boat. GYPSY has touched the lives of all those people and a great many more."

Although GYPSY's crew has maintained a tradition of turning out smartly in white uniforms for Hobart's historic Opening Day Regatta, some of the older fellows also turned up on other occasions in an odd array of working clothes. Sid Knight habitually wore a three-piece suit with a collar, tie, and felt hat—but wearing hob-nailed boots. "My great uncle Sid insisted that everyone either wore sand shoes or went barefoot to help preserve the decks," Steve recalls, "but old Sid was a bit of a law unto himself, and he insisted on wearing his boots. Whenever we tacked or jibed, those of us who were barefoot in the cockpit all tried to stay well clear of those hob-nailed boots."

Every January since 1919, the GYPSY Boys, as they are known to all, have set sail on their annual 10-day cruise, an all-male affair. They take only minimal food and prefer to dine out of the sea's cool lazarette. "Southern Tasmania has some of the world's best cruising grounds," Steve says. "It's just gorgeous, with plenty of lovely sheltered bays, deserted islands, and very deep water. We sometimes go up the d'Entrecasteaux Channel or through the Dennison Canal, a short cut that avoids going around the Tasman Peninsula and allows us to head on up the east coast to visit places like Maria Island and the Schouten Passage. There are magnificent white sandy beaches, gin-clear water, and an indigo sea. We take a couple of craypots with us and some grab-all nets and fishing gear. If the crays (rock lobsters) aren't there, there are plenty of fish, crabs, and abalone. No one goes hungry on a GYPSY cruise." And, of course, like most boats' crews, they also take plenty to drink. The boat's official drink is gin. "That," Steve winks, "is strictly for medicinal purposes. We drink it to keep the malaria at bay. And we have never lost a man to malaria yet."

KRAIG CARLSTROM

Steve Knight takes the wheel on a June day of light wind on the Derwent River off Hobart. The wheel itself was made by two crew members, using wood from an English oak taken down when a Hobart hotel was demolished in 1938. The wheel replaced the original iron tiller. The hub cover is a repurposed telephone bell, and the steering gear was adapted from an old Whippet, an Australian car.

Bruce Stannard, an Australian journalist and maritime historian, is a regular contributor to WoodenBoat.

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Gar Wood Custom Boats

Preserving a legendary brand

by Evelyn Ansel

COURTESY OF KENT O. SMITH, JR

***Previous page*—Mike Turcotte puts a 22′ Gar Wood Speedster through its paces on Lake George, New York, in 2015. Mike's father, Tom Turcotte, co-founded Gar Wood Custom Boats with his brother, Larry. The company restores and replicates the speedboats produced by Gar Wood Industries from the 1920s through the '40s. *Above*—This fleet was built by Gar Wood Custom Boats. The boat closest to the camera is a 28′ Runabout model. Its two closest neighbors, and the boat on the opposite end of the formation, are 25′ Runabouts, and the second boat from the left is a 33′ Streamliner.**

The mahogany runabouts built by Gar Wood Industries in the 1920s through '40s were renowned for their speed and detailing, from their characteristic folding-V windshields to their black-rubber, varnish-saving step-pads stamped with the Gar Wood name. Today, they are among the most collectible of classic speedboats: Some 10,000 were reportedly built, but fewer than 300 original Gar Woods are still around, according to the Antique & Classic Boat Society.

Gar Wood Custom Boats, a small shop in upstate New York, has for the past three decades made a specialty of finding and restoring original Gar Wood boats—and building new ones. The shop is located about an hour north of Albany, on Brant Lake, in the town of Horicon, just west over the hills from Lake George. The Lake runs north–south, and is 5 miles long by a half-mile wide. It's "perfect for testing powerboats," according to Tom Turcotte. Tom and his brother, Larry, own the business, which today consists of three generations of Turcottes, four and a half acres where the main shop is located on Duell Hill, and three additional satellite storage facilities.

Tom and Larry were raised near Albany, but summered on Brant Lake as kids in the late 1950s. The region has a rich history of powerboating, and they showed an interest in it from an early age. Their father insisted that if they intended to get out on the water, it had to be in a wooden boat. Together, the brothers restored their first powerboat, a 1947 Gar Wood, while they were still in high school.

After high school and college, each of the Turcottes pursued his own career, Tom with a degree from Cornell in Hotel Management and Larry with a masters from the College of St. Rose for education in industrial arts. But the two couldn't help keeping an eye out for interesting "barn boats," and collecting a few over the intervening years. The brothers were especially interested in the historic raceboats and runabouts built by Garfield A. "Gar" Wood, because of their all-around excellent performance as well as their elegant construction, detailing, and historical significance. The pair decided to go into business together in 1984, focusing specifically on the restoration of original Gar Woods.

Garfield Arthur Wood was born in Mapletown, Iowa, in December 1880, the third of 13 children. The family relocated to Minnesota when Gar was 10. His father, Walter, was a steamboat captain who would informally race his MANITOBA against other paddlewheel passenger steamers. During one particularly memorable impromptu race, Walter Wood noticed he was losing his lead over MERRY MANN due to a lack of firewood, and ordered the "lads" onboard to break up the deck chairs and tables for fuel. They won, according to Gar, and early contests such as this fostered the youngster's competitive spirit. The win-at-any-cost theme would recur throughout his life: He

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Garfield A. Wood made his fortune with the invention of hydraulic dumps trucks. He spent much of it on his quest for speed on the water.

ALISON LANGLEY

AMY TURCOTTE

Brothers Larry (left) and Tom Turcotte founded Gar Wood Custom Boats in 1984, after working for a few years in other careers. They are sitting in a 1929, 28′ Baby Gar.

would always push the limits, financial or bodily, in pursuit of a trophy.

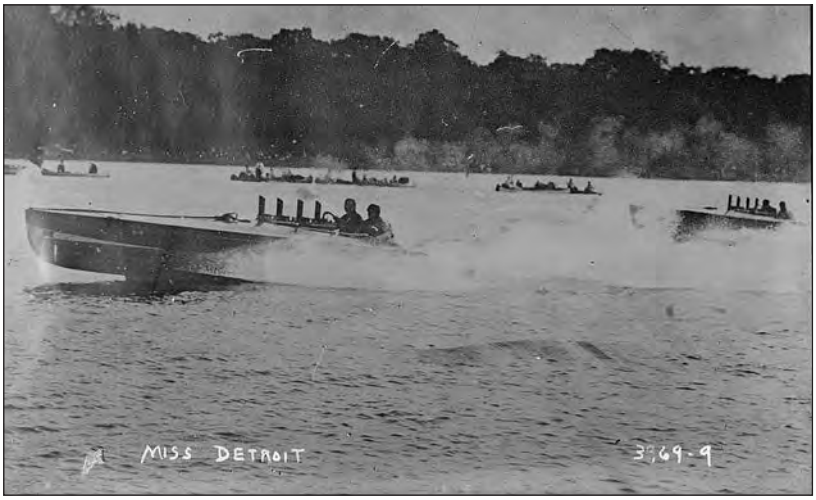
Wood was a very bright young man with a mechanical mind. He married Murlen Fellows in 1910 and the couple initially supported themselves through her teaching job and his machine shop. Later that same year, Wood was struck by a moment of engineering clarity that would earn his fortune: While watching a delivery man strenuously hand-crank a truck bed into the air to dump a load of coal, he was reminded of the power of the hydraulic cylinder used to reverse the steamboat engines of his childhood. He postulated that, if attached to the underside of a truck bed, a hydraulic lift could save much labor when shipping products such as coal and gravel. He borrowed a coal truck and put his theory to the test, financing the project with his and Murlen's life savings. This was the birth of the dump truck, the garbage truck, and a self-made millionaire. Wood's hydraulic lift became the foundation for the extremely successful Detroit-based, Gar Wood Industries.

Wood's business practice was shrewd and conservative, and he was notoriously tight with finances. All eight of his brothers worked for Gar Wood Industries at some time or other, and he was wary of business partnerships outside of the family. However, there was one aspect of his life in which fiscal conservatism was never even a consideration, and outside collaborators were welcomed: his desire to own and race the fastest powerboats of the times. He never lost his early taste for speed, and did not hesitate to spend astronomical sums in pursuit of trophies such as the Gold Cup and the Harmsworth International.

In 1916, just five years after patenting his hydraulic hoist, Wood purchased his first purpose-built racing boat, the Gold Cup contender MISS DETROIT. The boat had been built by Chris Smith for the 1915 Gold Cup and campaigned to the point of retirement at the time she was put up for auction the following year. The extreme speeds of Gold Cup racing were not kind to the boats; MISS DETROIT, at just a year old, was already worn out, and Wood was essentially buying her still usable Sterling engine—and an opportunity to learn about raceboat construction. He was also buying, knowingly or not, a connection to a builder who would become instrumental in the development of the recreational power boating industry: Smith, then-owner of a financially troubled boatshop, would go on to found the legendary Chris-Craft brand of runabout (see sidebar).

Upon Wood's arrival at the shop to see MISS DETROIT for the first time, he and Smith immediately began discussing the possibility of building a new hull for the powerful Sterling. What began as a meeting between builder and buyer turned into a business partnership in a matter of hours. Together, Wood and Smith developed a succession of boats that would make Wood the only person to win the Gold Cup five years running, from 1917 to 1922. His mechanical instinct and willingness to spend endlessly, combined with Smith's construction techniques and experience with hull design—and the skill of riding mechanic Orlin Johnson—made their racing team unbeatable.

Not everyone was impressed with Wood's winning ways. The East Coast–focused American Power Boating Association was growing increasingly agitated by his winning streak. The Gold Cup trophy showed no sign of leaving Detroit, and competitors found Wood's limitless financial resources to be downright unsporting. In the winter of 1921–22, the APBA developed a set of restrictions for the Gold Cup series, ostensibly to make the races safer and to bring a gentlemanly touch back



LIBRARY OF CONGRESS

Gar Wood made his first foray into speedboats with the purchase of the Gold Cup racer MISS DETROIT from Chris Smith in 1916. Wood went on to set a water speed record in 1920 in a purpose-built boat called MISS AMERICA; Smith went on to found the legendary boat company Chris-Craft.

COURTESY OF KENT O. SMITH, JR

Joe Turcotte (at the helm) and Bruce Hiller enjoy a relaxing idle in a 25′ Streamliner; both men work for their family's business, Gar Wood Custom Boats.

to the sport. These restrictions limited engine displacement, required enclosed engine compartments and wet exhausts, and outlawed stepped (planing) hulls. They limited waterline length, required elements such as running lights and cleats for docklines, and stipulated that boats must have accommodations for two passengers in addition to the driver and riding mechanic.

Theoretically, the new rules would promote safer raceboats that could also be used as pleasure craft. It was also commonly understood, however, that the fundamental reason for these changes was to stop Wood's unbeatable technological advances. While Wood had little interest in rules written for the sake of good sporting behavior at the expense of design advancement, he continued to campaign for the Cup under the new restrictions, using a line of hulls he'd been developing for long-distance, open-water racing. Unfortunately for Wood, the combination of hull and engine restrictions handicapped him precisely as intended: He was not able to put enough power into his long-distance hulls to again win the Gold Cup. By 1929, Wood had grown tired of fighting the restrictions and turned his attention, wholesale, to the unlimited circuits—and to breaking speed records. He won the Harmsworth International Trophy, which placed no restrictions on competitors, for the first time in 1920 with the first of his series of ten record-breaking MISS AMERICA hulls. He'd go on to win it eight more times.

After that first Harmsworth victory, Wood later recalled, "no less than four separate individuals" came to him wanting "boats like ours." That demand, according to George Reis in a 1935 *Motor Boating* magazine article, inspired Gar Wood Industries to produce a line of stock boats, beginning in 1922 with the 33′ triple-cockpit Baby Gar "gentleman's runabout."

Construction was standardized for series production. The boats were planked, decked, and trimmed in African mahogany and framed in oak. The sides are batten-seam construction, and bottoms were double-planked on the diagonal with a layer of lead paint–impregnated canvas between the two layers. This was the only effective way to keep the boats from leaking, since the incredible speeds they were capable of were

The Genesis of Chris-Craft Boats

While Wood and his race crew busied themselves chasing trophies in the early 1920s, they left stock boat production in Algonac largely to Chris Smith. For his part, Smith had other goals in mind. He'd always dreamed of building a line of fast, affordable, and handsome powerboats, but the pleasure market had never been robust enough to support such a business. However, with increased interest in the "Gentleman's runabout" promoted by the APBA Gold Cup restrictions, the business model was becoming increasingly viable. In 1922, Smith and his sons started the Chris Smith & Sons Boat Company, and officially separated from Gar Wood Industries. Two years later they changed the company name to Chris-Craft. Wood was disappointed but supported Smith, even subcontracting with the fledgling company to build a series of 33′ stock hulls outfitted with Wood's converted Liberties.

—*EA*

COURTESY OF KENT O. SMITH, JR

Greg Turcotte, a son of co-founder Larry Turcotte, blasts along in a 33′ Gar Wood Runabout.

not at all forgiving to traditional single-plank seams. Fastenings were advertised as being exclusively copper, brass, or bronze in the 1926 Baby Gar pamphlet. All the chrome-plated brass hardware was custom styled for Gar Wood Boats. The cockpits were completely upholstered with thick top-grain leather, sprung and packed with cotton and horsehair to provide the smoothest ride and to resist the daily abuse of "spike heels stepping on it, salt water hitting it, and many times standing on it, [and] sun's rays piercing down on it…" according to Reis' description when visiting the factory.

Exhaustive equipment inventories from the 1930s specify everything from fire extinguishers to the number of cigar lighters onboard at delivery. All models were guaranteed to arrive with a minimum of three and up to six lighters, depending upon the number and arrangement of cockpits; only two fire extinguishers were provided, however. A custom-styled

vanity kit allowed windblown lady passengers to check their teeth for lipstick following a voyage.

After the Great Depression and the mounting challenges of World War II, Wood retired from managing the business in the early 1940s, turning over control to a corporate management team. In 1947, unable to recover pre-Depression momentum and without their champion at the helm, Gar Wood Industries stopped building boats. Although it had turned out an estimated 10,000 craft, the Boat Division was incidental to the overall business, accounting for only 3 percent of sales. It was driven more by Gar Wood's obsession than anything else. Wood eventually retired to Florida, where he was active on the water until he died in 1971 at age 90.

In total, the company offered fewer than a dozen major models. But there were seemingly infinite variations in cockpit layout, cabintop styling, and engine options. This, combined with a range of lengths for each model, made for a dizzyingly long catalog listing. Between 1922 and 1929, Gar Wood Industries built 67, 33′ triple-cockpit runabouts. Today, fewer than 10 are still known to exist.

How does one begin to build a new business around a line of boats as distinct and brand-oriented as those to come out of the original Gar Wood Industries? And, thorny question though it may be, who has the right to lay claim to a name with a shadow as long as Gar Wood's? In some ways, it's a matter of self-selection: Badly built boats simply won't last. But there's more to it than that.

Other Gar Wood enthusiasts and talented boatbuilders had previously tried to revive the brand; there had already been attempts to reproduce the Speedster as a stock model on at least two separate occasions in the 1960s and early 1980s, but neither business is still in operation. Clearly, something has set the Turcotte

EVELYN ANSEL

Gar Wood Custom Boats collects and replicates the original hardware of early Gar Wood boats. The company has amassed a massive inventory of such items.

EVELYN ANSEL

The company has an in-house upholstery shop dedicated to duplicating the leather seats of original Gar Wood boats.

brothers apart; as of 2016, they have been successfully operating as GarWood Custom Boats for more than 30 years. What is it that has allowed them to succeed?

It has certainly has to do with timing; there were still enough original boats available when the Turcottes started to make a business of restoration. It also has to do with the Turcottes' ability to replicate every level of detail in Gar Wood boats, right down to their hardware and smoking kits. But it also relates to the culture of secrecy surrounding the development of racing powerboats during their Golden Era, which resulted in a surprising fact: There were never any plans for Gar Wood's factory boats. They were all built on jigs, with an enormous pattern library developed and stored in-house. Any plans that exist on the market today are based on measurements taken from existing boats.

So, in order to build "Gar Woods," the Turcotte brothers began collecting any publications and material they could find from the factory days, and they began collecting original boats as well. They started with Baby Gars, the famous and rare 33′ triple-cockpit models. As they went about a restoration, they painstakingly disassembled each hull, making wooden patterns from its pieces. They also stripped original hardware and made casting patterns. They found intact step pads and had new ones fabricated. They learned about the upholstery by peeling layers off original seats that had been re-covered countless times, like stripping wallpaper in an old kitchen to find that very first sheet—in this case, an "antiqued" dark red leather, highlighted with creases of black. They removed tops and seats to reveal and record the original "oak/medium buff"-colored interiors, which Tom calls "Kitchen Cabinet Yellow." They propped up bottoms to scribe the proper profiles to reverse-engineer strongbacks. In the earliest boats, they found serial numbers hand-lettered everywhere in blue carpenter's crayon by Wood's crew. In short, Larry

ALISON LANGLEY

Tom Turcotte, Jr., ventures onto Lake George in a 28′ Runabout.

EVELYN ANSEL

A 28′ Runabout enters the shop for varnish work. The company maintains about 28 boats during the off-season.

and Tom created their own Gar Wood factory.

They methodically expanded their stock offerings to include other models that made their way to them for restoration; with each new model, they had an additional set of patterns for their library. Everything from windshields to dashboards has multiple patterns that, in themselves, chart the evolution of Gar Wood styling during the production days. And, in keeping with tradition, there are still no drawings to be found at Gar Wood Custom Boats.

Larry and Tom have made a lifelong study of the originals. They still keep a whole building full of original parts for reference. Larry says, "You have to be half a junk-man to work in restoration." Today, Tom's three sons—Tom, Mike, and Joe—all work alongside their dad and uncle. Joe's wife Amy runs the office, and *her* dad works part-time with the crew too. It is a fairly small operation with six full-time and two part-time staff members, and the business is very much a family affair. Everyone does a little bit of everything, but they all have their specialties beyond general carpentry and finish work. Larry is responsible for the complicated Gar Wood windshields, and "engines are his avocation." Tom is responsible for all the upholstery and interiors. In the younger generation, the second Tom is the head mechanic; Joe does interiors and cabinetry; and Mike, the youngest, has gravitated toward the hardware.

Each year, the shop will turn out between four and five boats, averaging two to three new builds and one or two restorations. Their most popular models are the 28′ triple-cockpit Custom Runabouts, followed by the 28′ Streamliner. One major difference between models is the engine placement. In the 28′ triples, the engine compartment separates the forward two cockpits from the aftermost "mother-in-law" rumble seat. The Streamliners, a later model, utilize Wood's V-drive which allows the engines to be placed all the way aft, providing greater flexibility in cockpit arrangement. The original Streamliners were never produced in great quantities due to the closure of the Gar Wood Boat Division, but the Turcottes have done much to popularize this model today, with its somewhat modified bottom that makes it ride, as Tom says, "just as comfortably as the runabouts." In addition, the Turcottes still offer other models: the 33′ Baby Gar, a scaled-down 28′ version of it, 20′ and 24′ Custom Utilities, a 22′ Split Cockpit runabout, and a line of 20′ Speedsters that they've scaled up from the original 16-footers to increase their performance and accommodate the more powerful engines many owners want today. Approximately 25 percent of the business is in maintaining and storing 50 or so local boats.

The younger generation of Turcottes very much enjoys the production aspect of new builds. Using patterns and jigs, the shop's got it down to a science: In the early '90s, they built a 28′ triple-cockpit runabout in only three weeks from start to finish, in order to make a boat-show deadline. "Well, it was an opportunity…and it was a challenge…." Tom admits that "there wasn't a lot of sleeping in those three weeks." New builds incorporate modern materials and techniques. Modern amenities offered in new builds include hydraulic steering, split decks between the cockpits in the 28′ triple for easier movement around the boat, bow thrusters, sound systems, powered seat lifts, in-floor coolers, and locker interiors designed to accommodate towels and wine bottles. All of these modifications have been incorporated as subtly as possible, and the overall look is still very classic. The hulls are planked in bookmatched ½″ African mahogany over a skin of ¼″ okoume plywood and mahogany frames, and fastened with stainless-steel screws. The bottoms are epoxy-glued and screwed, and have more frames than the originals to accommodate the increased power. The new building process doesn't require too much interpretation at this point; the years of collecting and patternmaking have made the shop into an exceedingly efficient place. Restorations are far less predictable.

Tom and Larry still call the shots in restorations. The work is extremely meticulous, down to the rivets in the copper gas tanks and horsehair in the seats. Restored boats are planked as they were originally, with mahogany over oak frames, and fastened with bronze screws. The elder Turcottes know everything from the proper dashboard profile and gauges to the particular windshield profile of any given production year. The one concession to modern materials they recommend in their restorations is to install a modern bottom, built in the same manner as those of their new boats. They will still build cross-planked mahogany and bedded canvas bottoms, but they

EVELYN ANSEL

While much of the metalwork is done in-house, the signature step pads are produced by a local shop, specifically for Gar Wood Custom Boats.

COURTESY OF KENT O. SMITH, JR

Three 28′ Runabouts await their drivers. The triple-cockpit boats of this design debuted in the 1930s.

say this is one place really worth compromising the originality.

Hardware and interior appearance are consistent across the fleet whether new or restored. The shop is an impressively tight operation: Upholstery, casting, machining of hardware, windshields, interiors, systems, engine installations, and varnishing and finishing are all done in-house. The Turcottes copied their hardware patterns from original pieces, but they have the castings themselves done at a local foundry. The subsequent chroming and polishing is done in East Hartford, Connecticut. The signature black-rubber Gar Wood step pads are made locally, while instrument panels and gauges are faithful reproductions of originals fabricated in Washington State. The fuel tanks, including the copper tanks for restorations, are built by a certified local company. Larry very much enjoys restoring the old V-12 Liberty engines.

The Turcottes' depth of knowledge and experience with Gar Wood boats is arguably unequaled in the field. They've been in business twice as long as the Gar Wood Industries Boat Division, and the fact that they are still busy filling orders after three decades is testament to the quality of their work. They've had to constantly prove themselves, since doing business under the Gar Wood name is, admittedly, a bold move. This might well explain why the shop has a reputation for being protective of its trade and brand. Like Wood's original enterprise, this one remains a largely family affair.

As the Turcottes walked me through the building where they store original parts, a sort of living library, I was impressed again by the encyclopedic depth of their knowledge as they casually pointed out the subtle changes in components from year to year. We passed a 60-year-old Liberty engine covered in flaking paint, and Tom laughed. "You know," he said, "when we were first starting out, we would've said, 'Ah, that looks terrible' and stripped that thing and repainted it immediately. But now, we look at it and say, 'Hell, that paint's been there for 60 years. Let it stay. Leave it alone.'"

After 50 years of boatbuilding and restoration, the brothers, like Wood himself, are still shrewd businessmen. They encourage adaptation and progress to accommodate the needs of their customers but have developed a particular and subtle stance toward the standards of the work they do and the objects that they have collected over the years. Their attitude is not at all sentimental. Instead, it's an almost curatorial stance not commonly found outside of museums. Gar Wood Custom Boats lives up to its name.

Evelyn Ansel grew up in Mystic, Connecticut, and has studied, sailed in, and simply enjoyed boats from Venice to Stockholm and beyond. When not on the water, she spends most of her time in museums and conservation labs. She writes regularly for WoodenBoat*—most recently about Gold Cup racers for WB No. 248.*

Slender as a Sliver

A no-frills 62′ double-ender that is all about sailing

Text and photographs by Neil Rabinowitz

A rigged and ready deep-green, 30-square-meter sloop bobbed at its mooring as Kim Bottles watched the sunrise illuminate the forested harbor of Port Blakely on Bainbridge Island, Washington, a few years ago. In the pioneer era, the cove was choked with sailing ships loading at the largest sawmill in the world, but as he sat on his lawn skirting what is now a quaint harbor, Bottles turned his thoughts to sailing and what he would look for next after owning a string of classic yachts. He decided he had stewed about it long enough.

This particular rumination had started 30 years earlier, when he wrote to naval architect William Garden in British Columbia to ask him about updating his design for OCEANUS, an influential 60′ double-ended sloop of 1954. "He wrote me back explaining all the reasons why it wasn't a great idea," Bottles laughed. "I always thought OCEANUS was one of the coolest boats ever, and it turns out that Bob [Perry] agreed with me." Garden died in 2011, but Bottles couldn't get the idea out of his mind, so he approached Perry, an eminent Seattle yacht designer whose wide-ranging career has included notable double-enders. The concept that they developed together—and which ultimately became Bottles's latest yacht, FRANCIS LEE, launched in 2015—sprang from many influences, but OCEANUS always remained the fundamental inspiration.

"My dad taught me to sail when I was a kid," Bottles said. "He was no racer but was a big fan of L. Francis and loved double-ended boats—all of Hunt's 110s,

***Above*—Kim Bottles of Bainbridge Island, Washington, kept in mind the pure pleasure of sailing when he had Seattle yacht designer Bob Perry draw up this slender yacht—nicknamed "Sliver" but christened FRANCIS LEE.**

The wood-composite hull—strip-planked in 1″-thick western red cedar and sheathed with E-glass set in epoxy—was built by the Northwest School of Wooden Boatbuilding. Her beam is only 9′10″ for her overall length of 62′.

210s, among others." His references, of course, are to L. Francis Herreshoff's double-enders, especially his influential Rozinante design of the early 1950s, and to Ray Hunt's pioneering double-enders of the 1930s and '40s, the hard-chined International 110 (1939) and International 210 (1946). Bottles has owned boats of both wood and fiberglass construction, but for this next boat he specifically chose wood, not only as a tribute to the legacy of his father but also for practicality.

Bottles was born into a sailing family in Southern California and grew up sailing a C.D. Mower–designed, gaff-headed Seabird yawl. Since moving to Seattle in 1977, his diverse fleet has included a Rhodes Evergreen 36, a Joel White Sakonnet 23, a Dragon, a Folkboat, the famed Aage Nielsen 50′ keel-centerboard yawl TIOGA, and, most recently, the same 30-square-meter that was moored offshore at the moment he turned his thoughts to his next yacht. Bottles's broad perspective on yachts and sailing had given him a preference for hulls with low freeboard—shapes that were slim, slippery, svelte, and proportionally graceful.

Designing with a Purpose

The yacht design that Perry completed for Bottles is 62′ LOA, with a slender beam of 9′10″ and a draft of 10′. Perry and Bottles were of one mind from the start, recognizing that it would take vigilance to design something light and fine-ended, balancing purity of concept with practicality. Both were wary of incremental "mission creep" that can skew priorities and undermine shape and performance.

They even shared similar sources of inspiration. Like Bottles, Perry had written to Garden many years earlier, and he credits a reply he received from the prolific designer for encouraging his own career, back when he was just a teenager dreaming about yacht designs. He had a longstanding relationship with double-enders, and in fact one of his groundbreaking designs was the 1973 Valiant 40, inspired by Scandinavian types. Although very few of his designs have been intended specifically for wood construction, he has drawn everything from ultralight-displacement racing boats to custom carbon-fiber cruisers, rule-savvy Two Tonners, sporty powerboats, and family cruising boats. Long and lean canoe sterns had long intrigued Perry, but it was Bottles's thoughts of OCEANUS and his commitment to the project that brought Perry into the assemblage of Northwest talent that got it done.

"I like to go fast," Bottles said. "Since my late teens, I had been talking about building something I could keep at the dock and conceivably singlehand—maybe flush deck, no headroom, no engine, low maintenance, without accoutrements to distract from simple sailing pleasure." Perry initially conceived the boat as a thrill-seeking daysailer with a deep keel, a needle-like canoe stern, a razor-thin entry, no lifelines, and spartan accommodations.

One departure Perry made from the original OCEANUS concept came in the redesign of the original yacht's very slender ends. As entrancing as he found the stern drawn in the mid-20th century—"It was a gorgeous image on the water," as he recalled—he felt that it was

Some components of the boat were built as subassemblies, separate from the hull, most notably the one-piece deck, cockpit, and trunk cabin. Russell Brown of Port Townsend Watercraft led construction of this foam-cored composite assembly. Here, the deck unit is being installed after the hull was turned right-side up.

Conceived primarily as a fast daysailer, FRANCIS LEE flies an asymmetrical spinnaker, which her owner prefers for its simplicity—it needs no pole, which can get in the way when stored on deck.

too fine for the new boat. He envisioned slightly fuller ends for greater buoyancy. In looking at a wide variety of long and skinny hull shapes, Perry and Bottles bantered back and forth about the relative merits of boats ranging from canoe-sterned hulls by Herreshoff to double-enders by New Zealand designer Laurie Davidson, Seattle designer Ben Seaborn, Southern California designer Alex Irving, and Connecticut designer David Hubbard. One of the boats that came to mind was the Bruce King–designed NANTUCKET SPLINTER, which inspired a working nickname for the new design during its development—"Sliver." All local sailors still know her by that nickname, despite her christened name of FRANCIS LEE.

How to Build Her?

Bottles and Perry also debated whether to give the boat a foam-cored hull for light displacement. Bottles, however, was leaning toward wood-composite construction, and he liked the idea of having her built at the Northwest School of Wooden Boatbuilding in Port Hadlock, down the road from Port Townsend and not far from Bainbridge Island. They ultimately settled on fiberglass-and-epoxy-sheathed strip-planking, using 1″-thick western red cedar.

"We all knew the pros and cons," explained Tim Nolan, of Tim Nolan Marine Design in Port Townsend. "The strength-to-weight ratio is great. It smells good. It grows on trees. It is easier to shape, as it sands and cuts with a plane, while foam is softer and has hard spots at the glue joints. Cedar is four times the weight of foam, but its unidirectional fibers add stiffness and a puncture strength that allowed for a thinner outside skin than if we had chosen foam." Nolan and Perry, joined by another of Nolan's engineers, Jim Franken, and the school's project manager, Bruce Blatchley, created a test panel and determined they could build at a similar weight using wood. That settled it.

Word spread fast that a groundbreaking new project had come to the Port Townsend area. Local boatbuilders took notice. "It's a design that haunts most naval architects' dreams," Nolan says. "A client asking for a long, skinny, go-fast boat with little under water and the means to pull it off—that's a temptation for any yacht designer." The project drew on the

Owner Kim Bottles, at right, approached designer Bob Perry, at the helm, about reimagining fine-ended double-enders, in the wake of William Garden's 1954 60-footer OCEANUS and the canoe-sterned yachts of L. Francis Herreshoff, among others.

Free of the influence of handicap rating formulas, Perry's design met the owner's desire for a boat that could be singlehanded, raced, or cruised—and one that would be fast in any situation.

expertise of numerous boatbuilders in the Port Townsend area.

"When the project began," Bottles said, "the region was slow economically, so I was able to tap the best craftsmen in the area. Once I realized how much talent I had assembled, I surrendered to their specialties as to the ideal methods of construction." Bottles subcontracted an all-star team to work with the school's composite construction program, with 35 students and graduates involved in every step of the process. Unlike a commercial shop where boatbuilders of varying skills meet standards and deadlines, the school had the luxury of slowing down, making FRANCIS LEE a teaching exercise and introducing the school's students to advanced building techniques such as 3D modeling, computer design, and CNC cutting.

They built the boat upside down, planking over integral bulkheads. Nolan and Franken worked together to complete the structural analysis and develop the laminate sheathing plan, which called for 24-oz, triaxial, knitted E-glass set in epoxy. Laminate specialist Russell Brown of Port Townsend Watercraft fabricated a lightweight, one-piece foam-cored composite deck, cockpit, and cabin, which the team judged to be a less complicated monocoque structure than one built of wood.

Precise jigs and cutting specifications derived from the computer lofting and 3D modeling allowed the deck to be constructed separately off site, a method that worked just as well for such components as bulkheads, frames, and the cabin trunk. Instead of being fitted in place sequentially, these off-site or on-the-workbench projects allowed teams to construct various parts simultaneously for later installation, an important gain in efficiency. The interior, for instance, was built separate from the hull, using foam and 'glass components set up on a computer-lofted jig. The bulkheads, bunk flats, shelves, and bunk faces were assembled as an entire unit, weighing just 735 lbs, ready to be mated to the hull after it was turned upright.

Franken engineered a device for rolling over the hull in place, utilizing circular cradles rotating on rollers and balanced with counterweights. The system took weeks to construct but allowed two guys with a climbing rope to roll the hull over in one uneventful minute. After the boat was upright, the pre-made components were dropped in place and tabbed together, much like in fiberglass hull construction. For example, Brown built the one-piece deck and cockpit on a jig with closely spaced, computer-lofted molds set up on a strongback, which all went together as easily as a Lego set. The completed deck came to rest on a wooden beam shelf,

FRANCIS LEE's clean and spare interior matches her conception as a lean, no-nonsense sailing machine. A minimal galley, removable saloon table, rudimentary head, and low-upkeep finishes all discourage clutter so that nothing gets in the way of the central purpose of sailing.

which was triangular in cross-section and about 2″ wide on the deck and hull faces, providing a gluing surface for the deck edges. The shelf and the deck edges were shaped to accommodate epoxied 'glass tape inside and out for a strong and clean deck-to-hull joint. Franken reported that the components fit together beautifully.

FRANCIS LEE pushed the envelope of the school's mission of wooden boat construction, since its wooden components consisted of the cedar planking, a clear Douglas-fir timber keel, forward and after stems of sapele, the deck flange, and interior accents. But the project united a staggering combination of wood-composite and exotic composite specialties in a region already famous for composite-hulled megayachts, sometimes with engineering spilling over from the aerospace industry.

To keep the lightweight boat on her feet, a deep keel with an ample ballast bulb was necessary—but the profile was limited by Bottles's only restriction on the design: "We knew our narrow boat would need good stability, so Bob asked me how deep we could go and still keep the boat at my dock," Bottles said. "I told him 10′, so he said, 'Fine, we'll go 10′.' I still have 6″ to spare at the lowest of tides." The welded-steel foil keel itself weighs 1,700 lbs and it has a 7,400-lb lead ballast bulb bolted on, all sheathed with epoxy. The keel and ballast bulb together constitute fully 50 percent of FRANCIS LEE's total weight.

At the hull, the keel flange is bolted with nine pairs of 1¼″ bolts to a network of stainless-steel floors and stringers inside the hull. This waterjet-cut structure, which is about 20′ long, disperses the load to longitudinal composite stringers, bunk faces, bulkheads, and chainplates. A similar welded stainless-steel structure centered on the maststep distributes the mast's compression load. The hull, deck, house, bulkheads, stringers, and total interior make up only 20 percent of her total weight, and a like amount is attributed to the rig, engine, rudder, and hardware.

"It is like trying to lift a pickup truck with an egg," Nolan joked. "The hull is essentially only keeping out the water, while all the loads of the mast compression and headstay are carried by the hull and deck acting as a girder, and the leverage of the keel is carried by a dedicated internal structure."

The metal support system was the work of Bill Campbell and his wife, Catherine, who also build beautifully crafted wooden harps—a unique testament to the creative collaborations and variety of sensibilities common among Port Townsend artisans.

A double berth, with stowage outboard, spans the entire width of the hull forward of the saloon.

The shallow water at the owner's Bainbridge Island dock imposed a design draft limit of 10′, one of the only limits on FRANCIS LEE's hull shape. About half of her total weight is in her welded-steel keel and its 7,400-lb lead ballast bulb. Moored at the dock, she can be under way within minutes.

Pure Sailing

"It was never about the rules," Bottles says of the design, noting the contortions that yacht designs undergo to take advantage of racing formulas. "It's just the pleasure of sailing. That's why I have a tiller. My wife and I can easily cruise the Inside Passage. I singlehand it fine, but when we race we have four on board…knowing that none of us are able to wrest the tiller from Bob's hands."

The pleasure, he might add, of *fast* sailing. Although she's capable of long passages, FRANCIS LEE is intended primarily as a daysailer. She has no overlapping sails. Belowdeck furlers reduce deck clutter, and winches are placed to suit shorthanded sailing, with an electric winch to take a lead from nearly any line. Bottles remains devoted to performance—for example, he called for the anchor rode to be stowed amidships to keep its weight out of that fine and narrow bow.

The interior is spartan at best. The cabintop is small and rounded. Forward of the saloon, a double berth with stowage on each side spans the width of the cabin. In the saloon, settee berths accommodate two more sailors. The galley is minimal; the removable saloon table is composite-cored, sheathed with a cherry veneer to save weight—a savings comparable, as Bottles says, to a half-drunk bottle of wine. Cherry is used as trim, and the cabin sole is a composite construction sheathed in cherry and ash. Bottles originally favored a flush deck with no headroom at all. Perry says he is still unsure whether Bottles was joking when he considered not installing a head to save weight. As it is, the composting head is as rudimentary as possible, all in the name of performance.

Originally, the sail plan showed a bendy mast with fuller sails. But noting the minimal buoyancy forward, the designer incorporated a conservatively undersized Farr 40 rig, which in combination with the long waterline length prevents the slender bow from being driven under. Bottles's custom-made sails included a fully battened mainsail, but he could have chosen an off-the-shelf one. FRANCIS LEE's jib fits her "J" dimension (mast-to-headstay-fitting measurement) of 17′, compared to the Farr 40's 14′. Bottles could also use conventional spinnakers but instead favors asymmetrical ones to avoid the use of a spinnaker pole. When the wind fails, the 39-hp diesel Saildrive gives her a 10-knot cruising speed, with fuel enough for a 400-mile range.

Viewed from dead ahead, FRANCIS LEE seems radically thin, living up to her Sliver nickname. As she heels, effectively increasing her waterline length, she picks up speed markedly—she thunders to weather better than Perry had imagined. He estimates that with a full main and jib and a few extra hands she could reach 20 knots.

On deck, the spartan theme continues. FRANCIS LEE has no trace of exterior wood trim, not so much as a toerail. In fact, the only wood visible is the ash tiller. She's meant to be low-maintenance, easy to sail, and easy to live with—and meant to be a regular victor of the local racing circuit.

Even a cursory glance shows that Sliver is built for thrills, not passagemaking. Her heart is in the hunt. She will probably never campaign the way a one-design racer would be. There are no others quite like her—no Sliver class sloops. But she was conceived, designed, and built for local waters, and at any opportunity Bottles could singlehand this slender sled to the lead of any local race and still be home for dinner. More likely, he will call a few friends to share the thrill of leading a fleet around Puget Sound, feeling the tiller's pull as FRANCIS LEE transforms into the high-tech wooden hybrid, the astonishingly swift Sliver.

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Itinerant Gypsy Boatbuilders

KRISTIN DILLON

Saving the Arctic schooner BOWDOIN for another generation of service

by Joshua F. Moore

The best yacht designs don't attract heroes. They create them. For nearly a century, that's precisely what the schooner BOWDOIN has been doing, from the explorer who first commissioned the 88′ vessel to the entrepreneurs and craftsmen who saved her from becoming a neglected museum exhibit to the mariners who returned BOWDOIN to her Arctic cruising grounds at the end of the 20th century. This past winter, BOWDOIN produced a new batch of heroes, chief among them a group of "itinerant gypsy boatbuilders" who helped oversee what became one of the vessel's most significant rebuilds in decades. These men and women, like the many others who have helped save BOWDOIN over her 95 years of service, have proven that composure and self-reliance can be just as important when it comes to boat restoration as they are in Arctic exploration.

Indeed, these two traits have defined BOWDOIN since even before she slipped down the ways at Hodgdon Brothers' yard in East Boothbay, Maine, on April 9, 1921. Her first skipper, a Bowdoin College graduate by the name of Donald Baxter MacMillan, financed the $35,000 construction cost by recruiting investments as small as $100. Having attempted to reach the North Pole in 1909 with another Bowdoin graduate-turned-explorer, Robert Peary, he commissioned one of the preeminent designers of the time, William Hand, to design a vessel "not one whit larger than is necessary" for the Arctic journeys MacMillan had planned. Indeed, the explorer's design brief for BOWDOIN was remarkably specific: "Theoretically a small ship can be constructed stronger than a large one. She will lift more easily when under pressure, she can worm her way through narrow leads, she can take sharper corners, she can hug the land for safety, take refuge from the pack behind rocks and ledges, anchor in shallow harbors, and when frozen in can be more easily and quickly banked with snow and more economically heated." On 26 voyages to Labrador, Baffin Island, and Greenland that followed between 1921 and 1954, MacMillan put all of these

***Above*—Andros Kypragoras of Whitefield, Maine, pictured here with his son Oscar, led the recent structural overhaul of the 1921 Arctic-exploration schooner BOWDOIN. Having worked on numerous far-flung large-vessel projects, he calls himself and his crew "itinerant gypsy boatbuilders."**

TOM STEWART

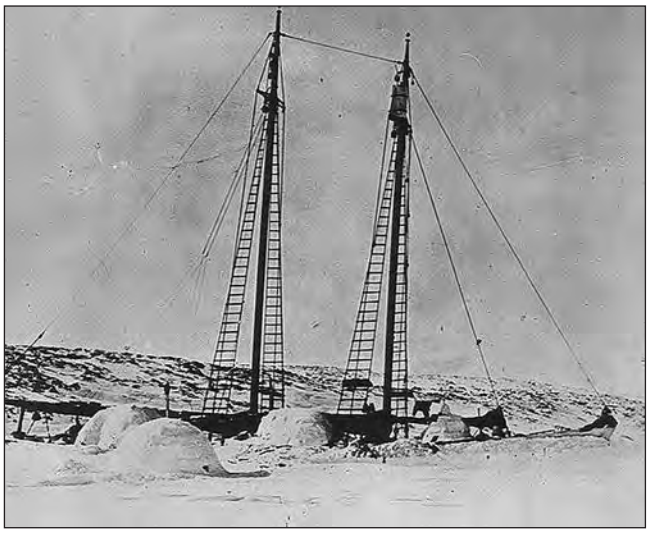
BOWDOIN is now owned by Maine Maritime Academy in Castine. Under academy ownership, she returned to the Arctic with a student crew; she remains an integral part of the school's license-preparation courses.

design attributes to the test, in the process becoming legendary for his ability to maintain his composure during even the most challenging of situations. Whether it was using coal from the ship's stove to melt his way out of pack ice or navigating BOWDOIN into improbable but secure hurricane holes, MacMillan's ingenuity and self-reliance earned him a place among the greatest American explorers—and he did it aboard a wooden vessel designed to last 20 or 30 years at most.

After MacMillan's days in the Arctic came to an end (the explorer was in his 80s when he delivered BOWDOIN to Mystic Seaport in 1959), the heroics the vessel produced in people soon shifted from exploration to preservation. First came Capt. Jim Sharp's rescue of BOWDOIN from Mystic, where it had slipped so far into decay that it was largely a hulk, missing masts, bulwarks, and even entire sections of cabintop. Sharp's resurrection of BOWDOIN into a working schooner that could take passengers out of Camden, Maine, was followed in the 1980s by a lengthy—and, some would say, legendary—rebuild at the hands of John Nugent, whom Sharp had befriended after discovering him sleeping in a car at the Camden Public Landing. Nugent's heroism was followed by the dedication of Bill Cowan, a marine systems expert who, while living aboard at the Charlestown Navy Yard in Boston, completed the work to get BOWDOIN certified as a sailing school vessel (SSV)—the first such certificate granted by the Coast Guard. Finally, at the end of the 20th century, BOWDOIN brought forth a new group of sailing heroes, these in the form of young mariners from Maine Maritime Academy (MMA) in Castine, which took possession of the schooner in 1988.

Under the MMA's stewardship, BOWDOIN returned to the waters she was designed for, once again making voyages to Newfoundland, Labrador, and even three trips above the Arctic Circle. The stout vessel's ability to stand up to whatever conditions she encountered earned her the respect of everyone who held her helm. "She's an incredibly strong boat—she's really got full-size fishing schooner scantlings, but is only about two-thirds the size," says Capt. Elliot Rappaport, who served as BOWDOIN's captain on one Arctic trip. "She was able to take an incredible amount of punishment." Others, including Capt. Jim Sharp, who used BOWDOIN as a private yacht during the off-season in the 1970s and ventured with his family and Nugent as far north as Cape Breton and as far south as the Chesapeake, said it was sometimes the crew rather than the boat that took the punishment. "She was like a spirited colt, fighting those incredible currents up in Fundy Bay," Sharp says. "She might beat you up a bit, but she'd always bring you home."

But as BOWDOIN herself had proven repeatedly, and as most wooden boat owners can confirm, such adventures come at a cost, and by 2010 the historic vessel was showing signs that more restoration



PEARY-MACMILLAN ARCTIC MUSEUM

On her second voyage north, under the command of her original owner Donald MacMillan, BOWDOIN was deliberately frozen-in at Refuge Harbor in northwest Greenland during the winter of 1923–24. On this expedition, the schooner's crew made tide and weather observations and studied the region's botany, geology, ornithology, and anthropology. She was in the ice for 325 days and had begun to break free by July 1924.

ALISON LANGLEY

Jim Parker drives cotton into a seam in BOWDOIN's newly replanked deck. Each seam received a single strand of cotton followed by two strands of oakum. The seams were then payed with a two-part black polysulfide compound.

work would soon be needed if she were to remain in such active duty. The white pine deck was worn out, having become thin in spots and, through knots aplenty, was letting fresh water into the boat. Though MMA eventually painted the deck with Tufflex as a stopgap measure, BOWDOIN's crew, as well as Coast Guard inspectors, recognized that the deck would soon need to be replaced. In 2014, Capt. Eric Jergenson made the difficult decision to remove BOWDOIN from service when he discovered rot in the vessel's mainmast. A heroic effort by a former MMA student by the name of Andros Kypragoras saw a new mainmast constructed on-site in Castine in just 45 days—a remarkable accomplishment, and one that showed MMA's BOWDOIN Committee the range of Kypragoras' capabilities and how he might be useful in the future. A capital campaign was begun with the goal of raising $1.6 million to fund the replacement of BOWDOIN's deck, as well as a variety of systems upgrades that would include a new exhaust, an engine rebuild, and upgrading the electrical system. A target of fall 2015 was set for the work to commence, and MMA began soliciting bids for the project. When the bids came in, one name was especially familiar.

"Since we're a publicly funded institution, we're required to go out for bid for a project of any size," explains Andy Chase, who in addition to being a former captain of BOWDOIN during its Arctic explorations is an MMA professor and serves on the academy's BOWDOIN Committee. He is also co-chair of the capital campaign. "But since this is a historic vessel, we can do a Request for Qualifications, and doing that gave five to seven bidders who were well qualified—including Andros."

Kypragoras, who submitted the lowest bid "by kind of a lot, actually" won over the MMA committee not only because of his previous work on BOWDOIN's mainmast, but because he was exactly the kind of self-reliant shipbuilder who had seen the vessel through so many trials already. "The way he operates, he's got basically no overhead," Chase says. "He has a box of tools and a group of people who work with him. Everyone who has watched him work is blown away by his skill, but also how he is able to move forward methodically and quickly."

Indeed, that methodical approach is what has become Kypragoras' stock-in-trade, starting all the way back in 1996. Having been born in New York City but raised on the Mediterranean island of Cyprus, Kypragoras thought that MMA would be the right place to help him "become the next Jacques Cousteau." That dream lasted only a few days, when the amount of writing required for his Ocean Studies coursework sent the 18-year-old Kypragoras back to his academic advisor and resulted in a quick switch to a more mathematics-focused Nautical Science concentration. A 40-day cruise on the MMA training ship STATE OF MAINE and a two-week trip aboard BOWDOIN under Capt. Rappaport, who had taken the vessel to its northernmost point as an MMA vessel, proved that Kypragoras wasn't destined for a life at sea ("I get seasick," he admits). By 1998 it had become clear that MMA wasn't matching the young man's ambitions—"I needed to do something a little more hands-on," Kypragoras says—and that fall he left Castine for a position on a container ship doing 28-day runs between Norfolk, Virginia, and the Azores. Choosing to remain in New England while waiting out a delay in the tanker's first departure, Kypragoras took a day trip to Essex, Massachusetts. There he met

KRISTIN DILLON

Master caulker Geno Scalzo of Owls Head, Maine, prepares a skein of oakum caulking. Scalzo oversaw the caulking of the schooner's hull and deck.

ALISON LANGLEY

Brian McClellan builds one of several replacement hatch frames for BOWDOIN's main cabin house top.

someone who told him that the crew building the 98′ schooner DENIS SULLIVAN in Milwaukee was looking for help, and Kypragoras decided that building a schooner sounded like more fun than shipping out.

That project, which saw the young shipwright working under veteran builder Rob Stevens, launched a career that would go on to include work on vessels such as ROSEWAY, BOUNTY, and the hospital ship TOLE MOUR. His first project as lead builder, though, was on the Starling Burgess–designed 121′ LOD fishing schooner HIGHLANDER SEA (ex-PILOT), then based in the Great Lakes. "I got a 40′ timber, towed it out there, and made a topmast for them," Kypragoras explains. "They were ecstatic that I could make a mast, and that I actually hauled it all the way out there from Maine. So when the larger rebuild project came along, they asked me if I wanted to do it." That rebuild ended up lasting a full year and included a new gripe, horn timber, engine bedlogs, section of keelson, and an entirely new bottom. With about 30 people working in his crew on HIGHLANDER SEA, Kypragoras began building a team that would eventually include Aaron Freeman and Mark Queeney, two of the people who would follow him from project to project, working on vessels that included NIAGARA, LIBERTY STAR, and ELISSA. Kypragoras and his small group of traveling craftsmen were becoming the "go-to" crew for large projects on historic vessels, no matter where they were located.

"I call what I do 'itinerant gypsy boatbuilding,'" says the 38 year-old craftsman, dressed in a button-down shirt, neat tan trousers, and a baseball cap. Even after meeting his wife, Kristin, and buying a house in Whitefield, Maine ("It's a good place to keep a shipsaw," he says), Kypragoras has managed to keep his traveling band together and busy, though the timing of jobs has not always worked out perfectly. "ELISSA was the first job that Kristin came with me on, and we thought we had it timed just right to get back to Maine before our son was born, but then Oscar ended up being born down there in Texas," he says. "And then the due date for my second son, Milo, was October 6 of last year—almost exactly the same day that BOWDOIN was due to arrive here in Camden. So that wasn't exactly ideal."

But the BOWDOIN, with its rich history of exploration and restoration, was one project that Kypragoras knew he couldn't pass up, even with the pressures of a young family. For space to do the work he turned to Lyman-Morse Boatbuilding Company of Thomaston, Maine, which had recently hosted the restoration of LADONA (ex-NATHANIEL BOWDITCH), another William Hand–designed schooner that was launched only a year after BOWDOIN. Lyman-Morse had recently acquired Wayfarer Marine Corporation in nearby Camden and jumped at the chance to put BOWDOIN in its massive shed on Camden Harbor. Bill Cowan, who had overseen the certification of BOWDOIN as a sail-training vessel back in the 1980s and was now a marine systems specialist with his own boatyard in Rockland, Maine, stepped forward to design a new, modern electrical system. BOWDOIN's masts were pulled in Castine on October 14, and the vessel powered down the bay to Camden on a crisp, clear fall day.

ALISON LANGLEY

Andros Kypragoras guides the reinstallation of BOWDOIN's deckhouse. Rather than move the schooner outside for this job, Kypragoras located a knuckle-boomed crane-for-hire that could operate within the shed.

Almost from the beginning, Kypragoras' ability to maintain his composure proved vital to keeping the project moving forward. After sliding into Wayfarer's shed, Kypragoras' crew removed hardware, both deckhouses, and chainplates before removing the deck to check the condition of the frames, ceiling planks, and deckbeams. A survey performed by Giffy Full had indicated

that at least a dozen top timbers (built 24″ on center, in keeping with BOWDOIN's oversized scantlings) would need to be replaced. It also suggested that the starboard-side ceiling under the refrigerator, which had been the site of too much condensation over the years, would be suspect. The mild steel exhaust was going to be replaced with a 316 stainless one, so the worm-gear steering system had to be removed for access. On November 2, demolition of the deck began, and almost immediately the project began to grow.

"Our plan was to start at the top, to make that watertight, and then work away at the rest in phases," Kypragoras says. "We really needed to stop the fresh water from getting into the boat."

But once the deck was removed, the damage belowdecks was revealed to be worse than anyone had expected. Instead of the relatively few white oak top timbers that the survey had indicated might be bad, more than 75 percent of them were rotten. Kypragoras quickly decided to replace all of them with new 6″ (sided) black locust ones. "We found that pretty much all the stanchions [aka top timbers] from the break beam to the engineroom were bad, and on the BOWDOIN the stanchions are built right onto the frames—they're really a continuation of the frames," Kypragoras explains. While he had originally planned to replace the upper three or four white oak planks on each side of the vessel, his crew ended up pulling eight amidships to facilitate the replacement of eight futtocks on the port side and six on the starboard. (All the 2¾″ planking is fastened with ⅜″ galvanized spikes and 1⅛″ black locust trunnels.) And while the ceiling under the refrigerator ended up being not as badly deteriorated as the crew had imagined, the yellow pine structural ceiling on the port side was significantly more rotten, meaning that an entire watertight bulkhead would need to be removed. This meant that the white oak break beam, where the foredeck drops down 6½″ inches to the main deck, would also have to be replaced, as well as several deck-beams in the forepeak. The entire 2½″ × 8¾″ white oak caprail was replaced. Bulwarks were rebuilt with fresh Douglas-fir. The inner transom was rebuilt in white oak surrounded by black locust "haunches" at the corners. Other improvements included a new samson post, mast partners, and 6″ × 8″ engine bedlogs—all done in white oak. "The discovery that the ceiling planks needed to be replaced was really the biggest expansion on the job, since it meant removing a big section of the interior—including that watertight bulkhead," Andy Chase says. "So yes, it's substantially bigger than we thought it'd be, even knowing that it'd be bigger than we planned." (Once the work had begun, MMA made a request to the Maine Legislature in an attempt to raise an additional $1 million; that request failed, though it could be resubmitted in a future session.)

Kypragoras says that dealing with unforeseen

KRISTIN DILLON

BOWDOIN's white-oak top timbers were mostly rotten, so Kypragoras and crew replaced all of them with tough, decay-resistant black locust. Aaron Freeman is on the staging, to port.

challenges in a rebuild is precisely what attracts him to boat restoration and is part of what makes his team of craftsmen so successful. "I think this is probably a great job for someone with ADD [Attention Deficit Disorder]; the deck is going on while the windlass is being rebuilt and the generator is being installed," he says. "But I like

ALISON LANGLEY

BOWDOIN's deck planking came from a stand of white pine planted in Vermont in 1906, and cultivated for lumber. The clear, straight stock made a beautiful and rugged deck.

being able to see the big picture, and I've learned to really trust the people that I work with. I don't have to spend a lot of time checking up on people."

Ironically, it was the deck project—the "precipitating event" for the rebuild—that ended up being the most straightforward. MMA, knowing that the deck project was on the horizon, had purchased the necessary white pine from a stand in Vermont that had been planted in 1906 and maintained impeccably by foresters since then. Jim Aaron, a sawyer in New Salem, Massachusetts, with whom Kypragoras works frequently, sourced the wood and did a rough cut before letting it dry for two years. When it was time for the BOWDOIN project, he finished it to the 2¾″ square dimensions required and delivered it to Camden. Assisted by his caulking crew of Geno Scalzo and Jim Parker, Kypragoras and his team installed the new deck and sealed it with one strand of cotton, two strands of oakum, and finally two-part BoatLife polysulfide deck caulk. "It's an absolutely incredible bunch of wood," Chase says. "I think we're going to do the whole deck without a single knot!" (Kypragoras, for his part, won't confirm quite this level of perfection but admits that the pine is remarkably clear.)

The systems upgrade, too, ended up being more significant than expected. Adding 30 gallons of

ALISON LANGLEY

Electrician Alan Burke of Lyman-Morse tends to the vessel's new wiring. In the foreground is BOWDOIN's Cummins diesel auxiliary motor, which was rebuilt at Maine Maritime Academy as a student project under the supervision of a Cummins technician.

graywater capacity and expanding the blackwater tanks from 120 to 212 gallons was relatively straightforward. So was increasing the fuel capacity by 100 gallons. "We used to have to bring two 55-gallon drums of fuel with us to the Arctic, which is obviously not ideal," Chase says. But bringing the electrical system up to snuff proved more difficult. Cowan, who had designed the BOWDOIN's system in the 1980s, says the updated plan required 10 new panels. "The long-term goal is that the boat can go back to the Arctic and keep doing that—not just become another dockside museum," Cowan says.

"When we started talking about all of this, it became evident to me that the systems on the boat were not up to par." Updated electrical standards for vessels such as BOWDOIN required that all new marine breakers and a new inverter be installed. This work fell to Lyman-Morse's crew. The rebuilt engine required a new alarm system. A new Cummins Onan generator promised to deliver significantly more power for BOWDOIN's new systems but also required completely new wiring. A sealed refrigerator promises to prevent a recurrence of the condensation concerns that helped lead to the project in the first place.

The grasp that BOWDOIN has on the people working on the boat is indisputable: Bill Cowan, for instance, donated all the panels, the entire electrical plan, as well as his other work upgrading the system. These materials and Cowan's time are undoubtedly worth thousands of dollars, though he declines to tabulate the exact cost.

ALISON LANGLEY

Shipwright-sailor Greg Smith guides BOWDOIN's windlass into place on the new deck.

Whenever possible, Kypragoras and the owner's representative, Hannah Gray, worked to involve MMA students in the project. Insurance regulations prevented much on-site work by students, though Gray says that one student did spend her Christmas and spring vacations at the Camden boatyard, doing everything from cleaning out the bilges and sanding to helping drive 6″ spikes into the new planks. But whenever possible, students completed BOWDOIN projects at MMA: The worm-gear steering system, for instance, removed to allow for the deck project, was overhauled there. Most significantly, the 190-hp Cummins Marine NTA 885 diesel engine was removed in Camden and brought to Castine, where a Cummins technician helped oversee its rebuild in a MMA Small Craft Technology class over a five-month period.

As the project grew, Kypragoras' ability to manage not just his own crew but also his family life was put to the test. With so many moving parts, the potential for the project to exceed both its budget and its deadline was significant. And while his estimate included a time-plus-materials aspect, anticipating the uncertainty of a rebuild like this one, the deadline was much less flexible. BOWDOIN had a busy summer of sailing scheduled, and missing it was not an option. In addition, Kypragoras had a young family at home (they relocated for the winter from Whitefield to Rockland in order to be closer to the job site) and while they were sensitive to his job's demands, they wanted him to be part of his family's life, too. "I've learned to compartmentalize jobs more, so that I'm not bringing the work home with me," he says. "Before I had kids, I would do the management and logistics of a project after hours and spend more of my day actually doing the carpentry and the work itself. Now I try to do everything in the time I have here, on the job." His ability to manage long-term projects efficiently is evident on the BOWDOIN project: Despite the tight deadline and increased scope of the work, his team has never worked more than five eight-hour days in a week.

By early June, the deckhouses (newly covered in Dynel and painted) were reinstalled and BOWDOIN was relaunched on June 6. During 2016 she will stay relatively close to home with a quick run to Nova Scotia to allow MMA students the chance to fulfill their Coast Guard license requirements. In the summer of 2017 the vessel will journey as far as Québec City. Chase says he'd originally planned to have BOWDOIN venture into Canada as far as Churchill, Manitoba, but instead decided to bring the ship back to Maine for a second phase of the rebuild. This work, currently slated for fall 2017, will include removing the remaining bad planks, replacing futtocks as necessary, and evaluating keelbolts. Phase 2 of the BOWDOIN rebuild should be far less significant, or expensive, than Phase 1 has been. "The systems work will be done, and hopefully we can do most of what we need to from the outside," Chase says.

Rappaport, who has skippered a variety of historic vessels over his career, isn't surprised that BOWDOIN has needed all this attention, even considering the amount of work done to the vessel in the 1970s and '80s. "That method of construction was meant to create a boat that was to last 20 to 25 years, so if you have a boat built that way and it's two or three decades old, you have to figure that you're about due for some fairly major work," he says.

Kypragoras says that while he would like to be part of the Phase 2 work on BOWDOIN, he knows better than to plan too far into the future. Indeed, his style of "itinerant boatbuilding" is based on his team's ability to adapt to any project, in any location. "It's kind of like bringing the circus to town," he says. "You don't have the infrastructure for jobs like this in a lot of places, and that challenge is what I like about it." Whether it's locating a boatyard in the Great Lakes that could handle a large-scale project like HIGHLANDER SEA or sourcing silicon-bronze screws on a smaller job, Kypragoras says that spending time in a new location and meeting new people are what keep him and his family interested in boatbuilding and restoration. "After this job, I don't know where the next one's going to be," he says.

ALISON LANGLEY

Pat Finley carved the schooner's name and scrollwork into the bulwarks, replicating the vessel's original ornamentation.

KRISTIN DILLON (BOTH)

The schooner BOWDOIN rebuild crew stands with the ready-to-launch vessel. In the back row are Greg Smith, Adam Burke, and Mariah Kopec-Belliveau; in the middle row are Tristan Pope, Andros Kypragoras, Hannah Gray, Aaron Freeman, Nick Tataro, and Noah Kleiner; and being held aloft is Brian McClellan. (Mark Queeney is missing from the photo.) Inset—The rebuilt schooner was relaunched into Camden (Maine) Harbor in early June, and is now rigged and sailing from the Maine Maritime Academy waterfront.

"I sort of hope that it's not in Maine, and my wife, too, has those same ants in her pants, so hopefully it'll be someplace interesting."

Aboard BOWDOIN, Chase says that the work completed by Kypragoras' team, and that done by Bill Cowan, the Lyman-Morse crew, and others, is essential to ensure that she can return to the Arctic waters she was designed for. "We're absolutely maintaining the original integrity of the boat, since it's a National Historic Landmark," he says. "We aren't planning to get iced in the next time we go to the Arctic, but we could." And while modern materials and designs have created a new type of ship for work in these harsh environments, those who have commanded BOWDOIN say the boat is still the right one for the job. "It's a hundred years later now, so modern materials and equipment puts you in a whole new realm, but the boat that she is, in terms of her size and her draft and her maneuverability—regardless of her history—makes her still a really appropriate vessel for that kind of work in that part of the world," Rappaport says. "Even if she just dropped out of space, even without all that history, she'd still be a great boat for exploring up there."

Indeed, the tales of heroism that have come from BOWDOIN's decks for more than 95 years seem to not yet be concluded. More than a boat, more than a design, BOWDOIN represents a piece of the adventurous identity that has come to define Maine and even America. "BOWDOIN represents a Maine tradition of geographic, scientific, and ethnographic exploration that began in the 19th century and continued into the 20th century," says Earle Shettleworth, Maine's state historian. "By its very name, BOWDOIN connects us back to the connection that two great explorers, Donald MacMillan and Robert Peary, had, and out of that connection came this curiosity, this drive and intellectual interest, in northern discovery. While we no longer have either of those men, we still have the BOWDOIN."

Indeed, whether on the ocean or in the boatyard, BOWDOIN continues to prove her innate ability to push people beyond what they thought was possible. "There is something special about that boat," Bill Cowan says. "It has some sort of a presence that just draws people."

Joshua F. Moore is a writer and editor based in midcoast Maine. His previous work for WoodenBoat *has included features on DORADE, PEGGY BAWN, and other traditional sailing vessels.*

ROBIN ARON OLSSON

A Conversation with Jens Langert, RIGGER

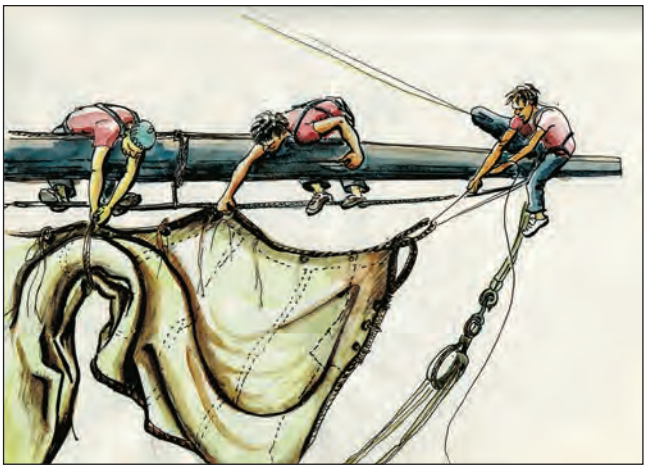
Making the case for historic techniques and materials

by Sandrine Pierrefeu

To understand the rigging of massive and complicated historic sailing ships, it is probably necessary to be an artist, seaman, and engineer all rolled into one. Jens Langert has drawn on this rare blend of traits to design, manage, and sail such vessels as they navigate the oceans of the world with rigs composed of only wood, hemp, and flax. Throughout his career, Jens has closely studied traditional rigging, from his early summers at a sailing school to serving as the head rigger of two of the most important ships rigged this way in modern times—GÖTHEBORG, launched in 2003 in his native Sweden, and L'HERMIONE, launched in 2012 in France.

The trademark tone of this fiftyish rigger is both jocular and very serious as we explore his ideas while walking along the quay of Göteborg, in the south of Sweden, where he was born and where he lives when he is not voyaging: "The hardest thing, when starting these projects of historic ship reconstructions on such a grand scale using natural-fiber rigging, is to successfully follow the specifications found in references from the period. One is always tempted to reinterpret, to 'improve' or to 'strengthen'—here a shroud, there a yard, here the diameter of a line. With our clever calculations, our modern learning, our ultra-precise measuring devices, and our computer simulations, we

***Above*—Swedish rigger Jens Langert has worked on notable modern reconstructions of historic ships rigged with natural-fiber cordage. Among these is the 2004 East Indiaman GÖTHEBORG, shown above reaching 12 knots in the South China Sea. During the voyage, which retraced the historic route from Sweden to China, Langert served as rigging master and bosun.**



JENS LANGERT

Langert's approach to rigging combines historical research with technical analysis but also incorporates an artistic sensibility. Many of his own drawings document shipboard life—such as this one, showing sailors bending a sail onto one of the yards of the French frigate L'HERMIONE.

believe we are smarter and better than our predecessors of former times. There is always someone, in this kind of project, to put forward 'better solutions' than those shown in old treatises on naval architecture and early professional reference books, forgetting that the engineers and technicians who wrote these works were not novices but specialists of a very high level. We have to give them credit." Jens has made a specialty of period rigging that is dependent on such historical research, which has deepened his appreciation for the old masters.

"At the time in which these books were written, they constituted the proven knowledge in the most advanced sector of the technological world. Ship construction in the 18th century was at the point of the spear of the era's existing technology, like the aerospace industry of our own times. It brought together the best engineers, in workshops with colossal budgets that had the most cutting-edge experts of the times flocking to them. The ships were built with the best materials of the highest quality, the latest generation. All of the world's commerce moved by sea, and the penalty, for any technical choice that was inappropriate, was immediate: The masts broke or the hulls ruptured; men, ships, and cargo were lost to the deep."

Relearning Forgotten Materials

Working with another master rigger, Bjorn Ahlander, on the GÖTHEBORG project in the late 1900s and early 2000s, Jens designed and made spars and all the rigging and fittings for the ship, which was a reconstruction of a Swedish East Indiaman from the 18th century, 134′ on deck. After her launching, Jens served aboard as rigging master and bosun during her seminal voyage to China and back, following historic spice trade routes. (The ship was put up for sale in spring 2016 by the foundation that owns her.) L'HERMIONE, 145′ on deck, was another of his major projects. Jens was the lead rigger on the project and sailed with the ship to the United States in 2015, retracing the 1780 voyage by the Marquis de Lafayette to bring French assistance to the American Revolutionary War. L'HERMIONE's reconstruction, which took nearly two decades, was launched in the historic royal dockyards in Rochefort.

These were among many large projects that Jens has taken on (see www.jbriggers.se), but he has a whimsical side as well: His repertoire includes rigging a "raft of Medusa" for a film, and he and six friends designed and built the "wind wagon" ASTRAKAN to sail across an American desert to Burning Man, an eccentric annual festival of arts (see sidebar, page 84). Our conversation, however, is about the great ships he's been involved with.

"What do they have in common, the Swedish three-master GÖTHEBORG and the French frigate L'HERMIONE?" he asks. "Along with the Russian frigate SHTANDART, the Australian ships ENDEAVOUR and DUYFKEN, the Dutch BATAVIA, and a handful of others, they are the last 'tall ships' in the world rigged with materials that are natural, since the ships they re-create were built before the advent of steel hulls, masts, spars, and cables. Steel was quickly adopted for naval construction during the industrial revolution, and in the second half of the 19th century this new material revolutionized global seafaring. It permitted

NIGEL PERT

Langert first began learning about handling traditional rigs as a youth during summer sailing programs. As his knowledge deepened, he took on and led some of the largest traditional ship rigging projects in modern times.

the construction of ships much larger than those built of wood, which has a practical size limit. Beyond about 50 meters [165′], wooden hulls would break their backs, wooden masts would snap, or rigs would fail.

"With longer and longer metal hulls, the rigs became gigantic...right up until sail was abruptly abandoned in favor of mechanical propulsion. As steel became predominant and sail power was abandoned, the knowledge of natural rigging was completely lost over just a few decades. Few people in modern times have experience with these rigs, and even so, some pretend to 'improve' the ancient scantling rules? I find that absurd!"

Active and passionate, Jens has been involved in maritime history and ships all his life. Starting at age 14, he sailed during summers aboard traditional vessels at a Swedish sailing school, Stiftelsen Kryssarklubbens. He especially discovered the pull of the sea aboard two of the school's vessels: GRATITUDE, a 1903 Scottish trawler, and GRATIA, an English yacht of 1900. Later, as he made seafaring his livelihood and became a captain, he continued to sail almost exclusively aboard traditionally rigged vessels. Did this familiarity with practical maritime skills give him a particular insight into the spirit of old reference works for mariners?

Understanding the Old Manuals

"It took me years before I was capable of using historical technical manuals," he says. "The older they are, the more difficult they are to understand. Technically, the language is complicated because the artisans of the age, such as riggers, laborers, and sailors, were illiterate. The measurements of spars were given with the aid of empirical rules and relative proportions. Even if scientific-minded people knew exactly how to take a measure, the workers weren't up to the task of reading specifications from plans. The manuals therefore give methods that were easy to memorize and didn't require the use of instruments." For example, in an 18th-century Swedish manual for how to shape the hounds, or cheek pieces, of a lower mast so that the fighting top would be horizontal despite the rake of the mast, he found instructions that involved a few nails and a bit of string instead of any kind of device or ruler. "I read this text, written in ancient Swedish, several times without understanding, so I decided to scrupulously follow them. The result was the exact angle. Without instruments. By following a rule handed down by oral tradition, it didn't matter whether an apprentice could read or write. If it had been written as '3 degrees,' I would have understood right away, but the craftsmen at the times had to do the work without knowledge of trigonometry. For me, this was a kind of revelation—once I had the key to their way of thinking, it was much easier to understand the text." Jens himself began learning traditions in his adolescence, when he served as a cadet aboard the three-masted Danish sail-training ship GEORG STAGE. Aboard ship, training emphasized theory and practical work equally, with empirical learning alongside hand skills.

"When one is at last capable of decoding and understanding these 'golden rules,' I consider it necessary

COURTESY OF JENS LANGERT

In the Dusty Wake of the Pioneers

In the middle of the 19th century, terrestrial sailing machines were thrown into the conquest of the American Great Plains. A century later, Jens Langert designed one of these wheeled "Prairie Clippers," which he and several Swedish friends built in Sweden and shipped to the United States to sail across the Black Rock Desert in Nevada in 2012.

Jim Prescott was the first of Jens's friends to call his attention to these historic and experimental sailing wagons of the pioneers. "When I was a kid, I read in *Boy's Life* magazine the story of Zeb Thomas. Instead of using wagons drawn by horse or oxen, he wanted to create sailing vehicles to cross the country. So he founded the Prairie Clipper Company," Jim says. With five other friends equally passionate about sailing and in building interesting things, Jens and Jim found documents—and a Walt Disney film—retelling the epic of Zeb Thomas's prairie clippers and their first use in 1853. They immediately wanted to build one.

Unfortunately, sources of technical information were scant, because the original project failed quickly and ignominiously, even comically. The prototype wagon crashed on its first attempted crossing and was

JENS LANGERT

While gaining extensive experience with natural-fiber cordage and sailcloth, Langert developed a deepening admiration for the skilled craftsmen and sailors of former times. Here, the foremast crew takes a reef aboard GÖTHEBORG during her voyage from Sweden to China.

to follow them with an immense respect... even if they seem very approximate and not at all precise to us—we who have been educated in the era of the computers and the microscope. For historical reconstructions, it is indispensable to make the effort to put oneself in a different time. Let's remind ourselves what they were capable of, these artisans: They built cathedrals, as well as ships that circled the globe, with these same methods that nowadays appear risky to us. Let's consider these 'formulas' as the precious secrets of expertise, the guarantees that natural rigging will work well and safely. Let's be humble and obedient, like the apprentices that we are. We have everything to learn from these ancient masters." So insists this rigger.

Too Much Safety...Kills Safety

"Sometimes, we don't understand the reasons that underlie the choices laid down by the handbooks of the era. But let's try to apply them and test them offshore, on long passages. In use, and only after a trial of sufficiently long duration, we'll see if the old masters saw rightly or whether we are right to doubt them," says Jens, irritated at the arrogance of modern thinking over historical practice. "Our computers allow us, for example, to see that a topgallant mast of a three-master like L'HERMIONE, sized according to longstanding scantling rules, will break at 30 knots of wind. One might be tempted to reinforce this mast—to use thicker shrouds and yards to make it more solid. Except...that it is wise and prudent to reduce sail and to brail before a total loss, along with the hopes of its passengers and the money of the investors. "We found the accounts more epic than technical," Jens explains. Undaunted, the rigger and his friends, many of them veterans of the GÖTHEBORG project, decided to follow their own instincts and built ASTRAKAN, a wind wagon inspired by Thomas's original efforts. They then shipped it to the United States to sail about 300 miles across the desert in 2012 to Black Rock City, a temporary sort of Brigadoon set up annually for Burning Man, a whimsical festival of counterculture, a "crucible of creativity" (see www.burningman.org), where a square-rigged wagon would fit right in.

"We knew, thanks to our experience with iceboats, that at speed the concentration of forces would push the forward end down in this kind of vehicle," Jens says, "so we envisioned a trapezoidal chassis. Wider and with large wheels forward, and finer aft with smaller wheels for effective steering. We decided not to fit it with shock absorbers for the same reason: pressure concentrates forward, so shock absorbers wouldn't have served any purpose. It worked better to use supple materials, capable of cushioning the shocks." That material? Wood. Slow-growing fir trees, free of knots and branches, their straight trunks providing tight-grained wood, strong... but flexible: ideal.

For fastenings, the Swedes chose lashings. "To flexibly hold the pieces of wood to each other or to the metal frame, this solution was perfect. It allowed us to avoid boring holes in the wood for bolts or fastenings—these holes would have weakened parts subject to repeated and violent shocks. Moreover, we built the wagon in winter, in Sweden, and used it in summer in temperatures over 50 degrees Celsius (122 degrees Fahrenheit), with very low humidity. So it was quite certain that the wood would 'play,' or distort as it dried out. The bored holes would not have stayed in alignment. But regardless of whatever deformities occurred in our beams, the lashings would do the job," the rigger explains. "For the same reason, we chose natural-fiber rope—manila. We knew that these bindings would 'follow' the deformations in the wood," Jens says, recalling months of preparation in the snow for a desert passage.

When the wagon was ready, it was disassembled to fit into a shipping container and sent to the town of Gerlach, Nevada. The seven Swedes flew to Nevada and caught up with ASTRAKAN via a rented car. When all was ready, they had the wagon towed to the point of departure and launched their wind wagon, which achieved a top speed of 43 km per hour (27 mph) during the long voyage under the desert sun. The Swedes won their "historic bet," reaching the festival after three weeks of navigation in the desert. The wind wagon is now in storage in Nevada, awaiting other candidates who might want to borrow it for new "crossings."

—SP

NIGEL PERT

Aboard L'HERMIONE, Langert has served as the lead rigger, and part of his responsibility has been to train other crew in port and at sea in time-honored techniques such as worming, parceling, and serving standing rigging, in this case a replacement forestay made up at sea during the frigate's 2015 voyage to the United States.

the wind reaches 30 knots. If an unforeseen gust, a strong one, strikes the ship when the topgallant sail is set, yes, it's true, this mast will break. But if this happens, it will relieve the stress on the rest of the rig. The failure acts something like a fuse in an electrical circuit, a sacrifice that may perhaps save, in this case, the rest of the mast and maybe even the ship herself if it prevents a capsizing.

"By reinforcing that topgallant, one adds weight and windage aloft and deprives the rig of this extra 'safety,' thanks to a weakness that was...calculated. Too much safety sometimes kills safety!" says this mariner, who, after his years of voyaging, returned to university to perfect his technical knowledge. His diploma in architecture has given him an understanding of the forces involved in ship rigs. When it comes to a question of historical rigging, he heeds his calculations of stability and material strength, but he doesn't hesitate to double-check this scholarship with a solid dose of good sense...the sense of a seaman.

He cites another example from the BLUENOSE II reconstruction recently completed in Nova Scotia. "The BLUENOSE team is encountering at this time some real difficulties. In effect, the administration has required, under the pretext of safety, that the wooden rudder of this sailing vessel be replaced by a metal one. Said to be stronger, this new piece of equipment reassured the maritime authorities who had found the one made of wood—which is susceptible to breaking or to deteriorating over the years—to be troubling. Except that wood is buoyant. Not metal. The heavy metal rudder altered the vessel's fore-and-aft trim, reduced its seakeeping qualities, and weakened the structure. There again, the result of 'strengthening' is disastrous and counter-productive," he concluded. Plus, steering proved difficult, requiring a hydraulic assist. By May 2016, CBC news reported that the steel rudder would be replaced—with a wooden one—at a cost of $1 million (Canadian).

Harmony Is the Key

"Homogeneity of materials ensures strength and effectiveness. Wood, cordage and shrouds of plant fiber, along with natural sailcloth, are flexible. They react in unison, in the same manner, despite differences of temperature and humidity. The whole rig 'lives," adapting and regulating itself continuously, and harmoniously. With stretchy standing rigging you need bendy masts and stretchy sails. It would be dangerous to combine metal shrouds with other rigging composed entirely of plant fiber, since the shrouds would work differently than the rest. Metal resists *here*, whereas *there* the rest of the system bows, bends, and relaxes." Such a piece of rigging, unable to yield along with the rest of the rig, could concentrate stresses: "A too-robust shroud might cause a lot of damage in the end, and weaken the whole."

NIGEL PERT

From the smallest cordage to the largest, L'HERMIONE relies on tarred hemp and manila rope. This tightly wound and tarred serving keeps water out of the standing rigging.

"We had the chance, during a safety inspection of GÖTHEBORG by the Swedish maritime authorities in 2004, to work with an experienced inspector who was near retirement age. This senior inspector came to have confidence in old materials, with which he had not been initially familiar, provided that we respected the specifications of the original builders and that we not introduce any materials that didn't fit with this coherent whole. This was a seaman who completely understood historic rigs," Jens says.

"It is not easy to believe in these natural materials because we have lost the everyday use and the experience of them. The only experience that we usually have with modern hemp rope, for example, doesn't inspire confidence. The demand for cordage of this type today usually involves aesthetics or looks. Some people buy hemp rope to 'make pretty,' either for their boats, or as a decorative element in homes or businesses. They are motivated by the look of the cordage and the price, but they don't research technical qualities. When somebody is looking for a strong and durable line, he goes back to synthetic rope. The manufacturers naturally understand this market. The result: When modern hemp rope has been put to the test aboard boats, it breaks, it rots—it's worthless!"

The Art of Hemp and Tar

"In old times, hemp for rope and flax for sailcloth were handled by networks of artisans, indeed complete industries. A thorough expertise developed around these essential raw materials. Throughout the culture, from harvesting through fabrication, each stage was accomplished with exacting skill and care, which gave rope and sailcloth alike remarkable quality and durability. With hemp, for example, the harvest of male and female plants was not done at the same time. To harvest fiber of the finest quality, you have to time the cutting precisely to follow the biology of the plants. Next, the stalks of the plants were left to rot for a long time in pools—a process called 'retting.' The stalks were allowed to dry, then soaked once more before being combed by hand to extract the fibers. This procedure is long and tedious, and in the retting process the plants are foul smelling and no pleasure to handle. But the process allows the extraction of fibers that are more than a meter long and very strong," continues Jens, who studied rope making before designing rigs that relied on hemp rope—especially for standing rigging.

"Today, a single harvest is typical, disregarding whether the plants are male or female. The retting is done chemically, and the manipulation—the extraction of the fibers—is mechanical. The fibers obtained this way are fragile and their length is no more than 10 or 20 centimeters (4″ to 8″). Naturally, ropes made from these fibers are of notably inferior quality." Typically, hemp rope is also impregnated with tar, and there again the choice of material and the application method determine the quality of the result. "Tarred hemp ropes found on the market today are treated, after fabrication, by soaking them in vats of liquid tar. Once you put strain on this type of cordage, the tar seeps out of the fibers, like you're wringing out a mop. The only right way to treat cordage is to saturate each fiber with thick tar before making up the rope. This way, the fibers are impregnated to their heart and the tar stays in the rope even under strain. This method takes a crazy amount of time and requires a lot of labor. In the absence of a historic workshop or demonstrations in a museum, nobody works this way anymore."

Like a Wooden House

"A traditional tar treatment, faithful to the process followed by artisans of former times, gives shrouds and rigging a remarkable durability. For GÖTHEBORG, we made our own rope and followed this method, and the rigging has been in place since 2004. For L'HERMIONE, since we couldn't make the rope ourselves, we used manila instead of hemp. This Philippine plant, a relative of the banana tree, provides long fibers that are probably the equal of the hemp processed in olden times. The results are remarkable. It's the same for sailcloth and wooden spars. Experience is essential

NIGEL PERT

Langert leads a crew in setting up shroud deadeye lanyards. L'HERMIONE is a modern representation of an 18th-century frigate, built in the same dockyards in Rochefort, France, where the original was launched in 1799.

NIGEL PERT

Except for the use of modern safety harnesses, going aloft aboard L'HERMIONE today would be indistinguishable from doing so on the original ship in 1799.

from the selection of the best materials all through the process, in treatment, and in working the materials. When the work is done right, these rigs prove themselves in use, working well and with great strength," Jens says.

Since GÖTHEBORG's launching in 2004, Jens has continued to do inspections and materials tests on her rigging. "For certain uses and certain cases, on the condition that it is cared for correctly, natural fibers give better results than modern materials. Synthetic rope and sails, for example, are very susceptible to damage by ultraviolet light. They don't rot like natural fibers, but sunlight causes deterioration and makes them brittle.

"Natural rigging and wooden ships are a bit like wooden houses: If one takes care and maintains them properly, they'll last a very long time." In order to build, sail, and maintain such rigs, in addition to studying old ways one must understand the characteristics of materials, and for this the knowledge and solid experience of traditional seamanship is indispensable. In this type of work, various elements of rigging are adjusted and managed using devices that have almost no reliance on metal at all.

"As in understanding sailing or weather, each situation encountered during a life enriches a sort of bank of skills on which one draws when leading or designing this kind of rigging project. Each sail plan is different and new, like each vessel. The rigger has to learn from them all to design the next one, and rely on historical references and mathematical calculations, but also

NIGEL PERT

An important part of Langert's work at sea on L'HERMIONE and other ships is to monitor and maintain the rigging, keeping proper tension and avoiding chafe—and to train the crew in the skills of doing so. Here, he leads two crew in tensioning a new forestay (shown being made up on page 86).

on intuition and a sense of beauty. For it is proper also to pay attention to the general allure of a rig—to its aesthetics. If it looks beautiful, it is probably practical. And vice versa. What is practical is usually efficient and beautiful." At the end of this explanation, Jens breaks into laughter, not one to be too serious for too long. This Swedish artist does not lecture. He explains, considers details, seeks the truth itself in order to better understand how these sublime and swift vessels function, a working understanding that was very nearly lost to our era.

"I am astounded how much sailing has progressed these past decades," continues Jens. "When I was young, American racing sailboats reached 15 knots and the world speed record under sail was 25 knots. Today, some sailboats are clearing the bar of 50 knots. What happened in the meantime? We continue to learn so many things about wind and aerodynamics. Adapting new materials, like wood in combination with resins, or new composites, makes way for amazing advances. And even the old skills that we have revived and experimented with on the historic sailing ships are participating in this evolution. With rope of exotic fiber that is lighter and stronger than metal, ocean-racing boats are reviving 'textile' rigging. Even if the textiles are no longer the same...the very sophisticated seamanship of the old rigs of natural fiber sets the foundation and inspiration aboard the vessels of the next generation. The seamen of the 19th century relied on the knowledge of those of earlier times to advance. The adventure continues!"

Sandrine Pierrefeu is a seafarer and traveler who for 25 years has lived in Brittany, France, where she writes articles and books on maritime subjects. (Translated from the French by Tom Jackson.)

The Brake-Drum Forge

MARTHA BRYAN

Building a simple heating device for shaping metal

Text and photographs by Harry Bryan

Since the days of Vulcan, the Roman god of fire and metallurgy, a means of shaping metal with heat has been an important part of civilization. Some configuration of forge and anvil has been in the shadows of many great enterprises. The horse and buggy could not function without the many forged metal parts that are part of the buggy's structure and fastenings. The clipper ship, for all that we say about the days of *wooden* ships, would not have been able to hoist a sail without the work of the shipsmith holding the rig together. In 1807, the engineer Robert Stevenson, Robert Louis Stevenson's grandfather, started work on the stone tower that was to become the Bell Rock Lighthouse, and the first tool landed on that tide-swept ledge off the coast of Scotland was a forge used for sharpening the stone drills required by the masons.

Today, the popularity of blacksmithing courses is an indication of the number of people who want to learn how to shape metal for decorative and utilitarian purposes. For many, putting the learned skills to use will

***Above*—For many boatbuilding tasks, a simple forge made of an old automobile brake drum is more than adequate. Such a forge can also be useful, for example, in making steel deck and rigging hardware for later galvanizing, as described on page 94.**

Materials

—Brake drum 12″ to 14″ outside diameter, 3″ to 4″ deep
—Three pieces of ½″ pipe, 18″ long, threaded on one or both ends
—One 1¼″ pipe flange
—Three ½″ pipe flanges
—One 1¼″ close nipple
—One 1¼″ pipe tee
—One 1¼″ × 6″ pipe nipple
—One 1¼″ pipe plug
—Four ¼″ × 1″ flathead stove bolts with nuts
—Nine 10-24 × 1″ flathead stove bolts with nuts
—One fender washer, 1½″ outside diameter
—Hair dryer with minimum 1¾″ opening
—Paint roller handle

With the exception of the brake drum, the parts needed to make the brake-drum forge will be in stock at most hardware stores.

be hampered by the lack of a forge. Light bending as well as the hardening and tempering of small tools can be done with the heat produced by a hardware-store torch. Heavier pieces will require a large oxy-acetylene torch with tanks and hoses, an expensive proposition for a hobby or occasional need—yet still an option for shop-made steel hardware, as boat designer and builder Paul Gartside has advocated (see sidebar, page 94). A forge is better than a torch for heating large pieces, but building a traditional full-sized forge would require a significant amount of time to make and a good deal of space to use.

On the other hand, the forge presented here, while small, is capable of delivering enough heat to bend a ¾″ bar or to melt a ½″ bar, which is useful for many, or maybe most, purposes in a small-boat shop. Its heart is an automobile brake drum. While the exact diameter is not critical, the flat area where the drum bolts to the wheel studs should be at least 7½″ in diameter in order to have room to mount the legs.

Making the Forge

To start construction, center and clamp a 1¼″ pipe flange on the outside of the drum and drill ¼″ holes for the four ¼″-diameter stove bolts that will secure it in place, as shown in photo 1. When the flange is secured,

The ½″ pipe flanges used for attaching the legs are partly sawn away to allow the large air-supply flange to seat firmly on the flat area of the brake drum.

use a hacksaw and half-round file to cut away part of the three ½″ pipe flanges that will hold the legs. The picture shows that by removing this metal, the smaller flanges may be moved inward so that most of their area lands on the flat of the drum. Drill and bolt these flanges in place with 10-24 × 1″ flathead stove bolts.

The legs are made from 18″ lengths of ½″ black iron or galvanized pipe threaded on at least one end. These are a common hardware store purchase. Each leg should be given a bend centered 8″ from the bottom that will offset the pipe's end 5″ to 6″ out from the vertical. One way to make this bend is to increase leverage by slipping larger-diameter pipes over each end of the leg, leaving exposed the area to be bent. With one person on each end of the extension pipes, bend the leg against a tree or a vehicle's trailer hitch. Alternatively, take the legs to a metalworking shop that can heat them with an acetylene torch before bending. Screw the bent legs into place and set the forge right-side up.

In order to prevent charcoal from falling into the air outlet, make a strainer from a fender washer with a 1½″ outside diameter. After fitting it into the 1¼″ pipe flange, remove it and drill five ¼″ holes around the washer's center hole. Then reinstall the washer.

Place a mixture of sand and Portland cement in the bottom of the drum to a depth of 1½″. This "sand-mix" is a common building-supply item. If you keep the mix fairly stiff, you will be able to shape the center depression at the same time that you fill the drum. If the mix is too runny, wait about an hour for the cement to take its initial set then gently scoop out the center with a spoon. Make the depression bowl-shaped, about 3½″ in diameter.

Give the sand mix at least 24 hours for an initial cure, and allow four or five days before lighting the forge. After the initial cure, screw the close-nipple and tee into the center pipe flange to form the "tuyère," or blast opening. Add the clean-out plug and 6″ nipple to accept the blower.

The Blower

The blower can be made from a hair dryer with a minimum outlet opening of 1¾″. This is a common thrift store item, although even new ones do not cost

The tools that I've forged, some of which are shown here, have proved their worth over time. From top to bottom they are:

A. Cant hook. This short peavey hook is used at the sawmill for rolling-over logs on the carriage. Both the hook and the heavy band holding it to the handle are shapes particularly suited to being forged.

B. Hold-fast: This bench-top clamp drops into a ¾" hole. A sharp blow on its top sets its thin pad firmly against the piece being held for work. A second tap on the hold-fast's back releases it. This is a simple and effective tool, yet one that is difficult to produce without a forge.

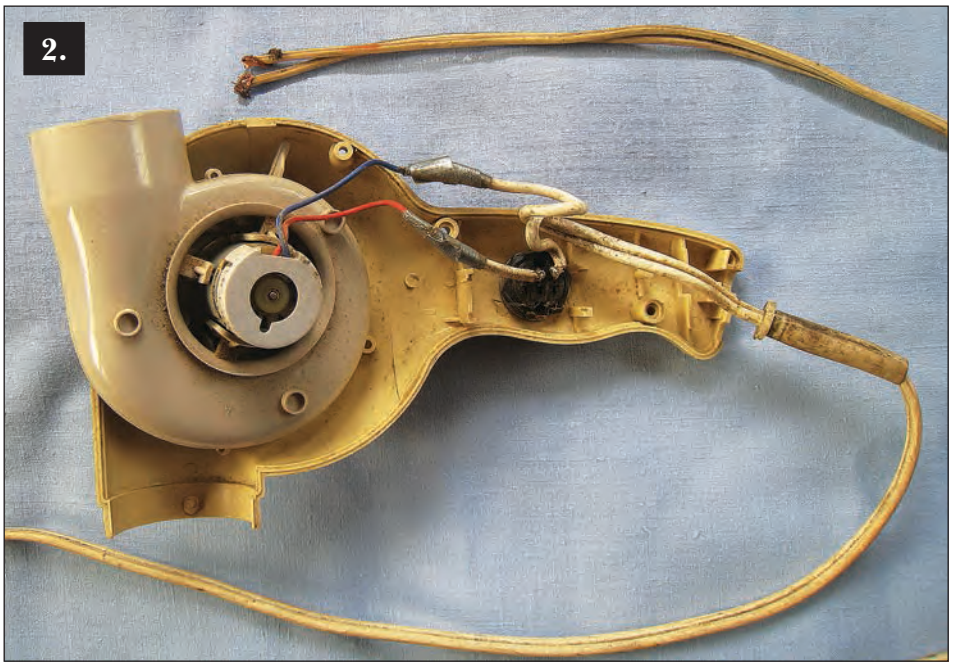
C. Log dog: I have not used this for years, yet it was instrumental in holding logs while they were hewn into square timbers during the construction of my shop.

D. All-steel chisel: It hurts to drive a favorite chisel, nicely sharpened, into a fastening or through fiberglass sheathing. This 1"-wide chisel is a relatively easy tool to make, but it will prove its worth over and over in repair projects, saving the best chisels for finer work.

E. Box-end wrench: This large wrench was made to fit the 2½" nut holding a 48"-diameter circular saw to its mandrel. The box-end is made from a salvaged telephone pole cross-arm brace heated and hammered around the nut it was intended to remove.

Using the Forge

When steel is heated, it softens and its plasticity increases. In this state, it will be far easier to bend, shape under a hammer blow, or punch a hole through. Many forged items require a level of skill reached only after many hours of trial and error, yet those basic steps—heating, bending, squishing, and



After the hair dryer's heating coil has been removed, the incoming wires are connected from the switch directly to the blower motor. Because this is now a low-voltage device, the plug must be cut from the cord so that it will never again be connected to a household receptacle.

much. Take the dryer apart and remove the heating coils. Rewire it so that one of the motor's terminals is connected to the electric cord and the other to the switch. The electric cord's second wire is connected to the switch, as shown in photo 2.

It is critical to cut the plug off the end of the cord so that

punching holes—performed in the proper sequence will be performed over and over to create a vast number of useful items. The following is a brief introduction to these operations.

Heating: A forge fire should be deep enough and compact enough to absorb most of the oxygen in the air coming from the blower. If the fire is too shallow or the blast gate allows too much air through, the steel will oxidize too much, causing excessive scaling. The hotter the piece, the easier it will bend, and the longer it can be worked before cooling. However, a yellow heat, while necessary for welding, risks damaging the steel. Therefore, for general work heat the metal to a bright red or orange, but not to a yellow or white.

Bending: A bar can be given a gentle bend in its middle by grasping each end (with gloved hands), putting the heated section behind the anvil horn or a bar that is clamped in a vise, and then pulling the ends toward you. For a sharp bend, cool each end of the heated section in water to shorten the length of the heated area and therefore the extent of the bend. To make a short bend near the end of a piece, hammer it over the edge of the anvil or bend the piece with the end held in the jaws of a vise.

Drawing-out: If you were to heat a ½″-square bar, then lay it on an anvil and give it a few blows with a hammer; it will not only become thinner, but wider as well. If you then place it on edge and carefully pound it back to a square section, it will measure something less than ½″ × ½″ square but be longer. This is called "drawing out," a process that is more efficient when using glancing hammer blows in the direction that encourages the lengthening of the bar. Hammering with the bar placed across the anvil horn makes each blow yet more efficient. Tapering a bar is a drawing-out procedure.

Upsetting: Although this is another squishing operation, it is the opposite of drawing-out. Here, the piece is struck heavily on its end so as to cause the heated area to shorten and swell in girth. Making a right-angle bend that has a sharp, square corner requires upsetting the area to be bent in order to provide the extra material needed for the corner. Making a bolt head is another example of upsetting.

Punching holes: Punching a hole can have some advantages over drilling. First, it is an easy way to make a hole that is not round. The punch used to make such a hole can be as simple as, say, a ½″-square and 6″-long bar of steel. To make a square hole—for example, to seat a carriage bolt into a chainplate—heat the area to be punched, drive the punch into the metal from one side, then turn the piece over and complete the hole by driving the punch through from the back side. If the punch is forged to a taper starting at ¼″, not only will the punching be easier, but as the punch is driven through the metal the chainplate will swell out, making the chainplate stronger than one in which metal is removed by boring the hole.

—HB

Further Reading

New Edge of the Anvil, by Jack Andrews. Skipjack Press, 1994.

The Art of Blacksmithing, by Alex W. Bealer. Castle Books, revised edition, 2009

The Complete Modern Blacksmith, by Alexander G. Weygers. Ten Speed Press, revised edition, 1997.

The Blacksmith's Craft, by Council for Small Industries in Rural Areas, 1968.

A sheet-metal damper controls the volume of air reaching the fire. It fits into a slot sawn in the neck of the hair dryer.

The forge completed. Note the depression in the sand-mix lining, with the fender washer at the bottom. The poker is made from a straightened-out paint roller frame.

it can never again be connected to household current. You now have a low-voltage-only blower that will operate well using a cordless-drill battery rated at either 9.6 or 12 volts. (A 12-volt motorcycle or automobile battery will work as well.) Try the blower out. If it runs in reverse, switch the wires at the battery, then label them "pos." and "neg." If you are using a cordless-drill

Galvanized Hardware

by Paul Gartside

It is easy to underestimate the cost of hardware in any boatbuilding project. For a small boat, a set of rudder fittings and a couple of pairs of oarlocks and sockets will cover it, but as size and complexity increase, hardware costs balloon exponentially—and this is particularly true of sailboats.

A glance through catalogs of sailboat hardware reveals what we are up against in the way of financial pain. I am continually astonished by both the level of sophistication and the cost of modern sailboat hardware—all of it in support of a pastime. A stroll through a jewelry store with a supermodel on your arm will likely hurt less.

But I'm often struck, too, by a sense of incongruity. If we are building a boat for ourselves, we are engaged in an act of creation for its own sake. The pleasure derives directly from making complex and beautiful structures from simple materials. Of course, there is the profound magic of completing the circle, in launching and sailing away on a voyage of discovery, but that can never be the

PAUL GARTSIDE

Forge work and gas welding can bring shop-made deck and rigging hardware within the budget of the home builder. For a 24′ cutter, the author made some 40 fittings of mild steel, which were then sent out for galvanizing.

battery, the wires can be held to the battery connections using a spring clamp as long as the plastic tips on the clamp's jaws are in good condition.

To create a blast gate to regulate the flow of air to the forge, saw a slot a bit less than halfway through the blower's neck. A hacksaw works well for this. Cut a piece of sheet metal to fit the slot, as shown in photo 3.

The Poker

Forge fires make frequent use of a poker to add new fuel, compact the coals, clear the draft holes, and place the metal in just the right spot. A poker of just the right size can be quickly made from a paint roller frame by straightening out its bends. Cut off the excess metal 12″ from the handle. Heat 1″ of the tip red hot and then flatten it with a hammer, and after it cools file the end to a slight point. Give the last 1½″ a 90-degree bend with the flattened tip oriented crossways.

Here, the forge is ready to light, with shavings and kindling above the tuyère, or blast opening.

prime motivator. Foremost is the fun of building, and that places us at the opposite end of the spectrum from the shop-to-own crowd.

So let's step away from the jewelry store for a moment and consider what can be done with the very simplest of materials and equipment.

Before stainless steel became the dominant material for marine hardware in the 1960s, hot-dipped galvanized mild steel was the norm. At least it was in the Europe of my upbringing. It is true that U.S. yachting culture always leaned more heavily toward bronze, but most British yachts of the pre- and post-World War II periods—the designs of Giles, Nicholson, Illingworth, and others—made extensive use of galvanized steel for mast and deck hardware. As late as 1972, I remember going through the Robert Clark–designed GYPSY MOTH V and finding galvanized steel in the chainplates and deck fittings. A budget boat for sure, but in Francis Chichester's opinion, the best one he ever owned. If it was good enough for him and good enough for such iconic boats as the 1947 Fastnet Race winner MYTH OF MALHAM, it is certainly worthy of consideration today. The fact that mild steel is so easy and enjoyable to work should make it doubly attractive to the home builder.

While a small forge such as the one described by Harry Bryan in the accompanying article is certainly handy for heating and shaping steel, an oxyacetylene welding set that will heat, cut, and weld is more than adequate for most pieces. A grinder, a drill press, and an assortment of files are about the only other tools required. One of the beauties of mild steel is that it is soft and easily filed and drilled—so much easier than stainless steel. Just remember to bore all fastening holes oversize to allow for the zinc coating.

Steel works best where light, strong fittings are required. For that reason, it is particularly useful for mast fittings that are often complex, with multiple tangs and attachment lugs. The 100 percent weld strength is most reassuring there.

Boats with a traditional character are obviously a better fit from the aesthetic point of view than more modern designs, but part of the appeal of galvanized steel is the ease with which it can be painted-in to match its surroundings (being sure to use the right primer). This approach is different from using bronze or stainless-steel fittings, which are often deliberately used as accents.

Where galvanized steel does not work is underwater or anywhere that gets constant immersion. The zinc coating is the same metal we use for our sacrificial anodes, so it should be no surprise that it does not last in these conditions. Stop at the deck edge, and use bronze from there down.

The accompanying photo shows a 24′ cutter's set of mast and deck hardware, some 40 pieces in all, ready for galvanizing. Try not to think about the cost of that in bronze or 316 stainless steel.

Paul Gartside is a yacht designer and builder who lives and works in Shelburne, Nova Scotia.

This ¾"-diameter steel bar represents the practical limit of material that can be worked in a forge such as this one. After the fire is burning well, it will take three to five minutes to bring metal of this size nearly to white heat.

Chunks of charcoal larger than the volume of a golf ball should be broken up with a hammer before being placed in the forge.

Lighting and Managing a Forge Fire

While this forge can use soft coal, a cleaner-burning and more easily available fuel is barbecue charcoal. Briquettes can be used but produce great quantities of ash. It is best to get real charcoal.

To light the forge, start by nearly filling the drum with charcoal. Chunks larger than a golf ball in volume should be broken up with a hammer, as shown in photo 4. Use the poker to scoop out a depression far enough down to expose the air holes. Add a few shavings and cover them with a conical pile of five or six pieces of kindling ½″ square and 3″ long. Light the shavings and, after they are burning well, turn on the blower with the gate adjusted for a light blast. After the kindling is burning, use the poker to pull charcoal against the burning wood.

To maintain the fire, continue to pull charcoal into the center of the forge from just outside the fire's perimeter, compacting the burning coals slightly. Add new fuel around the rim of the drum so it can be drawn into the fire as needed. Place the metal piece you are heating on top of the fire and cover it with more charcoal. The idea is to keep a layer of burning fuel between the metal being heated and the air supply. By arranging the fuel this way and adjusting the blast gate, most of the incoming oxygen will be consumed by the fire, and little will be left to oxidize the metal, which will cause scale to form.

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

LAUNCHINGS

Edited by Robin Jettinghoff

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

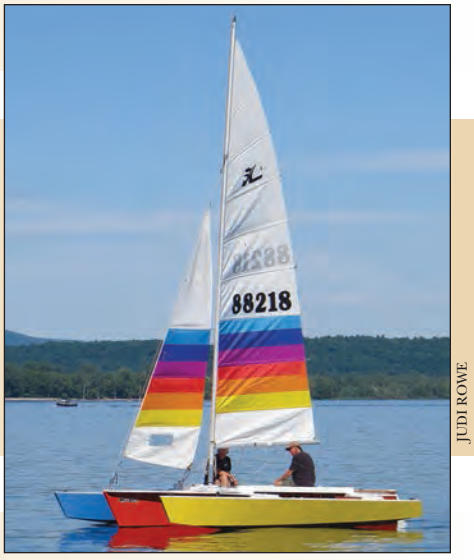
Please include the following information: (1) the boat's length and beam; (2) the name of its design class or type; (3) the names of the designer, builder, owner, and photographer; (4) your mailing address along with an email address or phone number; (5) the port or place of intended use; (6) date of launching; and (7) a few sentences describing the construction or restoration. (8) Send no more than five photographs (jpg images at 300 dpi) and enclose a SASE if you want anything returned.

RACHAEL DILL

Don Dill built FANNIE SALTER based on Reuel Parker's Cedar Key Sharpie design, with a few modifications. He widened her beam to 6′6″, lengthened her to 23′6″ long, enlarged the foredeck, and installed a hatch. Planking is white pine on white oak frames. Plans are in Reuel's *The Sharpie Book*, available from www.woodenboatstore.com.

GLYN MACPHEE

On Christmas Day last year, at Golden Beach, Caloundra, Queensland, Australia, Cam and Glyn Macphee launched JEANNIE, a 12′ clinker dinghy designed by Paul Gartside. Cam built her at the Wooden Boat Centre in Franklin, Tasmania. She is traditionally built with Huon pine planking and frames, celerytop pine keel, and transom and thwarts of King Billy pine.



JUDI ROWE

Bill Rowe has five grandchildren: Julia, Emily, Madeleine, Dashiell, and Lydia. He'd already built two boats, JULIA and EMILY, when he started building this Seaclipper 20 in 2013. He launched the plywood-and-epoxy trimaran, MAD DASH (named for the next two grandchildren), last fall in South Hero, Vermont, and LYDIA is not far behind. Lucky grandchildren! Plans are available at www.searunner.com.

TRENT CAMPBELL

During Winter Term at Middlebury College, Vermont, last year, 16 students and their teacher, Douglas Brooks, built and launched a 27′ traditional Japanese river boat in the college pool, following a Shinto ceremony. The design is from the Agano River in the Niigata Prefecture. The boat is built of Vermont pine, fastened with blacksmith-made nails and wooden dovetail keys. For more information, email douglasbrooksboatbuilding@gmail.com.

ROSE McCONNELL

Matt Suter led a group of 39 students at the Lower Cape May Regional High School in Cape May, New Jersey, in building a 22′ St. Ayles skiff designed by Iain Oughtred. They launched W.D. NELSON (named after a boatbuilding mentor) in October 2015, and a second boat is now in progress. The school hopes to use the boats to encourage nearby schools in building their own skiffs. Kits are available from www.hewesco.com.

Fred Ellis relied on the lines for the peapod published in John Gardner's book, *Building Classic Small Craft*, to build SARA C. He spent seven years constructing the 14′ carvel hull from cedar planking on oak frames with a mahogany backbone. Fred rows her on Lake Skegemog and Elk Lake in northern Michigan.

FRED ELLIS

DENISE RAY

Jim Ray of Westmoreland, New Hampshire, researched a lot of boats before deciding on Paul Gartside's Skylark (www.gartsideboats.com). Paul recommended advanced boatbuilding skills to build the Skylark, so Jim took "Fundamentals of Boatbuilding" at WoodenBoat School with Greg Rössel in June 2015. After that, he went home and got to work. Jim and his wife, Denise, launched FINE L. LEE on Spofford Lake this past April.

Seeking a stable and seaworthy boat for salmon fishing in the San Juan Islands, Will Pieti of Bellingham, Washington, decided to build a 20′6″ Bartender, designed by George Calkins (www.bartenderboats.com). Will launched BAYRUNNER OF FAIRHAVEN last June in Bellingham. With her 40-hp Suzuki outboard, she'll cruise at 19 knots; top speed is 26 knots.

WILL PIETI

HARLAN TRAMMELL

Harlan Trammell of Lower Keys Fine Woodworking in Big Pine Key, Florida, recently designed and built this 16′6″ Juniper skiff, AMERICAN ALLEGIANCE. Strip-built from Atlantic white cedar covered with fiberglass set in epoxy, she features a glass-bottomed view box made from polycarbonate. She flies across the Florida flats with a top speed of about 54 mph.

DARYL PEIFER

Seeking a versatile sailboat that can hold a crowd, Kent Tyson of Barto, Pennsylvania, chose a D18 Myst design by Don Kurylko (www.dhkurylko-yachtdesign.com). The 18′3″ hull is strip-planked in western red cedar with mahogany trim and Sitka spruce spars. Kent spent about 1,500 hours over four-and-a-half years building VENTURE, and launched her last August at Lake Nockamixon in Pennsylvania.

Last spring, James Madigan, of the A.K. Ilen School of Wooden Boat Building in Limerick, Ireland, and his assistant Matthew Dirr directed a two-week workshop—offered by The Scholarshipwrights in Nobleboro, Maine—in building two skin-on-frame Irish currachs. The class launched a 25′ racing Naomhog from county Kerry and a 17′ Scattery Island fishing currach from county Clare on May 29, 2016. For more information, visit www.scholarshipwrights.org.

ANNE BRYANT (BOTH)

MELODY BORGHI

After spending every evening and weekend for four months working on his 14′ Weekend Skiff, Joe Borghi proudly launched MELLY B in September last year. The design is by Richard Butz and John Montague, and appears in their book *Building the Weekend Skiff* (available at www.woodenboatstore.com). MELLY B carries a 1987 4-hp Evinrude outboard. Joe and his wife, Melody, cruise the waters of southeast Michigan.

CRUMULUS is a Penobscot 17 designed by Arch Davis (www.archdavisdesigns.com) and built by Norbert Pauli of Schöneiche, Germany. Norbert chose the Penobscot 17 because of its size and attractive lines. The hull is built of marine plywood and epoxy, with keel, stringers, and spars of Douglas-fir, floorboards of spruce, and trim of teak. He and his family launched CRUMULUS last September at Lake Parstein.

NORBERT PAULI

COURTESY OF THE LESSER FAMILY

BUD follows Dave and Rosemary Lesser of Ogden, Utah, wherever they sail. BUD, the tender to their yawl, LA VIE EN ROSE, is a Beach Pea designed by Doug Hylan (www.dhylanboats.com). Dave modified the plans a bit by installing flotation compartments under the sternsheets and by using watertight hatch kits from PT Watercraft in Port Townsend, Washington. He also replaced the thwart knees with laminated frames of Alaska yellow cedar.

RELAUNCHINGS

VALERIE KEKICH (BOTH)

Ryan McKeeman bought a dilapidated 16′ Dunphy runabout in October 2014 in Sudbury, Ontario. He replaced the decking with clear tongue-and-groove cedar, rebuilt the interior, repainted the hull, and added a split windscreen. THE GROOVER—a nickname of his late father, who initiated Ryan's early interest in boats—is powered by a completely restored 1958, 35-hp Johnson Super Seahorse outboard.

In 1948, Kurt Schmidt's father bought a derelict 1917 Kennebec wood-and-canvas canoe in Wisconsin, removed the canvas sheathing, and then let it sit untouched for decades in the family barn. In 2011, Kurt took on the job of finally restoring it. As this was Kurt's first restoration, he learned to steam-bend wood, clench nails, cane seats, and stretch canvas—see www.thewoodenboat.blogspot.com—and from the looks of things, he learned well.

LAURA SCHMIDT

DAVID YOUNGSON

The Wagemaker Company built this molded-plywood 12′ × 4′5″ Wolverine, hull number M679, in 1954 in Grand Rapids, Michigan. David Youngson of Vancouver, British Columbia, bought her around 1995. Last spring, as a gift to his son, James, he replaced the deck and windshield. LIL MISS CANADA, complete with her original 1954, 25-hp Johnson, now carries the family on Lake Coeur D'Alene in Idaho.

In 1926, the N.J. Blanchard Boat Co. of Seattle, Washington, built MALIBU, a 100′ fantail motoryacht designed by Ted Geary. She underwent recent extensive restoration at Haven Boatworks in Port Townsend, Washington. The crew there replaced much of her stern section, including horn timbers, futtocks, planking, and stern tubes. She also received substantial deck repairs and a full topsides repainting. She was relaunched in April on Puget Sound.

LAURA SHIFLETTE

Hints for taking good photos of your boat

1. Set your camera for high-resolution images. We prefer jpg format, at 300 dpi minimum.
2. Stow fenders and extraneous gear out of the camera's view. Ensure the deck is clean and uncluttered.
3. Take your photographs in low-angle sunlight for best results. Early morning or late afternoon usually work well.
4. Keep the horizon level and the background simple and scenic so your boat stands out from its surroundings.
5. Take some pictures of the boat underway and some at rest. Often a vertical format works well for sailboats. Shoot a lot of images, then send us your five favorites.

We enjoy learning of your work—it affirms the vitality of the wooden boat community. We receive so many submissions that there is not room in the magazine for all of them to be published. Launchings not printed in the magazine can be seen at www.woodenboat.com/boat-launchings.

WoodenBoat
REVIEW
PRODUCTS • BOOKS • VIDEOS • STUFF

Anza Paint Scrapers

Reviewed by Nick Schade

MATTHEW P. MURPHY

Intended for scraping off old paint, Anza scrapers in a wide variety of shapes can also work well for challenging woodworking projects such as fairing the inside of a strip-built kayak.

Cleaning up the interior of a small strip-planked boat such as a kayak or canoe can be an exercise in tedium. Unlike the convex exterior, the interior does not succumb easily to the powers of a random-orbit sander. All glue squeeze-out must be removed, and then the flat facets of each strip face must be slightly hollowed to create a smooth, fair surface.

Coarse sandpaper on a contour pad mounted on a random-orbit sander is quite slow because the contour pad really wants to conform to the existing shape, rather than cut the desired one. I have tried a variety of tools to speed up the process. My experiments have included making a hollowing plane from a cheap block plane, dabbling with compass planes (they don't work for this application), and using spokeshaves across the grain. For a little while, 40-grit sandpaper wrapped around a foam block worked best for me. Then I discovered the utility of paint scrapers. Alternately called "shave hooks" or "hook scrapers," they fit the bill. Their quality ranges from stamped sheet-metal jobs screwed to a plastic handle, to steel triangles fixed to the end of a rod. I cycled through many of these, and eventually found an ideal model.

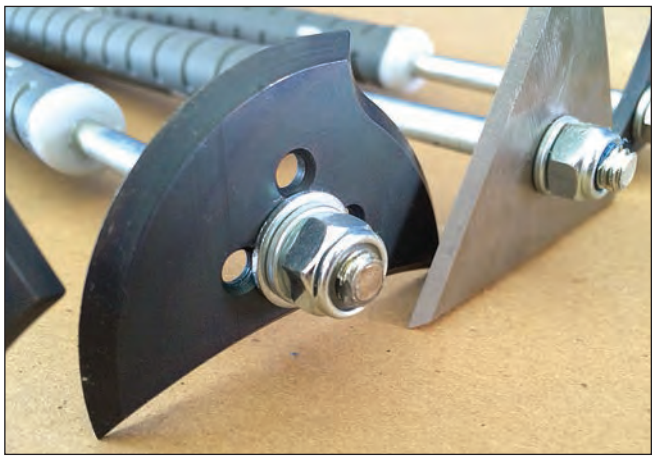
I started with a stainless-steel blade screwed into a plastic handle. It held a nice edge, but the handle was short and thus awkward for anything beyond small touch-up work. Then I discovered that my local hardware store had a stamped sheet-metal model. It worked well to clean glue from the hull exterior, and I filed the blade into a nice shape for work on the interior—though this tool was limited to a fairly shallow curve. However, the thin edge had an annoying tendency to chatter and hop, creating a washboard effect on the work surface.

A few years later, while snooping through a woodworking store, I found a shave hook with a blade that screwed onto the end of a wooden handle. The blade was 2″ square, which allowed modification to a wide variety of curves. The blade was thick so it didn't flex and chatter much. Unfortunately, the handle was attached via a metal insert set into the end-grain of the handle, and it quickly failed. When I returned the failed tool, I found that the store had, not surprisingly, dropped that product line, and I bought the only shave hook they had in stock: a modified triangular blade peened onto the end of a metal rod. Unfortunately, the peen was insufficient to hold the blade tight; it wiggled ever so slightly, once again creating washboard patterns in the wood. My hunt for the perfect tool continued.

One day while reading an online article having nothing to do with my tool odyssey, I came across an ad for scrapers offered by a company selling an infrared paint stripper called The Silent Paint Remover (see WB No. 179). The tools were made by Anza, a Swedish company supplying the painting trade. They appeared to have nice, beefy blades and comfortable handles. I took the leap, and bought one.

It proved to be a serious tool worthy of confiscation by airport security (as I've since proved). The blade was a full ⅛″ thick and made of high-grade steel, with a roughly 45-degree bevel around the working edge. A lock nut held the blade onto an approximately ⅜″-diameter rod that after 3″ continued into a 9″-long rubberized plastic handle.

With the tool held nearly parallel to the surface of the wood, a quick pull along the grain sliced off a beautiful shaving. This was not the sad pile of dust produced by my earlier, lesser tools, but a quickly built nest of fluffy curls. I easily and swiftly shaped the flat faces of the cedar and mahogany strips into smooth, continuous curves. Scrapers on soft wood do not create the glassy surface you might expect of a cabinet scraper on rock maple, but they will do a great job of shaping so only sanding is needed to achieve a smooth final finish.



MATTHEW P. MURPHY

MATTHEW P. MURPHY

These fine scrapers are available in a variety of useful convex and concave curves, and I soon ordered a suite of them. I've also put some to a bench grinder to create my own custom shapes. The only one I have not been happy with is a large, nearly 3″-square blade. I thought its width would be useful for flat surfaces, but the flex in the blade and handle initiates chattering, though gripping the top of this larger blade can dampen vibrations.

The steel sharpens easily with a single-cut bastard file to produce an edge that cuts very nice shavings, but I have taken the blades to a diamond stone to get them razor sharp for even finer results. One sharpening lasts long enough to clean up most of a kayak.

Although I purchased the tools for working on strip-planked boats, I later had to strip 100 years of accumulated paint from my porch railing, which had more lathe-turned balusters than I care to count. I had ample opportunity to test the virtues of the Anza scrapers against my quiver of previously collected, now-redundant shave hooks. The same properties that make the Anza scrapers excel in shaping cedar strips produce equally good results removing paint from intricate turnings and moldings. They're well suited to finishwork on boats.

Nothing is going make the task of scraping fun, but Anza's selection of solid tools makes it bearable. My long search for a good and versatile scraper capable of working a variety of shapes has come to a satisfying end.

Nick Schade founded Guillemot Kayaks (www.guillemot-kayaks.com) in Groton, Connecticut, and is the author of The Strip-Built Sea Kayak. *He teaches strip-built small-boat classes at WoodenBoat School and elsewhere.*

Anza Paint Scrapers are available for sale at www.silentpaintremover.com/scrapers. Prices vary from about $29 to $34.

COURTESY OF FORESPAR PRODUCTS

Tea Tree Power by Forespar Products is available as a spray for direct application or as a gel for continuing mold and mildew prevention.

Tea Tree Power

Reviewed by Anne Bryant

Let's bust a well-circulated myth from the get-go: chlorine bleach does *not* kill mold.

I might have just rocked your understanding of the world, and perhaps am challenging a dogmatic adherence to protocol. Right now, in your bilge, there might be a trusty bleach bottle or diluted spray ready for deployment.

Mold, like all fungi, grows hyphae—rootlike structures that reach into wood or any porous surface. Mildew is just an early form of mold that grows on damp surfaces fairly quickly. What we see on wood's surface is like the unwelcome bloom of an unwanted flower. Similar to pollen, mold and mildew spores travel in the air; they flourish in moist environments, so are able to reproduce quite well on boats.

Understanding how mold grows is the key to controlling it, as is understanding what's happening at the molecular level when you use a given cleaner. Chlorine bleach, because of its ion structure, isn't able to get into the porous surfaces of wood to kill the hyphae. It's removing only the stain and surface structure of the mold. Conversely, you might use an effective mold-killing product such as common household vinegar or hydrogen peroxide and still see the mold stains, but the important part, the hyphae, will have been killed.

Our 32′ cutter, MIMI ROSE, has limited ventilation in the forepeak. We try to keep it free of clutter to allow better airflow, but the shelves behind the head are the most likely to grow mildew. We were lucky

ANNE BRYANT

for a long time, but when some of the soft things aboard started getting telltale spots, I knew this was going to be a practice of maintenance and patience.

There's no such thing as a wonder product, and someone telling you they've got one probably also has a bridge they could sell you. I wanted to find a product or a suite of products that had some very specific properties:

- Based on sound science, they'd be effective for killing mold, not just hiding it.
- I'd feel good about any rinseate going out of our through-hull fittings whether at anchor in a quiet Maine cove or right in Baltimore's Inner Harbor (see sidebar).
- There'd be a component to the cleaner that would deter future mold growth, that through regular use during normal cleaning would keep it at bay.

I ended up having the best luck with a product called Tea Tree Power by Forespar. It combines the one-two punch of an effective odor eliminator sans synthetic fragrance together with a penetrating cleaner that kills hyphae.

I had initial misgivings, and was also averse to trying to evenly distribute tea tree oil by way of a spray bottle. As an avid "do-it-yourselfer," always looking to save a penny or figure out how to do something myself, I've tried working with essential oils to make household products. If you've made your own bug spray or other well-meaning concoction, you have felt the pangs of disappointment when your expensive, short-lived emulsion separated shortly after the first use. Tea Tree Power contains pure Australian tea tree essential oil; it is marvelously homogenous and never clogs the sprayer.

I sprayed the Tea Tree Power in a light mist and let the product sit for a few minutes as directed by the manufacturer. I didn't want excess that would go to waste. At the same time, I wanted it to be as effective as possible, so I worked through the whole forepeak, and not just the problem areas, in small patches. The spray's light scent is pleasant and fresh. I paid special attention to corners and cracks, and inspected to be sure there weren't sources of moisture we had missed or needed to fix.

ANNE BRYANT

After wiping everything down and returning items to the shelves and lockers, I placed a 4-oz container of the Tea Tree Power gel among the stuff on the shelves behind the head. This plastic tub with holes in the top seemed to work mostly as a source of fragrance, but as evidence suggests, it also works as an airborne antiseptic. Sure, there were still spores in the humid air, but my wood was now soaked and protected with tea tree oil, and I had the gel doing its little passive thing on the shelf.

I didn't see evidence of regrowth for a long while, probably about three months, and even then the mold and mildew came back in fewer places. I decided that a monthly regimen of spraying, letting the product sit, and wiping everything down would keep it at bay almost permanently.

About a year later, my gel has a "spent" look about it, and I definitely plan on getting refills for my gel container. The refills come in nice large amounts, so if you're cruising you can order up a few and have enough for a couple of years without worrying about buying a lot of little containers. I might continue to use the Tea Tree Power spray but will also be trying out ubiquitous, affordable hydrogen peroxide. I've discovered through research for this review that it's another effective and natural mold fighter, though perhaps not an effective mold deterrent. The quiet, tea tree–scented battle continues.

May The Force, not the spores, be with you.

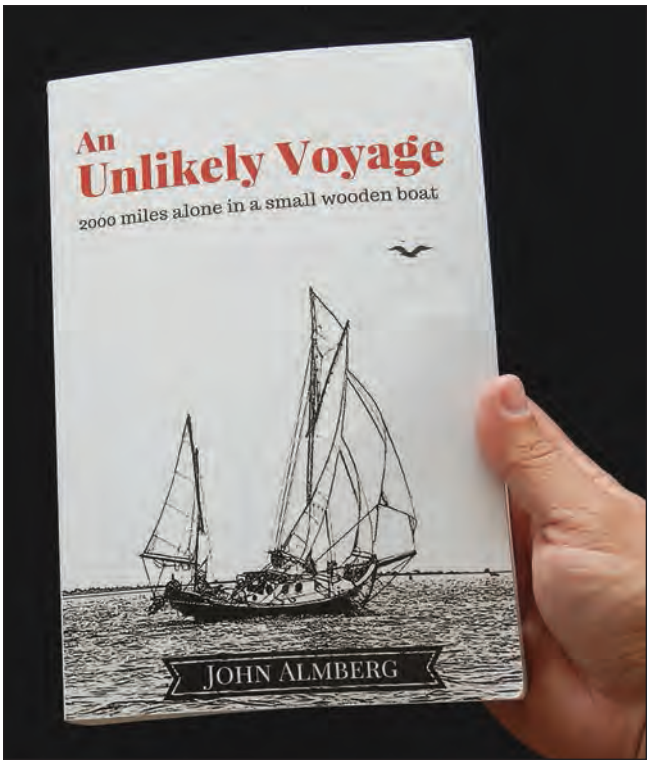
Anne Bryant is WoodenBoat*'s associate editor. She and her partner, Colin Sarsfield, sail and cruise in the 32′ cutter MIMI ROSE.*

A 16-oz bottle of Tea Tree Power spray retails for around $17 and a 2-oz package of gel retails for about $19. Visit www.forespar.com/ttpower for more information.

Ecology and Safety

Regarding my second stipulation: I have decided to relegate the bleach bottle back to the bilge, or rather, will most likely leave it ashore. From the moment it's manufactured, chlorine bleach, which relies on somewhat unstable ions for its effectiveness, begins to break down into undesirable and potentially dangerous chemicals. One of those by-products is dioxin, a known carcinogen that accumulates in finfish and shellfish, increasing in concentration up the food chain. You have the power to help reduce the amount of carcinogenic substances that end up on dinner plates. Sure, you only cleaned your bilge, but so do lots of other people over time. It's best not to use chlorine bleach at all, but if you do, never discharge it overboard. Another problem with chlorine bleach is that a spill in combination with hydrogen peroxide, which is very useful aboard a boat, can cause a violent chemical reaction.

—AB



An Unlikely Voyage

Reviewed by Robin Jettinghoff

An Unlikely Voyage: 2000 Miles Alone in a Small Wooden Boat, by John Almberg. Published by Unlikely Voyages, 249 Lenox Rd., Huntington Station, NY 11746. 317 pp., softcover, $19.95. ISBN: 978–0–692–60143–3. *Available from The WoodenBoat Store, woodenboatstore.com.*

Since you are reading this magazine, I suspect you may have a secret fantasy of voyaging great distances in a wooden boat. Perhaps you have imagined the feeling of sailing into open water with the wind on your quarter and the whole beautiful ocean ahead? Or maybe you've had a vision of nosing into a quiet cove at sunset, or pictured your boat rafted up to others in a distant harbor, as you share food, drink, and dreams with new friends? Maybe you've taken steps to bring this fantasy to life—built a boat, taken classes, sailed at any opportunity, or ventured with others in regattas or raids—training for that one great adventure of your lifetime?

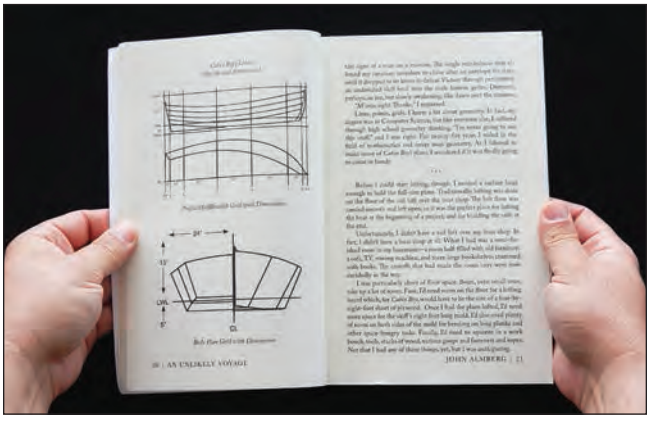
For some, preparation becomes an end in itself—the activity of it nurtures and fulfills the dream, and wanderlust fades. Others eventually put all that preparation to use and venture off in unknown waters to distant destinations. John Almberg is in the latter group, though for him, the grand voyage came before he had fully prepared.

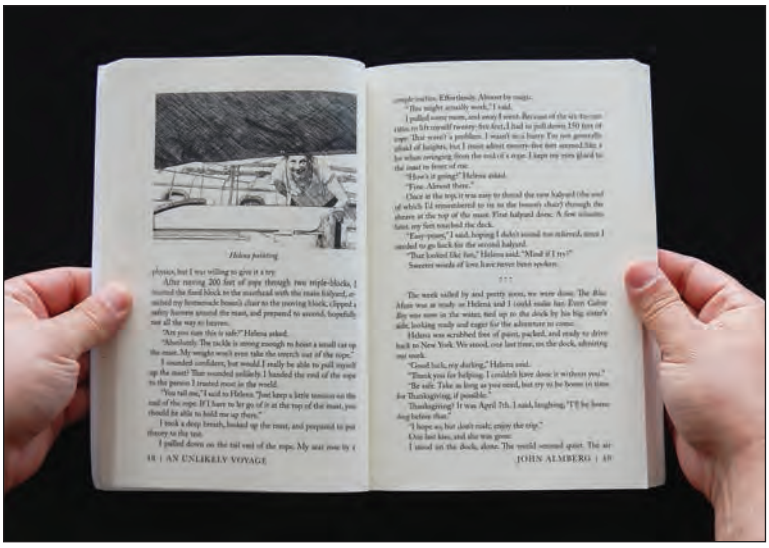
John Almberg's *An Unlikely Voyage* is a compilation of posts from the blog he kept as he built an Atkin-designed Cabin Boy dinghy, and then bought a Blue Moon yawl on eBay, sight unseen, and sailed it 2,000 miles to his home. His grand adventure was to launch both boats and then immediately sail them from the Gulf Coast of Florida to Long Island, New York. While building the dinghy was the impetus for starting the blog (www.unlikelyboatbuilder.com), the stories of his unlikely voyage created an interested group of followers, with about 850,000 views at the time of this writing.

Almberg and his wife, Helena, had been looking at fiberglass sailboats, because he didn't know anything about wooden boats or woodworking or tools. Helena didn't like any of them and decided she wanted a wooden boat. So, reluctantly, at her urging, he decided to learn about wooden boats and develop some carpentry skills by building a small dinghy. He had stumbled across a book of plans by William and John Atkin in a disused section of his local library in Huntington, New York. He'd never heard of the father-and-son design team and was surprised to discover that William Atkin had started building boats in The Red Boat Shop about a mile from that very library.

Almberg hadn't started building the dinghy and wasn't exactly looking for a bigger boat when he saw the Blue Moon advertised on the Internet. The 23-footer, designed by Thomas Gillmer in 1943, is a great small cruising boat for a couple. The design's gaff rig and sweet sheer have captivated sailors for decades. Both Almbergs were smitten at once, but the asking price of $20,000 was too expensive. Improbably, they found her again a few weeks later, this time on eBay with no reserve and no bids. Three days later the auction ended, and they posted just one bid, of $5,300, at the very last second of the auction and successfully purchased her.

When Almberg traveled to Steinhatchee, Florida, to inspect the boat and finalize the sale, he was surprised, given her price, to find her to be generally sound though she carried an inch-thick mire of biomass below





Helena painting

the waterline. Just a few weeks of scraping, painting, rigging, and loading, and she was ready to sail.

Almberg had purchased her with the dubious plan of sailing her solo back to Huntington, even though he'd never made such a voyage nor sailed such a boat alone. He had sailed for years, but only in and around Long Island Sound. Though he lacked cruising experience, he prepared as well as he could for his trip by reading books, soliciting advice from his readers, and purchasing lots of gear, tools, and safety equipment.

Despite these efforts, Almberg faced an unusually high number of mishaps on his trip. Recognizing the limitations of his experience and unashamed of his ignorance, he blogged frequently along the way with self-deprecating humor as he faced each new hurdle. Sometimes he found his own way to a solution, other times he received help from some unlikely sources, and a couple of times he flew home to buy new parts or make new gear before returning to continue his journey. I laughed out loud as he told the story of losing his dinghy, which he named CABIN BOY after the design, almost as soon as his grand adventure began. As he left the Steinhatchee dock, Almberg had untied all of the dock lines and piled them in the cockpit to be tended to after he sailed out of the harbor:

> A hundred feet down; just two thousand miles to go. … I glanced over my shoulder to admire my smart little skiff, again. … But as I watched, CABIN BOY's

tether quickly untangled itself from the mass of other lines, wriggled up and over the transom, and dropped with a small splash into the water behind us.

Blast!

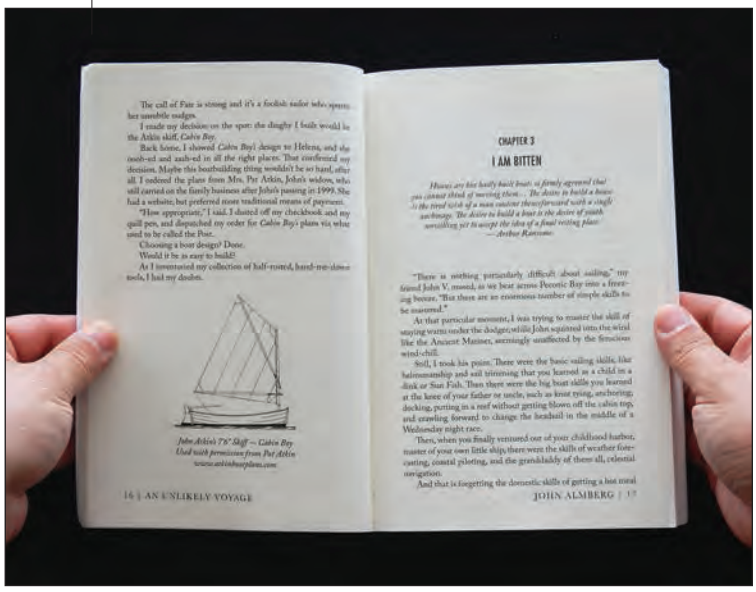
Untied from his big sister, CABIN BOY quickly fell behind, turned aside, and drifted—no, sped!—towards the shallows.

Double blast! The ingrate was making a break for it!

I continued to laugh as he described anchoring his yawl, and swimming, then wading after the dinghy before finally catching the truant.

The book is full of amusing stories, such as his journey almost across Lake Okeechobee, or how he came to acquire a new outboard motor, that will also bring chuckles. His wisdom, common sense, and confidence developed during the cruise, but he never lost his sense of humor. His excellent drawings augment the text, but I wish he had included charts showing his route, particularly for the areas in which he had trouble.

Almberg foresaw many possible obstacles on his adventure, and prepared well for them. Despite this preparation, very little went as planned. His trip took three times longer than he had anticipated, and many people facing such setbacks would have given up. I found



myself admiring him for his persistence in overcoming the challenges, and for being just an average sailor and an average guy who had a dream and made it work.

Robin Jettinghoff is WoodenBoat*'s assistant editor.*

BOOKS RECEIVED

Sugar & Salt: A Year at Home and at Sea, Volume Two: The Orange Book, by Annie Mahle. Published by Baggywrinkle Publishing, 136 Holmes St., Rockland, ME 04841, www.athomeatsea.com. 135 pp., softcover, $24.95. ISBN: 978–0–9749706–2–2. *The author regularly prepares meals for 30 people aboard her family's schooner, the J & E RIGGIN, in a 6′ × 8′ galley equipped with only a woodstove for cooking. The book is full of recipes and stories of life aboard, of gardening, and making do on the coast of Maine.*

Carolina Flare: Outer Banks Boatbuilding & Sportfishing Heritage, by Neal, John, and Jim Conoley. Published by Carolina Flare, LLC, 525 Old Zebulon Rd., Wendell, NC 27591, 286 pp., hardcover, $60. ISBN: 978–0–9791177–0–1. *This study of North Carolina sport fishing explores the boatbuilders, boat designs, history, and geography of the Outer Banks.*

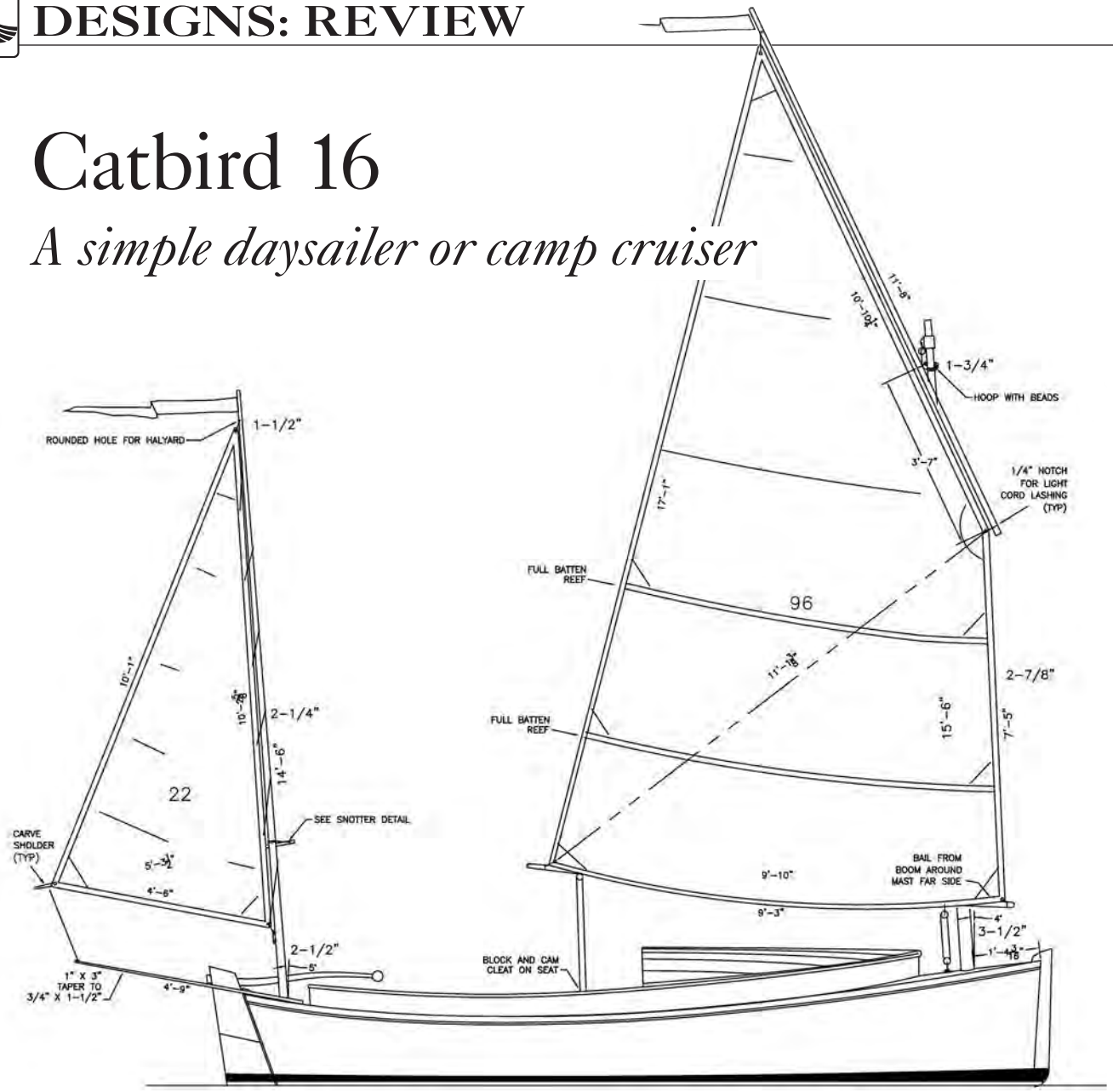
The Sea Chart: The Illustrated History of Nautical Maps and Navigational Charts, by John Blake. Published by Conway, an imprint of Bloomsbury Publishing, 1385 Broadway, New York, NY 10018, www.bloomsbury.com. 191 pp., hardcover, $40.00. ISBN: 978–1–84486–314–3. *This volume begins with beautiful 15th- and 16th-century charts and includes maps by indigenous peoples as well as explorers.*

The Voyage of YANKEE LADY: Circumnavigating New England in a Sailboat, by Judith Silva. Published by Tate Publishing, 127 E. Trade Center Terr., Mustang, OK 73046, www.tatepublishing.com. 380 pp., paperback, $26.99. ISBN: 978–1–62510–673–5. *The author, her husband, and four friends spent two summers sailing from Connecticut, up the Hudson River to the St. Lawrence, around Cape Breton, and back home.*

A Taste for Salt Water, by R. Laforest Perkins. Published by Perkins Enterprises, 1315 Manktown Rd, Waldoboro, ME 04572, 76 pp., paperback, $13.95. ISBN: 978–1–936447–07–7. *An autobiographical memoir of life on and near the ocean, beginning in the 1930s; charming drawings by Glenn Chadbourne augment the tales.*

Catbird 16

A simple daysailer or camp cruiser



Design by Karl Stambaugh
Commentary by Mike O'Brien

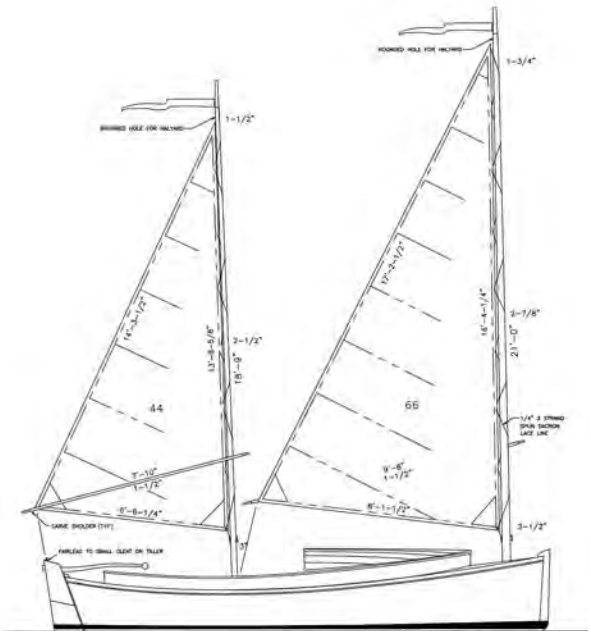
This good daysailer and camp-cruiser floated from Karl Stambaugh's drawing table along the shores of Chesapeake Bay. Catbird's simple, yet perfectly proportioned, sheet-plywood hull will go together easily. Then this versatile 16-footer will take us across a bay or lake and (with only 6″ draft) far up secluded creeks on the other side.

The experienced designer drew plenty of rocker in Catbird's bottom. This little skiff might give up an occasional burst of speed to other flat-bottomed boats with straighter runs that can plane readily when reaching in a breeze. Yet she'll atone with better overall handling and speed-made-good through a variety of conditions.

We can argue all day about the proper amount of rake ("flare" if you prefer) for the sides of a sailing skiff. Stambaugh has chosen moderation for Catbird. This skiff looks fine and sails well. In fact she might surprise even some experienced sailors. Tiernan Roe (www.roeboats.com) in Ireland built a Catbird for a veteran of several Fastnet races. The happy owner reports that his new boat heels down to about 15 degrees, where "she gains considerable stability and just chugs along."

Catbird's layout makes good sense for her purpose. Up forward

***Above*—The Karl Stambaugh–designed Catbird 16 is a versatile boat. She's easy to singlehand, yet will carry a modest-sized group, too.**



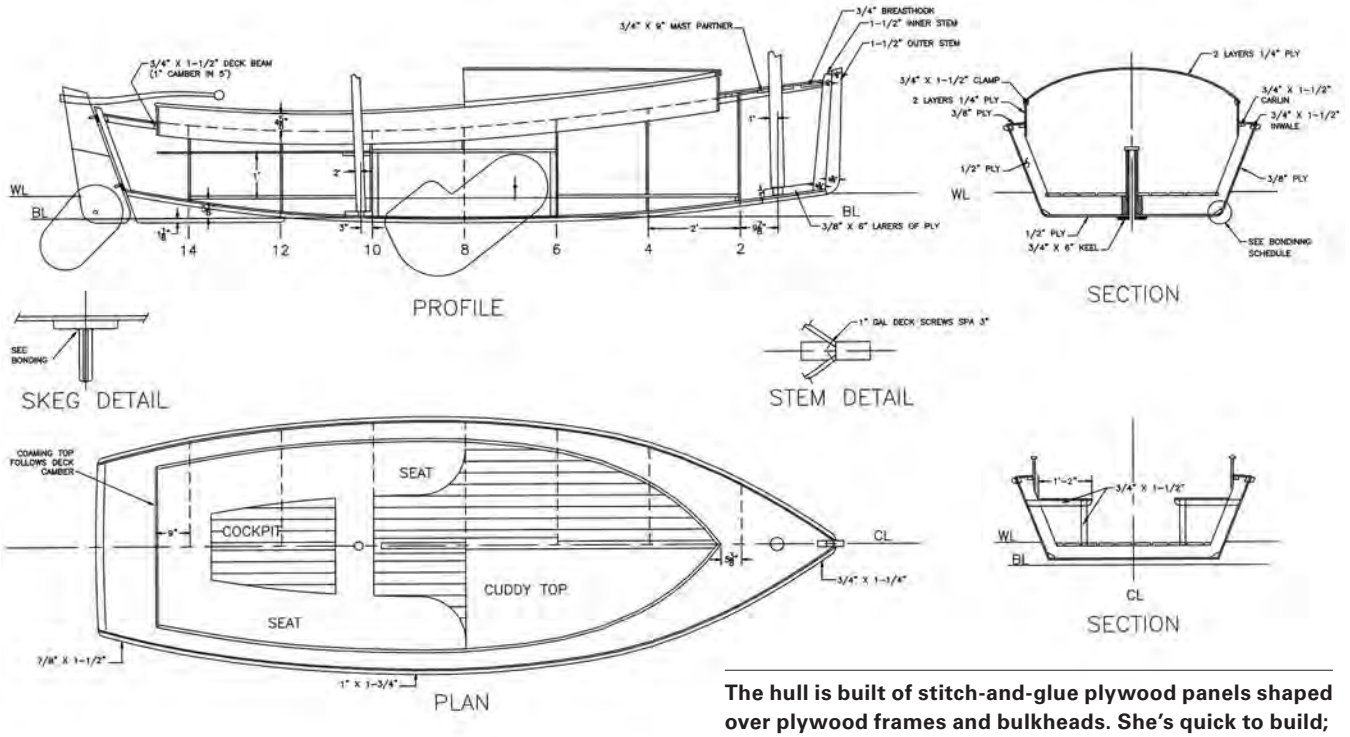
The rig comes in two variations: the lug yawl on the opposite page, and the cat-ketch at left.

the cabintop bridges across the coaming, in Rozinante fashion, to form a cuddy. This construction is simple, and its appearance is elegant. No full bulkhead separates the cockpit from the cabin. Such a barrier would impede air circulation, dim the light below, and might induce claustrophobia. If we need to exclude rain or insects, a drop-curtain will serve. As for security, my teacher liked to say, "A lock will stop only the honest man."

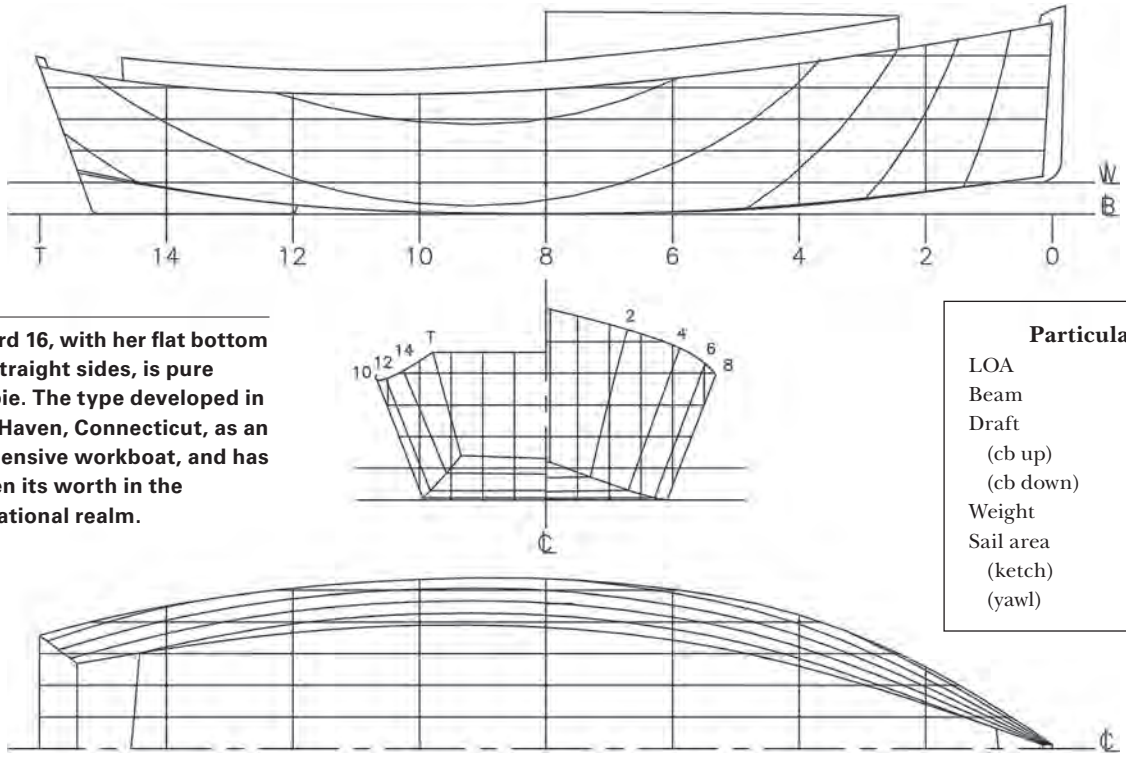
The cabin offers a broad flat for spreading our sleeping bags. These will be divided at their heads by the centerboard trunk. Whether this will be considered a virtue or vice depends, I suppose, upon the circumstances. Comfortable benches surround the cockpit.

We should know better than to tamper with this proven arrangement. Yet I'll propose that we eliminate the hard cabintop in favor of a removable cloth top supported by ash bows (set up to mimic the curves of the specified wooden top). The resulting fully open cockpit would measure 13′ in length. Access to ground tackle and mainmast will be improved, but you'll have no kind words for me if saltwater gets into the bedding.

At first Stambaugh drew a cat-ketch rig for Catbird. He later added a lug-yawl option. Both rigs offer sharp control and easy handling. Aboard the cat-ketch, the foot of each leg-o'-mutton sail (in tension) working with the sprit boom (in compression) and the mast forms an automatic triangular boom-vang that also allows us to control sail shape and twist. Taking up on the snotter or sliding it higher on the mast flattens the sail and lessens twist. The self-vanging action reduces loads on both sheets, and they'll not require blocks.



The hull is built of stitch-and-glue plywood panels shaped over plywood frames and bulkheads. She's quick to build; most of the effort will be in detailing and finishing.



Catbird 16, with her flat bottom and straight sides, is pure sharpie. The type developed in New Haven, Connecticut, as an inexpensive workboat, and has proven its worth in the recreational realm.

Particulars	
LOA	16′0″
Beam	5′4″
Draft	
(cb up)	1′0″
(cb down)	2′0″
Weight	350 lbs
Sail area	
(ketch)	110 sq ft
(yawl)	118 sq ft

At the mastheads of the ketch, Stambaugh specifies "rounded holes" for the halyards. Some folks refer to these as "dumb sheaves." My teacher called them "bee holes" because they looked almost identical to the holes drilled into his shop's framework by carpenter bees. By whatever name, they make more sense for this application than store-bought blocks. They cost almost nothing and will never jam. Without any maintenance, they last close to forever. I've employed them, with good results, for sails up to 240 sq ft.

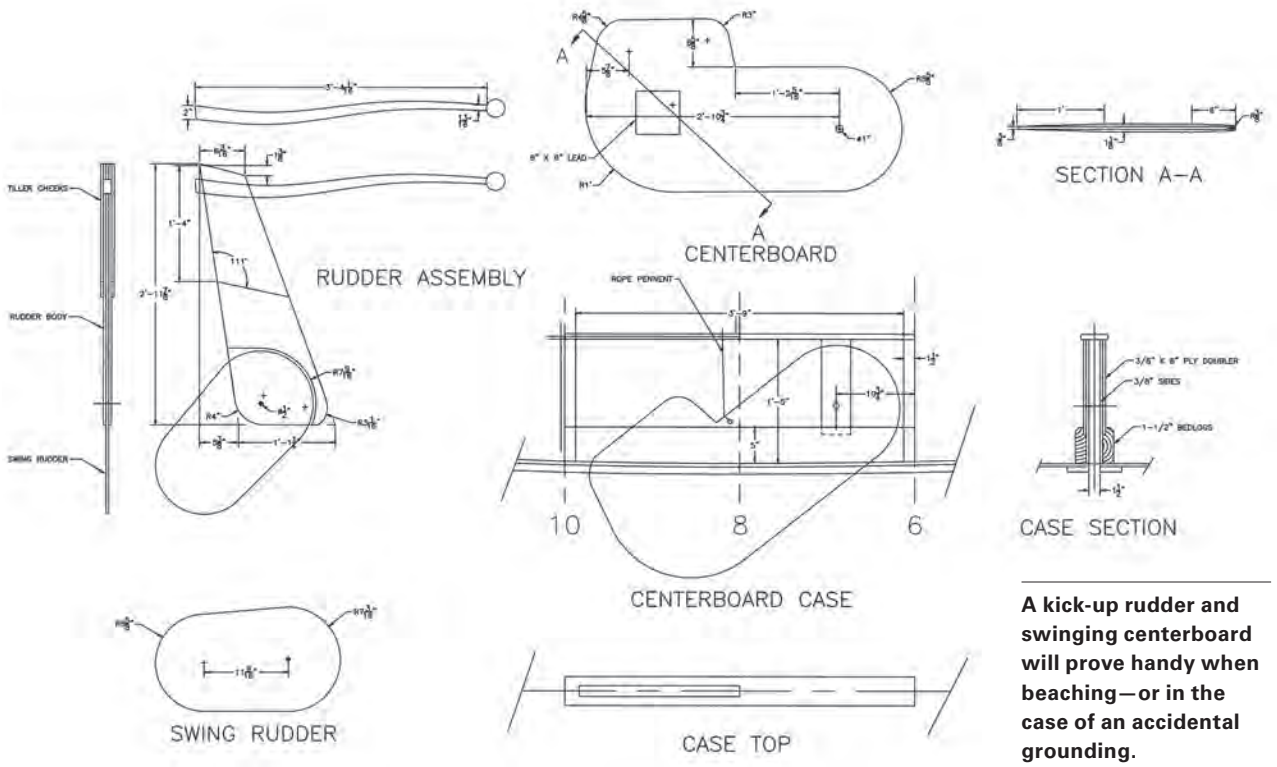
Both the Catbird ketch and Catbird yawl offer the usual advantages of split rigs. We can maneuver quickly and with certainty in tight situations by "backing" the mizzen. If we need to fuss with this and that, we can sheet in the mizzen hard and let go the mainsheet. Our skiff will rest patiently until we're ready to take off again.

Proponents of cat-yawls tell us that their rig is faster than the cat-ketch to windward and that reefing will prove simpler. (Aboard a cat-yawl, only the mainsail need be reefed.) Fair enough, but this ketch's 66-sq-ft mainsail seems unintimidating, and we'll probably not have to reef at all. In quick squalls, the sails can be depowered (flattened) as described above. When it breezes on steadily, we'll furl the mizzen and set the mainmast in a third step (not shown), which we can improvise somewhere near the centerboard pin. Catbird will continue on happily under full mainsail alone.

If it blows still harder, some folks might stow the mainsail and set the mizzen in that third step. Yet when it comes on that strong, I'll suggest we lower everything that will come down without an axe. Then we'll row for cover while repenting our sins.

Catbird's cat-yawl rig carries a 96-sq-ft balance-lug mainsail and a minuscule 22-sq-ft leg-o'-mutton mizzen. This tiny sail at the stern provides balance and control rather than much power. The mizzen's sprit boom makes for a fine handle. We can grab its forward end and push it in the direction opposite to where want to head, which is an excellent technique for avoiding collisions and for showing off in the harbor. The mizzenmast steps at the starboard quarter and doesn't interfere with the rudder or tiller.

The yawl's balance-lug mainsail shares fine adjustability and self-vanging with the ketch's leg-o'-mutton main. A downhaul at the mast holds the boom down. When the clew wants to lift the outboard end of the boom, a taut luff resists. The geometry here isn't quite so firm as with the sprit-boomed leg-o'-mutton, but it works. We can fine-tune the set of the lugsail by adjusting tension in the downhaul



A kick-up rudder and swinging centerboard will prove handy when beaching—or in the case of an accidental grounding.

Catbird may be built with a small cuddy cabin, as shown in the drawing on page 110, or she may be built without the cabin for pure daysailing or tent-cruising.

and by changing the locations of the downhaul on the boom and of the halyard on the yard. This lug mainsail can be reefed at either of its two full-length battens.

Stambaugh suggests that sailors who might encounter strong winds would be well served by the compact cat-ketch rig. The slightly larger lug-yawl rig should prove faster in light air. Despite the lug rig's greater sail area, its masts are shorter than those for the ketch.

The designer tells us to assemble Catbird by bending precut plywood panels for the bottom (½″) and the sides (⅜″) over seven transverse frames. No lofting is required. The panels will be stitched-and-glued together at the chines. Experienced builders might get to the water more quickly if they substitute conventional chine logs for the stitching-and-gluing.

For auxiliary power, we can make a good pair of oars. We could also hang an outboard motor on the transom, but let's avoid the stench and expense.

Sailors young and old might find healthy fun with the Catbird 16. Fitted with those rugged oars for rowing, poling, and fending off, this handy little camp-cruiser will take her crew just about anywhere they ought to go.

Mike O'Brien is boat design editor for WoodenBoat.

Plans for Catbird 16 can be had from The WoodenBoat Store, P.O. Box 78, Brooklin, ME 04616; 800–273–7447; www.woodenboatstore.com.

Contact designer Karl Stambaugh at Chesapeake Marine Design, 794 Creek View Rd., Severna Park, MD 21146; 800–376–3152; www.cmdboats.com.

PROTON

A DIY Class 40 Racer

by Laurie McGowan

Hi there,

I'm Gerry Corneau, and I am a dreamer. I have a simple request: a DIY Open 40. I'm sure I am not the only dreamer who looks at your designs. We fellow dreamers who read *WoodenBoat* have mostly built boats, sailed them, and lived with them. We, as an age cohort, are about to have some time on our hands, and still have some dreams. So, how about a DIY Open 40?

The box rules are really where ideas have gotten fleshed out and vetted in the past decade of sailing, and we baby-boomer dreamers haven't missed a trick. So how about an Akalaria/Dudley Dix/Pogo mashup? The swagger on the race course of the Akalaria Open 40 combined with the Dudley Dix construction ethos and the spare elegance of the Pogo 40, with an emphasis on safety, speed, and comfort, balanced equally.

This is an obsession for me, and I'll be thrilled to see what this proposal yields. I've been a big fan of your work so far. The concepts are well thought out, and provoke a lot of imagining. Have fun with this one. I know I will!

Gerry Corneau
via email

Hi Gerry,

Thanks for your letter! I'm a big fan of shorthanded racing, and it (being a fan) is what got me into boat design to begin with. I really enjoy watching the rapid evolution of sailboat design through races such as the Mini Transat and the Transat Jacques Vabre, and France's particular obsession with this type of contest has really spurred the development of great boats, gear, and sailing techniques.

I'll give a warning to fans of traditional wooden boats: this is not one of those! The Class 40, as you note, is governed by a "box rule," meaning it has strict limits on (mostly) dimensions. The rule also levels the playing field by limiting exotic materials and equipment. A bow width restriction in the rule means there cannot be a wide, scow-like shape, but some winning boats have bows as wide as possible at the waterline (they look a bit like a longer boat that had its nose chopped off, and are not pretty). These bows are well clear of the water when the boats heel and they really scoot in the right conditions, but when running and plowing into waves the deceleration is stunning to watch.

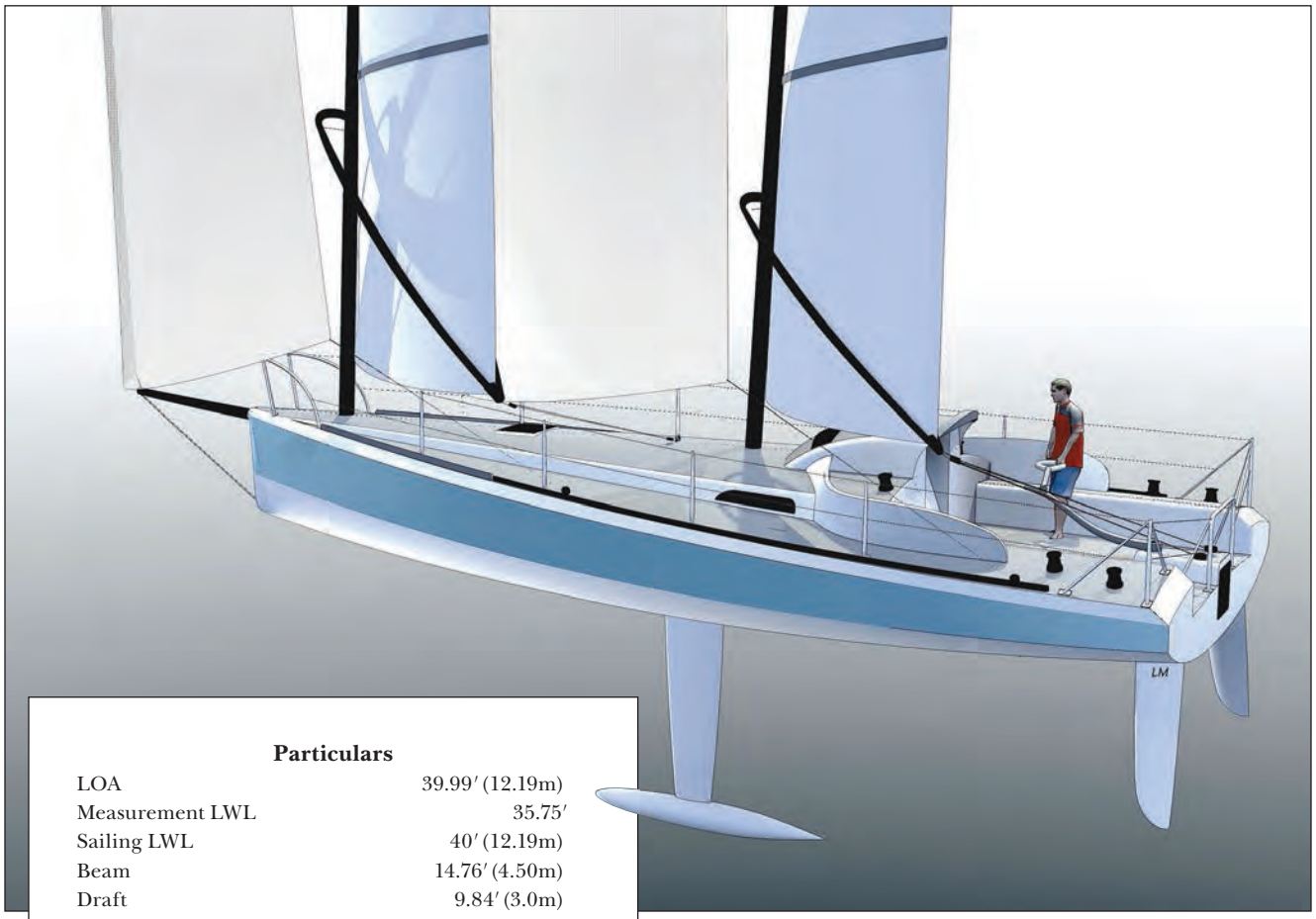
Volume forward is important, it turns out, and Eric Sponberg addresses this point later in this article. With the concept I've drawn here, I try to achieve some of that volume, and slightly convex waterline shape forward, by working in some rocker in the forefoot. The chine shape here is fairly typical of racing monohulls today, with the fair run and the turn of the bilge below the chine a soft curve. The chine terminates quite high above the waterline at the transom and keeps the transom from dragging when the boat is heeled.

Freestanding Cat-ketch Rig

This design, which I'm naming PROTON because it's cool-sounding and is "positively charged," has a freestanding cat-ketch rig, which might be unique in this class. I wrote to the race committee in France to find out if the rig is allowed, but I had not heard back in time for this article. So, I'm taking a bit of a gamble with the rig being legal, but that's what "Sketchbook" is for: trying something new. I'm hoping it *is* allowed, because the benefits of the rig are too many to ignore.

Eric Sponberg is a newly retired naval architect in Florida who had a varied and interesting career. He designed several well-known racing and cruising sailboats, as well as powerboats, but is likely best known as the man who helped Gary Hoyt and Freedom Yachts popularize the carbon-fiber freestanding rigs of that company's boats. I asked Eric about the suitability of the cat-ketch rig for Class 40 racers and came away convinced that this is the way to go.

Steering is via dual rudders operated by a single tiller working through an Ackermann arm linkage.



Particulars

LOA	39.99′ (12.19m)
Measurement LWL	35.75′
Sailing LWL	40′ (12.19m)
Beam	14.76′ (4.50m)
Draft	9.84′ (3.0m)
Mast height	62.34′ (19m)
Minimum lightship displacement	9,920 lbs (4,500 kg)
Estimated loaded displacement (without water ballast)	11,420 lbs (5180 kg)
Water ballast 1,695 lbs per side	(750 liters, or 769 kg)
Fixed ballast	3,968 lbs (1,800 kg)
Sail area, upwind	1,238 sq ft (115 m^2)
Sail area, with spinnakers	2,852 sq ft (265 m^2)
D/L ratio (sailing, no water ballast)	80
SA/D ratio	39

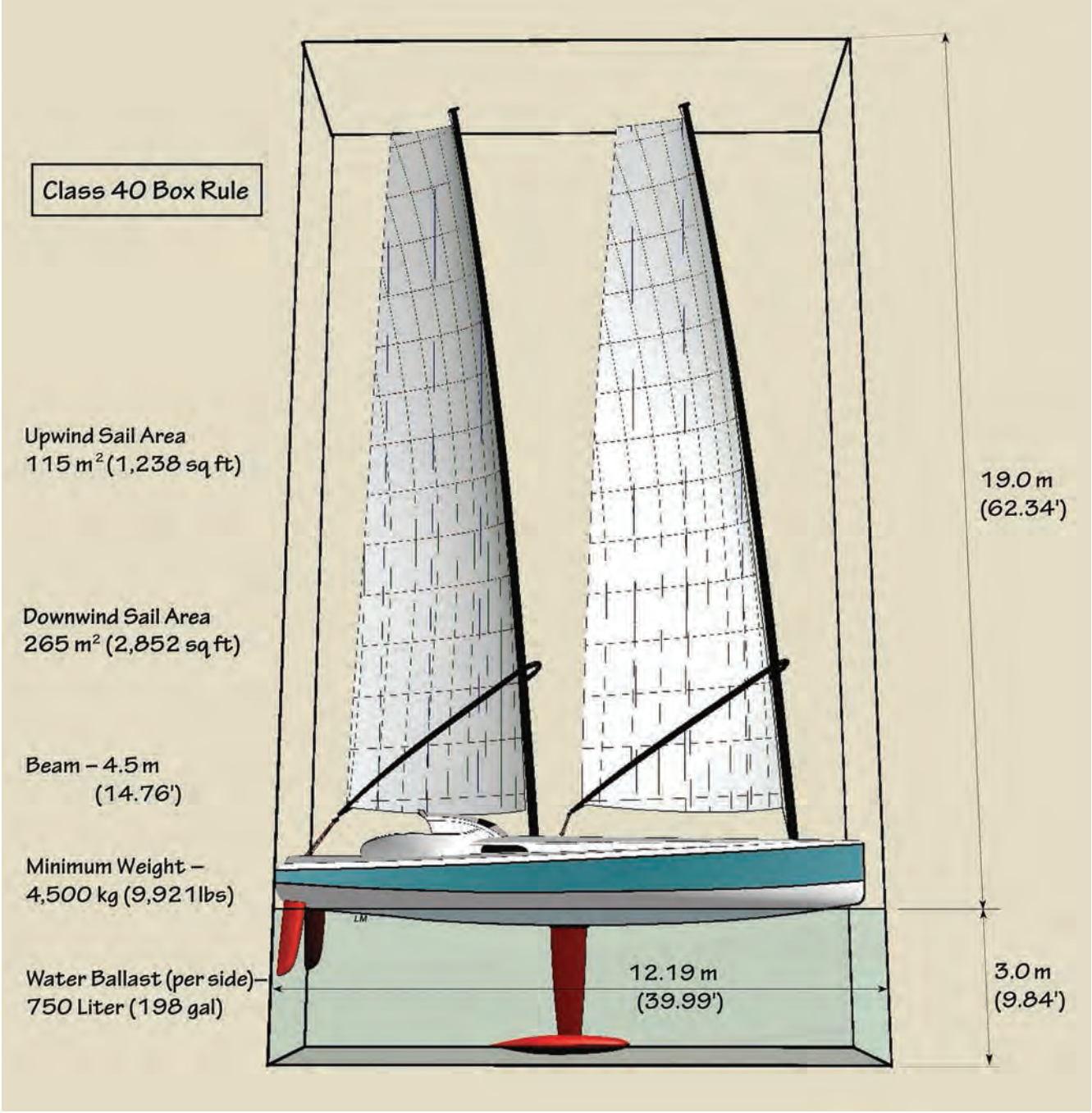
The racing strategy for Class 40 boats involves running downwind, and PROTON's freestanding cat-ketch rig, using carbon-fiber masts and wishbone booms, is designed to make the most of it, including stable wing-on-wing sailing.

In a nutshell, Eric has shown that compared with other rigs this one is easier to sail, more forgiving, and more powerful on most points of sail—especially off the wind. It is ultimately faster than a sloop rig. All the "Open" classes of racing monohulls (from 21.3′ to 60′) are developing hulls meant for reaching and running in short-handed ocean races. He pointed out that the type of hull that has evolved, plus the "usual" rig, a sloop with stays and shrouds that is best at windward work, are almost working at cross purposes.

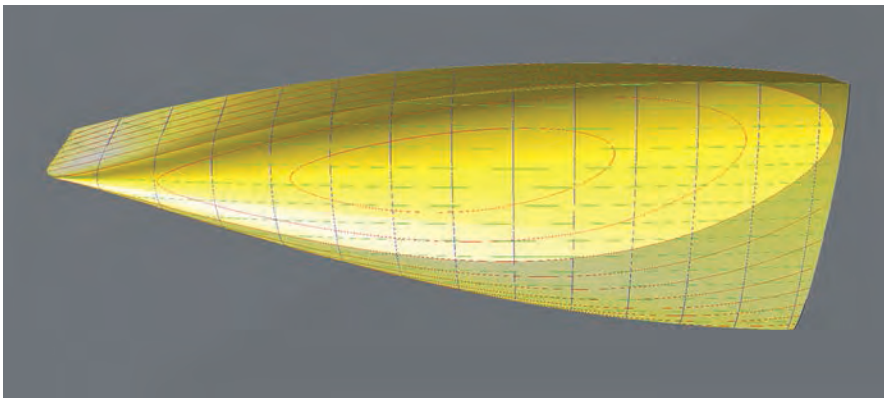
"Even with non-rotating masts (a class requirement)," Eric said, "a freestanding cat-ketch rig allows a boat to be sailed wing-on-wing downwind, which makes the boat so much more stable. This can be a tremendous tactical advantage on an ocean race. These 40-footers are skimming dishes and are not meant to be sailed on the wind. They are terrible to windward, so the winning tactic is to sail far off the wind, and as fast as possible."

Eric further notes that "a stayed rig requires so much attention all the time, and if any one of the many fittings holding it up were to fail, it could be catastrophic." A freestanding rig, he says, has two things supporting it: the heel and the deck partners. "If you design a freestanding rig correctly, the mast bends in gusts instead of immediately transferring that energy into heeling the boat and slowing it down." He likens the bend to "a bird loading up its wings to provide thrust in a flap," and notes that "you can feel the boat surge as it releases this energy." The trick to designing these rigs is to achieve the proper bending characteristics. "There are very few people who do this correctly today."

And then there's the boat's shape. A correctly shaped boat, Eric says, can handle the weight of the mainmast right up in the bow. As the boat heels, the center of flotation—the center of the area of the waterline's "footprint"—should move forward. A bow that's too fine will dive as the boat heels. That's why this rig requires good buoyancy forward.



***Above*—The PROTON design fits the "inside the box" measurements of the Class 40 rule, which in addition to limiting specific dimensions also curtails the use of exotic—and therefore expensive—construction materials. *Right*—When heeled, PROTON's center of flotation shifts forward, and its waterline aft terminates just below the transom, avoiding drag. The hull, when heeled, has minimal wetted surface.**



Square-headed sails allow PROTON to take maximum advantage of the Class 40 "box rule," and asymmetrical spinnakers on both masts more than double the sail area for downwind work.

Freestanding rigs are often accompanied by wishbone booms, which, Eric notes, are "excellent for maintaining sail shape on all points of sail. And they have an additional benefit: a net under the boom will catch the sail as it drops."

In boats measuring 40′ LOA and greater, Eric has found freestanding rigs to be less expensive than conventional stayed ones.

Layout

To lighten the weight and lower costs, I straightened lines as much as possible in the deckhouse and cockpit. The flowing coaming and cabin entrance might get replaced with a simpler setup that provides more protection for the crew while sailing, as crew comfort is so important in these races. The winches on each side of the companionway are for the halyard and other controls of each mast, and the two winches aft are for the main and mizzen staysails and spinnaker sheets. A single tiller is linked to the two fixed rudders through an Ackermann arm setup, to ensure that the rudders follow the proper arcs in turns (as the "outside" rudder has to turn in a larger arc than the "inside" one). Transom-hung rudders would make more sense for fixing damage after a strike with a floating object.

PROTON's accommodation is brutally spare, with two berths end-to-end aft on each side, a tiny galley to port forward of the berths, storage to starboard, a navigation station forward of the mizzen, then a toilet forward of this in another bay. Sail storage is also there and in the bay forward of this.

Construction

Carbon and aramid fibers are banned in hull construction under the Class 40 Rule, so wooden construction is a reasonable option and would include the following:

- Cedar-strip hull planking 1⅛″ (28mm) thick with conventional epoxy and fiberglass sheathing outside.
- Six ¾″ (19mm) mahogany bulkheads and ring frames, plus 1¼″ (32mm) balsa and fiberglass collision and lazarette bulkheads.
- 2″ (51mm) square laminated Douglas-fir frames between ring frames.
- Decks supported by ¾″ × 1½″ (19 × 38mm) spruce stringers let into the bulkheads and frames.
- Balsa-cored fiberglass construction for furniture panels and all low-load and wear decks all other decks being of plywood and fiberglass.
- Keelson, chines, clamps, carlins, hull stringers, maststeps, and extra hull stiffening of Douglas-fir.
- A keel blade built of "lifts" of steel welded together, with the bulb poured around it, then faired with foam and fiberglass.
- Rudders of stainless-steel stocks and tabs, with foam and fiberglass fairing.
- Masts, booms, and bowsprit are carbon-fiber laid up with epoxy.

The water ballast tanks are triangular along the chines, to maximize leverage when heeled, and their construction would be balsa and fiberglass. They would be filled and emptied with water scoops in the bottom of the hull, as well as with an electric transfer pump.

This boat would be an all-electric one, with solar panels and a hydrogenerator for battery charging. An equivalent to the 20-kW diesel system specified in the rule would be replaced by an electric-drive motor and a large battery bank.

Conclusion

I think a homebuilt Class 40 is totally doable, Gerry, and could even be competitive if you were able to use a freestanding cat-ketch rig. It would be easier to sail and should operate at a higher level more consistently than a sloop rig.

Laurie McGowan is a boat designer in Nova Scotia with a diverse on- and below-water work history; he specializes in energy-efficient commercial and pleasure boats. More of his work may be found at www.mcgowanmarinedesign.com.

Do you have a boat concept you'd like to see Laurie McGowan develop on these pages? If so, send it to Sketchbook, WoodenBoat Publications, P.O. Box 78, Brooklin, ME 04616, or email it to sketchbook@woodenboat.com. Your letter should be no longer than 500 words.

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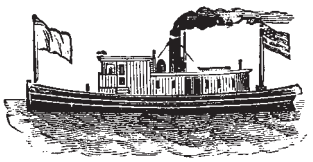

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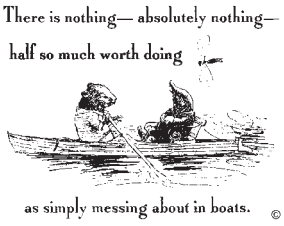

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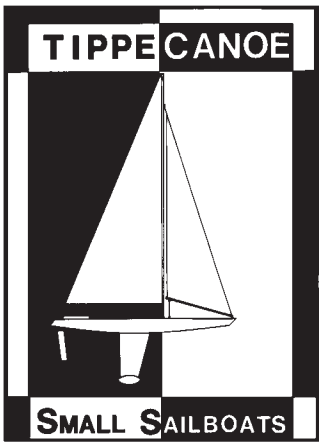

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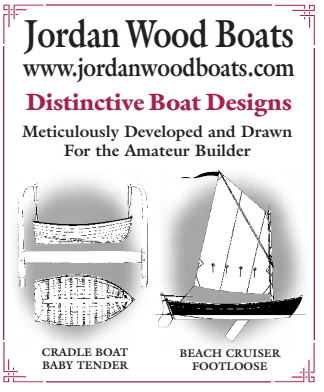

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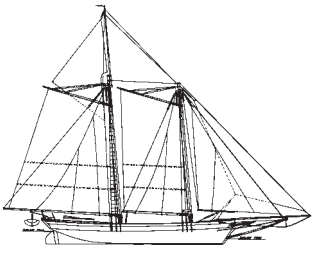

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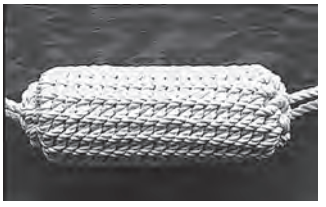

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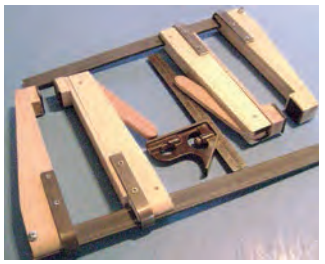

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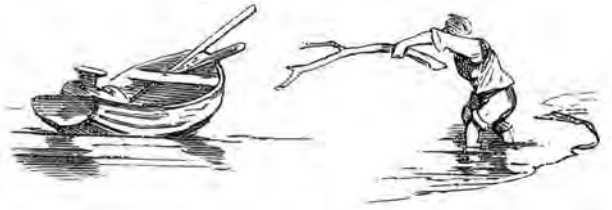

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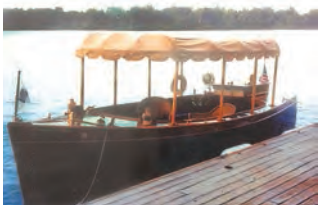

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Boats For Sale
continued

1927 27′ FAY & BOWEN LONG Deck Launch. Approximately 875 boats built by Fay & Bowen from 1900 to 1929; this is hull #841. We believe only five of the all mahogany (bright) 27′ long decks were built. Without question, this is the finest example of this model in existence. She is an absolute heart stopper! "Keego" is a multi-best-of-show award winner, including the 2008 "Best of the River" award at the annual Clayton Antique and Classic Boat Show. Asking $119,000. E-mail stphn56@aol.com, 908–256–5139. New York, NY.

GARDEN EEL CANOE YAWL—"SKYE" is probably the finest example of a William Garden-designed Eel canoe yawl in existence; professionally restored this year. New sails, 2.3-hp Honda, fitted trailer. One of only two flush-deck Eels from Schooner Creek Boat Works (1982). SKYE has wonderful sailing and camp-cruising abilities, and is much admired wherever she appears. $17,500. Email Norseboater22@gmail.com for photos and details, or call 360–316–1557. Port Townsend, WA.

1961, 36′ CHRIS-CRAFT SEA SKIFF. Two 225-hp freshwater-cooled engines, 2.5:1 transmission, hydraulic steering, 6.5-kW Onan generator. $6,000. 781–646–2795, hydra5@verizon.net. Boston, MA.

21′, 1963 LYMAN, EXCELLENT shape. Caulkins trailer. Fresh V-8. $9,800. 206–718–0253, Seattle, WA.

17′ THISTLE-CLASS SAILBOAT built from a D&M kit in the 1960s. Serviceable, but needs some repair, including a tree-punctured transom. Applying woodworking skill is required. I am not interested in money. Just want a caring home for a woodie. This is a sentimental transaction. 203–457–9070, nils.dailey@gmail.com. Located Guilford, CT.

CLASSIC 1961, 32′ CHRIS CRAFT Sea Skiff. Engines rebuilt. Set up to live aboard. New refrigeration, AC, water system, and extra storage. Trailer included. k7pq9343@att.net. Trades considered. $34,000. Lying Reno, NV.

THE WEST POINT SKIFF—Three models: 16′, 18′, and 20′. See our website, www.westpointskiff.com, for more info. 207–389–2468.

39′ PHIL RHODES DESIGN. "Cygnet V" built of longleaf pine on oak frames at St. John, NB, 1948. Yanmar diesel. Extensive refit and upgrades in past 10 years. New laid teak decks. Recent survey. $25,000. petermourer@comcast.net, 206–325–6132. Seattle, WA.

EXQUISITE, IMPECCABLY restored 1911 powerboat. Numerous awards. Rich documented history. Loved by all. Strong and seaworthy cruiser. $35,000 US funds. Optional delivery and orientation. Skype or Facetime viewings on request. David Campbell 604–992–5590, dcampbell@boatingfreedom.com.

2010, 16′ LOWELL SAILBOAT. Includes trailer. Custom made by Lowell's Boat Shop, Amesbury, MA. Comes with Shaw and Tenney oars. Can deliver up to 1,000 miles. $6,500. 210–286–0321, joed@swecs.com. Located near San Antonio, TX.

"ZEPHYR" WAS BUILT AT GANNON & Benjamin in 2005. She is a custom-designed centerboard sharpie set up for comfortable sailing with small groups of kids. Perfect boat for family sailing in protected waters. A classic, one of a kind! $9,500 or best offer. Contact John Rowse, 617–595–8557. john@communityboatbuilding.org. Boston, MA.

26′ SEABIRD YAWL 1987—Built and maintained by Hadden Boat Co. Yanmar diesel, new decks 2012. Featured in *WoodenBoat's Small Boats 2012*. Also see www.haddenboat.com. $35,000 negotiable. 207–371–2662.

WHITEHALL 15. IN EXCELLENT condition; two rowing places, Shaw and Tenney oars. Built at Eastport School in Maine, in 1990s. Trailer included. $5,500. 506–653–1327. New Brunswick, Canada.

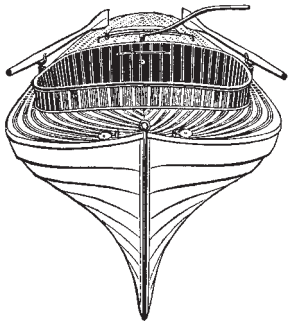
1925 TIMBER POINT #9, 23′. Maintained diligently at Southard's. Class subject of Bode's book. Time for this one to pass, perhaps to another caring family. $15,000. lethin@reservoir.com. Great South Bay, NY.

WINER MALONE ABACO DINGHY. Built in 1995 in Hopetown, Bahamas. Fully rigged with trailer. Excellent condition. kurtj.adams@gmail.com. $6,000. Western MA.

CATSPAW DINGHY FOR SAIL and oar. Joel White design built by owner in 2008. Traditional carvel-planked cedar on oak frames. Sprit sail rig. Trailer included. $5,500. mpj513@hotmail.com, 443–910–4410. Bel Air, MD.

1969, 26′ SAKONNET/MACKENZIE design. True bass boat, shallow waterline, clinker topsides. Keel cutaway, forward and aft controls. Reverse laps on the bottom, 6-cylinder Isuzu diesel. Full electronics, custom-built trailer. Ready for the water, must see! $19,900 or best offer. Amaxxinc office@gmail.com.

1924 HERRESHOFF 12½. Major rebuild in 2012 including new sails and mooring cover. $25,000. Contact Frank Duncan, 339–225–0839.



ADIRONDACK GUIDE BOAT for sale. Traditionally built, 16′, 38″ beam. Mint condition, varnished. $16,000. Please email or call for information and pictures. 518–593–0746. rectorj@charter.net. Plattsburg, NY.

39′ CONCORDIA YAWL, #48 LARA, 1957. Fully restored and upgraded by Traditional Boat LLC, 2014/2015. Clean survey. $160,000. 207–322–0157, john@mainetraditionalboat.com.

ONE-OF-A-KIND—Thomas Gillmer design, "Blue Moon," "Tansy Lee." The builder of the Freehand Steering System, Mike Anderson, is offering a cutter-rig wooden sailboat. 22′10″LOD, 31′LOA. 9′beam, 4′draft. Mahogany on oak, teak house and teak/ash interior, launched 1987. Carries a 6′8″ Montgomery pram dingy/lifeboat, outfitted for survival, with sailing rig and canopy. Outboard motor, 8-hp. Carries 60 gallons water and 10 gallons fuel. Water system gravity feed. Sail inventory: main, staysail, jib, light air drifter. www.andersonboatworks.com. $36,500. 949–246–8116. Newport Beach, CA.

36′6″ L. FRANCIS HERRESHOFF ketch DEVA. Only one of her design ever built, 1985. See feature in WB No. 157. Extensive work performed at D.N. Hylan & Assoc. in 2014; new sails, etc. See listing at www.dhylanboats.com/brokerage/deva-for-sale. Gorgeous one-of-a-kind. $58,000 firm. 207–359–9807. Brooklin, ME.

ROYAL LOWELL 30 UNDER construction at Traditional Boat. Cedar on oak. Bronze. Bright mahogany interior. Looking for an owner to have us complete her at $42/hr. Please see her at www.mainetraditionalboat.com. $150,000 at current stage of completion. 207–322–0157.

HAWKSBILL 1965 JOHN ALDEN Motorsailor. Huge 12-month, New England restoration. Extra large cockpit. Perfect fishing; diving; great all-round family boat. Caterpillar 3306. 1,000-gallon fuel. Cruises 9 knots; 3,500 miles of range. 400-gallon water tanks. 30-gph water maker. New three ton AC. New electronics. Plus so much more. Length at waterline 57′, LOA 64′, beam 15′6″, draft 5′. $375,000. Call Jack 305–407–6882, homefromhome4u@gmail.com.

1956 ROYAL CRUISER 32′.SLOOP rig, full keel, mahogany over oak, made in Sweden. New rigging, wiring, Dynel decks. two-cyl, 20-hp Yanmar, low hours. Bristol brightwork, full winter cover. Asking $27,000. Call/text 443–735–1102. Crisfield, MD.

1933 GAFF CUTTER, TEAK ON OAK, by Capt. O.M. Watts. Massive, well sorted out, owned 25 years. Picture gallery on sandemanyachtcompany.co.uk, page 10, "Makora." 011–44–1202–330–007 and 001–818–853–7101. $148,000. North Hollywood, CA.

1979, 12′6″LOA BLACKHALL RIVER Skiff by John D. Little, Washington, ME. Classic 19th-century design, copper-fastened cedar over oak frames, mahogany trim. Galvanized steel trailer, recent new lights, tires and wheel bearings. $4,700. Contact: 203–255–8058.

1959/2000, 26′GEHRLEINS "EDELWEISS" Bass Boat. Pristine condition. Complete rebuild. New stem, keel, transom and cold-molded bottom. New electrical, plumbing, and mechanical systems. New fuel tanks and Yanmar turbo diesel. New custom mooring cover. Rebuild history and survey available. $69,000. 201–410–3480 or slanzner@gmail.com. Branford, CT.

1953 THISTLE HULL #701—Built by Douglas and McCloud. Restored to like new in 2015. New rigging, new Harken hardware, new flotation, and new trailer. For more photos, call 406–471–2293 or email alex.b@montanawoodenboatfoundation.org. Asking $7,500. Located in Lakeside, MT.

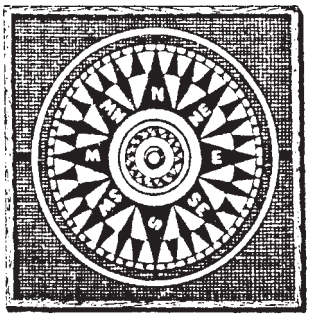
Boats For Free

1957 37′ ALDEN CUTTER 923A. Built by Le'Compte, all mahogany. 57′keel-stepped spruce mast. Double spreaders, completely stripped, re-glued with G-flex and refinished with Waterlox last year. 410–236–0299, EFahrmeier@yahoo.com.

21′ CROSBY MALLARD SLOOP. Built in 1951 by Nobel Prize-winning scientist Ray Davis. Restored in 1985. Needs some work. 8-hp Palmer; last run in 2005. Includes trailer, mast, sails, etc. 631–878–8847, email davis maple@gmail.com.

1901 FRIENDSHIP SLOOP. Charles Morse sloop Voyager. Sail #1 in the FS Society. Needs total rebuild. E-mail: stxfurnco@gmail.com; 207–273–4123; text 340–513–3280. Still standing in Warren, ME.

1956, CHRIS-CRAFT 27′ BULLNOSE, small cruiser project. Reframed and ready to finish. No trailer or engines included. 850–417–5582. NW Florida.



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- ♦ Boats advertised for sale must have wooden hulls.
- ♦ One boat per ad. Limit: One photo per ad.
- ♦ "BOATS FOR FREE" ads are FREE!
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TEXT: (20 word minimum or $55.00) Suggested Category _____

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25 _____	26 _____	27 _____	28 _____
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33 _____	34 _____	35 _____	36 _____
37 _____	38 _____	39 _____	40 _____
41 _____	42 _____	. . . . Attach sheet for additional words	

WORD COUNT _____ × $2.75 = $_____ + Photo ($75) = $_____ = $_____ **TOTAL**

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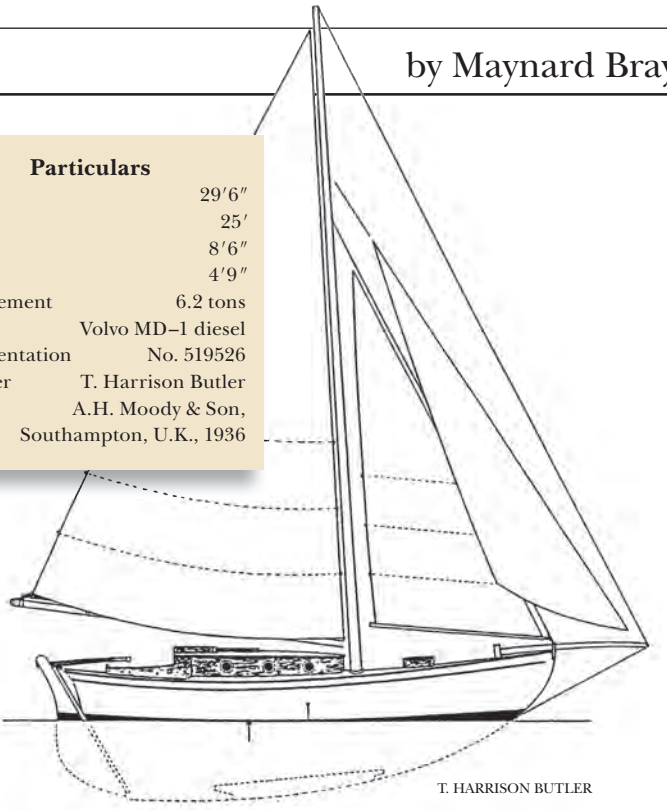
MISCELLANEOUS

by Maynard Bray

ZINGARA

A handsome teak cruising sloop

Particulars	
LOA	29′6″
LWL	25′
Beam	8′6″
Draft	4′9″
Displacement	6.2 tons
Power	Volvo MD–1 diesel
Documentation	No. 519526
Designer	T. Harrison Butler
Builder	A.H. Moody & Son, Southampton, U.K., 1936



T. HARRISON BUTLER

Designer Bill Garden called them "dear little boats"—and he knew what he was talking about, because a lot of sailboats similar in concept to ZINGARA came off Bill's drafting board. I'm talking here about compact cruisers with friendly features: nice to look at, easy to maintain; boats that will carry you through rough going in safety and comfort. ZINGARA's designer, T. Harrison Butler, specialized in "dear little boats" like this, and although he died 70-odd years ago, well over a hundred of his creations still survive.

Butler has a dedicated following and there's even a Harrison Butler Association based in England, where he lived. The association's website (www.harrisonbutlerassociation.com) is not to be missed, as it tracks all known Butler designs, their whereabouts (most are in Europe), and their current status. ZINGARA is included, but the information is a little out of date.

Although eye doctoring was Dr. Butler's profession, his passion was designing small cruising boats—and not simply dashing them off one after another, but carefully considering each one and subjecting its hull shape to his so-called "metacentric shelf theory" to achieve a balanced helm under a range of heeling angles and points of sail. He produced famously sweet-handling boats in an age of heavy weather helm.

In his book *Cruising Yachts: Design and Performance*, Dr. Butler laid out in no uncertain terms the criteria for what he considered good cruising boats. Although there are a few exceptions such as his double-enders, most of his boats look like ZINGARA, with short overhangs, an outboard rudder, full keel, narrow transom, and an interior in which you can stand up under the trunk cabin and sit upright under the deck. The book also covers the process of designing a boat—with chapters on drafting, calculations, ballasting, sails and rigging, interior layout, and, of course, balance. Even if you decide ZINGARA isn't for you, Butler's book is well worth a read.

ZINGARA went to her first owner in Canada, then migrated to the United States and has been here ever since—a rare bird in this country. This teak-planked, teak-decked, teak-trimmed, and copper-riveted little cruiser still has loads of potential despite having been ashore for some time. Teak is great stuff and so is copper; both are extremely durable no matter what the environment. The owner's idea back in 1990 was to replace broken frames amidships, where he removed the interior in this part of the boat for access. But the job stalled, other projects got in the way, and the boat (although covered and protected from the weather) sat idle for the next 26 years.

She's a project boat for sure, and the first job is getting her off Casco Bay's Great Diamond Island, near Portland, Maine. A barge and hydraulic trailer are called for, but the owner says he'll help with the arrangements. For more information and to see ZINGARA, contact Roger Robinson, shoreshot@outlook.com, 207–332–4162.

ROGER ROBINSON (BOTH)

Built using long-lasting teak and copper, ZINGARA's hull is well worth fixing. She is a fine-looking stable sloop that will take you wherever you want to go.

Maynard Bray is WoodenBoat*'s technical editor.*

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A special thank-you to the owners of *Moonmaiden II*. Beautiful paint job.