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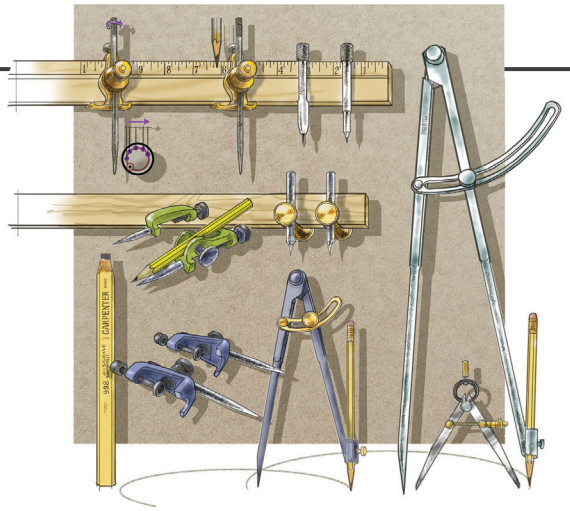

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Cover: ISOBEL, a 26′6″ electric-powered runabout designed by Stephens Waring Yacht Design and built by Belmont (Maine) Boatworks, makes her initial sea trials on Lake George, Maine, in October 2025.
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Photograph by Alison Langley

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EDITOR'S PAGE

Do You Really Want to Fix It?

In his article beginning on page 34 of this issue, contributing editor Greg Rössel offers a variety of approaches to repairing wooden boats that have been out of service for extended periods of time. Greg's advice is meant not so much as an exhaustive treatment as it is an inspiration to try resourceful and unconventional processes, within the bounds of good practice.

Around the time Greg was completing his article, Todd Schwede wrote to us from San Diego, California, with an idea for an article. He had been central to the rehabilitation of the John Alden–designed schooner BAGHEERA there in the early 1980s and had written a piece that was part reminiscence, part paean to the schooner, and part instructional article. The 72′ BAGHEERA (see page 50) was built by Rice Brothers Shipyard in East Boothbay, Maine, in 1924; she was severely run down when Todd and his associates first encountered her more than 40 years ago. Her condition, as described, recalled an admonition in Greg's article: "Anything can be fixed. The question is, do you really want to fix it? How much time do you have? How much money? When do you want to get it in the water?" Those central questions, in BAGHEERA's case, had clear answers: The owner had a funding source, a deep motivation, and a completion deadline. And the yacht had a purpose—chartering—envisioned for after the restoration.

As all of this was coming together, our own editorial assistant, Jasmine Thomas, was wrapping up phase one of the rehabilitation of an exquisitely built Gulfstream 30 sloop called ADVENTURESS. This boat was designed by Sparkman & Stephens and built in 1959 by Norman Hodgdon, also of East Boothbay, Maine. She'd been out of the water for a few decades and needed serious attention to float again. This project recalled another of Greg's admonitions: "Order your priorities by breaking the project into three lists: 1) Must Do Now; 2) Work on Next Winter, and 3) Get to it Down the Road." As Jasmine notes in her article beginning on page 48, she spent many a cold evening in a drafty boat shed last winter tending to list No. 1: Must Do Now. The process of rehabilitating the boat, she recalls, happened "deep in the bilges. It's hard to distinguish seam compound from bruises gained from countless painful hours replacing fuel hoses." Sailing the boat, however, "is worth every bit of blood, sweat, tears, and frustration." You can view the results in the photographs in Jasmine's article, which are drawn from a new video on the project that was recently posted to our Mastering Skills web site. (www.skills.woodenboat.com).

BAGHEERA, the schooner, came back to her home state of Maine from Southern California more than two decades ago, to become the flagship of a charter business in Portland. She continues to operate there, under careful and consistent care, and has carried thousands of passengers who might otherwise never have experienced such a rare yacht. And as I write this, ADVENTURESS has recently been tucked back into her shed, where Jasmine will begin addressing List No. 2: Work on Next Winter. As with BAGHEERA, the results of this noble effort are likely to bring the joy of sailing a bespoke classic to generations to come.



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DOYLE

Shellac for Bungs?

Dear Dr. Jagels,
I read your piece in the November/December issue of *WoodenBoat* (No. 307) with interest, and I am writing now with a comment and a query:

You state that you "have also seen historical references to using shellac as a glue to hold wooden plugs over countersunk screws in ships." Your phrasing suggests that you are not sure that this is correct, but I can assure you that it certainly is. My father was a bit of an amateur boatbuilder, and he often gave me exactly that job. I would pour some shellac in the lid from a wide-mouth jar, dip the bung in the shellac, align the grain of the bung with that of the plank, and drive it home with a single smart whack of the hammer. Then it was on to the next one. A day or two later, I would come back with a chisel and a hammer and trim the bung to make it fair with the plank. The time frame for this would have been 1950, give or take a few years, so it was practiced in relatively recent times.

I grew up in a home with white-oak flooring that was finished with shellac and then waxed. Even with the wax, it was somewhat susceptible to water stains. As a result of this observation, I would have thought that shellac should not be used in marine applications where appearance was important, but you seem to imply otherwise. Am I missing something?

Kenneth A. Smith
Beverly, Massachusetts

Richard Jagels responds:
Freshly mixed shellac created by dissolving lac in pure alcohol is very water-resistant. But mixed shellac ages and older shellac is less water-resistant. Also, a shellac finish ages and may lose some water resistance (boats were generally refinished annually). Finally, some so-called water stains on a shellac finish are actually caused by another solvent, often alcohol. Even a small concentration of alcohol in water will produce a white mark.

Azorean Whaleboats

Dear Matt,
It was good to see David Platt's article on the Azorean whaleboat revival in the Nov/Dec issue. I'd like to fill one omission, and provide one addition, one correction, and one opinion: 1) the origin of this exceptional cultural phenomenon came from Dan Thorne, a maritime-heritage enthusiast, who had discovered a last abandoned hull in the Azores. He was connected with Lance Lee, who recruited Yvon Le Corre, the brilliant French maritime artist, to document it, and a recent Apprenticeshop graduate, Bruce Halibisky, to assist João Tavares in the building of BELA VISTA; 2) none of this would have happened without the interest and generosity of Dan Thorne whose support enabled the project and the subsequent construction of two more boats in New Bedford; 3) the book, with essays by Lance and Bruce, with reproductions of Yvon's exquisite watercolors, was published in 1999 by Leete's Island Books, Sedgwick, Maine, not Mystic Seaport Museum; and 4) as Lance has written

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in his recent *Apprenticing: A Manifesto*: "The arts and craftsmanship are of high cultural value for a single reason. They inspire. Such inspiration is not an accident; it is the result or yield of the spiritual qualities in the artist or craftsperson. That spirit is comprised of qualities wrought by the art, the skill, the demands of materials and process. Art takes on an inspiring quality from the artist. Equally true is that individuals, artists, are imbued with such qualities, such spirit, by the practice of their art. This viral, but elusive fund—the human—must be sustained."

The inaugural sailors of the newly built BELA VISTA were veterans of early 20th century coastwise whaling in such boats; the hundreds of young Azoreans who this summer crewed the many boats illustrated in your article are vital extensions of that history and that spirit, quietly enabled by the power of authenticity and tradition. Maritime history is so much more than a catalog of one-offs, but rather a compendium of designers, builders, sailors, and participants in a vast community of those engaged with and by the sea.

Peter Neill
Sedgwick, Maine

Alden Schooners in the Fastnet Race

Dear Editor,

The *WoodenBoat* article about Ben Harris and Co. building an Alden Malabar IV notes that in 1927 TALLY HO won the Fastnet race on time against the Alden schooner LA GOLETA, a Malabar VIII that finished first but only by 45 minutes. What is not noted is that there were two Alden schooners in the stormy 1927 race among the 15 starters, and only TALLY HO and LA GOLETA finished.

There is another very interesting correlation between the 1927 entry and Ben Harris's effort. I quote from LA GOLETA crewman Alf Loomis's description of the race: "LA GOLETA had been built from an Alden design for an American residing in Chester, England, by a local shipbuilder who was unacquainted with yacht practices. What with foul weather on the passage down from Bangor, North Wales, she had arrived late at Cowes, with no time available for breaking in the racing crew—only one man of whom, besides (owner) Peverley, saw her mainsail hoisted until a few minutes before the race. Her decks leaked, her rigging had not been fully stretched, and she was unready."

LA GOLETA may have been unready, but she finished the race. I hope Ben gets her finished and does the race. Tally Ho!

Thad Danielson
Cummington, Massachusetts

Misplaced Credit

On page 58 of WB No. 307, the image of Roger C. Taylor steering the tugboat C.L. CHURCHILL, with former Lake Champlain Maritime Museum director Art Cohn standing by, was misattributed. Taylor's wife, Kathleen Carney, took that photo.

—Eds.







COURTESY OF THE MUSEUM OF THE VIKING AGE (BOTH)

***Above*—On October 29, 2025, the 76′ Gokstad ship, built in the year 890 and excavated in 1880, was moved into a new wing of the Museum of the Viking Age. *Inset*—The precision of the move, which required extreme care to protect delicate wood, stood in contrast to the move to a museum purposely constructed in 1926.**

A once-a-century moving project

by Tom Jackson

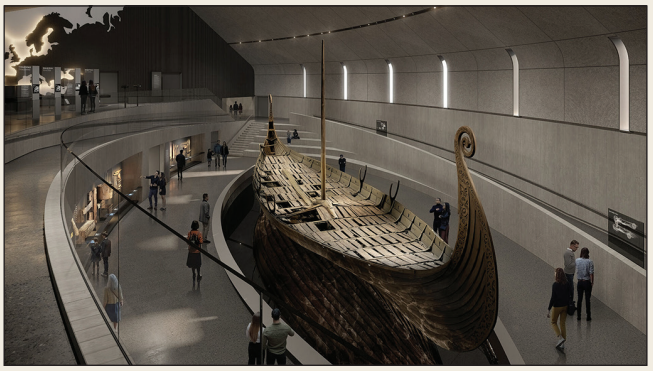
A boat afloat is a remarkably easy thing to move. At equilibrium, it's nearly a weightless thing. One person can easily get a line around a cleat to sway even a large boat into a dock. Ashore, it's a different story, and there has never been a more elegant illustration of this eternal principle than the September and October 2025 **relocation of Viking-age museum ships** in **Oslo, Norway**.

These are the famous ships recovered by archaeologists from burial mounds around the Oslofjord between 1876 and 1904 bearing the names of the properties where they were found. The Gokstad and Oseberg ships are the stars of the museum's exhibits, but the smaller, fragmentary Tune ship is not to be overlooked. Unfortunately, during the century that they have been on exhibit in a purpose-built museum on Bygdøy peninsula in Oslo, they have become increasingly **subject to deterioration**, largely due to humidity fluctuations and floor vibrations. A new wing, nearing completion, was developed by the Danish firm AART Architects for the Museum of the Viking Age, which is the new name for the re-envisioned Viking Ship Museum. The project is a fine-grained study of dramatic changes that have taken place in archaeology, museum science, and building technology in the past 100 years.

The original much-admired building, designed by Arnstein Arneberg of Norway, has a cruciform floor plan, like a cathedral; the new and **very clever addition** connects the apse, the end farthest from the entry, in a sweeping curve to meet one wing of the transept. The addition will have **state-of-the-art climate controls** and less ultraviolet-light exposure, independent of the old building's systems. To keep the ships as motionless as possible, the new wing will have **heavy footings under the ships** that will not only guard against shocks such as earthquake motion but also will be independent of the part of the floor that's subject to vibrations from foot traffic.

The museum has celebrated—exalted, really—these ships as stunning examples of the key to the Scandinavian world's early medieval period. The Gokstad ship of the year 890 is 76′ long and was buried in 900; the Oseberg ship of 820 is 70′8″ long and was buried in 834. Both are spectacular and largely original. Two more different ships would be hard to imagine: Gokstad, excavated in 1880, was a powerful oceangoing ship and a grave for a single robust man; Oseberg, excavated in 1904, was an elaborate ship ornate with awe-inspiring carvings and was richly laden with treasures buried with two women. Grave-robbers ransacked Gokstad but not the Oseberg burial.





COURTESY OF THE MUSEUM OF THE VIKING AGE (BOTH)

***Left*—The intricately carved Oseberg ship was transferred on September 10 after a decade of planning for the technical challenge of safe transit. *Above*—The ships will not only be better protected by building systems but also more visible from a variety of angles, as envisioned in an architect's rendering. The museum will reopen in 2027.**

Both show how critically important and central to the culture boats were—and also how ubiquitous: you don't bury a huge boat after only 10 years of service unless many others remain to serve critical needs. A third, the fragmentary Tune ship, estimated at 61′ long and built in 910, was the first ever recovered from a burial mound, in 1867, but at that time, modern archaeological standards were in their infancy.

The Bygdøy museum was built in 1926 specifically to house the ships, which have not been moved at all since. But the world moved on, with a century's worth of accrued understanding of humidity, stability, and wood preservation but also the emergence of dendrochronology, genetic research, laser measurements, photogrammetry, and a dozen other specialties. The ships—and the astonishing grave goods found with them—were showing serious cracks and degradation. They **had to be moved** to safety **if they were to survive**.

To do so, once the new building's shell was completed an overhead steel rail system for **rolling cranes** was installed. Heavy support structures for the move were built specifically for each ship to keep movement within very narrow and strict parameters during the hoist. In **September**, the **Oseberg ship was rolled 350′ to its new setting** via the apse at a speed of about 10″ per minute; in **October**, **the Gokstad ship followed**, **rolling 308′** via the transept. (See a time-lapse sequence of the move at www.vikingtidsmuseet.no/english/relocating-the-oseberg-ship.)

The Gokstad ship had never been moved in one piece, at least not since it was carried to the grave more than a thousand years ago. The grave robbers damaged its hull amidships, so when the University of Oslo archaeologist Nicolay Nicolaysen was ready to extract the ship in 1880, he set a different kind of plan in motion: "When all the other necessary preparatory measures were taken, the vessel was by winches, with tolerable ease, pulled out of the mound and then divided in two.... The larger or foremost part of it was then further strengthened and put on a large sledge provided with wheels. Eight and later nine horses were then put before it, but we proceeded but very slowly and were obliged very frequently to stop on account of the soft condition of the road...." It took 36 hours to get the forward section to the barge. At the University of Oslo, the ship was brought ashore and stored in a building but wasn't fully reassembled until the museum itself was constructed more than three decades later. Incredibly, some of the planking was sound enough to be steam-bent to restore shapes.

The era of the original Viking ship excavations coincides with a flowering of archaeology. The sensationalistic—albeit highly destructive—work at Troy in 1870 and Mycenae in 1876 by the German businessman-turned-archaeologist Heinrich Schliemann captured public imagination. Just before the Oseberg ship was uncovered, Sir Arthur Evans's great work in excavating the Minoan city of Knossos on the island of Crete was under way, in 1900, following its discovery in 1877. The **ship burials** represent a Norwegian, and **Scandinavian**, version of **classical antiquity**. By the time the Gokstad and Oseberg work was undertaken—partly because landowners were getting curious enough to start digging on their own—archaeology had made a great leap into the modern era. Both ships were carefully documented and were considered exemplary excavations in their day. The new building and the ships' move prove that technology and science are advancing still.

The latest move has been a **decade in planning** and was executed, by all accounts, without flaw by Statsbygg and Imenco in conjunction with the museum staff. But the work is not over. The Tune ship was the last of the three to move, and then the extremely rich and delicate grave goods—especially from the Oseberg ship but including three spectacular small boats found with the Gokstad ship—will need care of their own. Afterward, the **climate** of the new building will be controlled **independent from the original building**, which will serve as an architecturally preserved entry and interpretive area.

The museum is scheduled to **reopen in 2027**. When I visited in 2005, I saw in person the Gokstad faering that started me on a path of boatbuilding and study; a single photograph I saw of that boat when I was very young left an impression that never faded. Artists' renderings of the new exhibits show that the ships—which for a boatbuilder were frustratingly hard to examine closely and from various angles—promise to be much easier to view. (But my advice: if you go, take birdwatching binoculars anyway.) They'll be there long into the future. They'll inspire other young people to study and to start building. And that, too, is not such a light load to carry.

Tom Jackson is WoodenBoat*'s senior editor.*

Youth boatbuilding thrives in Ontario

by Bruce Kemp





BRUCE KEMP (BOTH)

***Left*—Since retiring as a shop teacher in London, Ontario, David Vine, kneeling, has led numerous boatbuilding projects for young students. *Below*—People from 11 area schools joined a fourth annual regatta celebrating the youth boatbuilding program Vine started under the auspices of the Teaching With Small Boats Alliance.**

David Vine was looking toward retiring from his teaching job when the adage "it takes a village to raise a child" was driven home to him by the woodenboat community. The **veteran shop teacher** from the Canadian city of **London**, **Ontario**, is part of a larger international group that has been building boats—a lot of boats—and he can swear to the positive effects of such projects on **even the most jaded teenager**.

"Fifteen or 20 years ago," Vine said, "I heard about a family boatbuilding week at WoodenBoat School in Brooklin, Maine. I threw my kids in the car, and we drove down there and built a boat in a week with six other families." From that, he learned how useful small boats could be as a teaching tool.

"In 2017, when I was still in the classroom, my principal, Bruce Neilsen, came to me and said, 'We've got about 10 First Nations, Metis, and Inuit kids who are having difficulty coming to school because they don't want to leave the reserve, so they don't have a lot of the credits necessary to graduate." Neilsen wanted to guide them into David's fledgling boatbuilding program to inspire them to go to school to complete their credits.

Bruce was the principal at Strathroy District Collegiate Institute, where David was the head of the tech department. Strathroy is a comparatively small town on the southwestern edge of London, one of Canada's largest cities. "At the time, we were looking for **new ways** to deliver programming, particularly around finding **interdisciplinary connections**," he told me. "One day, David came to my office and said he had come across this program out of Virginia, and the idea was that he could combine mathematical skills with tech design and construction in a very deliberate way that I found intriguing."

David by then had already **discovered Joe Youcha**, then the director of the Alexandria (Virginia) Seaport Foundation who had designed the Bevins Skiff, a simple plywood-planked boat 11′8″long, specifically as a teaching tool. Youcha also founded **Teaching With Small Boats Alliance** (TWSBA, www.teachingwithsmallboats.org). "Quite a few folks down south were doing it," David said. After going to Chicago to observe Joe's three-day training session for union carpenters, he followed Joe's suggestions and contacted organizations with experience in boatbuilding programs.

In the United States, program leaders were boatbuilders and carpenters trying to get school-district leaders interested in their approach; David, who was already in education leadership, had the opposite problem: "I was trying to figure out how to become a boatbuilder to create the program."

In **2017**, he went to a **TWSBA biannual conference** in St. Michaels, Maryland, attended by 150 people; he thought of it as a kind of **Woodstock with planes and chisels**. "And it's just three days of sharing. It's just a mind-blowing experience. After I went to the first one of those, everything started to become clear. I thought, 'I can do this back in Canada.'"

David has since attended numerous conferences. "It's an incredible group of people. They want to show you what they're doing. They want to invite you into their environment. It's a really, really cohesive group of people."

As a principal, Neilsen recognized the appeal such a program would have for kids and their possibilities for genuine engagement. At the very least it could be a cool, hands-on activity. "That's what got me into it," he said.

The program's success went way beyond what Bruce or David anticipated. **By that spring**, David had **a boat built** and invited Bruce and other school administrators and staff to join the kids at the launching at a local pond, with David delivering the boat via a trailer towed behind a bicycle (he also taught bicycle repair).

"We thought that was success right there," Bruce said. "Then we did **another one the next year**. Now that David had a boat, he could create building templates. We thought this was something neat that the kids of Strathroy would get to do for a few years. But I **never imagined** the scope that David ended up taking it to. Nor that it would be something **he'd end up spending his retirement doing**."

Bruce helped put David in touch with other elementary and secondary schools. "Now, he's branded it," Bruce said. There's even one of these boats sitting on display in the atrium of the school board's office.

The initial **group of First Nations** students loved the program, **and David** has **reached out** to other indigenous communities. Many students found their boats to be a unique way to reconnect with the shorelines of their communities, and they've been inspired to attend classes and to learn more about carpentry.

The program draws both young men and young women. "I never thought I'd be doing something like building a boat for school," one student piped up during her building class at London's Mother Theresa Catholic Secondary School. "This is a lot of fun, but I wasn't sure I would be able to do it. I've never sawed anything before, and the router scares me a little."

By **early June**, more than **500 students**, parents, and volunteers representing 11 area schools flowed down to **London's Fanshawe Lake** for the program's **fourth annual regatta** to see a dozen highly decorated, student-built boats take part in relaxed activities on the water. In an age when it's hard to get kids away from their phones for even five minutes, the lessons David learned nearly two decades ago at WoodenBoat School, about an idea that has spread across the United States and as far as New Zealand and the United Kingdom are having an impact in Canada.

Bruce Kemp, a writer and photographer living in Merrickville, Ontario, is a regular contributor to WoodenBoat.

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Around the yards

Kurt Hasselbalch, who retired in 2019 as the curator of the Hart Nautical Collections at the MIT Museum in Cambridge, Massachusetts, shows proof positive that maritime historical preservation doesn't wash out of a person's bones: Since retiring, he wrote, "I've been happily teaching myself to become a competent woodworker," with an emphasis on Colonial furniture, but he has also become the **treasurer of a nonprofit organization** devoted to the care of the historic **Boston tugboat LUNA of 1930**.

LUNA, built in Solomons, Maryland, to a design by John G. Alden, was the **first diesel-electric tugboat** in the world built for a commercial company, he noted. She carried diesels by Winton and generators and an electric motor by GE. "Soon after, steam tugboats began giving way to this new advanced marine propulsion technology," Kurt wrote. She was commissioned for Boston Towboat Company, a subsidiary of Mystic Steamship Company and served in Boston Harbor from 1930 to 1971. She is 98′ LOA with a draft of 13′ and a beam of 25′, displacing 315 tons.

Her current caretaker, LUNA Preservation Society, of which Kurt is the treasurer, has owned her since 1992.

In fall **2025**, **Garett Eisele** and his crew from **Atlantic Traditional Boatbuilding of Hope**, **Maine**, **hauled the boat** for an inspection at Fitzgerald Shipyard in Chelsea, Massachusetts. They **recaulked** the plank butts below the waterline and repainted her bottom. Eisele said the 3″-thick oak planking was still in good condition. "The good news is her hull is in reasonably sound condition," Kurt reported. "Years of neglect have created the preservation problems that we need to address in the coming years."

LUNA has been moored in a private shipyard for decades, so a top priority is finding a more public berth. "We expect to have her publicly accessible in Boston Harbor by spring 2026, and we need some helping hands to preserve and maintain her as she deserves. She was **relaunched October 21** after a dry-docking that mainly involved bottom work and fresh bottom paint. Kurt said **patching and painting** "from the top fender to the wheelhouse" **will continue through spring**.

Kurt Hasselbalch, Treasurer, LUNA Preservation Society, 79 Sturges St., Medford, MA 02155; 781–799–1902; hckhlp2016@gmail.com; www.tugboat-luna.org. Atlantic Traditional Boatbuilding, 517 Howe Hill Rd., Hope, ME 04847; 207–706–9283; atlantictraditionalboat@gmail.com.



KURT HASSELBALCH

The tugboat LUNA is the object of a preservation effort in the Boston area, where she served from 1930 to 1971.



GARETT EISELE

Garett Eisele's Hope, Maine–based Atlantic Traditional Boatbuilding is restoring VALENTINE, a 1965 Kettenberg yacht.

Garett Eisele tells us that he also is **restoring the 43′ yacht VALENTINE** designed and built in **1965 by Kettenburg Boat Works** in San Diego, California. "The scope of work includes reframing much of the hull and replacing the sternpost and horn timber," he wrote. "The interior is mostly removed, but we have been able to do the job without removing the deck or much topside planking." As of early November, the reframing had been completed and the backbone reassembly was getting underway. The project is taking place in a leased commercial building in Northport, Maine. Relaunching is expected in spring 2026.

Atlantic Traditional Boatbuilding, 517 Howe Hill Rd., Hope, ME 04847; 207–706–9283; atlantictraditionalboat@gmail.com.

"**JELSE**, the 41′ Norwegian *jacht* that is the **world's oldest operating wooden sailing vessel**, is now nearing the halfway mark in her slow but meticulous restoration at the historic shipyard at Isegran near Fredrikstad, Norway," Bruce Stannard writes from Australia, following up on his article about JELSE and the shipyard in WB No. 260.

"Dendrochronology confirms she was **built in eastern Norway in 1733** (instead of 1766, as believed earlier). Although much of her original Norway pine (*Pinus resinosa*) timber has been replaced, six of her original floor timbers and three frames were still sound enough to be incorporated in the current restoration, which is being carried out by her owner, **shipwright Knut Sørensen** with one assistant. JELSE was built to carry commodities and livestock to the remote farming villages on the shores of the rugged western fjords. In 1861, she underwent a major rebuilding in Ryfylke in western Norway during which a 'midship deck was installed for the first time. The current restoration aims to retain her **as she was in 1861**. An oil painting of her under sail, dated 1898, is informing the accuracy of the restoration work.

"The restoration will, as far as possible, use the same materials as those used in 1861: oak in the keel and stem, bollards, and deckbeams and Norway pine for the sawn frames, hull planking, and deck. She is being fastened with **cast-iron rivets**, as she was originally, although some other fastenings of copper, brass, and bronze are also being used. JELSE will have no auxiliary power; she will **maneuver entirely under sail, with her massive 52′ pole mast carrying a gaff foresail, jibs, and a very large squaresail**. She will carry **paraffin lanterns** and will have no modern materials aboard except for compulsory safety equipment.

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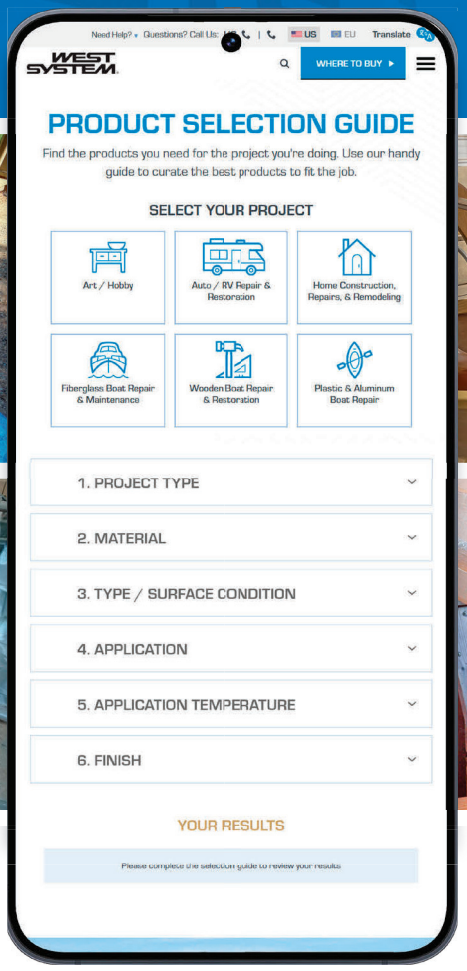





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COURTESY OF KNUT SØRENSEN (BOTH)



***Above*—The careful restoration of JELSE, launched in 1733, is progressing at Isegran, Norway. *Left*—Materials matching the originals are used throughout.**

"Knut plans to establish a charitable foundation to which JELSE will be donated as the centerpiece in demonstrating and relearning the sailhandling skills of the early 18th century. The total restoration budget now stands at 15 million Norwegian kroner (about $1.5 million), with much of the funding being made available through Norway's National Heritage Board and the municipalities of Fredrikstad and Hardanger. JELSE's **relaunching** had been envisioned for 2027; depending on funding, that date **may be closer to 2030**."

■ What started **in 2023** as a **labor-of-love boat restoration** for **Felix Bowers**, a PhD student at the University of **Bristol**, **England**, took on a new life last year when two friends, **Michael Weinman** and **Rhys Jones**, joined his project. All are competitive sailors who met during Cowes Week regattas, and all are now partners in the project and members of the Royal Thames Yacht Club.

"We discovered our **joint passion** for classic boats over **too many whiskies**," Felix writes. "We joined as **full partners** in our ambition to rejuvenate **PENGUIN—an International Dragon–class** racer built at Clare Lallow Boat Builders in Cowes in 1963. As a university student, I crewed for four years of Dragon racing with the same family; later, PENGUIN, which had been years on the hard near Burnham, was given to me. I started the project, and now we're making steady progress at Mark Rolt's Bristol Classic Boat Company. The **objectives** are straightforward: return a sound, class-legal wooden Dragon to **competitive racing condition**. The hull carried a good pedigree and had kept its shape, but the boat required significant renewal to meet current classic-racing expectations.

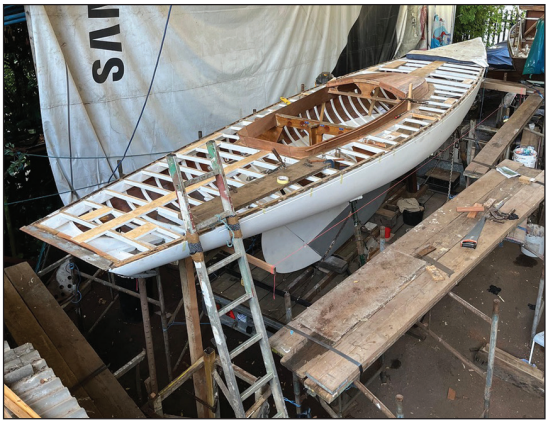
"Her deck planking was near the end of its life, but the deckbeams proved serviceable. The hull exterior had been sheathed, which usually signals terminal decline in wooden yachts; however, we found the opposite to be true for PENGUIN. While the boat was stored on the hard, the sheathing shielded the timber from rain and ultraviolet light degradation. Once the sheathing had been removed, the primary structure proved fair and fundamentally sound, enabling **controlled renewal** instead of a full reconstruction.

"A **new teak deck** is being installed, supplied by Sykes Timber," with the planks vacuum-bagged **over a marine-plywood substrate** for uniform epoxy adhesion. "The deck's torsional stiffness contributes to the hull's structure rather than acting as a cosmetic layer. On the interior, we targeted structure that needed renewal. Laminated ring bulkheads came first. The keelson and backbone were sound, needing only reinforcement, sealing, and refreshed fastenings.

"Below the waterline, the hull has been longboarded and prepared for a hard racing finish. The topsides will receive a two-part finish for durability and predictable maintenance.

"Our systems will follow class limits and modern practices established by Petticrows, an influential International Dragon builder in Portugal. For the rigging, we will have clean, low-friction control runs laid out so a small crew can handle the boat efficiently. The traveler and mainsheet post are being modernized and widened. A new alloy mast will be stepped and equipped with updated vang and backstay controls.

"Rebuilding a wooden Dragon is often not a glamorous task, but it's **immensely satisfying** when done correctly," Felix wrote. "The project has clear goals: retain originality where it matters and update systems where they materially improve performance and longevity. When PENGUIN returns home to The Solent, our desire is to race credibly in an exciting and iconic fleet of modern and classic Dragons, becoming faster and technically sharper each season by tuning rather than re-engineering." A May 2026 relaunching is anticipated.



FELIX BOWERS (BOTH)

***Left*—Three friends who met during sailing races in Cowes, England, are restoring an International Dragon–class yacht in Bristol with a view to making her competitive in classic yacht racing on The Solent. *Right*—For Felix Bowers, not all work is glamorous, but having friends join in has hastened the project; they expect to relaunch in May 2026.**



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■ "In 1973," Nic Compton writes from Devon, England, "Nick Grainger and his girlfriend sailed a 21′ double-ended Shetland boat from Scotland to the Pacific, but when the boat capsized off Tahiti, they had to give up on their madcap adventure, abandoning the boat in American Samoa. Fifty years later, he told the story in an inspirational book, *The Voyage of THE AEGRE* (see WB No. 295). One person who read that book was boatbuilder **Peter Matheson** of **Clydeside Traditional Boatbuilders**, near **Glasgow**, Scotland. So impressed was Peter by Nick's journey that he **decided to build a replica of THE AEGRE**.

"Peter, now in his late 70s, has been building boats for nearly 50 years, including many similar to THE AEGRE, ranging from 16′ fishing boats to a 42′ Murray Peterson schooner. He believes THE AEGRE was inspired by the lines of the Stroma yole, a type of boat native to the island of Stroma off the northwesternmost tip of Scotland. 'There's a story that a Scandinavian fishing boat was washed ashore on the beach of Stroma island and that this wreck inspired the Stroma men to build their boats,' he says. 'They built many of them, and they were the Rolls Royce of fishing boats back then. I believe these boats are the most seaworthy in the world, and THE AEGRE has proved this.'

"Peter doesn't believe in using plans, or even molds, to build a boat. He **builds the boats 'by eye,'** using a string line and level to make sure the boat is symmetrical and a plumb line to make



NIC COMPTON (BOTH)



Peter Matheson is finishing a re-creation of the 21′ yacht THE AEGRE, a Shetland double-ender that famously sailed from Scotland to the South Pacific.



sure the stems are plumb. The rest comes from his nearly 50 years of experience in the trade.

"The new boat—named AMERICAN LADY in honor of Peter's American wife—is built of ¾"-thick larch lapstrake planking (or clinker-built, as we say here.) She has heavy oak floors to support the 16-hp Yanmar diesel engine. In traditional style, most of the hull planking was fitted before the frames were added, allowing the boat to be shaped by the builder as it grows. The pitch-pine deck was splined rather than caulked, and Peter used polysulfide to seal the seams. 'I do not like using modern stuff like that,' he says; 'however, time is going on, and I must cut some corners. The Buddhist monks say do not aim for perfection. Aim for success, and this is what we must do.'

"A team of **volunteers**—including an American taking a gap year from Harvard University and young itinerant boatbuilders from Britain, France, Denmark, Germany, and Russia—**have been helping** to build the boat. She will be rigged in the same fashion as THE AEGRE, with a boomed standing-lug mainsail, jib and (possibly) flying jib set on a bowsprit. A spring 2026 launching is expected."

Clydeside Traditional Boatbuilders, 22 Pearce St., Govan, Glasgow G51 3UT, U.K.; www.clydesideboatbuilders.co.uk.



JAMES ROBINSON TAYLOR

At the 2025 Régates Royales in Cannes, France, the New York 40s CHINOOK (left), MARILEE (center), and ROWDY (right) were in tight formation as they raced together for the first time in perhaps 95 years.

Offcuts

■ The yachting **photographer James Robinson Taylor**, who lives in Italy, writes to inform us of a **rare convergence**: "A great moment in classic yachting occurred at this year's edition of the **Régates Royales** in **Cannes**, **France**, with **three** of the five **surviving New York 40s racing** together **for the first time in almost a century**. Just before the First World War, in need of what we'd call today a performance family cruiser, the New York Yacht Club commissioned a one-design from Nathanael G. Herreshoff, and Herreshoff Manufacturing Co. built an even dozen of them over the winter of 1915–16 and two more in 1926.

"Beautiful, fast, and seakindly, the 40s were a great success. Although their class racing ended in the early 1930s, today four of them have been restored and are actively racing. Two

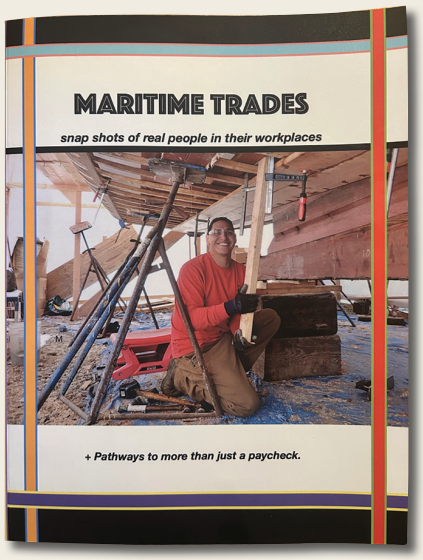


The Schooner Martha Foundation's mission is to provide hands-on sail training for sailors aged 12-18 aboard the historic 1907 schooner *Martha*, emphasizing teamwork, seamanship, and caregiving of the 116-year-old vessel. The all-volunteer-run non-profit organization is seeking donations for the restoration of the original 1907 house and cabintop.

For more information, visit **www.schoonermartha.org/donate** or contact Pete Marshall at 425-260-3509

of them had been in the Mediterranean and two in North America—until **this year**, when **MARILEE** left the U.S. East Coast for the west coast of Italy, where she **joined her sisters ROWDY and CHINOOK**.

"I'd crossed paths with MARILEE and RUGOSA at the 2001 AMERICA's Cup Jubilee in Cowes, England. Perhaps their blistering performance on The Solent was the spark that soon brought ROWDY and CHINOOK back to life here in the Med; they've been intensely racing for 15 years now and have become the boats to beat and benchmarks for the rest of the fleet. For years, I've been **patiently waiting** for the **stars to align** and bring another NY40 to our shores. Finally, this fall in Cannes, MARILEE was on the line with ROWDY and CHINOOK for the **first time** in perhaps **95 years** or so. Photographing the three together during active racing was tricky; halfway through the week, on the tail end of a dying breeze, my sources, who were also awaiting this moment from the far side of the gulf, signaled me that the three were together—the message was literally, 'James get your ass over here!' So like the *papparazzo* I once was, I tore across the gulf at full throttle; the RIB hadn't even stopped when I started shooting. Two minutes after these shots, CHINOOK had fallen out of the framing and the moment was gone."



■ **Ashlyn Brown** of **PT Watercraft** in Port Townsend, Washington, has created a new paperback book, largely photo-driven, that celebrates the numerous and multitalented marine-trade workers in the town. Calling the book a "first result of an evolving project," she incorporates candid **photos of her own** with **short text blocks** for each of about **50 people**. The work is a casual, down-home one, with just first names shown on the one-page summaries of each person's skills and how they got there, with definitions of their jobs. (Full names and companies are listed in the back.) "What I have been deeply moved by is the community created by the many interesting, multiskilled, and generous people who proudly live by an unspoken code of honor and craftsmanship," she writes. The volume, titled *Maritime Trades: snap shots of real people in their workplaces*, seems especially intended to **inspire other 18+ pathseekers**—and one way it does so is by graphically showing just how many of the men and women involved in Port Townsend's marine trades are themselves quite young. Anyone who says there are no young people involved in boatbuilding these days is evidently just looking in the wrong places.

Ashlyn Brown, PT Watercraft, P.O. Box 1875, Port Townsend, WA 98368; www.ptwatercraft.com.



■ **Caulking mallets** never cease to incite wonderment and mystery. David Peterson wrote us with his take on **tracing the C. Drew & Company's legendary mallets**—just as Christopher Sanders had done in 2023 (see WB No. 290). Their **similar tracks of research** reached an **almost identical conclusion**.

"My caulking tools have been passed on to me by retired boat carpenters over a 50-year career. The ones made of a dark wood are superior to others in feel, and the very loud chirp is thought to be distinctive of black mesquite. Drew used that wood for their best mallets but also used live oak, white oak, and a wood called 'redwood,' which may have been a marketing term. After years of use, a mallet gets shorter and lighter, decreasing its punch. To replace one these days is a choice between finding a good vintage one or making one yourself—which I decided to try.

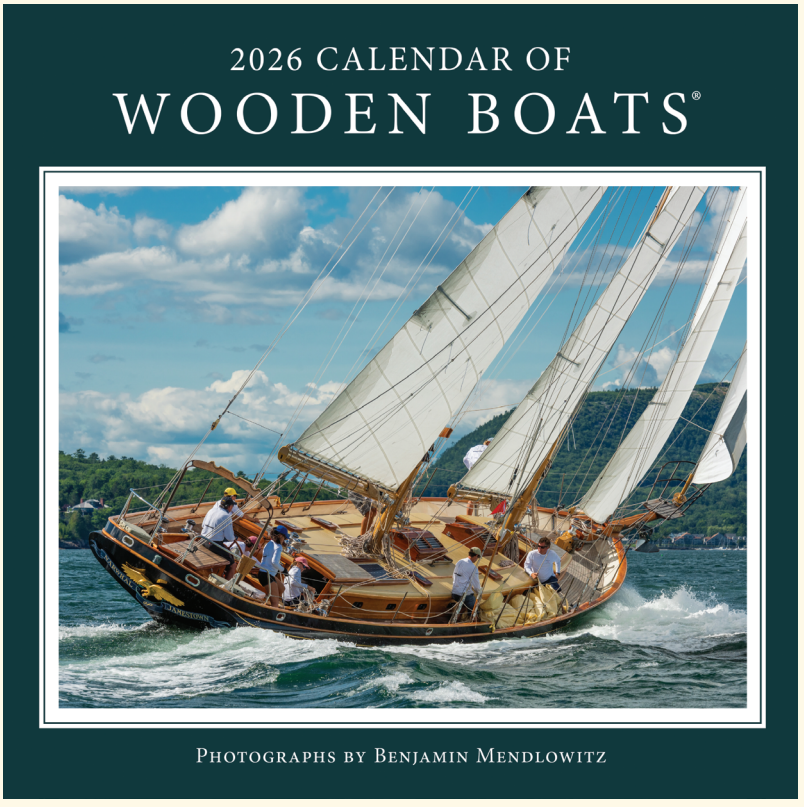
"The rings can be made of high-carbon-steel tubing, but the wood was a different story. I got some **black mesquite** from the U.S. Southwest, but it was much lighter in color and weight than I expected." Just as Sanders had done, he **reached out for scientific help**. "I contacted the Forest Products Laboratory in Madison, Wisconsin," the same lab that Sanders had approached. The lab asked for samples, which Sanders had been loathe to cut from his mallets. But Peterson had mallets he was willing to do send samples from: "It was painful, but I found that the wood was a very dark brown but not as black as I first thought.

"A possible **identification**, ***Swartzia fistuloides***, was made by a specialist, Regis B. Miller, who had written a definitive paper on the genus *Swartzia*. Miller said it was definitely mesquite, which Drew may have used as a marketing name." **Sanders's lab tests** also showed ***Swartzia* as a likely genus**, or possibly *Libidibia*.

"I am content to end my search," Peterson concluded. "The mallets I have will last me until I pass them on. My advice to anyone wanting a mallet is to buy an antique one but be sure to have the dealer scrape the wood surface to find that rich, dark-brown color the best mallets are known for." Meantime, anyone wanting to craft a mallet would be well-advised to **read**—or **re-read**—**Sanders's** detailed **article**.

Across the bar

■ **Rob Pittaway**, 84, August 11, 2025, New London, Connecticut. A native of Cambridge, Massachusetts, Mr. Pittaway's lifelong interest in boats was kindled early in his life during family summer vacations in Maine and Massachusetts. After graduating from Colorado College, he studied naval architecture at the University of Michigan. He worked for a couple of years at the General Dynamics Electric Boat Division in Groton, Connecticut, but then joined the staff at Mystic Seaport Museum, where he worked in the small craft collections under the historian and curator John Gardner. Mr. Pittaway made numerous models and his experience resulted in a monograph, *Building the Half-Model*. (In 1975, he also contributed a pictorial report, "The Antique Boat Show," to WB No. 2.) He was a member of the John Gardner Chapter of the Traditional Small Craft Association, the New London Maritime Society, and the Jibboom Club of the Custom House Maritime Museum, also in New London. Among his designs were Robin, an 18′ sail-and-oars cruising ketch of 1975, and the Stonington pulling boat of 1980.



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7-13

- **Building the Kerisper** with Clint Chase
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14-20

- **Fine Strip Plank Construction** with Nick Schade
- **Introduction to Woodworking** with Jim Macdonald
- **Elements of Sailing** with Annie Nixon
- **Elements of Coastal Kayaking** with Rebecca Daugherty

21-27

- **Fundamentals of Boatbuilding** with Bob Fuller
- **Systems on BELFORD GRAY**
- **Build Your Own Eastport Pram/ Passagemaker Dinghy** with George Krewson
- **Paddle Making** with Eric Schade
- **The Art of Marquetry** with Jim Macdonald
- **Elements of Sailing** with Jane Ahlfeld & Tom Conlogue
- **Craft of Sail onboard NORA** with Kim Walther

28-4

- **Systems on BELFORD GRAY**
- **Build Your Own Stitch-and-Glue Kayak** with Eric Schade
- **Introduction to Woodworking for Women** with Becca Levi
- **Elements of Sailing for Women** with Jane Ahlfeld & Kim Walther
- **Traditional Sailing & Seamanship** with Annie Nixon
- **Craft of Sail onboard NORA** with Andy Nadolny

JULY

5-11

- **Fundamentals of Boatbuilding** with Warren Barker
- **Glued Lapstrake Plywood Construction** with Bruce Mackenzie
- **Build Your Own Skerry Daysailer** with Dillon Majoros
- **Build Your Own Apprentice Tool Chest** with Joel Senger
- **Rigging Small Boats** with Jose Hernandez-Juviel
- **Introduction to Small Boat Racing** with Delaney Brown
- **Craft of Sail onboard NORA for Women** with Kim Walther
- **Open Boat Skills** with Geoff Kerr & Casey Blust

12-18

- **Introduction to Wood Turning** with Bruce Mackenzie
- **Woodstrip Canoe Construction** with Alan Mann & Rose Woodyard
- **Build Your Own Plank Constructed Pond Yacht** with Bruce Richter
- **The Art of the Sailor** with Jose Hernandez-Juviel
- **Elements of Sailing** with Susan LaVoie
- **Craft of Sail onboard ELSKOV** with Andy Nadolny
- **Open Boat Cruising** with Geoff Kerr & Casey Blust

19-25

- **Building the** with Walt Ansel
- **Family Boatbuilding** with Joe Youcha
- **Runabout Repair & Restoration** with Gary Lowell
- **Building Half Models** with Reuben Brown
- **Lettering & Leafing** with Bob Emser
- **Family Waterfront** with Susan LaVoie & Becca Levi
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AUGUST

26-1

- **Noank Sloop** e& Matt Morello
- **Finishing the Naskeag 16** with Dudley Dix
- **Runabout Repair & Restoration** with Gary Lowell
- **Build Your Own Plank Constructed Pond Yacht** with Bruce Richter
- **Creative Writing in Nature for Kids** with Sophia & Grace
- **Advanced Sailing** with Jane Ahlfeld & Gretchen Snyder

2-8

- **Marine Painting & Varnishing** with Gary Lowell
- **Woodcarving** with Reed Hayden
- **Build Your Own Speed Pram** with Clint Chase
- **Elements of Sailing for Women** with Jane Ahlfeld & Gretchen Snyder
- **Traditional Sailing & Seamanship** with Annie Nixon & Jeff Evans

9-15

- **Build Your Own Ship's Wheel** with Bob Fuller
- **Building a McKenzieyak** with Cricket & Glade Zarn
- **Introduction to Woodworking** with Bill Thomas
- **Drawing Coastal Maine** with Kat Logan
- **Build Your Own Northeaster Dory** with Dillon Majoros
- **Concepts of Boat Design** with Clint Chase
- **Elements of Sailing** with Jane Ahlfeld & Carrie Baker
- **The Catboat** with Martin Gardner
- **Open Boat Skills** with Andy Nadolny & Marc LaFrance

16-22

- **Building the Open Chub Dory** with Cricket & Glade Zarn
- **Introduction to Boatbuilding: Traditional Plywood Construction** with Bill Thomas
- **The Maine Coast in Watercolor** with Kat Logan
- **Bronzecasting** with Michael Saari
- **Elements of Sailing** with David Bill & Martin Gardner
- **Open Boat Cruising** with Andy Nadolny & Marc LaFrance

23-29

- **Stitch-and-Glue Construction** with John Harris
- **Wood-and-Canvas Canoe Construction** with Dan Miller
- **Carving Name Boards** with Reed Hayden
- **Building a Ship in a Bottle** with Alex Bellinger
- **Building the 14′ Amesbury Outboard Skiff** with Graham McKay
- **Advanced Sailing** with David Bill & Martin Gardner
- **Craft of Sail onboard ELSKOV** with Hans Vierthaler
- **Open Boat Expedition** with Annie Nixon

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SEPTEMBER

30-5

- **Fundamentals of Boatbuilding II** with Bruce McKenzie
- **Build Your Own Fox Canoe** with Bill Thomas
- **Sparmaking** with John Harris
- **Introduction to Canvaswork** with Ann Brayton
- **Messing About in Boats** with Andy Nadolny & Marc LaFrance
- **The Catboat** with Martin Gardner
- **Elements of Coastal Kayaking II** with Nick Schade

6-12

- **Wood-and-Canvas Canoe Repair** with Dan Miller
- **The Art of Woodcuts** with Gene Shaw
- **Punch Listing Your "Build Your Own" Boat** with John Staub
- **Sailing the Fleet** with WoodenBoat School Staff
- **Craft of Sail onboard ELSKOV fo Women** with Arista Holden

13-19

- **Small Boat Repair** with Joe Connor
- **Concepts of Wood Composite Construction** with Mike Moros
- **Traditional Lapstrake Construction** with Jeff Reid
- **Marine & Seascape Photography** with Michael Kahn

20-26

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EVA BIEDERBECK

WOY 26 Day Racer

Cold-molding with environmental responsibility in mind

by Michael Sauter

Particulars

LOA	26′3″ (8m)
LWL	23′5″ (7.13m)
Beam	7′11″ (2.42m)
Draft (keel down)	6′2½″ (1.9m)
(keel up)	3′7″ (1.1m)
Displacement	2,470 lbs (1.12 metric tons)
Ballast	794 lbs (0.36 metric tons)
Sail area	
Mainsail	226 sq ft (21m^2)
Jib	151 sq ft (14m^2)
Gennaker	753 sq ft (70m^2)

In autumn 2025 in the workshop of Jan Bruegge Boatbuilding in northern Germany, three boatbuilders were fitting out the interior and putting the finishing touches on the deck of hull No. 2 of a new design, the WOY 26 sloop. The deck's Douglas-fir came from European plantations, and the larch hull planking and other woods used in the construction were also of local provenance. At the same time, farther back in the workshop, beyond a lapstrake dinghy getting its final finishes, hull No. 3 of the same design was taking shape.

Through the open barn door, foliage was visible on the shore of the Schlei, a 20-mile inlet leading into the Baltic Sea. This area—around the town of Kappeln and the historic village of Arnis, which with a population of 260 is the smallest city in Germany—is second only to the Lake Constance area bordering Switzerland as a center of German wooden boat building.

Jan Bruegge, the boatyard's owner, was born and raised in the Elbe River harbor city of Hamburg, about 95 miles to the south. After completing high school, he began to study what is known in Germany as nautical science, with a career path to becoming a commercial ship's captain; however, he quickly figured out that he would rather work with boats, not ships. He instead completed a boatbuilding apprenticeship in Kappeln and won an award as Germany's best boatbuilding graduate. He completed his formal education as a master boatbuilder in 2016. In Germany, that is equivalent to a bachelor's degree and is a prerequisite for certain entitlements, for example, educating apprentices of his own.

Having achieved his certification as a master, he immediately founded his own boatyard. Only a year later, Jan was awarded a contract to build the hull of ELIDA, a beautiful 48′ racer-cruiser designed by the

***Above*—Jan Bruegge test-sailed his brand-new first WOY 26 daysailer on the Schlei, a northern German inlet, in October 2024. While WOY stands for "wooden yachts" in the design name, the first boat was also named WOY.**



EVA BIEDERBECK



NICO KRAUSS

***Left*—A high-tech upside-down building jig for all future WOY 26 hulls has been milled by Knierim Yachtbau in Kiel, Germany, and a second jig was made for the deck. The precise and smooth surfaces make the jigs ideal for perfectly shaped laminations. *Bottom left*—The third layer of 2.5mm-thick (3/32″) larch planking veneers, set on the opposite diagonal to the previous layer, are stapled into place for hull No. 2. The innermost and outermost layers were placed longitudinally.**

French firm Thomas Tison Yacht Design. While the deck was being built separately in Brittany, Jan Bruegge Boatbuilding built the hull, a cold-molded construction using four layers of Sitka spruce, one of carbon fiber, and one final exterior veneer of mahogany. ELIDA was launched in 2022, and Jan joined the owner's crew that year for the Fastnet Race and returned in 2025 for the revival of the Admiral's Cup at Cowes on the Isle of Wight, England.

Back in his office after touring the projects, I asked Jan to explain the ideas incorporated into his latest project: the WOY 26. The boat is conceived as a "bio-based," high-performance class of wooden daysailers. He observed that wooden boat building has been around for thousands of years but had been displaced because it could not keep up with more modern technologies. Jan wanted to change that. He was convinced that wood, especially when adapted for cold-molded construction, still had a lot to offer in terms of durability and strength-to-weight ratio. For Jan, another important quality was wood's haptics: "You feel wood immediately, and you will treat it automatically in a different manner," he told me.

It is said that the real start of the WOY 26 venture—multiple boats of the same design built in wood with modern techniques—occurred when Jan met the yacht designer Martin Menzner, head of Berckemeyer Yacht Design. The meeting occurred more or less by coincidence in a marina at the Kiel Fjord some six years ago. Jan had met with a customer there, and Martin—a passionate and successful competitive sailor—was just then docking his J80 sailboat. Having sailed and worked a bit on an LA28 (see WB No. 257) that Martin designed for another boatyard around 2014, Jan was fascinated by the radical design ideas displayed. "See, many of my peers are thinking about retirement," Jan, who is 37, told Martin. "I am thinking about, 'How do I build wooden boats over the next 30 years?'" Immediately, Martin was "all-in." Berckemeyer Yacht Design is arguably best known for its designs of aluminum yachts, but Martin pointed out that the company's catalog of designs also shows many intended for wooden construction, one example being RÉMY (see WB No. 290).

Over the next year, Martin and Jan worked off and on to create and revise a new design. They settled on a length of 8m (26′), although they had experimented with versions both longer and shorter. When I asked Martin how he came up with the WOY 26 and the earlier LA28, he replied that he was simply bored when strolling around the boat shows—all the daysailers resembled each other. He considered the LA28 his "Handschmeichler"—a German word that does not translate easily, but "hand charmer" comes closest; it describes an object of tactile delight. "I want to design boats that still fascinate after many years of looking at them," Martin said.

As the result of the encounter of these two visionary men, the WOY 26 is a very straight-ahead daysailer in every respect. The curve of the topsides transitions to the sprung-plank deck without a separate covering board. A wave-piercing AC75-style bow with ample tumblehome leads into a fixed bowsprit. Forward, the deck rises slightly to the forestay fitting to reduce turbulence in the airflow to the jib, as Martin explained. With its comparatively flat bottom sections and its high-set waterline, WOY appears to be hovering over the water rather than sitting in it.

With the hydraulic lifting keel fully extended for maximum stability, the boat's draft is 1.9m (6′2½″). Lifting keels typically must be fixed in the lowest or highest



NICO KRAUSS (ALL THIS PAGE)





***Left*—In the setup for the patent-pending full wooden-hull vacuum infusion process, the hull is partially covered by a mesh for additional pressure and fully covered by a green translucent film. The tubes fitted along the keel line draw epoxy resin upward, bonding all four layers simultaneously. *Middle left*—The red bucket holds low-viscosity infusion epoxy. *Bottom left*—Eight tubes lead from the bucket to four entry points on each side, set slightly below the edge of the veneers. The vacuum pump on the worktable draws resin through the hull veneer layers and the excess flows into a so-called "epoxy trap" bucket.**

position, but Menzer's design calls for a guiderail allowing it to be set at various depths. The keel lifts through a slot in the deck's kingplank; with the keel fully retracted for transport by land, the draft is reduced to 1.1m (3′7″). Together with the boat's twin rudders—which have less draft than would be necessary for a single rudder—WOY is designed to operate in shallow lakes or marinas.

Leanness was also a driving force in the design goals for Jan and Martin: A single winch allows line-handling amidships at the forward end of the cockpit between two closable hatches; the jib is self-tending; the carbon-fiber mast is secured by rod-rigging shrouds held in swept-back spreaders, which eliminate the need for backstays.

The yacht is ideal in light winds and easy to sail singlehanded or with a crew of two. But the WOY can also be well handled by a crew of up to four, and the form stability of the delta-shaped hull comes into play when the wind picks up. With a displacement of only 1.12 metric tons (2,470 lbs), WOY is intended to be fast.

And she is fast. She logged almost 19 knots in trials on the Schlei. "We planned for a daysailer; the result is more of a day racer," Jan said. And how do you set the gennaker? "Carefully.... The 70m^2 (753 sq ft) gennaker is packed in a bag under one of the two closable hatches, the tack line is running in the bowsprit, and you want to be careful not to touch the water with the huge sail. For mainly singlehanded sailors, we will offer a smaller kind of Code Zero sail."

For maneuvering in marinas, the boat is equipped with an electric pod drive that can be manually lowered in a well, which has a fitting for closing off the bottom for undisturbed sailing when the unit is retracted.

While working with Martin on the WOY design, Jan was also striving for something greater: nothing less than reinventing his process for building wooden boats. The WOY 26 hull No. 1 was built in a basic cold-molding process over a wooden jig, using spruce and pine veneers. The first layer was, however, made of thin wooden strips bent over the jig and fastened temporarily. In contrast, hull No. 2, which will be sailed on Lake Wannsee in Berlin, was built over a more elaborate jig and glued with a full-fledged vacuum-infusion process. Like vacuum-bagging, this process involves using vacuum pressure to hold the pieces tightly together; however, it differs in that instead of directly applying epoxy to the pieces, the vacuum pressure draws epoxy throughout an airtight envelope created around the entire hull. The idea was to build wooden boats by adapting methods used for fiberglass-boat construction. Everybody who has laminated frames or hull and deck planking knows the tedious process of mixing and stirring epoxy resin and hardener, and maybe



NICO KRAUSS (ALL THIS PAGE)

The varnished V-berth of WOY hull No.1, together with its plywood bulkheads, contrasts with the carbon-fiber keel trunk at right. In this prototype, strip-planking was used; in hull No. 2, larch veneers were used instead. The lines overhead are for the jib's roller-furler and the gennaker's tack line.

presoaking the wood pieces, maybe adding adhesive filler before applying it to the surfaces, pressing the parts together and waiting for the glue to set, removing excessive epoxy again and again, and repeating the process with the next piece. Like most boatyards building cold-molded boats, Jan's shop knew about vacuum-bagging and epoxy infusion and sought to use these methods to build the WOY 26 hull No. 2 in a single glue-up.

Through a business network called the Northern German Maritime Cluster, Jan had met Dr. Alexander Pfriem, a professor at the Eberswalde University for Sustainable Development. The two agreed to an ambitious project. The idea, as their prospectus described it, was for "Boats made from bio-based materials: Development of new composite materials and production techniques to improve efficiency in bio-based boat and yacht building" to exactly develop and prove this vacuum-infusion method.

Over three years, Jan and his team experimented first with small samples, then larger ones, and later with curved and complex structures. The university contributed research on the structural behavior of the resulting wood composites. In 2021, Jan Bruegge Boatbuilding received a sustainability award from the German State of Schleswig-Holstein, where Jan's company is located. Jan's vacuum-infusion method, for which a German patent is pending, was production-ready and successfully executed on WOY hull No. 2 in April 2025. The method not only minimizes material use and waste, compared with previous wood-epoxy methods, but also protects workers, which was an important rationale for the award jury. Jan explained that many professional boatbuilders develop a well-recognized epoxy sensitivity over time, but the vacuum-infusion method alleviates the problem by decreasing their exposure to getting epoxy on their skin or inhaling vapors.

***Below left*—The WOY's gennaker tacks to the fixed carbon-fiber bowsprit, while the jib's roller-furling gear is below the sprung-planked Douglas-fir deck. *Below middle*—The control-line console has a single winch for handling all halyard and trim lines. *Below right*—The center console, transom, and cockpit sides are veneered with silver fir.**









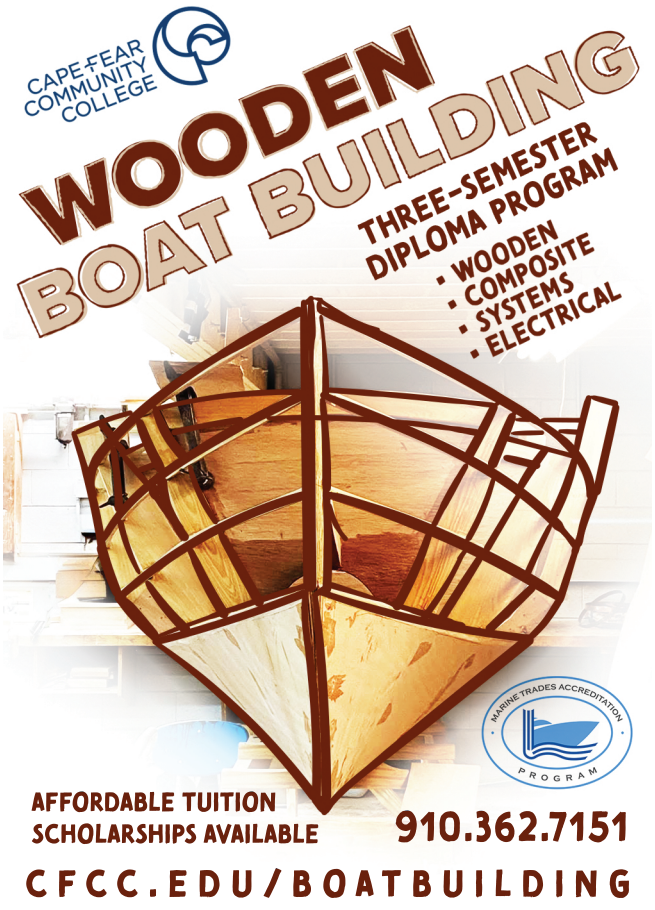


NICO KRAUSS (BOTH)

***Above left*—Forward of the mast, the self-tending jib's sheet is controlled by a traveler block mounted on a curved track. To the right, the visible slot allows the lifting keel to be raised. *Above right*—Instead of fixed cleats, which might disturb the smooth deck surface, WOY has "click-system" fittings. The hull color—called "sunrise"—was achieved with vinyl-wrap finish.**

Jan also focused on using sustainable materials. WOY hull No. 2 was built using exclusively local or regional woods and deliberately excluded the use of tropical hardwoods. She was planked with larch veneers, and her frames and transom were made of larch plywood. Her stringers and deckbeams were made of spruce. European larch has a durability rating of 3 or 4 on a scale of 1 to 5, with 1 being the most durable. Siberian larch, which has a rating of 3, has been widely used for planked daysailers in Europe, including the famous Folkboats designed in Sweden in the 1940s. The same value of 3 to 4 holds for European pine. Spruce has a value of 4. Hull No. 2's decks are of 3-rated European Douglas-fir—which is called "Douglasie" in Germany and sometimes "Oregon pine" elsewhere; the species, which is native to the West Coast of North America, was first introduced to European plantations during the mid-19th century.

The interior of the hull and its structure are varnished. The transom is wonderfully veneered with silver fir with very dense annular rings; rather than being



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NICO KRAUSS (BOTH)

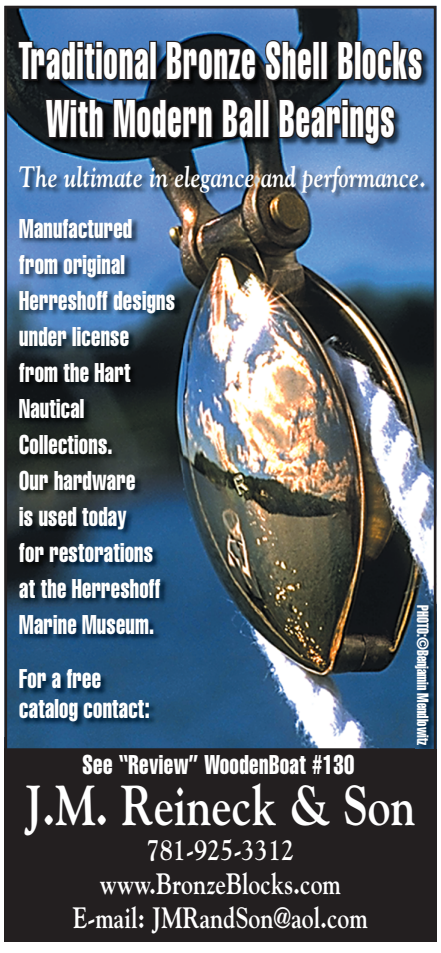
***Above left*—The prototype WOY 26 was launched in October 2024 and named WOY. The lifting keel and double rudders are visible in this photo. *Above right*—At the launching, the builder Jan Bruegge (left), designer Martin Menzner (middle), and composites consultant Dr. Alexander Pfriem of University Eberswalde (right), were on hand.**

peeled, these veneers were quarter-sawn to really show the ring structure.

The hull surface could be veneered and varnished, but Jan believes that the best option for the modern shape of WOY is a colored plastic sheeting—the vinyl wrap made popular in the automotive industry. The first WOY's color is "sunrise."

Some components are made of composite materials for weight savings and stiffness. The mast and boom are of carbon fiber, built by a local sparmaker. Structural elements manufactured in-house, such as the drop-keel trunk, the double rudder, and the bowsprit, are also of carbon fiber.

Jan ordered a building form from Knierim Yacht Building in Kiel, taking advantage of that company's five-axis CNC milling machine to make a precise jig of composite materials following Martin's digital plans. Two such jigs—one for the hull and one for the deck—used for hull No. 2 will be the basis for







NICO KRAUSS

Jan Bruegge enjoys a singlehanded sundown sail on the Schlei inlet; on other occasions his son assumes the role of bowman.

all future WOY 26s. The precision of the plans and CNC cutting allow the deck assembly to be wedded seamlessly to the hull.

Next, Jan and his team selected the 2.5mm-thick (3/32″) larch planking veneers. Especially for the innermost layer, which was laid longitudinally and would be visible from the interior, the veneers were first laid out on the workshop floor. The jig was treated with a release agent to prevent epoxy-soaked veneers from bonding to it. Then, the first layer of planking was stapled to the jig, followed by the second and third layers on opposing diagonals and the final fourth layer, which was again longitudinal.

By April, hull No. 2 was ready for the vacuum infusion of epoxy. The outer veneer layer was covered with a mesh film at several critical areas for increased pressure on the hull. Finally, the hull was sealed with a greenish film (visible in the photographs on page 24). Four tubes were fixed slightly below the edge of the planking and connected to a pot containing epoxy. Calculations showed that 40 to 50kg (88 to 110 lbs) of epoxy would be needed. Jan used a special low-viscosity bio-epoxy, a blend of resin and hardener that has low crude-oil content.

More tubes were fitted along the keel and held in place and made airtight with butyl tape. These tubes were connected to the vacuum pump and finally to a so-called "epoxy trap" to collect excess epoxy. All of the tubes were equipped with valves to control the flow of epoxy during the infusion.

The pump was started with a vacuum pressure close to 1 bar (14.5 psi). In barometric measure, a vacuum pump at 0.9 bar creates a pressure of 9 tons per square

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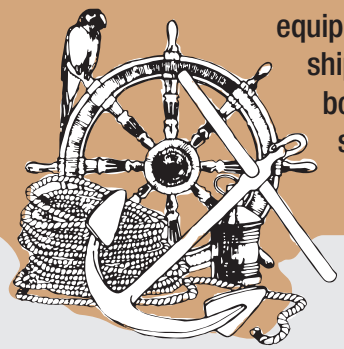

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NICO KRAUSS

So far, hull No. 1 is still the only WOY 26 sailing on the Schlei inlet, but No. 2 is nearing completion, and Jan's long-term dream is to create a one-design racing class.

meter (184 lbs per sq ft). The fluid epoxy is sucked upward through the plank edges. In Jan's method—and this is the game changer—grooves less than 1mm deep (about 1/32″) were cut into the veneers to facilitate flow. Slowly, the veneer layers filled, and in less than two hours the hull was completely glued with infused epoxy. Jan said he can better control epoxy flow for precise penetration of the wood when the epoxy is sucked upward rather than flowing downward. Jan was so confident for WOY No. 2 that he invited Germany's largest yachting magazine to observe the process.

After the epoxy had set, the green film was removed, and the hull was "post-cured" by warming the ambient air to 55°C (131°F), which allowed the infused epoxy to fully cure. Jan raved about how little filling and sanding were required afterward, a testament to the jig's perfect surface.

The completed hull was removed from the mold and turned upright so that the interior construction could begin, starting with gluing and filleting the plywood bulkheads into place. The deck assembly, which was produced using the same infusion method over its own jig, proved more challenging because of the tight curves in its surfaces.

The prototype WOY 26 was launched in October 2024 and named WOY, giving the class its name. The launching took place under the eyes of a significant crowd that included Jan and his team, Martin, Dr. Pfriem, other experts, friends, and family. Not surprisingly, WOY has attracted a lot of media coverage since then. She won the German Innovation Award 2025, which was initiated by the German parliament to celebrate innovative products, technologies, and services. She has been nominated for the European Yacht of the Year 2026, an award presented by the 12 leading European yachting magazines and praised as "the Oscar of yachting sports." Jan's long-term dream is to create a one-design class with the WOY 26.

And Jan is far from being done. He and his team are investigating recyclable epoxy to tackle the problem of the end-of-life cycle of a yacht. He also has started a study using so-called finite-element analysis, a calculation to divide a hull mathematically into many small simple forms, the physical behavior of which can be investigated for forces and loads and an element's interactions with neighboring elements. All of this to better understand how WOY behaves under various conditions as well as for future new projects.

"Wood is the most archetypal and natural material for boats," Martin said. And one possible future of wooden boat building is being written here—in Jan's workshop just outside of Arnis, a city of 260 souls in northern Germany.

Michael Sauter took up boatbuilding in retirement from his former life with a global consulting company. He spends most summers in the Penobscot Bay area of Maine, and has taken several courses at WoodenBoat School.

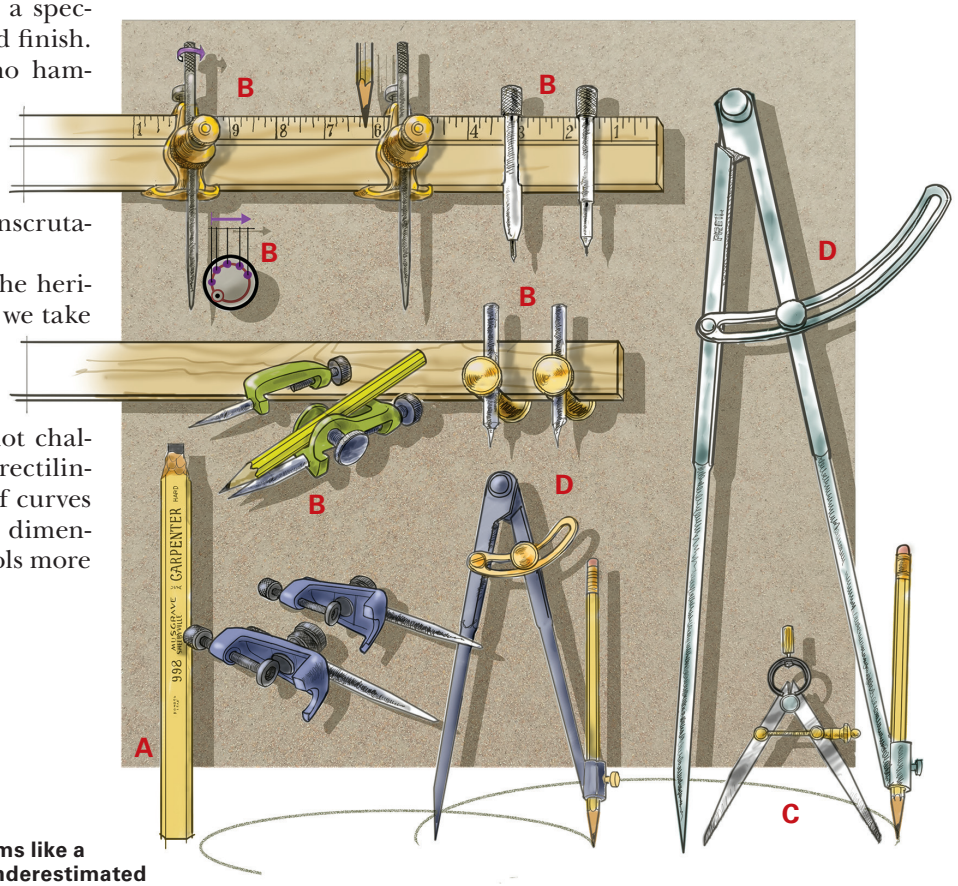
For more information, see www.woy-yachts.com or contact Jan Bruegge at jb@janbruegge.de.

Measuring, Part 2

THE PRACTICE

Carpentry is a noble pursuit with a spectrum of grades of production and finish. Bless the scaffold carpenters who hammer up temporary staging with rough lumber and double-headed nails. At the other end of the skill specrtrum are Japanese woodworkers, who join perfectly grained wood with joints of inscrutable complexity and painful precision.

In the previous issue, we discussed the heritage of measurement and the easy ways we take off, or record, dimensions. The boatwright's level of skill is formidable, and it depends on a high level of precise measurement. Length and width are not challenging for barn builders working in a rectilinear format, but boats are a symphony of curves and shapes. A boat's constantly varying dimensions can be faithfully recorded with tools more versatile than a 25′ tape measure.



Measuring Tools

The carpenter's pencil (A) at first glance seems like a crude tool for rough measures. But it is as underestimated as the framing square, which has multiple inch divisions and incised tables for abstruse joint angles and proportions. The easily sharpened No. 2 Ticonderoga pencil would seem to be a more modern and precise tool, but the venerable boxy wood butcher's pencil has hidden virtues. Two obvious advantages: it fits behind your ear perfectly and it won't roll off your bench. It's also tough; it won't break as easily as the thin Ticonderoga. The pencil, itself, is a tool. Nearly all box pencils measure ½" x ¼", which are useful dimensions, especially if you're laying a deck and want a consistent seam gap; the ¼" dimension is an ideal spacing. The distance between the broad side and the sharpened graphite tip should be close to ⅛", so you can lay the pencil flat against a horizontal surface—say, a boat's deck—and run the point along a vertical surface—say, a cabinside—to spile the cabinside to fit.

But you can't access many of the advantages of this pencil until you sharpen it, and don't be lulled by the rotary sharpeners purporting to be purpose-built; they reduce the carpenter's pencil's utility to the stationer's pencil's level. Instead, sharpen with a utility knife held in a shallow cut and pushed away from you by your thumb. Leave a nice even slope up to the graphite, with about ⅜" of the black graphite exposed. You can also give the graphite a few strokes on a bastard file.

Holding the sharpened edge to a straightedge on smooth stock gives you a thin line laid down darkly by the breadth of the graphite. There's no eraser on this pencil; a busy builder probably sharpens both ends.

When possible, abandon numbers! Think mediaevally and use ancient tools still commercially available to transfer dimensions exactly, without numbers. Trammel points (B) are widely useful for this. They come in a variety of configurations and can be affixed securely to a yardstick or a lath. Miniscule dimensional adjustments are possible because the points are not ground symmetrically: turning them in their sockets moves the point left or right. One of the points can be replaced by a soft pencil, making a whopping great compass for long-radius curves. Some trammel points are antiques, as shown; these are accompanied here by four commercially available models.

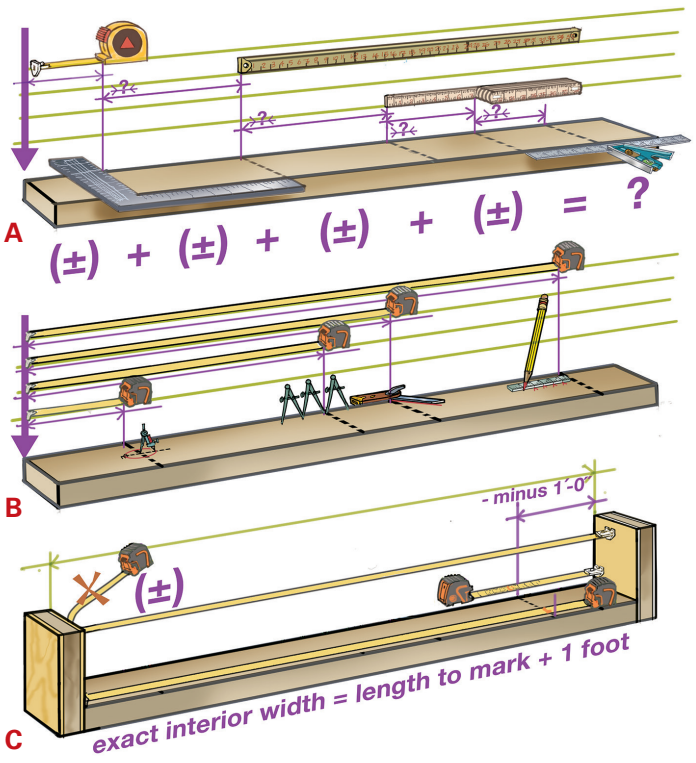
Haunt estate sales to search for the black-iron dividers (C) and compasses (D) our great grandfathers used. They don't wear out, and they capture dimensions and hold them without further worry about sixteenths or millimeters. When you press their points into your workpiece the measurement is assured by a tiny pinprick. Bisect that dimple with a trysquare and a marking knife.



Marking Knives

Tolerance for a marine joint is critical. The marking knife is the implement of choice for fastidious work. It's a simple tool: a single-bevel blade, not difficult to hone, with a penetrating but sturdy point. An X-Acto blade is too weak for this job. The marking knife has heft and authority. Stroked along a straightedge, held vertically, it should not only delineate the line of cut for a saw or chisel, but its scribed line will, to some extent, guide your cutting tool. At this level of delicate work, measurement fades to duplication: the marking knife can use one joint element to delineate its mating element. This is the reason most marking knives have long, pointed blades or small arrow points: such shapes can follow intricate inside patterns.





Measuring Protocols

Choose a reference point wisely and rely on consistent orientation to it. A string of additive measures isn't reliable (A): variations of accuracy in each addendum multiply over the string of individual parts, introducing a so-called compound error in the total. Count on measurements from a known base reference point to a "local" subpoint as the basis for precise spacing or placement (B). This kind of rigor is particularly applicable to setting up a building jig's station molds. Once again, the sinuous shapes of boatbuilding confound simple dimensions from a fixed reference point. Yet the boatwright is obliged to a higher level of dimensional fidelity. After all, the barn builder isn't demanding that the barn will float. What are reliable reference points for a vessel? Horizontal dimensions on deck? Dimensions along the keel? Frame stations? Waterlines? Choose wisely and measure carefully.

The measuring of inside dimensions can be frustrating. You can flex your tape measure sharply against an opposite wall and guestimate the nearest mark (C). You can add the tape measure body marking of 1½" or 2" and count on the sliding tab at the tape's end to compensate. But to be most accurate, you could also measure precisely 1' from one inner wall, measure to that mark from the far wall, and add 1' to your measured dimension.

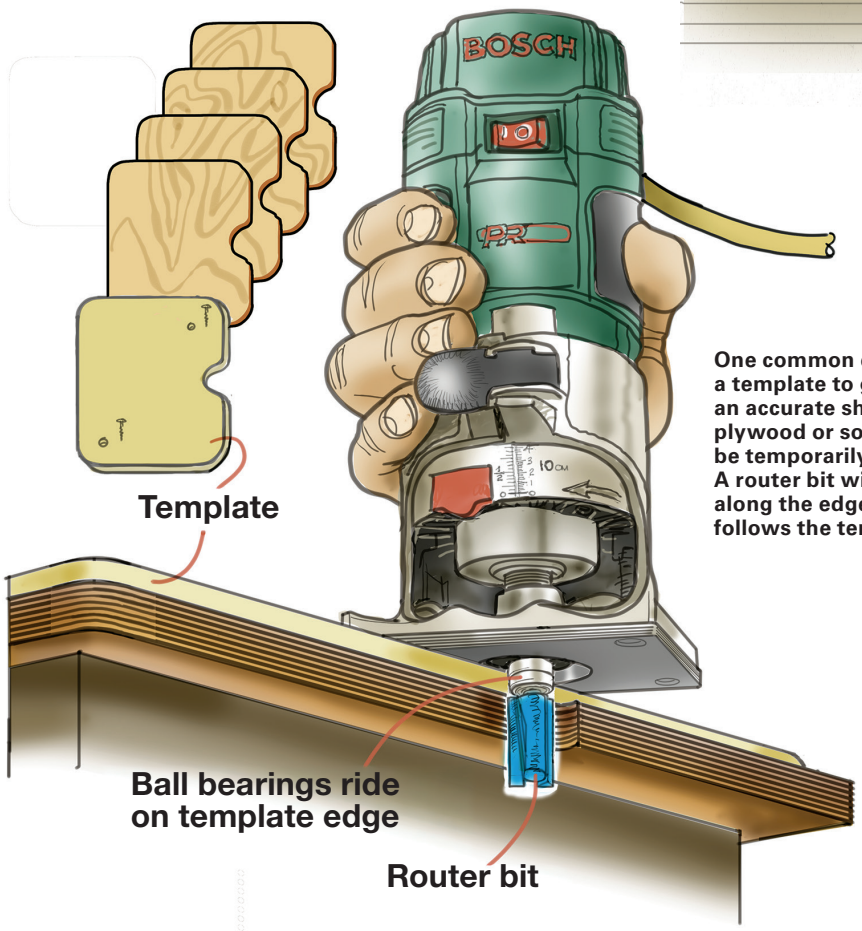
The Tape-measure Tab

The first 1" of a tape measure lacks 1/16" which is occupied by the tab thickness when pushed against the surface. When the tab is hooked over an edge and pulled, the slotted tab extends 1/16" to complete the first measured inch. The slot in the lower tab is to catch a nail head for solo measuring.

Jigs

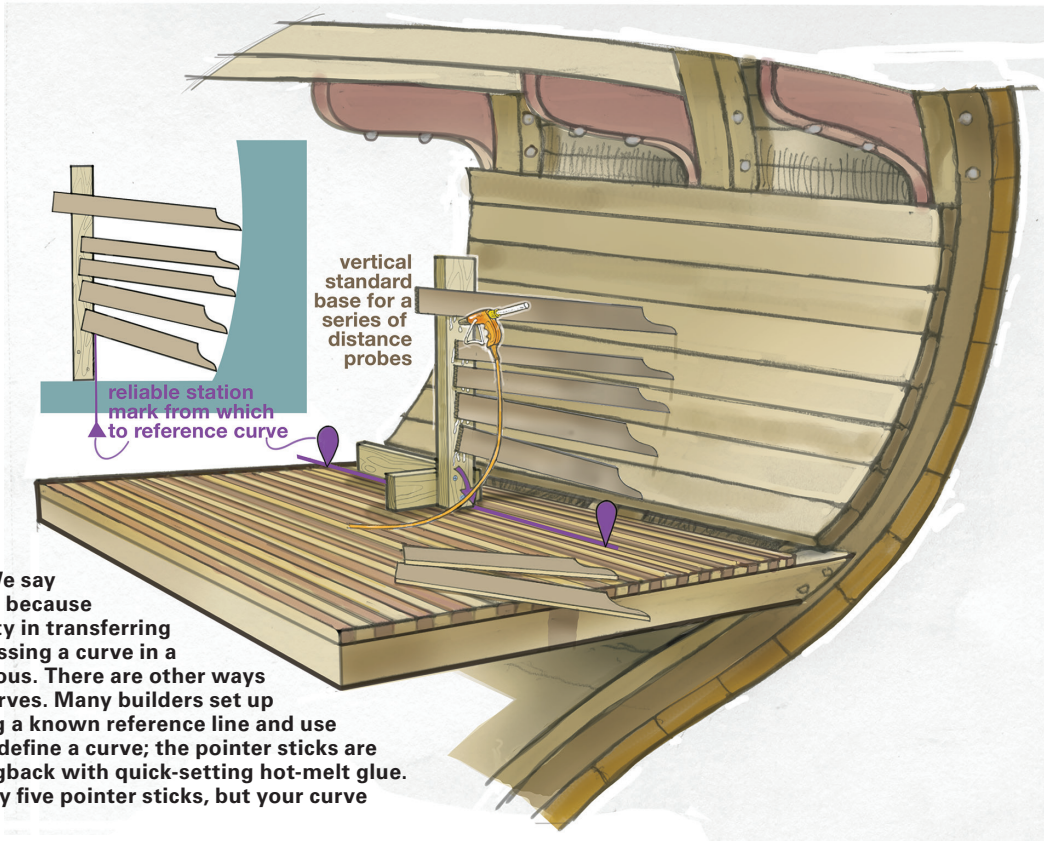
Repetition is inevitable and usually helpful. Most boatshops are hung with jigs for steaming frames and building entire plywood dinghies, or patterns for various other boat pieces. These jigs provide preordained accuracy; they are timesavers, and often brilliant setups for difficult assemblies. They assure precision.





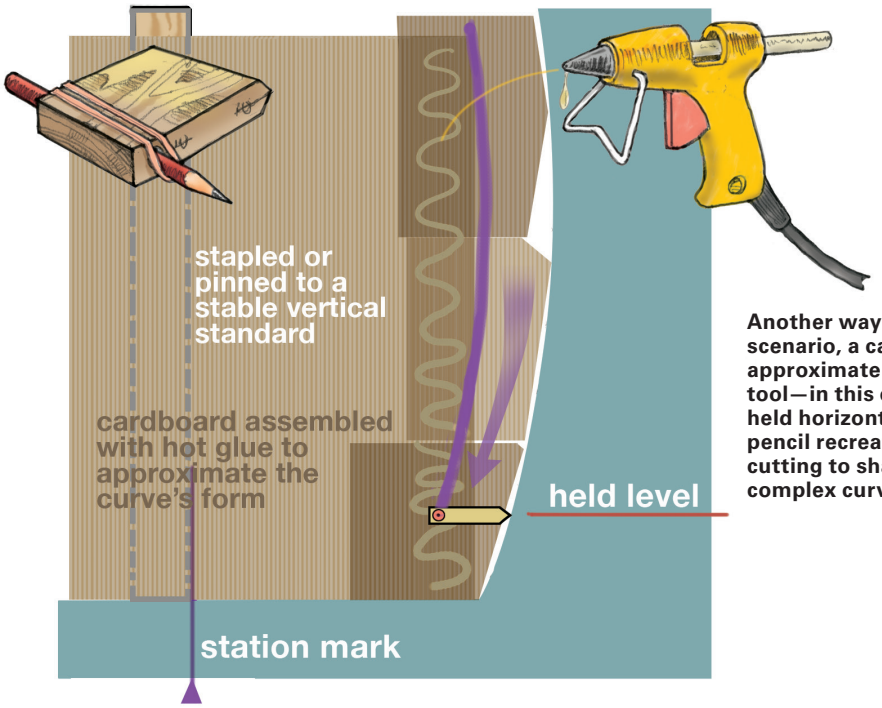
Router Jigs

One common exercise of repetition is using a template to guide a router in cutting out an accurate shape. The template is made of plywood or some other hard material that can be temporarily tacked to the stock to be shaped. A router bit with ball-bearing roller guide rides along the edge of the template. The cutter follows the template accordingly.



Defining Curves

Numbers aren't enough. We say "measure twice, cut once" because the human element is faulty in transferring numbers efficiently. Expressing a curve in a column of numbers is tedious. There are other ways of dealing with a boat's curves. Many builders set up a vertical strongback along a known reference line and use glued-on pointer sticks to define a curve; the pointer sticks are glued to the vertical strongback with quick-setting hot-melt glue. This illustration shows only five pointer sticks, but your curve may need many more.



Scribing Curves

Another way to "take off" a curve is to scribe it. In this scenario, a cardboard panel is built up with hot glue to approximate the interior hull curve. A simple scribing tool—in this case a block of wood holding a soft pencil—is held horizontally and drawn down the hull's shape so the pencil recreates the curve on the cardboard panel for later cutting to shape. We can thus duplicate the mathematically complex curve without numbers. Hurrah!

Jan Adkins is a regular contributor to WoodenBoat. *Visit his blog, Dockwolloping (www.dockwalloping.boats), for more insightful illustrated discussion of all sorts of maritime matters.*



MATTHEW P. MURPHY

Returning a Wooden Boat to the Water

Some conventional and unconventional thoughts on repair

by Greg Rössel

There are few objects as handsome as a traditionally built wooden boat. Owning and sailing one can be a joy, and a wooden boat can have an intangible draw that can cloud the judgment of even the most cautious mariner.

Although most old boats need some sort of repairs, the question is not whether a boat can be fixed. Anything can be fixed. The question is, do you really want to fix it? How much time do you have? How much money? When do you want to get it in the water? This is not to suggest that you shouldn't tackle a major boat-restoration project, but rather to offer guidance on making that choice, and seeing it through.

Boatbuilding is a bit like assembling a jigsaw puzzle; repair, however, involves plucking random pieces out of the completed puzzle, replicating them, and replacing them. It can be tedious, time-consuming, and expensive. Fortunately, we have tools, techniques, and materials that did not exist when the boat was built.

The Initial Inspection

A professional survey by a knowledgeable professional is always advisable—especially if you are investing considerable funds in your project. But there is much sleuthing you can do on your own to winnow the wheat from the chaff, before you get to the survey stage. Approach the prospect as a skeptical observer. Don your overalls and arm yourself with a notebook, a flashlight, and an ice pick for probing wood softness (carefully used and, if shopping, only with the owner's permission). Also bring a mallet for checking for the "ring" of solid wood, and an extra-sharp eye to check for twists, sags, lumps, and other general unfairness. Take notes and photos, and bring along a good dose of critical thought—as well as an open mind.

Begin with a visual inspection of the boat out of the water. The human eye is keen and it can quickly pick up discrepancies. If possible, get plans or a photo, or, better yet, visit a pristine example of the boat. This will

***Above*—Viable boat-restoration candidates often exist in seemingly hopeless cases, if one can see beyond the peeling paint to sufficient sound wood and fastenings.**



ARTISAN BOATWORKS

This 1927 launch built by J.O. Brown Boatyard had a deformed sheerline when she arrived at Artisan Boatworks for restoration; the deformation, or "hog," starts near the after yellow strap. The shop lifted the stern about 4" and locked in the restored shape with structural repairs.

give you a benchmark and you'll have a better idea of what to look for.

First examine the sheer. Is it as elegant as you'd expect it to be or does it flatten out in the center or droop at the ends? Look for localized stresses or distortions. Look at the waterline. Has it been re-marked upward at the ends while remaining the same midships? Is the boat drooping at the ends? Sight down the keel for hogging. Some boats, such as Whitehalls and performance pulling boats with long straight keels, are quite prone to this.

Sight the hull from a variety of angles. Is it still straight and plumb or has a twist set in? Is the stem perpendicular and the transom horizontal from side to side? On double enders, are both stems vertical? If the boat is a carvel-planked, round-bottomed model, does the sectional curve still look smooth or are there "hard" places that look similar to chines? Those hard places could indicate a batch of broken frames. Check the planking at the butt blocks; unfairness there could indicate failed fastenings.

There is a pantheon of fastenings used in the planking of traditional wooden boats. Copper rivets are top-notch. Copper clench nails—basically tacks bent over like one-legged staples—are a cheaper, faster, but lower-quality option. Iron screws and bolts are usually bad news and were often used by economy-minded builders. Chances are, unless you have a lot of time or money, restoration of an iron-sick boat will be problematic. Brass screws were often promoted as an upgrade; they didn't rust, but over time they did fall prey to corrosion, especially when paired with iron fastenings in the keel; this mix of unlike metal in seawater causes galvanic action, whereby the less noble metal—brass, in this case—is wasted by the more noble one (iron). Also, brass screws are weak, even when new. Bronze screws are now considered the gold standard; they are rugged and, although they do corrode over time, can usually be extracted if removed before their deterioration progresses too far. Bronze ring nails are durable but miserable to extract when doing repairs. Stainless steel is occasionally used in freshwater vessels but is subject to corrosion in saltwater.

Looking at the planking, are the bungs (or putty) pristine or are there rust streaks indicating that the iron fastenings within are breaking down? Iron swells as it corrodes and it will push bungs out of their holes and can blow steam-bent frames apart, destroy keels, and attack wooden planking. If the bungs are tight, remove a few (with the permission of the owner). Does the metal look sound or, in the case of bronze and brass, is there a pinkish crumbly appearance to the fastening indicating galvanic corrosion? Galvanic action is bad news; if found here, look for it elsewhere in the hull.

Look for signs of refastening or over-fastening. Are there four bungs where'd you expect two, or six instead of three? If so, chances are the planks have been



MATTHEW P. MURPHY

This Herreshoff 12½, while exhibiting an intact sheerline and relatively straight waterline, requires complete rebuilding; all of her structural elements are decayed beyond service.



GREG ROSSEL

Telltale streaks of rust indicate a row of steel or iron fastenings in this lapstrake plank seam.

sister-refastened in a quick and dirty fashion, possibly weakening not only the plank but also the frames. Watch for cracked or broken planks, as well. Look for dark stains on plywood that is either varnished or epoxy-coated; this might indicate water intrusion. A slump in the surface of a painted plank might foretell concealed rot.

On to the backbone: Look for unusual hollows or raised uneven areas on the stem and transom. Hollows could indicate decay. Uneven areas could indicate Bondo, the auto body filler, which is inappropriate for a wooden boat because it soaks up water and thus can rot the wood around it. Investigate by gently tapping the surface with a mallet. Does it have the good "ring" of sound wood, or does it give you a dull "thunk?" Carefully probe the suspected region with the ice pick. Is the wood solid or does it have the consistency of an old jack-o'-lantern? Are there any mysterious locally swollen areas on the keel that might indicate corrosion-expanded iron keelbolts?

Proceeding to the interior of a cruising boat: Does the bilge smell fresh or ominously musty? Work from stem to stern. Look for signs (and sounds) of rot in the stem, keel, frames, floors, and transom. The lower ends of frames and transoms and the after ends of keels are prime suspects. If there is a centerboard or daggerboard trunk, are there signs of leaking? Are there any mysterious interior "water lines" that indicate that the boat has flooded? Watch for "furry" frames; decomposed oak can have this look. Check that any lockers have been well ventilated and that they have not been acting as unintended Petrie dishes. How do the keelbolts look? Are they intact and not corroding?

Finally, check out the exterior, breasthook, knees, rails, thwarts, hardware, and spars—especially if the spars are painted.

You will likely find at least a few shortcomings and character flaws that will take a little more than paint and putty to fix, but at least you'll be aware of them. Does it still show promise? If so, the next step is to figure roughly what it will take to get the project up to snuff.

Starting Off: Plank and Fastening Removal

A common pitfall is to attempt to answer the Siren's call to do a total restoration right now and bring the boat up to like-new standards. This is admirable, but unless you have unlimited time and money it is a recipe for acquiring an incomplete white elephant in the back yard with a batch of spare parts strewn about. If possible, a more incremental approach is the way to go. Order your priorities by breaking the project into three lists: 1) Must Do Now; 2) Work on Next Winter, and 3) Get to it Down the Road. You have already determined that you have a strong structure to work with. It's better to build on that with sound and solid repairs that will get you safely out on the water in the summer and back into the shop for continued restoration in the winter.

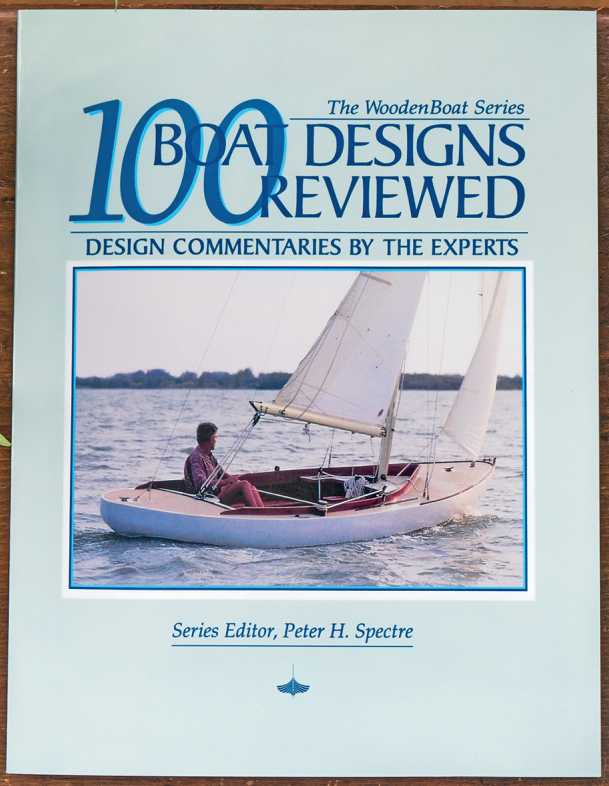
There has always been a requirement that a builder be creative in the use of tools—how to get a saw into tight situations to sever a fastening, cut off a moldering frame in a seemingly impossible location, or fashion a necessary



MATTHEW P. MURPHY

The oscillating multitool is a boon to wooden-boat restorers. It handily cuts through, wood, metal, and other hard materials, and is ideal for quick removal of compromised frames, as seen here.

WoodenBoat STORE





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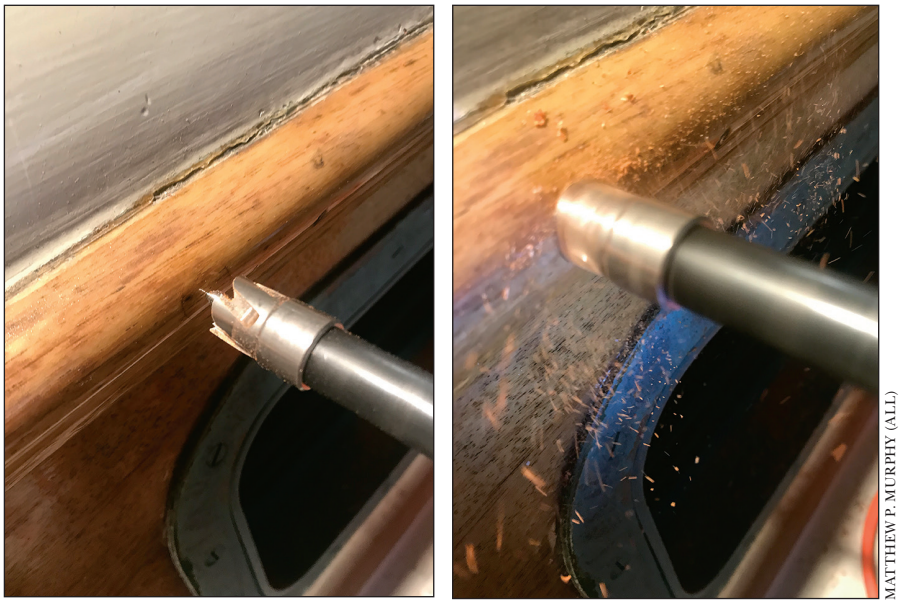

MATTHEW P. MURPHY (ALL)

***Right and opposite*—The Rotabroach, while designed for sheet-metal work, has proven to be an ideal tool for quick and clean bung removal, even in bright-finished surfaces. These photos show one in a series of eyebrow-trim fastenings that required inspection and rebedding; after the holes were re-bunged, the finish was rebuilt locally; following a few years of service, the new bungs mellowed to the hue of the surrounding wood, making the repair invisible.**

scarf without destroying the edge of a cherished heirloom firmer chisel. That's where the oscillating multi-tool comes in. It features a replaceable small blade that's fixed at one end while the other end moves, or oscillates, rapidly back and forth in an arcing motion—sort of a combination of vibrating and sawing. The blade moves at a very high speed. The tools have a variety of easily changed blades, with perhaps the handiest being the titanium nitrate coated one that cuts wood with fastenings embedded. This tool is a game changer. Removing fastenings can be difficult. But first you must get to them. Unless you are dealing with light lapstrake planks, whose fastening heads are exposed on the outside of the plank, the head of the screw or rivet will be set into counterbored holes filled either with a bung or some sort of compound. The compound-filled holes can be (relatively) easily cleaned out using an awl and a mallet to tap and pick away at the filler. The resulting hole won't be perfect, but it will be









adequate to give you access to the fastening. For bunged holes in bright-finished surfaces, however, this technique will likely leave an unsightly chewed-up result on the plank that will stand out like a sore thumb. The Rotabroach Sheet-Metal Hole Cutter made by the Blair Equipment Company (see Review, WB No. 264) is the answer in such cases.

Rotabroach hole cutters are designed to be used with handheld power drills for boring precision holes in sheet metal, frame materials, and plate, but are also ideal for removing bungs or compound that fills counterbores. They produce clean, sharp-edged, bung-sized holes that allow easy access to the fastenings below without injuring the surface or the fastening—be it a rivet, slot-, Frearson-, or square-drive screw. It's a tool worth considering.

Copper rivets are the easiest plank fastenings to extract. Start by taking an awl or a prick punch and, using a small hammer, make a small dent in the head of rivet. Then, take your variable-speed drill and a sharp bit that is the same caliber of shank of the rivet, and slowly bore through the copper head. Very soon the head pops off the shank of the nail and onto the bit. Take a thin punch and drive the rivet out through the plank.

Screws are like pirates: there be good and there be bad. Bronze screws can usually be extracted with little problem. They can also be a bit set in their ways

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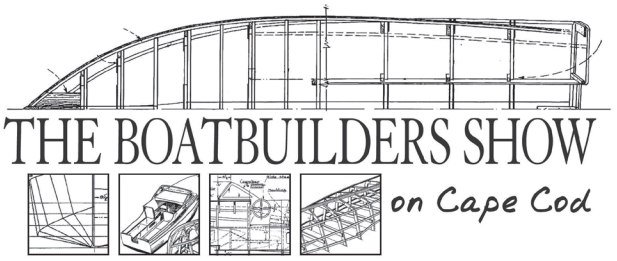

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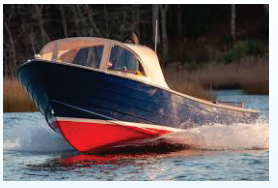



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Epoxy

Epoxy adhesives are a boon to restoration. They are formulated in a number of strengths, viscosities, curing times, and abilities to bond dissimilar materials. There are thin epoxies for penetrating rot and standard ones that can be amended for different but simple bonds. There are fillers and surfacing compounds for filling in minor imperfections. Some epoxies can glue damp woods or be used on wet surfaces—and even underwater. Others are made to ruggedly adhere to difficult-to-bond hardwoods. One does need to know the attributes, limitations, and qualities of the product being used, and it shouldn't be a replacement for good workmanship, but epoxy adhesives, used properly, have made a world of difference when making repairs.

—GR

when bound to the surrounding wood. To fix this, select a screwdriver that closely matches the slot of the screw. Insert the tool into the slot and give the end of the handle a smart blow with a hammer. Then use a brace and bit to slowly back out the screw. If a screw still won't budge, and its head is compromised, it can often be removed with a screw extractor. These devices, available in most hardware stores, resemble tapered drill bits, but have steep flutes along their lengths that spiral in the opposite direction from a screw's threads. Carefully drilling a longish hole into the screw's shank and then chucking the extractor into the drill and spinning it into this hole in reverse, is a good last resort for screw removal.

Brass screws are trickier than those of other metals. They might be removed as previously described. Then again, the head may just crumble. In that case, you may have luck—or not—using a screw extractor. You may also be able to sneak the blade of an oscillating tool between the frame and the plank and cut it.

Ring nails are miserable and, if they were properly installed, will be intractable. Again, the oscillating tool could possibly be used to free the plank from the frame. It may also be worth sacrificing the plank by using a small-diameter hole saw to cut around each nail. Then pull off the plank over the nails and slice them off at the frame.

Before attempting to remove the plank, remove all the seam compound and caulking cotton.



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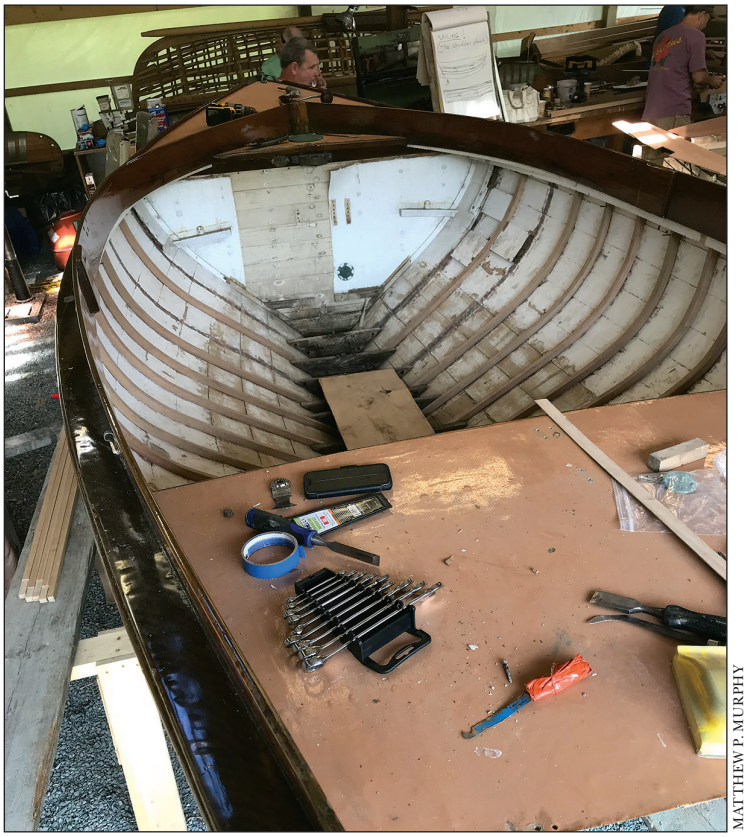
Frame Replacement or Repair: Several Approaches

Although total frame replacement—rather than repair—is usually desirable, the required disassembly of so many other components just to reach a frame or two might make it impractical. There are cases, however, in which the access to the broken frames is relatively unimpeded, and the removal of a plank or two allows for easy clamping of a scarfed-in new section.

On the other hand, imagine a classic lapstrake runabout in which the lower ends of the frames are rotted but the rest of the frame is sound. The boat has a lot of interior furniture, cables, and wiring and there is a deck to contend with. The run of the frame along the bottom is nearly flat until it takes a sharp turn at the bilge; the upper end of that flat portion is a perfect place for an epoxy-glued scarfed-in new frame section.

Now consider a boat with a few frames broken at the turn of the bilge. In his 1955 book *Boat Carpentry*, Hervey Garrett Smith offers a repair called "the slit sister frame. The basic idea is to cut



MATTHEW P. MURPHY

With joinery removed and easy access to the inner hull, full frame replacement is preferable to scarfed-in repairs.

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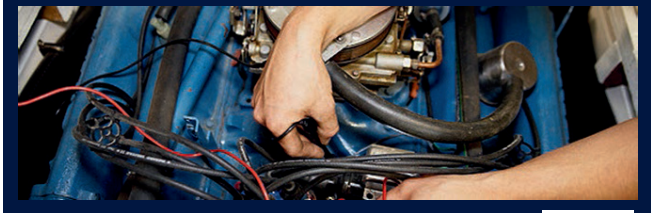

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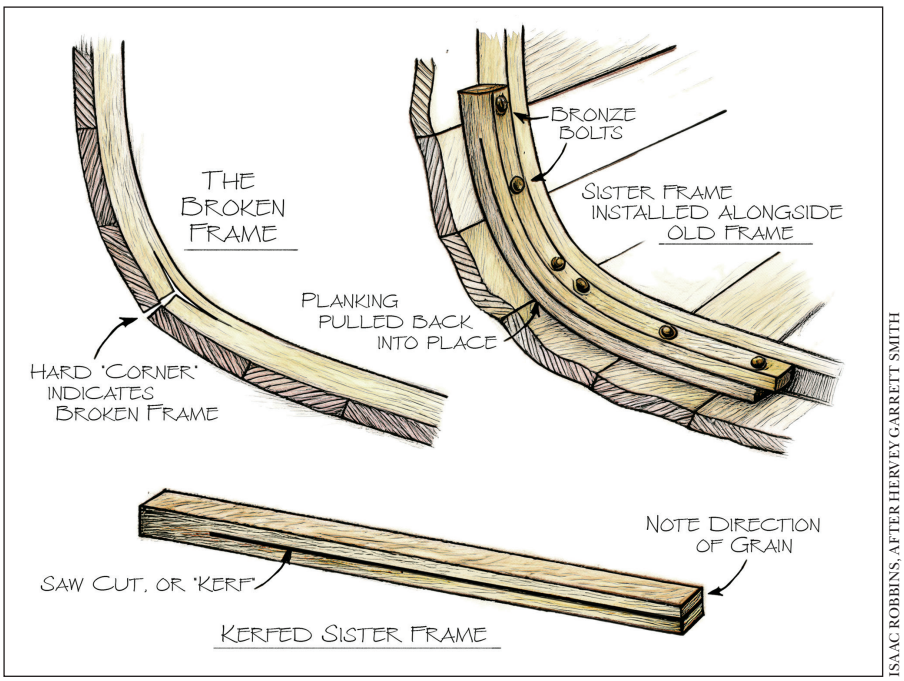
GREG RÖSSEL

Because the entire frame runs were readily accessible, full frame replacement was the best course in this flat-bottomed runabout. If the upper frames were intact, however, and access there was obscured, the straight lower portions would be good candidates for scarfed-on new frame heels.

a section of straight grained, green or air-dried frame stock of the dimensions of the original frame and long enough to overlap *at least* two planks on either side of the break. The sister is slit on the flat, with the slit stopping not less than 4″ from the end. Smith writes that "the main reason for slitting the frame is to eliminate the severe deformation of the wood fibers that caused the old frame to break. Thus, when the slit frame is bent, the inner half can slide by the outer half with no distortion." The sister is installed next to the broken frame with the slit side down, for drainage. Clean the caulking from the region of outer plank curve distortion. Line up some braces to help you with the bending on the interior (practice on the broken frame alongside). A brace for fairing the plank on the outside is helpful, as well. The new frame section will be fastened with bronze machine screws, which will also pull the planks back into fairness.

Here's one final frame-repair scenario: Several years ago, WoodenBoat School's catboat developed a chronic planking leak far forward under the deck. The planking would not hold caulking. Upon investigation, it turned out that a few frames had been removed and never replaced. The solution was to install new ones. But the tight space precluded the "Smith" solution described in the previous paragraph. So, we scribed patterns onto a piece of plywood and *carved* a suitable pair of replacement frames. This solution presented three choices of stock: A laminated version or one fashioned from either black locust or hackmatack with suitable curved grain. Having access to a suitable offcut from a large hackmatack knee, I went with that. The shape was traced from the pattern, but the stock was cut oversized to accommodate the twist that needed to be scribed and carved into the pieces. A forward end of the already-problematic plank was removed and a butt block added for eventual joining of the new plank end to the old. With the plank removed, the frames could be clamped into place and fastened with machine screws. The new plank end was fashioned and, again, fastened with machine screws to the frames and butt block and caulked.

And so it is with repairs: four different approaches were needed in four special circumstances to achieve basically the same result.



ISAAC ROBBINS, AFTER HERVEY GARRETT SMITH

In some cases, a broken frame must be sistered rather than replaced. The repair illustrated here was described by Hervey Garrett-Smith in his book *Boat Carpentry*. It shows a frame section of the same sectional dimensions as the original, kerfed for easy bending, and spanning at least two planks on either side of the break.

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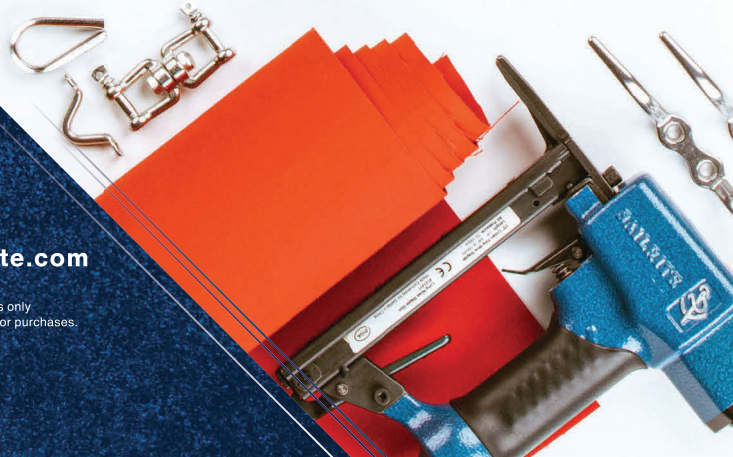

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GREG RÖSSEL

Carefully glued-in dutchmen can be used to repair damaged portions of planks that are otherwise sound.

Dutchmen (Graving Pieces) Small and Large

Graving pieces, also called "dutchmen," have long been used to repair or salvage otherwise-sound stock—even in new construction. Early methods depended mostly on mechanical fastenings, but epoxy adhesives have been a game-changer in adding strength to such a repair.

Common structural areas to be repaired with dutchmen are exposed top edges such as transom tops and coaming edges. Begin by selecting wood that closely matches what is being repaired. Then, fashion the repair piece slightly larger and taller than the area to be repaired. Clamp the graving piece against the injured area and trace the graving piece's shape onto it. Carefully cut away the compromised area to the shape of the graving piece, until the graving piece fits tightly. Dry-fit the graving piece and bore through its upper surface and into the fixture for a couple of bronze fastenings. Disassemble, spread the joint with thickened epoxy, and glue and screw the piece in place. After curing, bung the fastening holes, shape the exposed edge, and sand and finish to taste.

Planks that have developed shallow decay pockets (say, ¼″ or so deep) can be salvaged with a graving piece. The most popular version is a diamond shape with irregular sides. As with the previous repair, it is easier to make the receiving mortise to match the graving piece than the other way around. Cut the diamond then plane a slight taper into its edges, like a tapered plug. Place the diamond over the decay and trace around it with a pencil. Then, using a small-caliber mortising bit in a router, clean out the rot while staying clear of the drawn lines. Check to be sure all the rot has been extricated down to good clean wood. Then, with a sharp chisel, finish the job to the drawn pencil lines. Check the fit of the graving piece. If it looks good, file a small glue relief hole into the side of the graving piece that will relieve the hydraulic pressure that otherwise would build up when the patch is pressed into place. Softwood sucks up the glue, so be sure to soak the mortise with thin epoxy and then apply some that has been thickened. Plane the graving piece flush after the glue has cured.

Small defects can be repaired in a similar fashion by using shallow mortises cut with a round Forstner bit and plugged with a matching cut round plug. (Do a test run on test stock to make sure they indeed match.)

Occasionally on a small boat you will find otherwise-sound planks that have rotted



GREG RÖSSEL

In some cases, as seen here, an entire plank edge can be repaired with a glued-on replacement.

The stem of this Friendship sloop had localized damage outside of the rabbet line; the portions of the timber in contact with planking, however, were intact. To avoid a major stem replacement, a large dutchman-style repair was accomplished.





GREG RÖSSEL (BOTH)

edges. The top-notch solution would be to replace the entire plank, but there can be a considerable cost in material and time in this method. Another option is to simply replace the edge by cutting out the dubious wood and gluing in a strip that is the same thickness as the original. Though it seems a bit odd, it is no more so than any other strip planking: sound wood to sound wood joined with a strong glue line. Begin by removing the compound and caulk from the edge adjacent to the repair. Remove the fastenings along that edge as well. Mill out your plank strip slightly thicker than the original plank and cut a batten that is slightly narrower than the new strip. The batten will guide your Japanese rip handsaw, which you'll use to remove the sacrificial wood. With the old strip of planking removed, clean up the remaining edge with a sharp hand plane.

Check along the run of the new to see if any hollow must be worked into the interior face. Then, warp the strip into its location to determine the edge bevel. When the fit looks good, prepare for gluing. Insert pieces of plastic sheeting between the plank and each frame. Work out your sideways clamping-and-wedging strategy. Have your drill, countersink, and screws at the ready. Prime the mating edges with thin epoxy, then, using slow hardener, mix up a thickened batch. Apply thickened epoxy to the edges and, working from bow to stern, begin drilling and fastening and clamping; you can also wedge the strip against the plank. After the epoxy is cured, fair the repair and fill the screw holes.

One task that can be a deal-breaker is a backbone repair, especially on a large boat. Replacing a stem or keel is daunting and expensive. Consider, however, a partial stem repair I accomplished on a Friendship sloop—a repair that did not require complete replacement. The lower end of the timber had blown apart because it had developed iron sickness at the bobstay anchor points; the rest of it was sound.

Upon inspection, it was determined that the damage did not extend into the rabbet and that we could simply cut back to the apex and install a jumbo dutchman without any loss of strength. This repair was akin to installing a false stem on a dory—only more complicated.

We began by unfastening the forward ends of the adjoining planking. This revealed that, indeed, the stem was unaffected from the rabbet inward. A pattern was made of the curvature of the stem face. The stem was then cut back to the

The Case for Plywood Rudders

Builders once used iron drift pins when they were looking for strength in building up items such as centerboards and rudders. These were efficient and economical until the iron swelled as it corroded—so much so that it would blow out the side of the wood containing it. A better but much more expensive alternative would be to use bronze drift pins in a replica replacement. But why bother when we now have access to high-quality marine plywood that can be laminated with epoxy to the same dimensions as the original? Sheath this assembly with Dynel cloth and it'll be tougher than a boiled owl, and there will be no warping, twisting, or swelling.

—GR



GREG RÖSSEL

middle line of the rabbet—the place where the inner corners of the planks land—for a section of the stem. We'll call it the apex here. Like the smaller graving piece described previously, the ends of our repair had low straight angles with nibs cut in.

Next, a single laminate was steam bent in over the apex; upon cooling, it was bedded in epoxy and screw-fastened to provide a fair surface for our soon-to-be-laminated graving piece to land upon.

The curvature of the fairing laminate and the nibbed ends were traced onto plywood and, using this curved shape, a gluing jig was fabricated. The laminates were milled thin—about ¼″—to eliminate springback. The laminates were steamed and bent to shape ahead of time and left to cool and take their set. Then after sheathing the jig in plastic, the laminates were heavily coated with epoxy, firmly clamped to the jig, and left to fully cure overnight. Meanwhile, the plywood tracing was cut along the drawn lines to create an accurate pattern for the graving piece.



GREG RÖSSEL

For an expedient cabin-side replacement on a Friendship sloop, the author laminated new sides on top of the old ones. Here, he's protecting the old sides from the inevitable glue squeezeout.

After curing, the excess glue squeezeout was planed off, the pattern was traced onto it, and the faying surfaces of the graving piece were trimmed to shape. The graving piece retained its shape so the fitting was a relatively straightforward task. Thickened epoxy was applied to the inside of the graving piece, and it was clamped to the stem and left to cure. All that was left to do was to fair in the curvature of the stem face and the tapered sides. The rabbet was cut in and the stem was back in business, ready for replanking.

Is that a lot of steps? You bet. But it's way cheaper and faster than gutting the hull and replacing the entire stem, and there's no compromise in quality.

Deck Furniture as Bending Form

Here's one more example of saving time and money using new technology and tools: replacing trunk cabin sides and coamings.

Classic boatyards have numerous advantages over the backyard restorer. Two worth noting are 1) access to high-quality lumber in long lengths and widths and 2) access to experienced employees. Fabricating new trunk cabins and coamings of solid stock is a big deal involving persnickety pattern making and joinery, handling large, heavy stock, a prodigious steambox, and many fast-acting clamps and hands. Replicating such a facility in the back yard would be difficult. If your cabin sides need replacing, you may actually use the existing cabin or coaming as a form to laminate new sides using high-quality marine plywood and epoxy built up to the desired thickness; the outer layer could even be a layer of veneer so the finished piece resembles solid hardwood.



GREG RÖSSEL

The gluing-up of new cabin sides, using the in-place originals as bending forms, requires a well-conceived clamping strategy.

For either operation, it is worth taking the time to make a pattern using relatively inexpensive ¼″ underlayment plywood. Your finished plywood stock can be scarfed to length if necessary. Working one side at a time, begin by removing the hardware—port lights and such—from the cabin side. Remove some of the cabin top to allow clamp access. Then assemble your full-length pattern for the side, making it over-length and over-width to allow enough excess to trim to the finished dimensions and bevel to fit the deck. Wrap the plywood around the existing cabin side and clamp it into place. Using a pencil riding atop a block, scribe the curvature of the deck onto the pattern. Remove the pattern and cut out the curvature of the deck. Return the pattern to the deck and re-clamp. At this time, record all the necessary information—port light locations, the height of the top edge at regular stations, the forward and after ends of the side, and so on.

Prefabricate your laminates, scarfing them to length as necessary and staggering the scarfs. Fasten plastic sheeting along the side of the cabin and deck to catch excess glue, and to keep from adhering your new cabinsides to the old ones. Work out your clamping schedule and pads to assure proper clamping pressure. Round up some friends. This job involves lot of slippery epoxy, so to keep the glue-up under control; the job is best done in stages, one layer at a time.

Using slow-curing epoxy, wet out the laminates with first a thin then a thickened mixture. Bring the laminates to the cabin side and begin clamping. Sheetrock screws can be used where necessary to increase clamping pressure on the interior faces of the glue-up, though they'll mar the outer layer if it's to be bright-finished; these screws will be removed after the glue cures and their holes filled with thickened epoxy during the application of the next layer. Let the epoxy cure fully.

Repeat the process for the other side. After both sides have been fabricated, you can remove the original sides to fit your replacements.

This process is non-traditional, but the result is as strong as the original, and it gets the job done efficiently and within the scope of a home workshop.

And that, ultimately, is what it's all about: new approaches, alternative technology, and thinking outside of the box that will get that classic back on the water.

Greg Rössel is a contributing editor for WoodenBoat.

What it's all about: A carefully maintained Herreshoff 12½ awaits spring launching at WoodenBoat School.

MATTHEW P. MURPHY





Reviving ADVENTURESS

A matter of priorities

Text by Jasmine Thomas
Photographs by Truman Forbes

When I first found ADVENTURESS in November 2024, she had been out of the water for about 20 years. She sat on her stands, dry and patient, red bottom paint falling off, caked in dust, and inhabited by mice and filled with forgotten sails. She hadn't been sailing since I learned to sail as a child in the early 2000s.

ADVENTURESS is a Sparkman & Stephens Gulfstream 30. Unlike the other boats of this design built by Robert Derecktor, she came from Norman Hodgdon's shop in East Boothbay, Maine. She's mahogany-planked on oak frames. She's the only Gulfstream 30 Hodgdon built, and he couldn't resist a few departures from the original design: a cockpit about 1′ longer than specified, a mast 6″ taller, and a more-rounded house. These small differences add up; Hodgdon's hand in her is vivid.

When I bought her, her frames were dry but sound, her mahogany planks surprisingly tight, and her fastenings mostly if not all bronze. The hull was tight enough that I could run a putty knife along most seams without it vanishing. For a 1959 carvel-planked boat that hadn't floated in a generation, that was something.

I started with what Greg Rössel might call the "triage phase" (see accompanying article, page 34)—the work you do so that you can take her sailing and keep her afloat. Her bottom paint was too far gone to guess at, so in March 2025 I invited nine friends to help me hand-scrape the bottom down to bare wood. It took one afternoon, followed by 16 hours with a 6″ orbital sander attached to a shop vacuum. Next, I recaulked with cotton caulking any seam sections from which I was able to dig the old caulking. I applied Interlux underwater seam compound to every seam below the waterline, and my dad and I applied epoxy to a couple of deadwood areas that were neither structural nor would be affected by the swelling of the wood once the boat was launched.



Jasmine Thomas (right) spent a good part of last winter rehabilitating the Sparkman & Stephens–designed Gulfstream 30 sloop ADVENTURESS (above), which was built by Norman Hodgdon in East Boothbay, Maine, in 1959.





***Above left and right*—ADVENTURESS had been out of the water for more than two decades when Jasmine acquired her. Much of the initial effort involved cleaning and organizing, followed by careful assessment and treatment of the plank seams, lots of scraping and painting, and a thorough overhaul of the engine.**

Once the mahogany was clean, I primed the bottom with Pettit Tie Coat 6627 (see Review, WB No. 305), and followed this with two full coats of Pettit's water-based antifouling paint, Hydrocoat. Next, I moved above the waterline to sand, scrape, varnish, and paint just about every surface. The deck paint had no nonskid and was a bright but peeling peach color, which isn't my deck-color preference. While scraping the deck to prep for paint, I found a few problem areas where the fiberglass sheathing had cracked and allowed water in. While the deck was still dry, my dad and I patched these areas with a few coats of epoxy. The deck and coach roof received two coats of nonskid paint (see review, page 96), preceded by a coat of two-part water-based epoxy primer.

Before launching, I also needed to have a running engine and enough of an electrical system to at least run bilge pumps. The boat has a 1996 Beta Marine 20 diesel engine, which was the replacement for an Atomic 4 that had caught fire in the late '90s. The Beta had only a couple hundred hours on it when I acquired the boat. I had the starter and alternator rebuilt at Bonded Auto in Ellsworth, Maine—a local gem of a specialized shop for starters and alternators. New batteries rounded out the electrical overhaul, and I replaced the V-belt, water impeller, and fuel and oil filters. My dad and I also added a mesh strainer for the raw-water intake; the boat, as I bought it, did not have one. He and I debated taking the heat exchanger apart to clean it, as well. We were apprehensive about possibly breaking it and needing to buy a new one. We found a series of YouTube videos showing the process, and were inspired to try. One afternoon, my dad bravely got it apart. It cleaned up well with some vinegar.

After changing out all the fluids, replacing a few obviously worn hoses, and putting the engine back together, we put the raw-water-intake hose into a jug of water and tried starting her up, but it just wouldn't start. We figured there was air in the fuel line, so for a few days tried starting her while bleeding air, to no avail. One Saturday afternoon, my partner and I visited the boat, determined to start the engine. We tried bleeding air from the fuel system a couple more times, with no luck. We then resorted to spraying ether into the air-intake. Like a dragon taking its first breath, it came to life and kept running. It was immensely satisfying to hear the purr of that engine for the first time.

Before I dared launch the boat, I began watering the bilges. Every morning for a week, I filled her with wet towels, rags, and sheets, and poured buckets of water onto her keelson to swell the planks from the inside. When I went on a short trip in June 2025, I asked a few neighbors to help—two to water my boat, another to water my garden. By the time ADVENTURESS launched, she was leaking very minimally from the inside out, which unfortunately was not predictive of her leaking from the outside in.

The first time I saw ADVENTURESS floating, I felt like a mother watching her child learn to walk, just as much in awe as absolutely terrified that she would fall. As she remembered how to swim, I spent about every night aboard for the first month and a half. Since then, I've learned the difference between restoration and resuscitation. The former belongs in shops and books; the latter is not glamorous; it happens deep in the bilges. It's hard to distinguish seam compound from bruises gained from countless painful hours replacing fuel hoses.

But sailing her is worth every bit of blood, sweat, tears, and frustration. It feels as if she is happy to be back on the water. The magic of adventuring with her both solo and with friends is indescribable. She speaks clearly about what she needs and wants, and responds to sail trim and helm adjustment just as clearly. I am currently rebuilding an 1851 farmhouse in Maine with my partner, and in many ways a house such as this is just like a big old boat—just on land. This place will soon become ADVENTURESS's home as well. I still have many hours of work ahead of me bringing the house and ADVENTURESS back to their full glory. As I progress, I'll often think about and live by what Greg Rössel wrote: anything can be fixed, but you have to ask if you want to. I want to.

Jasmine Thomas is WoodenBoat*'s editorial assistant.*

Read Jasmine's review of the deck paint she used on ADVENTURESS, Pettit Tuff Coat, on page 96.

Learn more about Jasmine's ongoing restoration of ADVENTURESS in a newly launched video in WoodenBoat's Mastering Skills collection (skills.woodenboat.com).

Rescue Renovation

Saving BAGHEERA

by Todd Allen Schwede



COURTESY OF PORTLAND SCHOONER CO.

In 1985, I had just started my career as an apprentice marine surveyor with the Lloyds agent in San Diego, California, when I took a call from a rather distraught boatowner seeking advice on what he should do with his 1924, 72′ Alden schooner, BAGHEERA. Intrigued, I agreed to meet at the boat, which was docked behind the Carl Eichenlaub Boatyard on Shelter Island.

BAGHEERA's owner and I met at the head of the dock, and I looked down at the blue-plastic-tarpaulin-covered black schooner, and could tell from a distance that the boat was in terrible shape. Half of the caulked teak deck had been removed, corrosion in the chainplates had affected large areas of rotten planks, and the hull planking had open seams everywhere. The spruce masts had long checks, the paint was shot, and the standing rigging was barely there.

A closer look at the partially removed deck revealed rotted deckbeams and knees, and with half the deck missing the interior had been exposed to the elements for a long time. The boat had been fitted with a 110-volt automatic bilge pump that was cycling every 15 seconds. It was clear that the boat was sinking at the dock.

Once aboard, I immediately noticed that the cockpit engine hatch had been removed. The Perkins engine below was lying on its side, and its cylinder head had been removed. The Monel fuel tank had also been taken apart, and the forlorn yacht had no functioning electrical system.

The once-beautiful mahogany joinerwork in the saloon had scrape marks on every surface, as if someone had gone around with a hook scraper trying to see how difficult it would be to remove 61 years of accumulated varnish. It was heartbreaking to see a boat of this historical pedigree in such terrible condition.

My first impression was that the schooner was in such bad shape that the cost of even minimal repairs would be prohibitive. I was struck, however, by all the custom brass and bronze fittings and the superior craftsmanship of her original builders at Rice Brothers Boatyard in East Boothbay, Maine. I told the owner that I needed to conduct some research and possibly come up with some prices for a "rescue renovation." I soon realized that the neglected yacht was pedigreed and historic and might be worth the serious effort involved in saving her.

***Above*—The schooner BAGHEERA, launched as BEACON ROCK in 1924 by Rice Bros. Shipyard in East Boothbay, Maine, was saved from oblivion in the early 1980s by a rebuilding in Southern California. Today, she is the centerpiece of a charter business in Portland, Maine.**



COURTESY OF THE WEIR FAMILY

Before arriving in California, BAGHEERA hailed for many years from the Great Lakes. In this 1949 photograph, she lies alongside the Chicago waterfront.

Rice Brothers had built BAGHEERA in 1924 for Marion Eppley, a research chemist who made important advances in cadmium battery technology and production during World War I and served as a naval officer in both world wars. He named the schooner BEACON ROCK, after his estate in Newport, Rhode Island. Eppley sold his schooner in 1928 to Robert Benedict, who moved her to Chicago and renamed her BAGHEERA after a character in Rudyard Kipling's *The Jungle Book* (The word "bagheera" is Sanskrit for black panther). John "Bud" Snite owned the yacht in 1935; he was a Chicago banker and was one of the founders of the Great Lakes Cruising Club. She raced there until about 1938, when she was requisitioned as a training vessel during World War II. She returned to private hands after the war and was owned by the Weir family from 1948 through 1973; they sailed the boat out of Detroit, and changed her original gaff rig to Marconi the first year they owned her. By the early 1980s, she had come to California and was in decline.

I spent the next several days studying the value of vintage wooden schooners. I informed the owner that the boat needed to be hauled; it was taking on a lot of water, and we had to assess the extent of damage to the underwater planking.

Adding up the visible damage and making a very long list of all the things that would be required to make the vessel seaworthy, my initial estimate put the repair cost at about $150,000, or nearly half a million dollars in today's money. I thought that would put the project out of reach; however, much to my amazement, the owner didn't even raise an eyebrow. He said that he was in the oil- and gas-leasing business and could raise that money in a heartbeat. He suggested a limited partnership, in which I would be one of the general partners if I agreed to manage the project.

Realizing that saving the boat would require complete replacement of the electrical system, fuel system, rigging, and other components, I suggested that we may as well explore getting her U.S. Coast Guard certified to carry passengers for hire. We could then take advantage of the upcoming AMERICA's Cup races in San Diego.

We hauled the boat and quickly discovered that some 60 years of bottom paint had accumulated. Stagnant black water was leaking from dozens of locations, and planks were sprung, cupped, and leaking. We decided to wet-sandblast the bottom to further assess the situation. Despite the boat's condition, the limited partnership was funded, and BAGHEERA Charters was born. Because this was clearly going to be a major project, the masts and rigging were removed, and the boat was loaded onto a truck and taken to San Diego Boat Movers' inland yard.

Having originally moved to San Diego in 1973 to build strip-planked Doug Peterson–designed ocean racers at Carl Eichenlaub's yard, I had arrived at what was then the center of the West Coast boatbuilding universe. Driscoll Marine was down the street, and the Kettenburg Brothers Boatyard, Kohler Kraft Marine, Hawthorne Marine, Mauricio Brothers, and Knight & Carver Marine were all building boats. Kettenburg Marine had just finished the last of their K-38 and K-52 carvel-planked yachts just before the yard shut down new-boat construction, so several experienced shipwrights were available to



TODD ALLEN SCHWEDE

As planking was removed at the bow, it became clear that the stem was rotted and would require replacement.



TODD ALLEN SCHWEDE (BOTH)

***Above left*—As part of the initial assessment of the work required, the schooner was hauled out and the bottom stripped of paint to reveal the original longleaf-pine planking. *Above right*—The list of suspect planks grew as the topsides were wooded. About half of the hull planking eventually required replacement.**

moonlight until their pink slips arrived. As word got out about this yacht rescue, a lot of talented and skilled people joined the project.

I had decided that the only way to undertake restoration was to gather a team of shipwrights, boatbuilders, mechanics, and painters. We soon pulled a team together, splitting into an A group that would focus on the hull planking and a B group that would focus on removing the remains of the deck and assessing the deckbeams and other structure. They would also eventually remove the interior.

As the planks started coming off the bottom—first two planks, then 10—the extent of required repairs came into focus. The same thing happened with the topside planking: as we wooded it to determine the extent of the rot, the list of suspect planks grew from six or eight around the chainplates to 14 on each side of the boat. In the end, about half of the hull planking had to be replaced.

Then came the bad news. As several of the replacement bow planks were removed, it became apparent that the entire stem was rotten to the keelson and would have to be replaced. We laminated a new one from eight layers of 1″ white oak, glued with epoxy. In the end, the entire bow was renewed.

It quickly became evident that we would have to fabricate new frames for almost the entire starboard side. The port-side frames, on the other hand, had been replaced after hurricane damage in Tortola, and were in good condition. To replace the frames, the interior had to be removed; all of its components were carefully labeled so we could reinstall them after the structural repairs were completed.

The extent of damage to the deckbeams and structural members became apparent as the deck planking came off. A leaking deck has spelled death for many a classic wooden boat by allowing fresh and saltwater to infiltrate the interior structure and substructure, promoting rot and fastening deterioration. We were determined to replace the deck with plywood and epoxy to ensure that it would never leak again. First, we replaced four main deckbeams and their associated knees. All of the other deckbeams were sistered with new white oak tops. Together, these repairs raised the deck 1″.

Because we had to replace the entire deck, we removed the original forward and main deckhouses, which were undamaged, in their entirety. We then proceeded to epoxy-laminate two ½″ layers of okoume plywood. The new deck was treated with penetrating epoxy and permanently sealed with a layer of fiberglass cloth set in epoxy and extending up the bulwarks to the underside of the caprail. The finish system used epoxy primer with silica sand poured into the wet epoxy for a nonskid texture; after the loose sand was vacuumed away, the entire deck was painted with linear polyurethane paint.



TODD ALLEN SCHWEDE

Nearly the entire starboard side required reframing. The port-side frames, however, were still serviceable, having been replaced following hurricane damage in the Caribbean.

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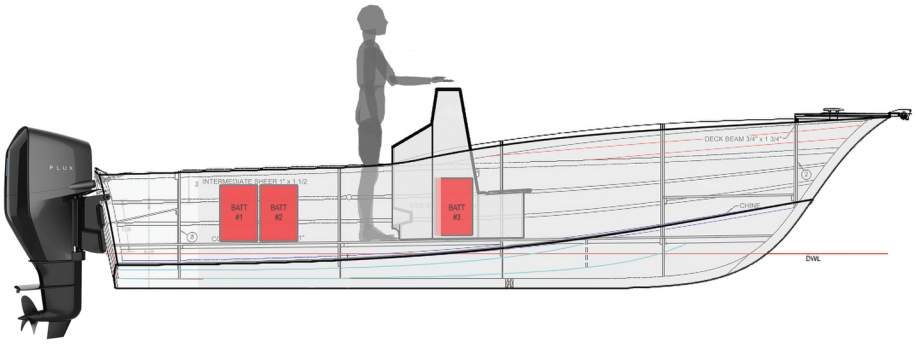

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TODD ALLEN SCHWEDE

The new stem was built of laminated oak.

The hull was originally planked with longleaf pine. That species was rare by the 1980s, so for the replacement planking we chose Honduras mahogany; at the time, there happened to be a glut of cheap Honduras mahogany on the market, but today it also is rare. Following the planking repairs, the entire hull was wooded, refastened, recaulked, faired, epoxy-primed, and painted with black linear polyurethane paint.

Because the hull contained a mixture of the very few remaining original longleaf pine planks and new ones of Honduras mahogany, we decided to treat the bottom with multiple layers of coal-tar epoxy. We applied four coats, thinned 50 percent, with an airless sprayer, with each successive coat chemically locking before cure. We then applied two coats of coal-tar epoxy at full strength, and then the bottom paint.

At the relaunching—and after hundreds of charters in Southern California—neither the decks nor the hull planking ever leaked a drop, creaked, or groaned.

While the hull was under construction, the masts were taken to Bill Clark, the last remaining wooden-mast builder in San Diego, for repairs. Both the mainmast and foremast were wooded, and approximately 800′ of tapered splines were epoxied into the checks before the spars were primed and painted with linear polyurethane. The standing rigging was replaced with new stainless-steel wire, and new bronze turnbuckles joined it to new chainplates. All of the original bronze mast fittings and cranse irons were sandblasted, and inspection found them to be in good shape, which was a testament to the quality of their fabrication at Rice Brothers 62 years earlier.

The interior bulkheads were replaced, with the addition of a crash bulkhead to meet Coast Guard certification. New ceiling planking was fitted, and the original interior was returned to its original position, completely refinished. Ten coats of exterior varnish were applied to the exterior brightwork, and during the boat's subsequent tenure in California, she would receive a fresh coat every three months.

The custom Dorade ventilators and hatch frames were polished and placed back in their original locations. BAGHEERA's Perkins diesel engine was rebuilt, an Onan generator added, and she was entirely rewired to meet Coast Guard requirements. On deck, stainless-steel stanchions and lifelines were installed and all the required equipment was provided for the schooner to be certified to carry 49 passengers.

The entire project took 10 months. The initial budget was blown out to just under $200,000—about $625,000 today. The paid construction crew numbered 15, and there were dozens of volunteers on the weekends.

We were in business! The boat looked like new, and we won an award from the San Diego Historical Preservation Society for our restoration. During the course of the reconstruction, seasoned mariners jumped on board as captains and crew. We fully embraced the *Jungle Book* theme and dressed the crew in pith helmets and khakis. The boat sailed like a dream. She was fast, perfectly balanced, quiet, and stable in all conditions.



TODD ALLEN SCHWEDE (BOTH)

***Right*—Four deckbeams were replaced outright; the rest were given a 1" laminate of white oak, raising the deck by that amount. This was covered in two layers of ½" plywood with fiberglass-and-epoxy sheathing. *Far right*—The extent of BAGHERA'S structural overhaul is evident in this photograph of her bilge before the sole was reinstalled. The schooner received new ceiling planking and crash bulkheads to meet U.S. Coast Guard certification standards. Her original interior was refitted after the hull refurbishing.**



TODD ALLEN SCHWEDE

The renewed BAGHEERA received U.S. Coast Guard certification to carry 49 passengers and entered the charter trade in Southern California for several years.

In 1989, BAGHEERA Charters sold the boat to my friend Tom Gay, and the company was renamed BAGHEERA Sailing Adventures.

As a result of the publicity—the relaunching party had drawn tremendous media attention with television coverage and newspaper articles—I started getting phone calls from previous owners and people who had been involved with BAGHEERA over the years. Dick Davies, a naval architect who had retired to San Diego, contacted me and requested a set of her plans; during his time as commodore of the San Diego Radio Boat Club, a fleet of six radio-controlled models of BAGHEERA raced as a one-design fleet. It turned out that Dick had taught me speed-skating when I was 10 years old in Rocky River, Ohio. He was also the naval architect who changed BAGHEERA's original gaff rig to Marconi in 1949, when the boat was in Detroit.

I got a call from another schooner owner, Paul Plotts, who owned DAUNTLESS, a 1935, 75′ Alden, who wanted to challenge us to a match race, which again attracted tremendous media interest. Bud Snite, who was 86 at the time and lived in La Jolla, a little north of San Diego, called and asked if he could join us for the race. My captain, Rich Gobin, visited Bud's home and reported that the entire den was covered in half models of BAGHEERA and lined with racing trophies.

Bud was delighted to be aboard BAGHEERA once again, but, during the race, as DAUNTLESS passed us,

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KERRY DALY

After her career in the charter trade in Southern California, BAGHEERA moved to Portland, Maine, where she continued the same work under the aegis of Portland Schooner Company. She has recently undergone another major hull refurbishment.

he lamented the fact that we did not have a fisherman staysail, and generously had one made for the boat, rounding out the five-sail plan. We still lost the next race, but only by a boat length.

We invited the local hotel concierges to the boat for sunset champagne cruises, and the charter business started to take off. We soon began doing three charters per day during whale-watching season; we later sailed five per day during the AMERICA's Cup races.

One night in 1997, while watching on television Dennis Connor's STARS & STRIPES win the AMERICA's Cup back from the Australians, at 2:30 in the morning, at the famous Kona Kai Club, my friend Dave Rozier suggested that we start the AMERICA's Schooner Cup.

Stumbling our way out of the hotel lobby, we spotted a very tarnished giant brass flowerpot, had an "aha-ha" moment, and clandestinely sneaked the pot into the trunk of Dave's truck. I had a plate-glass top made, using the sail plan drawing for BAGHEERA, and turned it into a trophy.

The Kona Kai International Yacht Club was thus formed, with Dave Rosier as its first commodore, and in 1988 the AMERICA's Schooner Cup became a charity event for the Navy Relief Society and Make-a-Wish Foundation. The first year, 12 schooners showed up, including DAUNTLESS, KELPIE, (now KELPIE OF FALMOUTH), Richard Straman's ASTOR and the replica schooner AMERICA. The next year, 24 raced. The Kona Kai International Yacht Club was subsequently absorbed by Silvergate Yacht Club, which continues to host the AMERICA's Schooner Cup as a charity event to this day.

During her time in San Diego, BAGHEERA took thousands of people on whale-watching and sunset cruises. Dozens of people were married aboard her, and from her decks dozens more had their ashes committed to the deep. I can't describe the amount of fun and wonderful memories, and the deep feeling of satisfaction knowing that now, 39 years later, and after she passed the 100-year mark in 2024, BAGHEERA continues to write her story.

As Greg Rössel notes in his article beginning on page 34, "Anything can be fixed. The question is, do you really want to. How much time do you have? How much money?" The BAGHEERA project came to us 40 years ago in a rare confluence of motivation, skill, vision, time, and money. The work accomplished in 1986 saved the boat from a sure trip to either a dumpster or to the bottom of San Diego Harbor—and set her up for a career that continues to this day.

Today, BAGHEERA is the centerpiece of the Portland Schooner Company in Portland, Maine, where she sails day charters. She has been listed in the National Register of Historic Places and recently underwent another refurbishment that promises to keep her going for at least another 40 years.

Todd Allen Schwede has been in the marine industry for almost 50 years. He started as an apprentice boatbuilder with Carl Eichenlaub in 1973, and later became a partner in Eichenlaub Marine and Shipbuilding. He transitioned to marine surveying in 1984, and is now an Accredited Marine Surveyor, Certified Professional Insurance Investigator, and Certified Marine Investigator. He is also the author of the book Rockin' the Boat: Adventures of a Marine Investigator.

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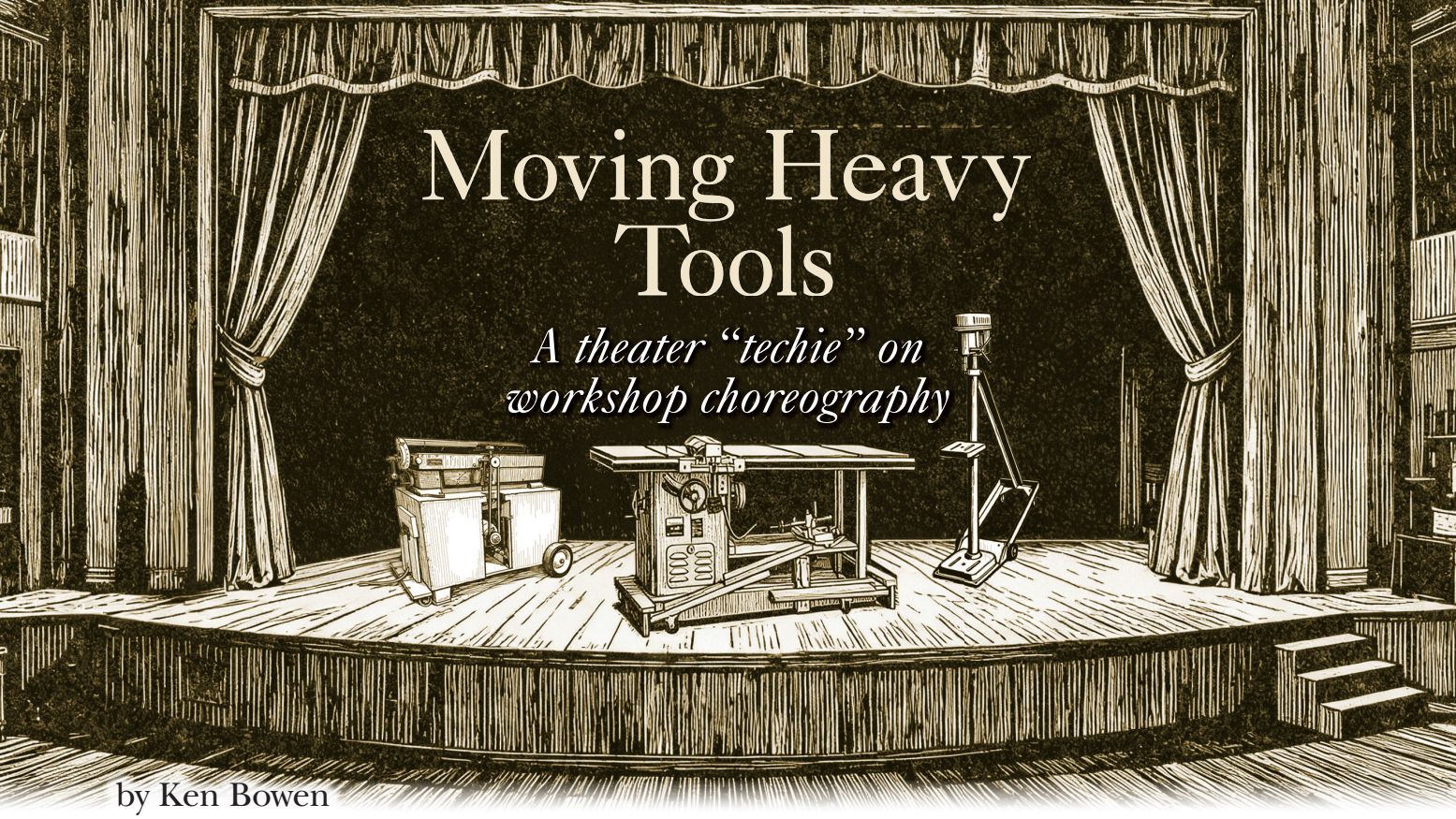
Moving Heavy Tools

A theater "techie" on workshop choreography



by Ken Bowen
Illustrations by Isaac Robbins

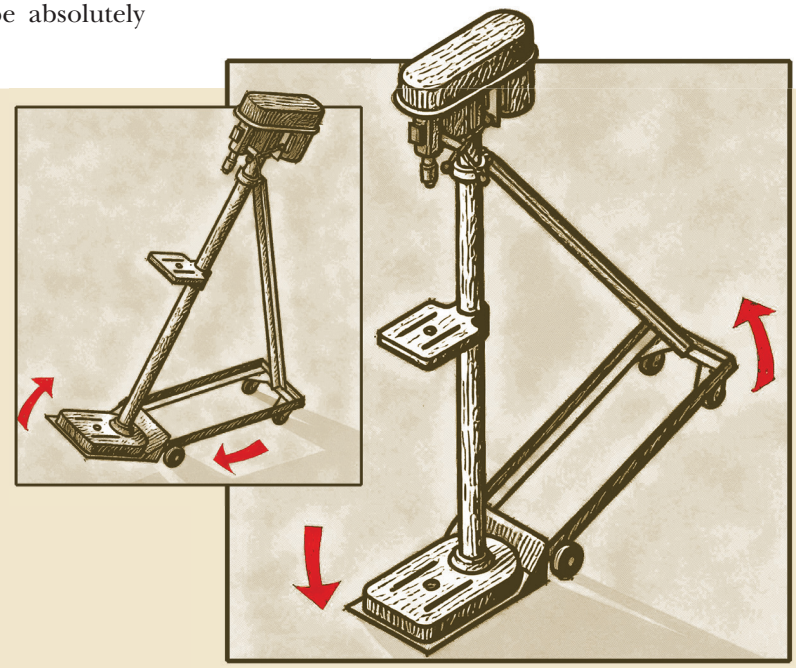
Boatbuilders are sometimes called on to make theatrical scenery, and theater stagecraft "techies" are sometimes drawn to boats. In the spirit of supporting my colleagues in both vocations, I offer some ideas from the theater world for moving big stuff in the shop.

As with boatbuilding shops, there never seems to be enough space in theater settings. The most important requirement is that "the thing"—whether it's a tablesaw, a set of boat molds, or scenery—gets placed exactly where you want it ("on spike" in theater jargon), and when it is in position it needs to be absolutely secure, without wobbling during use.

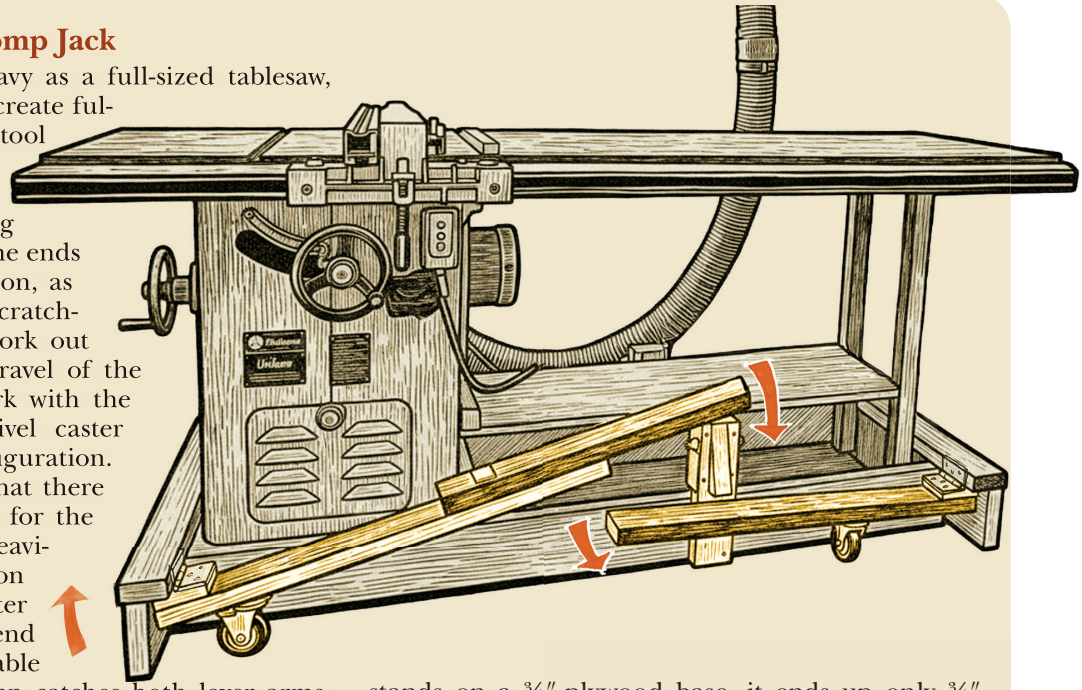
To this end, theater folk regularly engineer devices to move tools, equipment, and sets so that these items will be solidly in place after they've been moved. They have to be placed directly on marks on the (possibly uneven) floor, with shims as necessary to provide solid footing. You likewise want a stationary tool to be firmly "home" when you use it in the workshop, assuring safe and effective work. On the following pages, I offer some tricks and devices from the theater world that can be applied to managing tools and other heavy items in a boatshop.

The Tip-Jack

Drill presses (as shown at right) and bandsaws are examples of awkward and top-heavy objects, and for these, a tip-jack works well. In theater work, entire 15′-high walls are moved with this device. There are many variations, but basically the center of gravity of the thing being moved must be over the supports when it is in place and also when it is moving. These supports can be as simple as a repurposed, cheap two-wheel dolly with a kickstand, and can be made to be removed or folded up when not needed. The jack shown here holds the tool solidly and the casters fully rotate, allowing the heavy object to be accurately positioned and lowered into place.



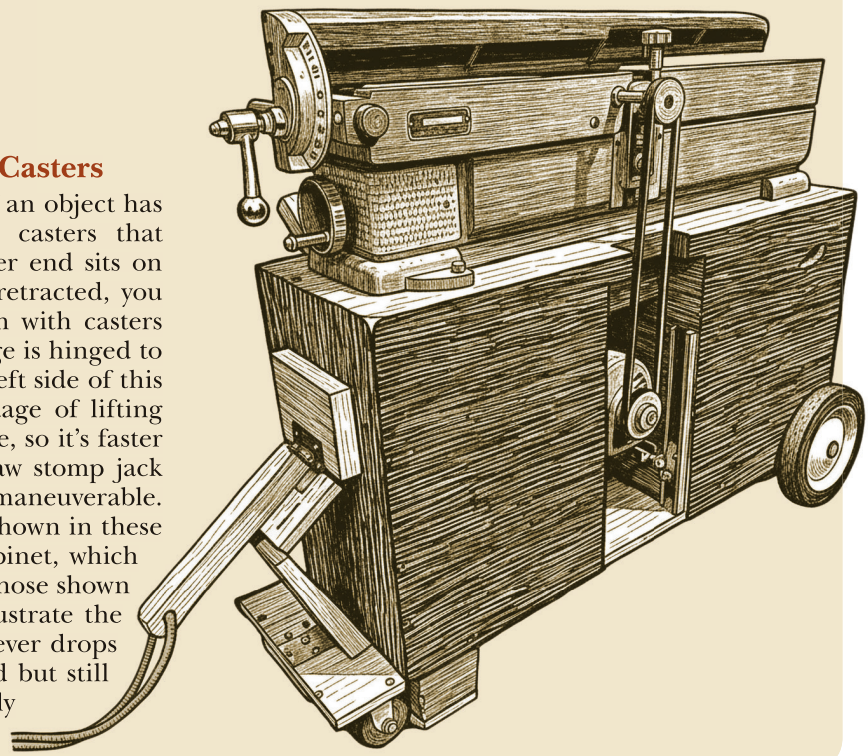
Stomp Jack



For something as heavy as a full-sized tablesaw, fully rotating casters create fulcrums allowing the tool to be lifted easily by stepping on the outboard ends of long 2×4 levers hinged at the ends of the tool's foundation, as shown. A bit of head-scratching is necessary to work out the angles and the travel of the levers to make it work with the geometry of the swivel caster and the saw's configuration. The drawing shows that there is a longer lever arm for the caster under the heaviest end of the saw (on the left), and a shorter one for the lighter end where the extension table is. However, one stomp catches both lever arms, lifting the front of the saw on two casters. Both levers hook under a spring-loaded wooden catch to hold the unit up. A matching pair of levers lifts the opposite side of the saw. Because the saw stands on a ¾″ plywood base, it ends up only ¾″ taller than when it was on the floor. The levers raise it enough to get to a new location. The whole rig is made of scrap 2×4s, plywood, door hinges, and four high-quality casters.



Mixed Casters

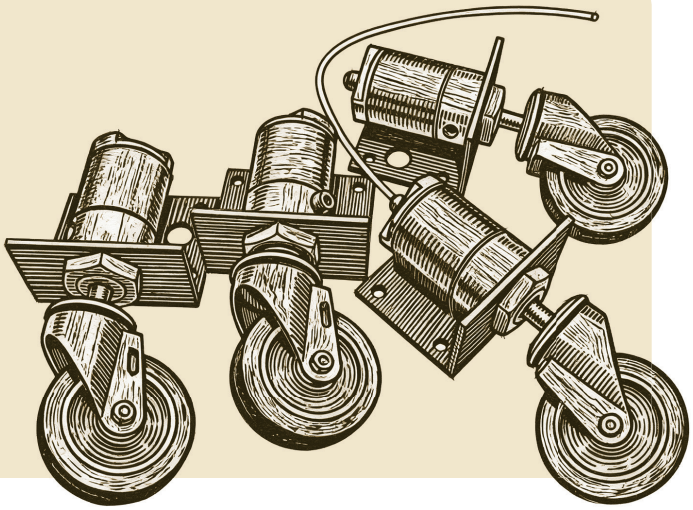


If one end of an object has straight wheels or casters that don't swivel and the other end sits on the floor when its casters are retracted, you can get away with a one-lever system with casters mounted on a board whose outer edge is hinged to a base plate below, as shown on the left side of this jointer cabinet. This has the advantage of lifting only one end to make the tool mobile, so it's faster and easier to raise than the table-saw stomp jack illustrated above, although it is less maneuverable. Stomping on the long, hinged lever shown in these drawings lifts the left end of the cabinet, which doesn't have permanent casters like those shown at the right. These drawings also illustrate the "over-center" principle: pulling the lever drops the heavy object—in this case an old but still reliable Craftsman jointer—exactly where it needs to be.

Pneumatic Casters

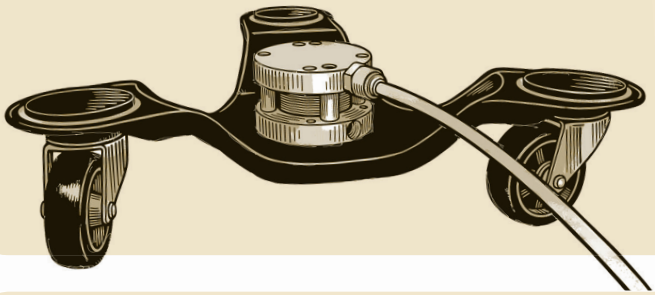
Many woodworking shops have air compressors, and the valves, connectors, regulators, gauges, and other accessories that accompany them are widely available, as are the specialized type of bolt-attached casters shown here, which have a threaded attachment that the piston of the cylinder screws into.

The appeal of air power is that it can be fairly quiet and also robust. If your shop compressor works at a typical pressure of 90 lbs per square inch (psi), this means that if you apply it to a 1″-square surface it will lift 90 lbs. These casters have the virtue of simplicity, and the pneumatic casters can be chosen for the size suiting the job.



Versatile Lifts

If you can get the thing you want to move onto a 4′×4′ or 4′×8′ platform made of ¾″ plywood with a foundation of 2×4 framing on edge (for an overall height of 4¼″), you can use short-throw cylinders, as shown in the drawing below, fitted to commercially available furniture dollies. Pneumatic types such as the one shown here—1½″ in diameter with a ¾″ stroke—are available from many places, including Grainger and McMaster-Carr. The round lifting surface has a radius of 0.75″, so its area is 1.77″ (π × r2), which at an air pressure of 90 psi yields about 159 lbs of lifting force per caster-plate. So caster plates at each of the four corners of a 4′×8′ platform can lift about 635 lbs. When you shut off the air supply, the thing drops to the ground, sitting solidly on the perimeter framework of 2×4s.



These triangular furniture dollies have some benefits that might not be immediately obvious: the triangular support on three casters spins freely on the cylinder, so if one of the casters hits an abandoned drywall screw or wood chip on the floor, it rotates to the back and might ride over the obstruction.

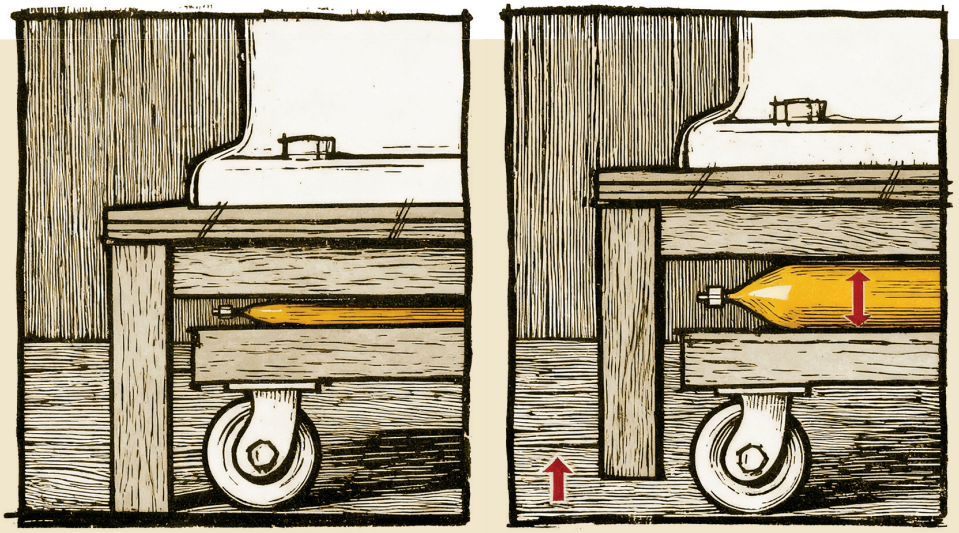
A Portable Pneumatic Air Supply

If you don't want to have to drag a hose to something when you want to move it—which is often the case in theater production—one option is to hide an air tank somewhere on the thing you want to move and charge it up occasionally.

One option for such a system is a scuba tank, as shown at right. The typical modern two-stage diving regulator sends air at about 160 psi from the first stage to the second stage at the mouthpiece, so one can get a used scuba regulator and put a standard shop regulator where the second-stage mouthpiece regulator used to be. For safety, it is best to have a dive shop do this conversion for you, because the fittings are unique to diving equipment. You will want an over-pressure safety relief valve in the system, because scuba first-stage regulators sometimes go wild and send full-tank pressure down the line.

Using scuba gear is the most expensive option, and a scuba certification is required to get a diving-air tank refill. But, as they say in theater work, "the show must go on," and being able to work up a solution on the spot—and on a deadline and a budget—is a valuable skill. A simpler pneumatic rig can rely on a standard air tank of the type sold as a tire-refill tank or as a replacement for your rusted "pancake"-style compressor.

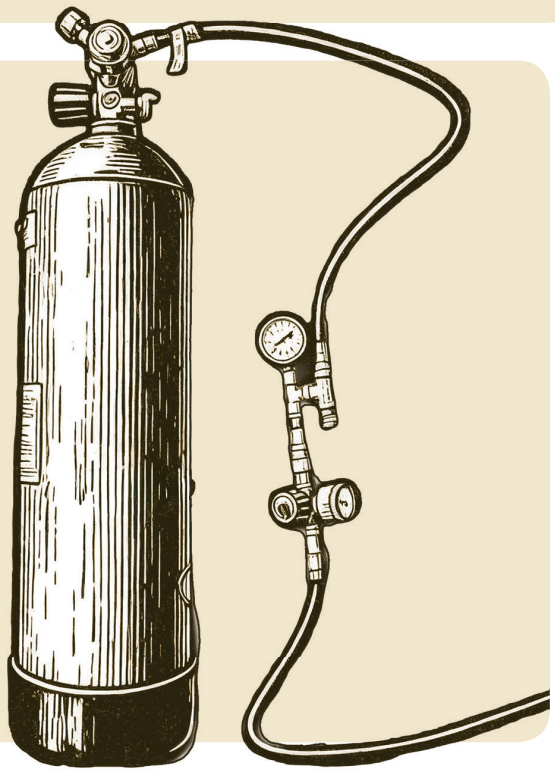
Carbon-dioxide tanks are also a great option. You can get 20-lb tanks from many companies that supply carbonated drink machines, which are ubiquitous in restaurants, quick-marts, and elsewhere. There is much more gas in one of these than in a comparable scuba tank. Such tanks must be stored vertically because the gas inside is in liquid state, but that fact means that there is a lot of pressurized gas available. Put a regulator on it and you can easily supply steady pressures of 150 psi, which gets pneumatic pistons very excited. I have also done limited spray-painting and sand-blasting with carbon dioxide tanks.



Pneumatic Improvisations

One low-tech way to accomplish the lift is to use the principle, which is also common in clamping wood laminations, that tremendous force can be generated with low-pressure air if it is distributed over a large area. For this purpose, I have used sections of discarded 4″-diameter firehose with a rubber liner, sealing the ends with rubber cement backed up with ⅛″-thick steel plates clamped with numerous 3⁄16″-diameter bolts. This clamping assembly consumes about 1½″ of each end of the hose, and a bit of pressure is lost due to the curvature of the hose's sectional shape and the crimping at the ends. I calculate that a finished 4′ length of fire hose yields about 135 sq in of effective lifting area, so with only 10 psi you get a force of 1,350 lbs, and more pressure results in more lifting power.

These sections of hose slide into place on top of a rectangular frame made of 2×6s on the flat, with casters extending below the frame. Above this framework, a ¾″ deck for the platform, as shown in the drawings above, is built on a perimeter foundation of 2×4s on edge, with guides holding the foundation and caster frame in position. The air is supplied or released via a nylon valve fitting in the middle of the hose sections, gooped up with whatever wonder-sealer you have on hand. When the hose sections are inflated, the entire platform lifts enough for the 2×4s to clear the floor by ¾″ or so, transfering the load to the inner 2×6 frame's casters. After the heavy thing is rolled into its new position, deflating the hose sections allows the outer platform to land on the floor again, exactly on its new location marks.



These examples of ways of moving heavy tools can also be applied to a host of other objects: boats, timbers, building jigs, just about anything. In one high-school production of Stephen Sondheim's musical *Sweeney Todd*, our crew had to move two, two-story buildings, each of which had an attached stairway, around the stage during the production. Both were lifted, silently, onto casters by pneumatic power, one supplied by a carbon-dioxide tank, the other by an air tank that was charged up to 90 psi before each show. All that is required is a strategy, planning, appropriate equipment, and care.

After 45 years as a theater designer, carpenter, painter, rigger, and techie, Ken Bowen, who grew up in a sailing family, built the Mackinaw boat SAGA *and now lives in Port Townsend, Washington.*

ISOBEL



ALISON LANGLEY

An electric runabout with mid-century roots

by Robert W. Stephens

Particulars

LOA		26′6″ (8.09m)
Hull Length		24′3″ (7.4m)
LWL		21′8″ (6.6m)
Beam		7′11″ (2.42m)
Draft	motor down	2′2½″ (67.5cm)
	motor up	11″ (28cm)
Displ.	(two aboard)	2,750 lbs(1,250kg)
Power		40kW (54 hp) RAD outboard
Battery		55kWh Fellten power pack

Every now and then, the stars align and every element falls into place for a very special project. In the spring of 2021, during the depths of the Covid-19 pandemic, a good friend telephoned me for some boat advice. Mary Jane was considering purchasing a lakefront property, and she asked me to advise her about an appropriate small motorboat to serve as a tender to the property. She had a trial run scheduled with a local dealer for a small production outboard launch and wondered if I would like to take a ride.

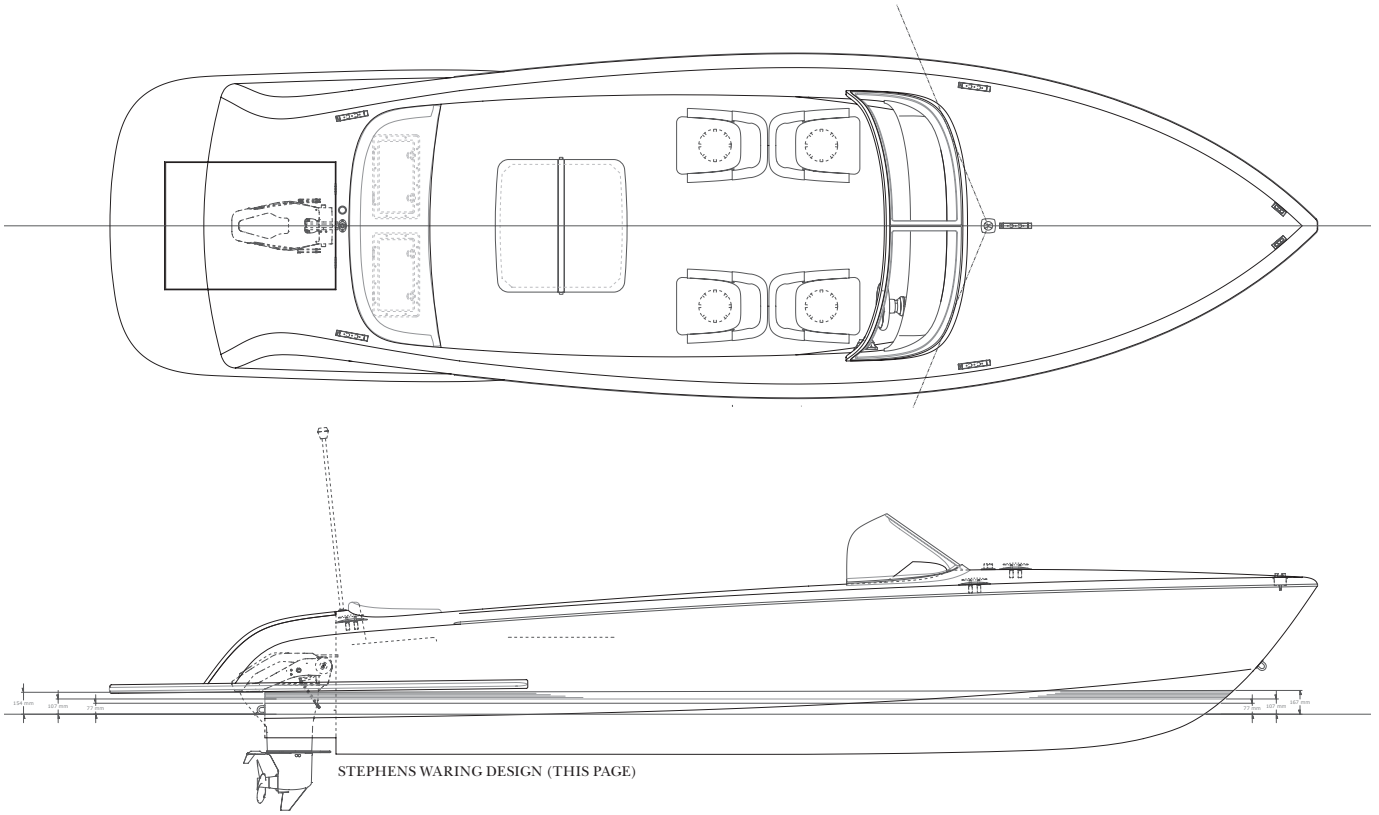
It was early May, which in coastal Maine is very early boating season. The temperature was chilly, but the sun was bright, the air was crisp and breezy, and I hadn't been afloat yet that year. Why not go for a ride?

We met on the shore of Lake Megunticook in Camden, Maine, where the dealer had the boat ready to launch. It was a brand-new, traditional 21′ offering—something that would have been familiar to anyone who grew up on a lake in the U.S. or Canada in the mid- to late-20th century. More attractive utility launch than runabout, it featured a boxy metal-framed windshield over a short foredeck, bench helm seats aft of the dashboard, aft-facing seats amidships, and a bench seat across the after end of the cockpit. All surfaces in the cockpit were carefully wrapped in marine-grade white vinyl. In a splash-well aft, a 150-hp two-stroke gasoline-powered outboard motor loomed over the quarterdecks.

The motor rumbled to life, and we cast off from the dock and explored the beautiful lake for an hour or so putting the boat through its paces. Mary Jane had experience with large saltwater sailboats, but the small powerboat world was a mystery to her, so this experience was quite enlightening. The boat was a good performer, coming up on plane easily and running at speed smoothly and steadily. It also exhibited the typical vices of outboard boats: difficult close-quarters maneuvering, engine noise from the tall cowling, and the outboard motor's visual interruption of the boat's lines—and the sight lines from the boat. The most noticeable vice came when we tried backing into a stiff breeze; the exhaust gases welled up from the water's surface and blew back through the cockpit, carrying the distinctive gas-and-oil smell of a two-stoke motor.

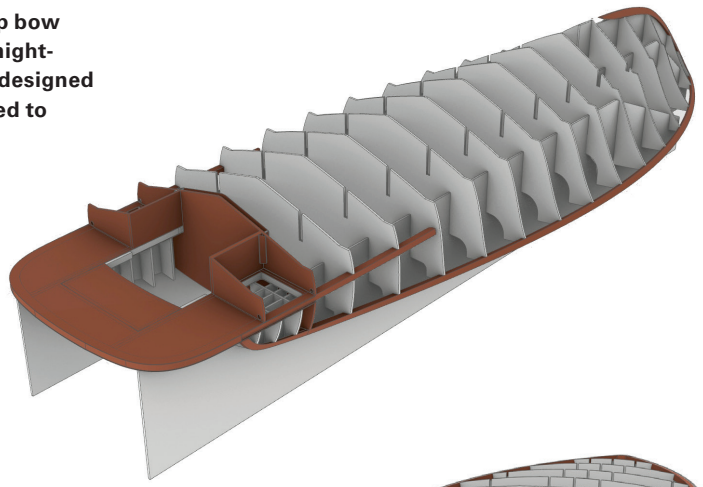
In a debrief over lunch, Mary Jane conveyed her impressions and asked me for my take on the boat. I

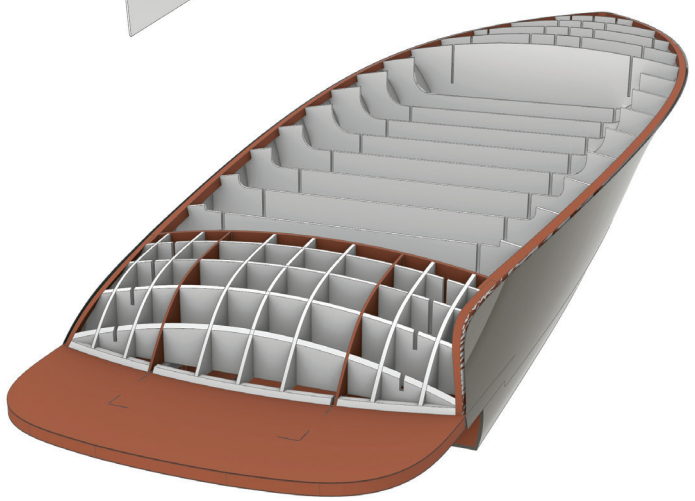
***Above*—ISOBEL, a 26′ runabout from Stephens Waring Design of Belfast, Maine, was conceived as a commuter boat serving an island property on a Maine lake. A tight set of parameters—a short commute, readily available charging on both ends of the commute, and occasional watersports outings of an hour or so—made the boat a ready candidate for clean, quiet electric propulsion.**



STEPHENS WARING DESIGN (THIS PAGE)

***Above*—The deck plan shows seating for six or seven clustered around a central "coffee table" concealing the Fellten battery. A pop-up bow light and removable all-around stern light on a wand serve for nighttime operation. *Right and below*—The CNC-cut jig assembly is designed to support structural components and planking, then be inverted to support the deck planking and slipper stern.**





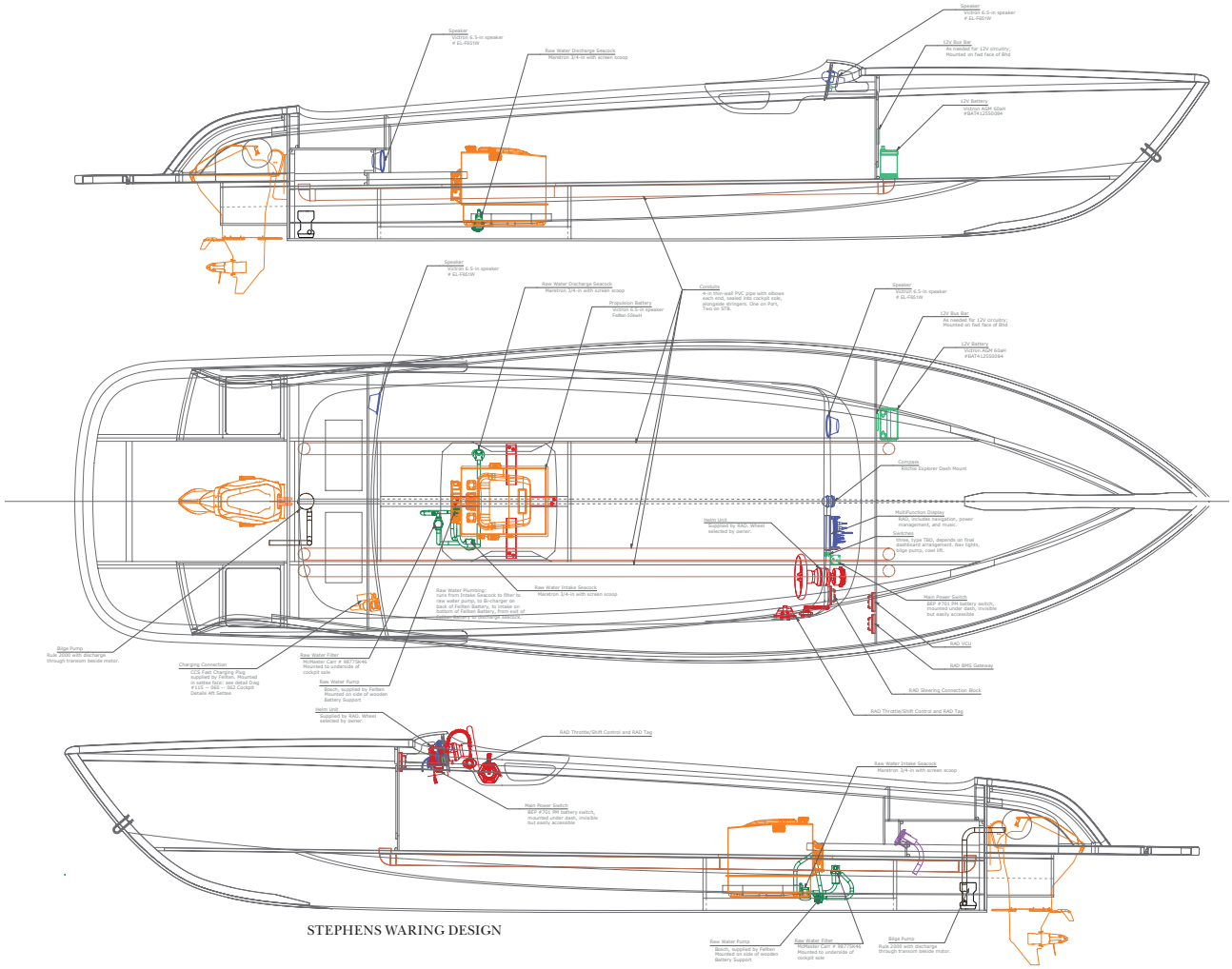
knew intuitively, from the history of our friendship, that she was chafing at the idea of compromise.

Mary Jane's husband had been a longtime client of ours at Stephens Waring Design; he'd became a dear friend through the design and build of four custom sailboats between 2001 and 2011. Marrying into "the family," Mary Jane had been a part of the design input for the last two yachts, a 50′ sleek daysailer named GINGER and a 68′ unconventional fast cruiser named ISOBEL.

If there's one thing the luxury of having a custom design experience does for a person, it's to make them resistant to settling for "good enough." Working together on the design of the sailboats, Mary Jane and her husband had collaborated with us on a couple of exquisite yachts that suited their requirements ideally and expressed their aesthetic priorities emphatically. We had then frequently sailed together aboard the yachts for a decade before her husband's death in 2020.

The utility launch was a good boat and would have served Mary Jane's purposes well. It was well-built, sturdy, and decently finished. In every respect it was perfectly fine. But when you have had exquisite, settling for perfectly fine isn't easy to do.

During our debrief, I compared the launch to a high-end pickup truck—luxurious and comfortable, absolutely serviceable, but not beautiful. It'll do everything you need, but it'll never be a Ferrari.



The mechanical schematic demonstrates the simplicity of the motor and battery installation.

And, like a high-end pickup, the launch was not exactly cheap. Its cost was much less than an equivalent custom boat, but still a significant sum to plop down on something that's…well…serviceable.

As we talked, it became clear that Mary Jane felt the property deserved something special, and that she would derive enough enjoyment from continuing the custom design-build process she had learned with her husband, and from operating the resulting tailor-made craft, to warrant the additional expense.

We considered her biggest objections to the utility launch and found they centered on the power plant. The two-stroke outboard was bulky, noisy, visually obtrusive, and smelly. Could we design something that eliminated all those concerns?

My design partner, Paul Waring, and I have been interested in the possibilities of electric propulsion for a couple of decades. We've designed a few electric and hybrid boats over the years, followed the development of increasingly practical electric solutions for propulsion, and kept abreast of battery technology and how it has affected the broader application of electricity as a realistic marine-power solution. The biggest lesson that keeps getting hammered home is that electric propulsion can be a viable choice—but for the time being, only in specific use cases that suit the limitations inherent in today's motors, batteries, and management systems. The goalposts are moving, but the big limitation is the energy-density of batteries versus a tank of gasoline or diesel fuel.

To put this in perspective, consider a standard 6-gallon portable gas tank that supplies a small outboard motor. That 6 gallons of gasoline with its tank will weigh about 42 lbs, which is roughly comparable to a Group 24 deep-cycle lead-acid battery, but it contains about 500 times as much usable energy. You can see from this simple example the dramatic difference between the ability to go fast or far under electric-vehicle (EV) power compared to internal-combustion (IC) power.

Improvements in batteries have made the difference between impractical-under-any-circumstances and practical-under-very-specific-circumstances. Land-based EVs use lithium-nickel-manganese-cobalt chemistry, which provides an energy density about five times higher than lead-acid batteries and can be discharged to a much lower level without damaging the battery. So, they have about eight times the usable energy density of lead-acid, and 1/60 the usable power per weight of gasoline.



DAN MILLER

The upside-down hull is show here ready for sheathing with 12-oz fiberglass and epoxy.

Fortunately, other factors benefit the electric side of the weight ledger. Electric motors themselves usually have higher power density compared to gasoline-powered ones, and even more versus diesel engines. In extreme cases, an electric motor not much larger than a large coffee can is capable of producing in excess of 200 hp (150kW). Compare this to a six-cylinder IC engine that may weigh close to 1,000 lbs (450kg). Reduction gears aren't required for electric motors in most cases, so we can save another couple of hundred pounds (90 kg). No exhaust components are needed—another 100 or 200 lbs. And electric motors are so quiet that soundproofing the engine compartment isn't needed, and this can amount to a couple of hundred pounds for a 200-hp IC engine. Any weight saved in these ways can be devoted to increased battery capacity and thus longer range.

Still, finding a use profile where a battery-electric propulsion system will work is challenging. The user's range requirement must be low and recharging easily available. The time required for recharging must be an acceptable hindrance to the boat's use. In general, the user must be willing to make a tradeoff between speed and range. And usually there must be other compelling factors to push the decision toward electric propulsion.

In Mary Jane's case, all these factors fell into place. Her lakefront island property is only a fraction of a mile from the shore dock. The lake is only about 2 miles long. Electricity is available at the mainland dock. And she's willing to use the high-speed ability of the boat only under certain conditions, such as for an hour or so of water sports. As a further incentive toward electricity, conventional fuel isn't available on the lake, so it would have to be carried in by truck a few times a season.

Finally, aesthetic considerations tipped the balance. We can conceal the small electric motor within the shell of the boat, its operation is virtually silent, and there's no exhaust gas to foul the air or water. Mary Jane's vision for her island retreat is a low-impact camp-style compound, powered by a modest solar array and heated with woodstoves. The electric boat would complement this ethos.

Having received the go-ahead, our challenge became to make it all work. The first step was to set performance parameters for the hull. Mary Jane wanted the sensation of speed and the capability for limited water sports—towing a tube or light-duty water-skiing. This meant planing speeds, with a top-end of about 20 knots (25 mph). She would plan on running the boat as a commuter at much lower speeds—a high displacement speed of 5 knots (6 mph) would get her from the mainland landing to her island dock in a few

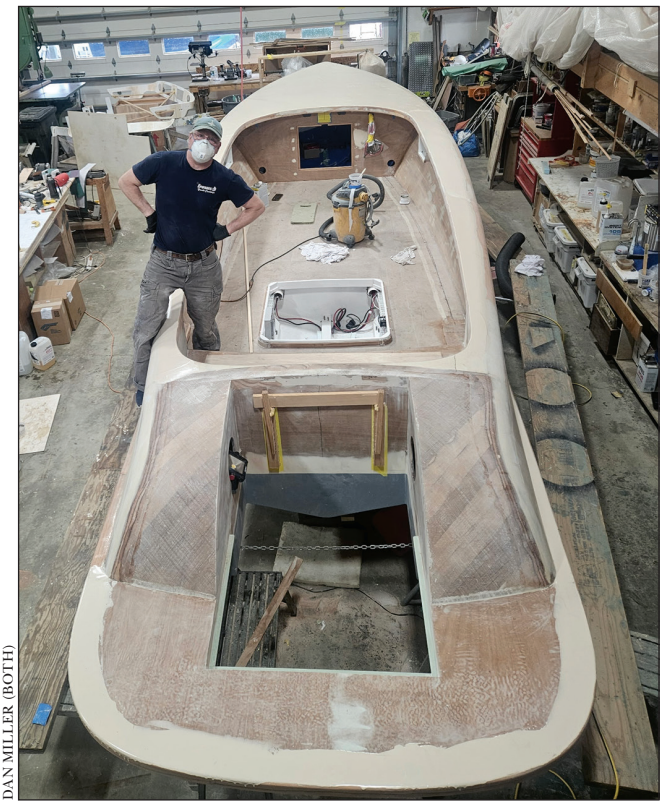
***Below left*—Turned right-side up, the hull was ready for the deck and slipper stern installations. *Below right*—Here, the foredeck has been cored and its top skin installed, while the slipper stern's core and final layers are being vacuum bagged into place.**



DAN MILLER



TRUMAN FORBES



DAN MILLER (BOTH)



***Left*—After being sheathed and faired, the hull and deck are ready for primer. *Above*—ISOBEL receives her sprayed-on Awlgrip topcoat, which was applied in the yard's dedicated paint booth.**

minutes. She wanted at least an hour's range at max throttle; this would result in at least 20 hours between charges at the lower speed. As is evident from the above numbers, asking a boat to plane involves much higher power demands than operating at displacement speeds; this is a much bigger factor when the lower energy-density of batteries is in play, compared to an IC engine. If one wants to operate a boat only at displacement speeds, the case for an electric powerboat is much easier to make competitive with IC operation.

We designed the hull as a conventional moderate-V, constant-deadrise shape with wide chine flats—nothing exotic, a shape well-proven for 60 years. For passenger capacity, we were looking at a hull length in the low 20′ range, with an extended stern and swim platform. I expected we could get the weight under 1,500 kg (3,300 lbs) all-up. This dictated a power plant in the 40–50 kW (54–67 hp) range. I knew of several possibilities for suitable motors, but I needed to solve the battery and the drive puzzles.



ALISON LANGLEY

The Fellten 55kWh battery lurks beneath the "coffee table" cover. Belmont Boatworks owner Dan Miller (left) and project lead Myeric Matthews are moving the cover into place in preparation for sea trials.

Most easily available marine electric motors are either configured as standard outboards or designed for inboard installation. With this project, knowing the boat would spend winters on a trailer and be launched on a shallow ramp, we needed a drive that would tilt up. But we also knew the look of a conventional outboard mounted on the stern was a non-starter. I had to find something in between.

We looked at using a conventional sterndrive, designed to mate with typical IC engines ranging from 120 hp to 400 hp but mated in this case with an inboard electric motor. This would have been relatively straightforward—but this type of drive is bulky and heavy, and designed for far more power than we were going to be putting through it. We would have seen substantial power losses in the gearing, and such drives are designed to direct exhaust gases through their lower units—a feature neither needed nor wanted.

I thought I had a promising lead for a while: a new tech company came on the scene with a big splash, with lots of financial backing from a major U.S. auto company and a very slick-looking unit with a 25kW motor mounted inside the lower pod. I could use two of these and hide the upper parts of the outboard motors under a lifting cowl for a super-clean look. We actually placed a pre-order for these units, but over the next months things began looking less promising. Tech support wasn't forthcoming, and eventually I learned that even though they showed examples of twin motors being employed on their proprietary pontoon boats, they did not have a ready-for-sale control system to manage twins for the masses. Such are the tribulations of working at the cutting edge.

About a year after we began the design process, and nearly constant internet searches for new developments, I stumbled across an email news blast alerting me to



ALISON LANGLEY

ISOBEL banks into a turn at speed.

a new company called RAD Propulsion, a U.K.–based startup with a power plant that looked very promising. Better yet, my first email inquiry resulted in an instant response from RAD's chief technology officer, Peter Byford, first by email and shortly after by phone. This was a very good sign, because in cutting-edge projects combining new technology in new ways, technical support is key. Peter explained that my call came at an excellent time: they had just completed prototype trials of their 40kW low-profile outboard and were moving toward the first true production run of 500 motors.

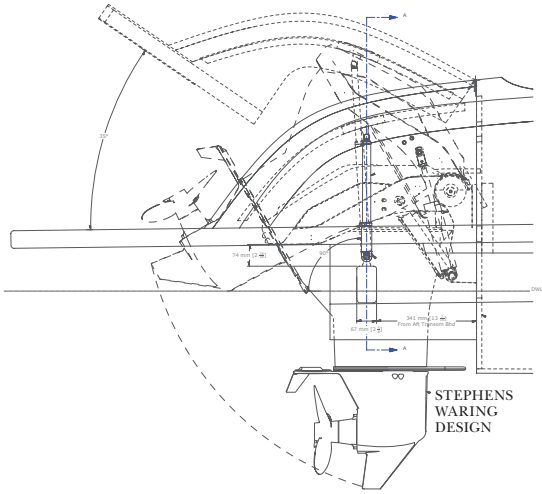
Peter also gave me a valuable lead toward a battery supplier, also U.K.-based: Fellten, who specialize in providing EV retrofit kits for classic vehicles—Land Rovers, Morris Minors, and the like. Their battery solutions rely on standard EV technology—high-voltage DC battery packs and charging systems. This allowed us to use standard EV plugs and fittings, although we also have an adapter to charge from standard marine 220-volt U.S. dock towers. Although ISOBEL will likely never use the feature, the battery also has the capability of using a Level 3 automotive-style DC fast charger—topping it up in mere minutes. (Level 3 chargers are spreading fast along Europe's waterfronts, but their adoption has been slower in North America). RAD has since developed a collaboration with Fellten to sell Fellten batteries direct from RAD.

With motor, drive, battery, and tech support all wrapped in a single package, the roadblocks fell away. It was time to get this boat designed and built.

In my early sketches shared with Mary Jane I had been inspired by the classic varnished speedboats of Italy—Rivas in particular—my imagination fired by youthful exposure to James Bond movies and cigarette ads. Their shapely slipper sterns and rolled sheers were the stuff of dreams, and Mary Jane responded to these images. We worked to refine the tumblehome and the sweep of the swim platform, using the power of 3D modeling and our design team's capability to generate photorealistic renderings to assure we had an eye-catching and dramatic shape. We agreed early on that we'd minimize decoration and simplify finishes to create a spare, clean look; this was our only departure from the Riva inspiration, where glossy varnished mahogany and elaborate mid-century metalwork adorn the boats. With this simplicity, the shapes and curves all had to be just right to convey the elegance we desired. We wanted references to classic mid-century shapes and style, but a modern stripped-down spareness.

Given her husband's fondness for wood construction in his four sailboats, we knew wood would be the construction material of choice. We also knew wood could be competitive in weight to all but the most exotic of composite construction, and it would be a considerably less expensive method than building in high-tech molded composite. Belmont Boatworks in Maine was selected as the builder, given their enthusiasm for the project and their willingness to commit to service after the build. This was convenient, because the boat's home lake lies only a few miles from this boatyard, which is just inland from the saltwater of Penobscot Bay. The yard's owner, Dan Miller, was excited to prove what his talented crew could achieve, and service manager Reid Garrity and project boss Meyric Matthews stepped up willingly and cheerfully throughout a project that pushed their skill set beyond the typical limits.

For light weight and simplified construction, I selected a wood-strip composite schedule for the hull. This is particularly effective in more complex shapes such as our V-bottomed hull with wide chine flats: we could minimize internal structure and reinforce the complex corners at the chine with additional layers of fiberglass tape. The hull is built of 12mm-thick (about ½″) eastern white





ALISON LANGLEY

The lifting cowl in the center of the slipper stern conceals the RAD 40kW motor. Electric lifters raise the cowl to allow tilting the motor fully for trailering.

cedar sheathed inside and out with biaxial nonwoven 'glass, with additional tapes at the keel and chine. We had originally planned on using western red cedar, which for decades has been a go-to material for modern wooden-boat construction, but we learned that the U.S. supply was depleted and Canada was no longer exporting the species. Two beefy stringers of 25mm (about 1″) Douglas-fir contribute longitudinal strength under the cockpit sole. Only two bulkheads are installed. One is the transom, of 18mm (about ¾″) plywood, which is actually forward of the extreme end of the hull, because the hull extends in slipper-stern fashion along each side of a motor well. The other is a conventional bulkhead forward of the dashboard, which extends down only to the cockpit sole; it is of 12mm plywood. All of the plywood is okoume, chosen over sapele for its lighter weight.

The deck is designed to require no beams, relying on its structure to create the shapely rolled sheer. It's a cored plywood construction: the bottom and top skins of 3mm (⅛″) plywood sandwiching two layers of 25mm (about 1″) CoreCell foam with perimeter blocking of Douglas-fir, which is carved to the rolled shape along the sheer. The slipper stern is built as part of the deck; the skins are doubled to two layers of 3mm (⅛″) plywood laid in double diagonals and the core is reduced by 6mm (¼″) to compensate.

The cockpit sole is cored also: it is composed of two skins of 3mm plywood separated by 19mm (about ¾″) CoreCell, with fiberglass skin on the top surface and taped to the hull sides. The cored swim platform was built over an inner horseshoe laminated of Douglas-fir veneers bent around forms placed on a full-sized lofting provided from our computer files. An outer horseshoe was laminated at the same time and then applied over the edge of the platform after the hull was planked and sheathed; this laminated horseshoe serves as a cantilever beam to support the platform.

The hull and deck were built over a set of CNC-cut forms that we designed in our Rhino 3D software to define the shape and provide the support needed to lay the strips in place. We designed the interlocking, egg-crate-style forms to accept the stem, transom, stringers, and inner horseshoe for the swim platform before planking was applied to the forms and structural members. The outside of the hull was sheathed in 12-oz (300g/sq meter) 'glass fabric and epoxy and primed, then the hull, with forms still in place, was turned right-side up. We designed the forms so that they also served to establish deck crown and the shape for the slipper stern. The deck and stern were built atop the hull with forms inside and a plastic barrier to prevent prematurely bonding the deck to the hull, then lifted off so the forms could be disassembled and removed. The already-assembled cockpit sole panel and forward bulkhead were dropped in, then the deck was installed by bonding it and screw-fastening it to the laminated Douglas-fir sheer clamps.

We began construction with a few unknowns still to work out. We had modeled and photorealistically rendered a shapely, upholstered dashboard without a clear idea of how we would build it cost-effectively. We considered molding it of fiberglass, but upon reviewing bids we rejected that direction. Next, we contacted the Advanced Structures and Composites Center at



ALISON LANGLEY

The wrap-around dash was 3D printed from PETG plastic and wrapped in faux-leather upholstery. Anodized aluminum panels shroud the modern electronics in retro style.



ALISON LANGLEY

ISOBEL is in her element on a Maine lake.

the University of Maine, aware that they had recently acquired a very large 3D printer. We connected with James Anderson, an engineer at the university and also a longtime boat nut who takes his work home with him as a hobby: he has a smaller 3D printer at his house and agreed to print the dashboard in several pieces in PETG plastic (polyethylene terephthalate glycol, a thermoplastic polyester) indexed for assembly upon a plywood structural support. The faux-leather upholstery was obtained from Vetus, suppliers of the off-the-shelf helm seats for the boat, and expertly installed on the printed dash by Gemini Canvas in Rockland, Maine. Gemini also built and upholstered the curved rear seat and bolster. The finishing touches were applied in the form of CNC-machined and anodized aluminum dash panels, designed with a retro theme to conceal a modern chart-plotter and steering unit. We reached out to our friends at Van Dam Custom Boats in Boyne City, Michigan, to produce these exquisite panels, knowing that Ben Van Dam and his crew would easily be able to handle the precise metalwork required, given the extravagantly beautiful metalwork they produce every year for their gorgeous wooden powerboats.

The other unknown was the windshield. Combining elegance and cost-effectiveness in a curved, custom glass windshield is a big ask, and Mary Jane pushed me to discover a solution that would be acceptably priced and stunning-looking enough to satisfy her. After trying and rejecting several solutions using laminated wood, then laminated composite, then bent metal frames, we settled on simple curved laminated and tinted glass, unframed.

The RAD motor is designed for standard outboard-style installation, but it is has a much lower profile than many motors of this type. It thus easily lives beneath the slipper stern; we designed a lifting central portion to allow it to tilt up for trailering or beaching. Unlike conventional outboards, the motor head doesn't pivot to steer; instead only the lower unit pivots below the cavitation plate, 90 degrees to each side of the centerline, so it can serve as a stern thruster, pushing the stern directly sideways.

The motor comes complete with dedicated controls and electric steering, simplifying the selection of equipment and assuring compatibility. We chose to purchase a multifunction display from RAD as well, which operates navigation and music apps as well as managing the electric propulsion and battery operation. RAD's constant support with wiring diagrams and other equipment selection was a valuable part of the project's success.

We installed the Fellten 55 kWh battery under a "coffee table" box forward of the after bench, about where a conventional inboard motor might live. The top of the box has the only varnished wood on the boat, a beautiful fabrication of foam-cored sipo mahogany. Storage for chart books, sunscreen, and other low-profile items hides beneath the butterfly lids.

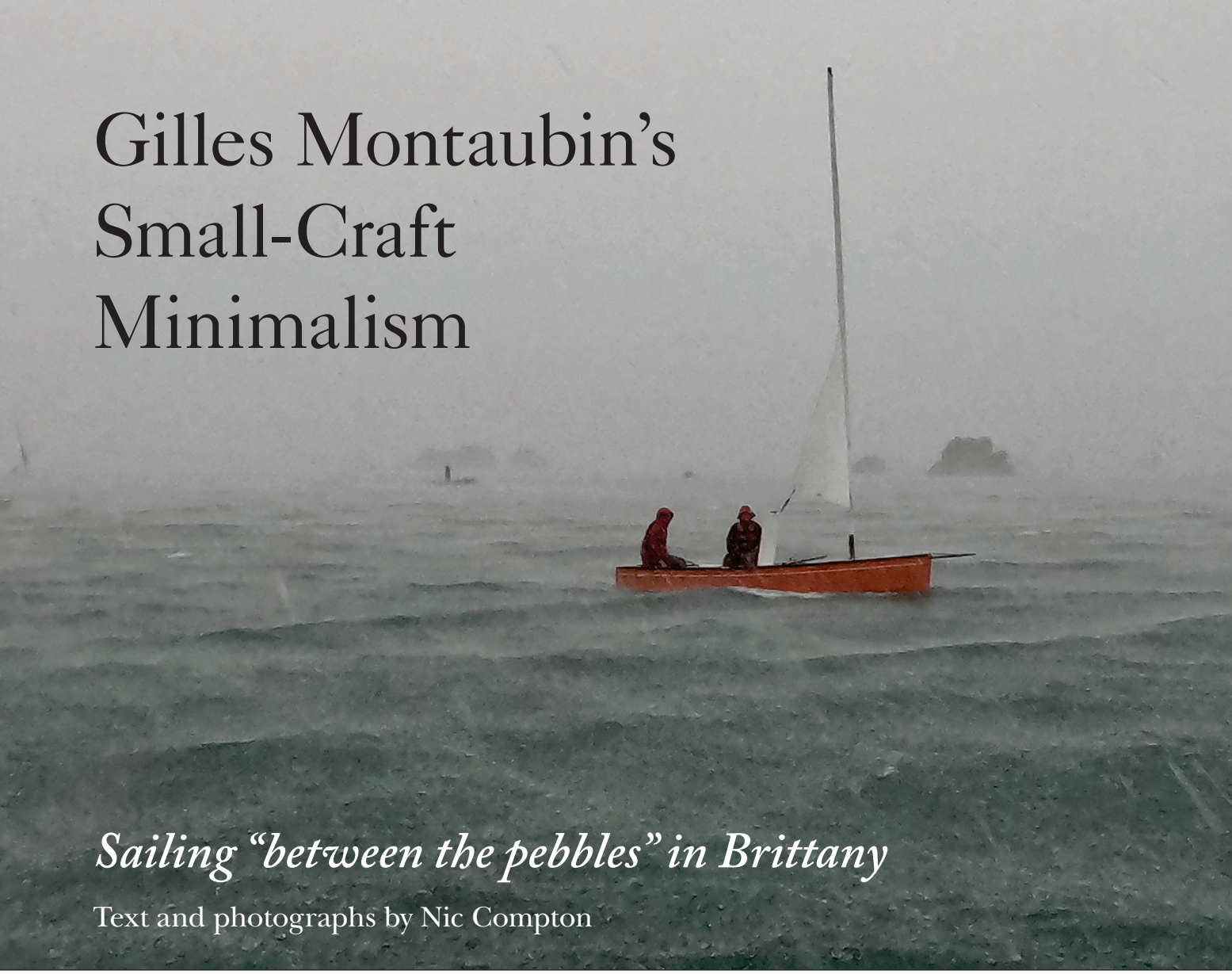
After a 21-month build, Belmont Boat Works proudly loaded ISOBEL (named for Mary Jane's grandmother and for the 68′ sailboat she and her husband owned together) aboard their large hydraulic boat-transport rig and moved her to a nearby lake for trials. The October day was pushing the end of the boating season, and the lowering clouds looked ominously like rain—much-needed after a record-setting drought that had dropped lake levels by 2′. A brisk breeze threatened to strip the remaining autumn leaves from the trees. A successful trial and photo shoot looked chancy.

But as they had throughout this project, the pieces again fell into place. The wind dropped, the clouds parted, the launching ramp offered just enough water to submerge the hydraulic trailer deep enough to slide ISOBEL afloat. And she was off. Her topsides glistened in their shimmering metallic bronze paint, a custom blend and a nod to her larger namesake, which shares the same color scheme. The low afternoon sun picked out the contrast between the off-white deck and the deeply tinted windshield.

Mary Jane pushed the throttle forward and the boat accelerated in near silence as electrons flowed from the battery through the motor. A roostertail blossomed astern and ISOBEL came up on plane. Mary Jane grinned. The stars aligned.

Bob Stephens is a principal at Stephens Waring Design in Belfast, Maine (www.stephenswaring.com), where he works with his partner, Paul Waring, and their team designing new-builds and refits, along with floating homes and other unusual projects. He has been designing, building, and sailing wooden boats for nearly 50 years.

Gilles Montaubin's Small-Craft Minimalism



Sailing "between the pebbles" in Brittany

Text and photographs by Nic Compton

My cameras tell the story: At 9:43 a.m. on June 12, 2025, my faithful old Nikon D800 records several shots of various small boats being rowed in early-morning sunshine across a glassy calm sea. Ahead of them are multiple lines of craggy black rocks, and in the distance an island with a tall, elegant lighthouse at one end. It's an idyllic scene, apart from the huge mountain of black clouds piling up on the horizon behind the fleet.

By 9:47 a.m., the sky darkens and the water turns inky black. A few wisps of wind ruffle the surface of the sea. Although the fleet is running ahead of the clouds, the coming storm is clearly catching up with them. The boats in my photos are reduced to silhouettes against a silvery sea, with a strip of light on the distant horizon.

By 9:52 a.m., the wind begins, and with it the rain. The breeze comes slowly at first, then quickly gathers pace. Most of the boats are now reefed, with sails eased right out.

At 9:54 a.m. the squall hits the fleet. It's astonishingly powerful, with easily over 30 knots of wind. Everyone drops their sails or reduces to the smallest reef possible. We are quickly soaked to the skin—especially those dressed for summer sailing. I stow my Nikon and take out the waterproof GoPro camera I brought along for just such an eventuality.

At 9:55 a.m., my GoPro shows an image that looks like a tropical typhoon: a gray-green sea covered with lines of white spume. The wind is so strong that rather than making waves, it flattens the surface of the water. It should be terrifying, but it's actually mesmerizingly beautiful. Even under bare poles, we are being driven along at a speed of 2 knots. The boats around us seem to be coping remarkably well, too.

By 9:58 a.m., visibility is down to less than a mile. The lines of rocks above the water are gray shadows, and any rocks under the water are invisible.

By 10:15 a.m., it has calmed down enough for me to bring my regular camera out again. The fleet looks a bit bedraggled, but all the boats in my viewfinder are right-side up and seem to have people aboard, which is reassuring.

At 10:39 a.m., I photograph the fleet coming into a small harbor and anchoring in a group in the middle of a pool. Everyone is wet but still high from the rush of adrenaline. It feels as if we've survived a potentially perilous situation. The memory of those dramatic 30 minutes will stay with everyone for a very long time.





***Left*—The Gilles Montaubin–designed SPRINT'O creeps along under greatly reduced sail during a sudden squall on the *Challenge Navigeur Léger*'s approach to Île de Batz on the north coast of Brittany. *Inset*—Most of Montaubin's boats are fitted with mainsails that can be roller-furled around the mast, which allows sail area to be reduced very quickly. *Above*—Montaubin took the helm of his own boat, DIOGÈNE, for the 2025 four-day event, which he cofounded and which is closely aligned with his aesthetic of lightweight, nimble, and fast small boats. The twin asymmetrical daggerboards are held in position with a simple through-pin.**

That squall came during the third day of the 2025 *Challenge Naviguer Léger* (CNL, literally "sailing-light challenge"), which took place last June off the north coast of Brittany, France. The event is an annual invitation-only raid that has a reputation for being one of the most challenging sail-and-oar events in the European boating calendar. It's invitation-only because instead of being an officially organized event, it's more a gathering of friends, which neatly avoids the legal obligations associated with organizing a regatta. As a result, there's no event website, no event listing—just an email list you can get added to if you know whom to ask.

Gilles Montaubin, the French small-craft designer renowned for his minimalist aesthetic, is the event's co-founder and is usually the instigator of these emails. His instructions for the 2025 gathering state clearly that all participants are required to "*naviguer en autonomie complète*," that is, be completely self-sufficient for the duration of the raid. Furthermore, "full responsibility remains with the skipper" for the safety of the boat and the people aboard. The only advantage listed of sailing in a group is "being able to provide assistance if necessary."

Each year, the group votes on where to go next, and Gilles draws up a proposed itinerary. There are no reserved moorings, no organized races, no formal dinner, no ceremonies. Everyone just turns up at a certain place at a certain time and gets on with it.

In 2025, that certain place and time were L'Aber Wrac'h on June 9. The destination was the village of Trébeurden, 50 miles to the east, passing the port of Roscoff on the way. It's a beautiful coast, full of craggy inlets, glorious sandy beaches, and lots and lots of rocks. The French call them *cailloux*, meaning pebbles, as if to diminish their power—but don't be fooled; they are scattered across the coast in seeming thousands, each one capable of tearing a hole in the bottom of a boat. Not surprisingly, the region of Finistère, where we were sailing, contains hundreds of shipwrecks as well as the highest concentration of lighthouses in the world.

I duly turned up at L'Aber Wrac'h at the appointed hour with a rucksack containing food for four days (most of it precooked) along with a tent, a mattress, a sleeping bag, and my two cameras. My host was none other than Gilles himself on his latest creation: the 17′ (5.2m) design he calls the Walabi 3. I had briefly met the famously self-effacing designer at the Blekinge Archipelago Raid in Sweden in 2005 (see WB No. 187),



Stéphane Blanc and crew approach the Île Vierge lighthouse aboard SPRINT'O, which he built to Montaubin's Walabi 3 design; she is one of three such boats that sailed in the challenge in Finistère in 2025.

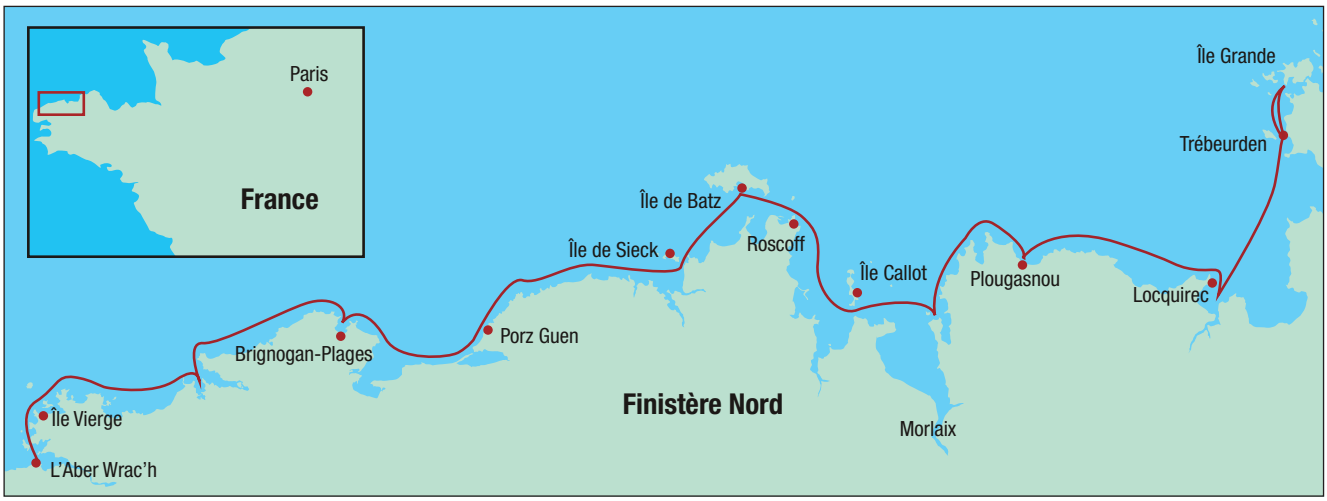
when his 18′4″ (5.5m) PETITE ELISA proved nigh unbeatable, winning five out of seven legs, usually by a large margin. With her flat bottom and hard-chined hull, PETITE ELISA had a modern, almost brutal, look. She was clearly designed for efficiency rather than traditional good looks. I was immediately intrigued and vowed to find out more one day.

Twenty years later, I finally got the chance to try out the latest manifestation of Gilles's thinking. At 17′, the Walabi 3 is slightly shorter than her predecessor and, at 264 lbs (120kg) unladen, considerably lighter. She has storage space forward rather than a cuddy and twin daggerboards rather than a centerboard. Gilles increased the angle of the chines in the later boat, giving the topsides a subtle increase in flare. The fitout for Gilles's boat is minimal and basic, almost thrifty. He has used his 50 years of experience in yacht design to pare the boat back to its essence, without sacrificing anything in performance. Not for nothing has he named his boat DIOGÈNE, the French spelling of Diogenes, the Greek philosopher famous for his ascetic way of life and his cynicism.

It turned out that two other boats built to the Walabi 3 design were taking part in the CNL, both owned by dentists who had previously sailed a wooden-hulled Wayfarer dinghy together before deciding to build their own boats. SPRINT'O and FLOKI were both fitted out to higher specifications than Gilles's own boat—one of them even had a Mylar sail—suggesting that dentists like their boats as shiny as their teeth. As FLOKI's owner, Franck Virol, put it, "Dentists are good at fixing things."

The rest of the fleet consisted of an eclectic mix of boats. The CNL's relative lack of rules seems to encourage experimentation and pushing the boundaries of what is possible for camp-cruising within a supportive framework. As well as the three Walabi 3s, there was another Montaubin design taking part, the less racy Petit Gabriel, plus four traditional sailing dinghies designed by François Vivier, two sailing canoes, a plywood one-design dinghy, a Goat Island Skiff, a converted Hobie Cat, a 1960s long-keeled wooden gaffer, and a 1970s fiberglass cabin cruiser. A fifth Montaubin-designed boat, the distinctive-looking pocket cruiser, PETIT LOUP, shadowed the fleet and acted as unofficial safety boat.

The four-day west-to-east *Challenge Navigeur Lèger 2025* involved following the rocky shoreline of Finistère, France, in sail-and-oars boats. Facing contrary winds, some returned to L'Aber Wrac'h rather than carrying on to the final destination, Trébeurden.





In contrast to Montaubin's spare design approach, other boats in the five-day challenge were more closely aligned with traditional designs and rigs, such as the François Vivier–designed Silmaril TRUK2, seen here approaching Brignogan-Plages at the end of the first day.

It was a gray day with a light southwesterly blowing when we set off from L'Aber Wrac'h, timing our departure to make the most of the east-going current. Straightaway, we were among the cailloux, with ominous, low-lying rocks appearing at every turn. Before long, we passed the Île de Vierge, with its stunning 108′-tall lighthouse, said to be the tallest stone lighthouse in Europe and the tallest lighthouse of its type in the world.

DIOGÈNE had made a slow start, possibly because the crew needed to get to know each other, possibly because she didn't like the lack of wind. One person who was having no such trouble was Emmanuel Conrath in his François Vivier–designed Grand Silmaril VITA BREVIS (see WB No. 304). Sailing light, with his large, black genoa hoisted on the end of a long bowsprit, Emmanuel was running rings around the rest of the fleet.

As we passed the Île de Vierge, Gilles called out to Emmanuel, and they agreed to take the outer route, giving the bulk of the cailloux a wide berth. Minutes later, we saw Emmanuel and most of the other traditional boats heading inshore, following the scenic coastal route past Le Curnic.

"It's always like this," Gilles said. "We agree one thing, and the next moment everyone does something completely different. Everyone follows their own course on the CNL."

Along with the three other Montaubin-designed boats, we took the direct, offshore route and benefited not only from shorter distance but also the full effect of the current's eastward set. The wind died just in time for lunch and, after a quick snack, Gilles got the oars out. A sliding seat was fitted atop a storage box in the cockpit, and a panel in the cockpit sole flipped over to reveal a wooden footrest. DIOGÈNE was soon under way again, and as I kept a wary eye out for cailloux, Gilles told me about the boat's origins.

Gilles grew up sailing with his father on the Marais Pointevin, an area of marshland on the west coast of France crisscrossed by an enormous network of canals and rivers. He studied sociology at university, but after gaining a doctorate in 1972 he decided to quit academia and instead set himself up as a boat designer and builder. He was particularly interested in multihulls. He established his company, MER (the French word for sea but also an acronym for *Multicoques Economiques Réalisations*), to build one-off plywood and composite multihulls, the first company in France to do so. Along the way, he designed a 24′7″ (7.5m) trailerable catamaran that he sailed with his family to Corsica and Sardinia, followed by a 39′4″ (12m) catamaran that he sailed from La Rochelle to Greece. His biggest design was the 44′3″ (13.5m) trimaran TRILES, launched in 1988.

But Gilles had always been interested in the shape of the traditional flatiron skiff, called a *platte* (i.e. flat) of Marais Pointevin. These were heavily built wooden boats used to transport people and cattle from one side of the river to the other by rowing or poling. He decided to build a flat-bottomed dinghy inspired by the Pointevin workboats but using modern materials. He launched his first flat-bottomed dinghy in 1988. That boat was lug-rigged, and he followed it with a two-masted *misainier vendéen* (Vendée lugger) in 1992. Then he had a realization: "'Why am I copying old boats?' I thought. 'I want to build something modern. I want to inspire young people to go sailing!'"

He had long experimented with rigs, among them a loose-footed cat-ketch and even a "biplane" catamaran with a wishbone sail on each hull. His next boat would be flat-bottomed like the traditional platte but with a modern rig. His Petit Jean design of 1998, with hard-chined hull and unstayed cat-yawl rig, was the first in what would be a long line of flat-bottomed dinghies that proved to be perfectly adapted to the growing raid scene in France and elsewhere.

Aboard DIOGÈNE, we were once again dodging the cailloux as the wind picked up. Gilles had a chart showing the position of every rock, but it was hard to keep track of exactly where we were. Several times, rocks appeared unexpectedly a few feet away from us, emerging from the swell like creatures from the deep. The fleet was scattered over a wide area, and despite his emphasis on autonomy, Gilles was counting the boats repeatedly to make sure no one had been left behind. By the time we reached our first stop, the Montaubin-designed boats were well ahead of the rest of the fleet, closely followed by Emmanuel in his speedy VITA BREVIS. Yet by the time we dragged DIOGÈNE onto the perfect sandy beach at Brignogan-Plages, most of the fleet appeared very quickly and it seemed we weren't so far ahead after all.



PETIT GABRIEL is a Montaubin Émerillon 17 design similar to "raid" boats but fitted with a small cuddy with a lift-up coach roof.

Last in was the perfect miniature gaffer AMER-ZO. "I was looking for a bigger boat," her owner, Patrick Menneteau, told me, "but I saw AMER-ZO on the beach and admired her greatly. A passer-by saw me and said, 'That boat's for sale, and her owner is over there.' Fifteen minutes later, I'd bought her. She's turned out to be a really good boat. I've made a few improvements, such as adding bilge keels to keep her upright when the tide goes out; they are shaped like shark fins to make them more efficient."

Sleeping arrangements for the first night were predictably varied and personal. Some crews had purpose-made tents, some had normal camping tents adapted for nautical use, and others pitched tents on the beach, as I did. Gilles, as you'd expect from his minimalist aesthetic, had a simple but highly efficient awning that fitted over DIOGÈNE's boom. One of the main reasons for having twin daggerboards now became apparent, as it freed up space in the cockpit for a large sleeping area. Gilles usually carries a four-part mattress for the purpose but left it behind this time to make space for my bags.

Like any gathering of sailors, evenings were an excuse for socializing and sharing drinks and nibbles. I took the opportunity to meet some of the wide range of sailors, in addition to the dentists there was an IT consultant, a sculptor, two retired teachers, a retired Air France pilot, a geographer, and a mathematician. Perhaps inevitably, the traditionalists grouped around Emmanuel while the modernists tended to gravitate toward Gilles. Yet, when it came to carrying a boat out of the water or perhaps testing a new brand of whiskey, everyone pulled together.

"I feel like I'm in *The Truman Show*," said Marco Dessandro, a sculptor born in Belgium to Italian parents. "Wherever I go, the same people turn up!" He had already attended events in Holland and Île d'Yeux, France, and was fast becoming a regular fixture on the camp-cruising scene proliferating across Europe.

Marco got interested in boats while making site-specific sculptures in Japan and elsewhere. He wanted to create floating sculptures that people could sit in, so he made various vessels out of paper, plastic, and birch, effectively rediscovering the concept of a "boat." Eventually, he focused on a series of riveted aluminum canoes of his own design. Unfortunately, the rivets leaked and the boats took on water, so he was eventually persuaded to build himself a proper boat: a Michael Storer–designed Viola, a 14′ sailing canoe. His low-lying boat with its long lug rig looked rather marginal for open-sea sailing, yet Marco was invariably one of the first boats home.

The next day, with strong easterlies in the forecast for the afternoon, we set off early to make the most of the morning's gentle conditions. This time, we stayed close to shore to keep out of the west-going current and big waves, and once again the modern boats led the fleet.

"You must be pleased to see your boats consistently in the lead," I ventured, but Gilles merely remarked, "I don't really notice."

"But you would notice if they were at the back of the fleet," I persisted.

"Yes, you are probably right," he answered with a wry smile.

Ashore, the varied accommodations included an improvised tent made from a boat cover (left); the Walabi 3 FLOKI fitted with an adapted land tent (center); and Montaubin's DIOGÈNE (right) with a neatly fitted awning.









To avoid strong winds, the fleet hauled out on the beach on the Île de Sieck. The boats included three Silmaril variations (second, third, and fourth from the left) and three Walabi 3s (right).

Gilles's first modern sail-and-oar design, the 20′ (6.1m) PETIT JEAN, marked a turning point in his creative development. The boat proved an instant success, winning the Douro River Raid in Portugal that had been organized by fellow Frenchman Charles-Henri Le Moing in 1997. The 19′4″ (5.9m) LILI followed in 2001 and duly won the Great Glen Raid in Scotland, also organized by Charles-Henri.

Both designs were open boats rigged as cat-ketches, with loose-footed mainsails and leg-o'-mutton mizzens. Gilles had already hit on the ingenious idea of reefing or furling the mainsail by wrapping a line around the base of the mast to roll the sail around the entire spar, inspired by jib roller-furling. By the time he built LILI, he had also switched to carbon-fiber spars after a brief flirtation with bamboo.

Gilles followed up on the success of LILI with the 16′8″ (5.5m) WABI, which won Raid Finland, and PETITE ELISA, essentially a scaled-up version of LILI fitted with a small cuddy and a single mast. PETITE ELISA went on to win the 2005 Blekinge Archipelago Raid in Sweden.

A whole string of designs, variations on the theme of flat-bottomed adventure boats, has followed. Typically, Gilles builds a boat for his own use, tests it for a year or two, and then sells it. If you catch him at the right moment, he might sell you the plans to build your own (see chantiermer.wordpress.com), but that doesn't seem to be his priority. His main motivation is intellectual curiosity and a spirit of experimentation.

Gilles's broad concept of hard-chined, minimalist hulls has been scaled up to cruisers of various sizes, most of them two-masted. The larger boats are usually fitted with his trademark features of masts set up for roller-furling and curved coach-roof profiles. The biggest to date is the 31′5″ (9.6m) PHYTHÉAS, built in plywood (as most of them are) by Louis-Marc Loublet.

In Brittany, the three Walabi 3s were battling it out at the head of the fleet. The wind had picked up, the sun was shining, and all was well in our little world. SPRINT'O had passed us and was headed out to sea, while FLOKI had set her genoa and was trying to overtake us to leeward. Gilles looked skeptical. "The genoa adds speed," he said, "but it means they can't point as high as we can." And, sure enough, moments later Franck lowered the genoa and FLOKI got back on track.

The Walabi 3 design has twin asymmetrical daggerboards, which give extra lift when sailing to windward. The windward board must be lowered and the leeward one raised during every tack; both boards are left down only when short-tacking. Off the wind, the leeward board is half-lowered and held in position by pushing a pin through the appropriate hole. After two days as the chief board raiser and dropper, I found the process slightly tiresome—but nearly all Gilles's boats have this feature, so I must be in the minority.

The original sailing plan, according to Gilles's itinerary, was to anchor off the Île de Sieck for lunch and then carry on to the Île de Batz for the night. But, with a strong northeasterly on the nose, Gilles and Emmanuel (the de facto event leaders) decided to set up camp on a small, sheltered beach on the Île de Sieck. There was only one problem: As the fleet slowly came together, it became clear that one boat was missing. Dutch sailor Koos Winnips, in his home-built sailing canoe WOLF—surely the most vulnerable boat in the whole fleet—hadn't heard about the change of plan announced on the VHF and had continued all the way to the Île de Batz.

There was an anxious hour or so as VHF contact was lost, but Koos eventually confirmed his whereabouts on the phone. The incident confirmed that although the CNL organizers might like to give off an air of nonchalance, their genuine concern when someone strays from the fold suggests they care more than they let on.



The 15′11″ Artemis sailing canoe WOLF was designed by Axel Schmid and built in Holland by her owner, Koos Winnips, who added the outriggers, or *amas*, for extra safety at sea.

"I like sailing in a group," said Stéphane Blanc, owner of SPRINT'O, who took part in his first CNL on a wooden-hulled Wayfarer dinghy in 2015. "There's a sense of community, and you learn a lot from others. I wouldn't do this on my own. We passed 1m [about 3′4″] away from a caillou today. It's good to know there are others there who can help if things go wrong."

It was another night on the beach and another pouch of spicy lentil stew for me; by this time, I was already envying Gilles his freeze-dried penne all'arrabbiata. One sailor who shall remain nameless had forgotten to bring a tent, so he improvised with a boat cover spread over two oars, a tiller, and a boom crutch, with the edges held down by rocks. He had a good night's sleep and was still smiling the following day, which is all anyone could ask for.

The next day, for various logistical reasons, I hitched a ride on the unofficial support boat, PETIT LOUP, the cat-ketch that was built by her owner, Louis-Marc Loubet. He has built several Montaubin designs at his yard at La Tremblade on the west coast of France and came out of retirement to build SPRINT'O for Stéphane Blanc. His own boat was, of course, immaculate—not just that, but it also has a slickness to it that feels very modern. It might be built out of wood, but you would never know it, for all the clean white surfaces and neatly rounded corners.

My transfer turned out to be a lucky choice: this was June 9, the day of the fierce storm. When it hit, I was sitting pretty in PETIT LOUP's cockpit, cameras at the ready. The boat's roller-furling mainsail came into its own. Indeed, while the boats with traditional rigs struggled to control their sails in the sudden gusts, all the modern ones quietly rolled their sails away or left a tiny corner unfurled to maintain steerage.

As the wind diminished and the boats regrouped, it seemed miraculous that there was no damage and no one was hurt. But then, that's what the CNL is all about: creating safe boats and capable sailors able to withstand whatever nature throws at them. The boats may be small, but they are well designed and well built.

After the storm, the crews gathered at the Île de Batz to lick their wounds. Koos, the lost Dutchman, was reunited with the group and seemed none the worse for his adventure. If anything, he was lucky to have missed that morning's wind drama.

My time was up, and I caught a ferry from Batz to Roscoff and then back to England; the rest of the gang carried on to Primel-Trégastel, near Plougasnou. I learned that the next day, the wind shifted to the southeast and, instead of carrying on to Trébeurden as planned, most of the skippers decided to make the most of a favorable wind to head back to L'Aber Wrac'h; they covered 44 miles in 11 hours. Four sailors who carried on to Trébeurden stayed the night and then caught taxis back to L'Aber Wrac'h to retrieve their cars and trailers for the road trip home.

The CNL was over for another year, but the same sailors will be reunited in other sail-and-oar events across Europe. Meanwhile, Gilles will no doubt go back to his drawing board and draw an even better raid boat. The search for perfection never ends.

Nic Compton is a regular contributor to WoodenBoat.



The challenge's unofficial safety boat, the 21′7″ PETIT LOUP, is an example of a Montaubin design intended for cruising comfort; she was built by her owner, the professional boatbuilder Louis-Marc Loubet.

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GALENE and the Teal Class

A "just right" racer-cruiser

Text and photographs by Nic Compton

When you know, you know, says the old adage about love. And it seems that it can equally apply to boats. Take James Smith, who comes from a salt-water family: his father, mother, and step-grandfather all served in the Merchant Navy. James joined the Sea Scouts and has sailed dinghies from a young age; he raced a Laser 2 out of Bosham in West Sussex, England, for many years before himself joining the Merchant Navy as engineer and traveling the world in cargo and passenger ships. But he never owned anything bigger than a dinghy.

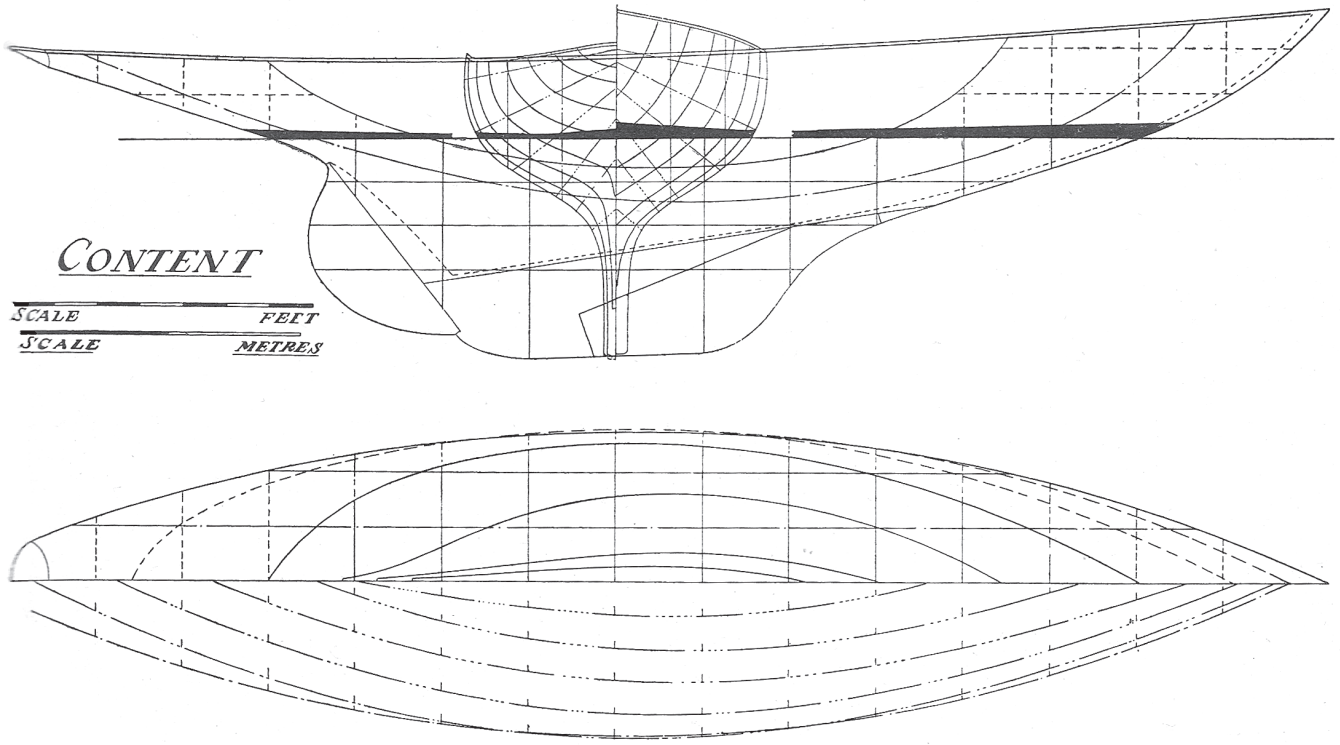
Then, one fine day in 2000, he decided it was time to buy himself a yacht. He soon spotted an elegant 30′ sloop for sale in the local paper and went down to Poole on the south coast to have a look at her. "I took her for a trial sail and loved her to bits," he remembers. "I've sailed on a lot of dinghies, so I can feel a boat very well. And GALENE feels just right. You hold on to the tiller, and it feels just right."

On "impulse," James bought GALENE (he pronounces it so that it rhymes with Delaney) without even looking at any other boats. Yet, as impulse buys go, it seems to have turned out rather well. For here he is, 24 years later, happily sailing the boat on Carrick Roads in Falmouth, Cornwall.

"Take the helm, and see what you think," James says. So I take the helm, and it does feel firm and steady—or "just right," as he put it. In fact, it's not the only thing about GALENE that is just right. For an 86-year-old wooden boat that has been through at least 14 owners and had major surgery at several points in her life, she feels remarkably homogeneous. The woodwork is all neat and tidy, the varnish well-tended, the non-original teak decks immaculate. Overall, the mix of bronze and modern fittings speak of an owner who knows when performance matters more than originality and yet is willing to be traditional when the situation is right.

With a boat as beautiful and authentic-looking as GALENE, one must wonder: Why bother with the Fifes, Nicholsons, and Watsons of this world when you can have a 1938 Luke Brothers yacht that ticks all the same boxes at a fraction of the price?

***Above*—Designed by Albert Luke and built by Luke Brothers in Hamble, England, in 1938, GALENE is a member of the Teal Class—a wholesome 1930s racer-cruiser. She has been under the same ownership for more than two decades and steadily maintained and upgraded. Here she is reefed down off St. Mawes, near Falmouth, Cornwall.**



***Above*—Uffa Fox wrote that that lines of the Teal Class "give the impression of power." *Below*—The original sail plan shows a small, affordable, jib.**

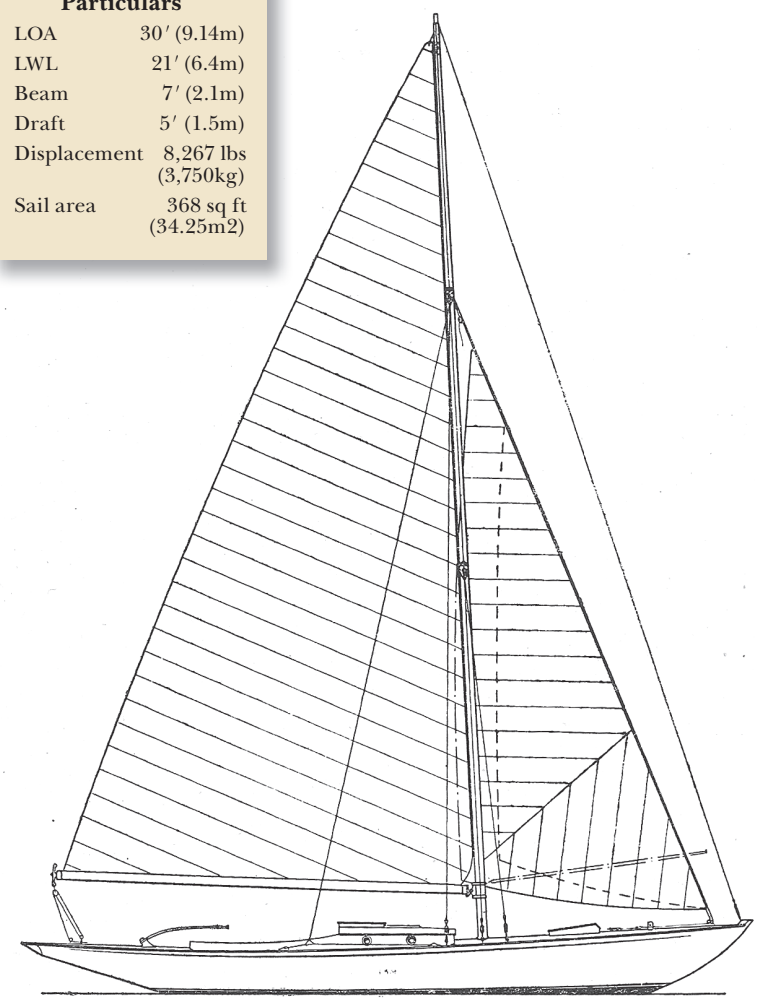
Particulars

LOA	30′ (9.14m)
LWL	21′ (6.4m)
Beam	7′ (2.1m)
Draft	5′ (1.5m)
Displacement	8,267 lbs (3,750kg)
Sail area	368 sq ft (34.25m2)

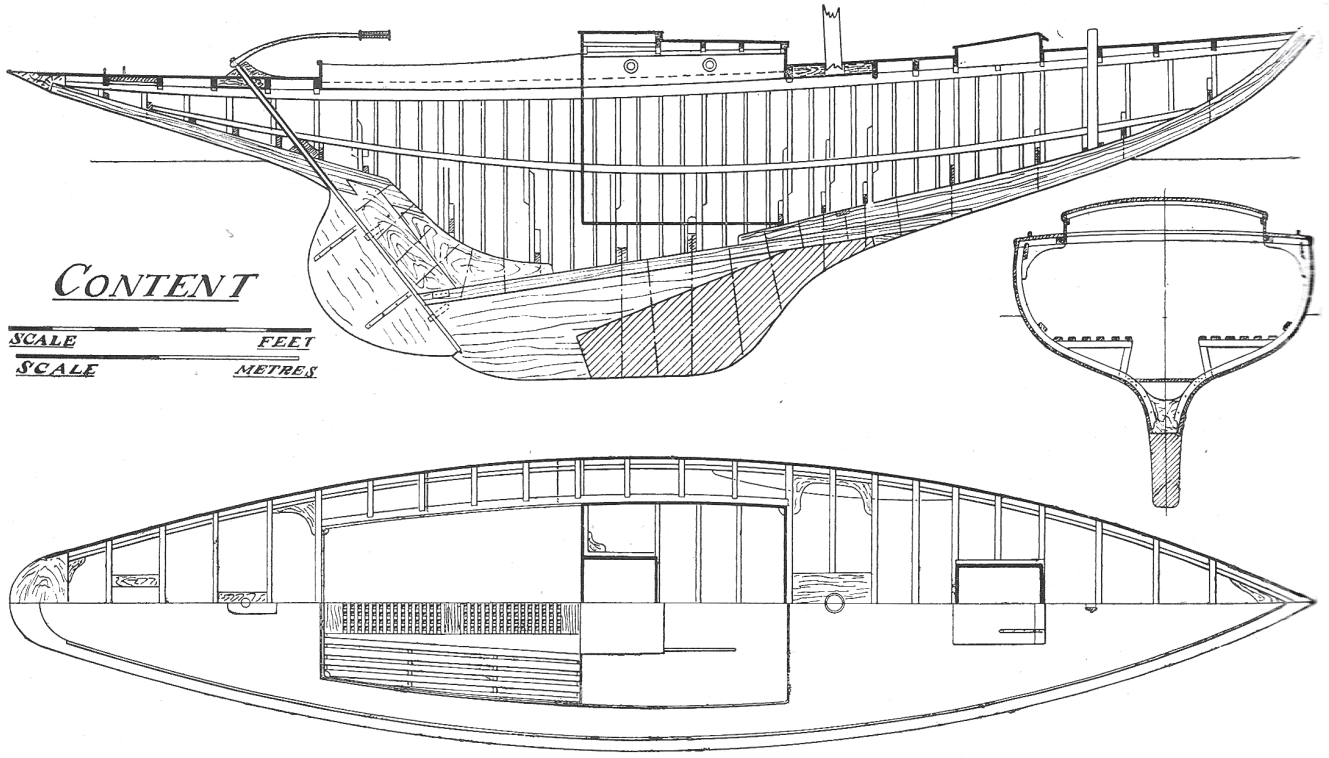
The origins of the Teal class, of which GALENE is a member, are told in Uffa Fox's 1937 book *Racing, Cruising and Design*. In it, Uffa describes how fellow yachtsman Bernard Clay was wandering around London with a model under his arm "preaching the gospel of TEAL" but that his seed fell on "stony ground" because most of the people he met were "stony broke." Eventually, Clay had the boat built himself anyway.

Of the actual boat, Uffa wrote: "Like the model, TEAL was a delight to the eye, as one would expect, for she was designed by Albert Luke, of Hamble. She proved herself to be such an able boat, both as a racer and as a day cruiser that more were built the following year, and to-day we have half-a-dozen boats to the Teal class, and there is every prospect of this class growing as the years go by."

He went on to describe the lines drawings, giving us the benefit of his special insight: "The sections show that being unhampered by any rule she has a good flare forward and throws a great deal of water away from her deck when sailing, which is in contrast to boats to the international rule who are pinched in at the deck to save girth measurement. The buttocks, water-lines and diagonals all give the impression of power."



RACING, CRUISING AND DESIGN, BY UFFA FOX (THIS PAGE)



RACING, CRUISING AND DESIGN, BY UFFA FOX

The boat's construction drawings show the original small cabin, which was incorporated into a new doghouse that was added in the 1960s.

A Boatbuilding Dynasty

The origins of the Luke Brothers yard can be traced back to the early 1800s. A yard in Fowey, Cornwall, at that time was operating under the name of Luke, according to Walter Smith Luke's granddaughter, Heather W. Shield. Her research suggests that the "Luke" was George Luke, who built so-called Fowey Cutters for the Royal Navy, and she even has a model of a 98-ton cutter, called PETREL, that George built in 1821.

George's son, Walter Smith Luke, completed his boatbuilding apprenticeship at a yard in Southampton before setting up on his own in Limehouse, on the River Thames, where he was based until the mid-1800s. There, he married Jemima Seward Pearce, and the couple had their first son, also named Walter.

The family moved to Oak Bank on the Itchen River, near Southampton, in 1868, and their yard was soon busy building a large range of working boats, including Itchen Ferries (a local fishing boat type), fishing smacks, and pilot cutters. They also built yachts, including impressively large ones such as the 77-ton steamship BESSIE of 1874 and the 144-ton schooner ST. HILDA of 1875. Most Luke-built boats of this period were designed by W.S. Luke himself, though the yard also built a few yachts by other designers, including the G.L. Watson–designed ULERIN of 1886, the most successful yacht in the 10-ton class of that year.

In 1895, W.S. Luke's sons, Walter and Albert, moved the yard to new premises at nearby Hamble Point. This seems to have been the start of an intensely productive period for the yard. They mostly built yachts, many designed by the family; W.S. Luke continued designing until at least 1899, while his son Walter produced several designs, too. But it was the younger brother, Albert, who created the vast majority of designs during this period, with nearly 100 vessels to his name from 1897 to 1939.



COURTESY OF JAMES SMITH

The Luke Brothers boatyard was photographed in about 1920 with unknown boats under construction. The nearest worker is using an adze to bevel a frame.



BEKEN OF COWES

GALENE (ex-THORA) was flying a fine collection of race pennants from her topping lift when this photograph was taken in 1938.

After a detailed description of the boat's construction, Uffa noted that the sail plan was "quite normal" and that the headsail has been kept deliberately small because "all the owners agreed amongst themselves to keep this sized headsail on the score of expense, for there is no doubt that while an overlapping headsail would improve the speed it would also increase the cost of racing in the class."

The class soon proved it was as fast as it looked, with the original TEAL winning the Round the Island Race (then a recent addition to the sailing calendar) in 1935 and 1936. Nine boats were eventually built to the design, of which five are thought to have survived: GALENE (ex-THORA), ANTOINETTE (ex-BRITT), TIGER (ex-LALAERNE), PHAKOE (in the Netherlands), and ZEST (in Canada).

Uffa competed in the Round the Island Race in 1937 in TL3 CONTENT, built by A.N. Compton (no relation to the author of this article) in Cowes the previous year. It was an all-weather race, starting with a strong south-southwesterly, then going calm, and finishing with a strong southwesterly. CONTENT's fortunes were equally

The yard continued to build boats by other designers, including at least two by John Alden: the 50-ton schooner CACOUNA of 1927 and the 49-ton LUCIA of about 1928. A regular contributor in the early days was Arthur Payne (of Summers & Payne), followed in the 20th century by the likes of John Thornycroft, Albert Strange, Charles Nicholson, and Fred Shepherd. It wasn't an entirely one-way traffic; at least one of W.G. Luke's designs was built by the legendary William Fife yard in Scotland and others by Camper & Nicholsons in Southampton.

Over the years, the yard went through several name changes. After starting as W.S. Luke, it changed to W.G. Luke when Walter Jr. took over. In 1911, it was renamed Hamble River Luke & Co. and started building hydroplanes, billing itself as "CONSTRUCTORS OF MACHINES TO PRIVATE AND SECRET DESIGNS" including "Hydro-Aeroplanes and Aeroplanes for Naval and Military use, fitted with Bomb-dropping Gear – Wireless Telegraphy – Guns" and registered "On Admiralty and War Office Lists," according to an advertisement of the period. The venture was a failure, however, and the company returned to boatbuilding, eventually settling on the name Luke Bros.



The brothers were also keen sailors. Albert raced one of his own 6-Meters on The Solent for many years, and in 1920 the pair formed the Hamble River Sailing Club (HRSC), which is still active to this day. One of the brothers' most popular designs was the 14′ Hamble Star One-Design, which was the dinghy to beat at the HRSC until the Merlin Rocket and National 12 took over in the 1960s. The class was revived on the Hamble in 2015, with a fleet of eight boats based near the Jolly Sailor pub at Bursledon on the Hamble River.

Albert died of cancer during World War II, and after the war his brother Walter sold the yard to Port Hamble Ltd. Ironically, the design by which the yard is perhaps best known, the Luke 5-Tonner, was designed after this sale by company stalwart Bill Hobbs.

Interviewed by Robin Gates in 1991 for an article in *Classic Boat* magazine, Bill described how the yard operated when he started working there in the mid-1920s: "In those days there were about 50 people working at the yard, and we started work at 7:30 when the two brothers came round to see how we were getting on. They knew everyone on Christian name terms, and they were known as Mr. Albert and Mr. Walter. Five-o-clock came round too quickly, and I found the work so interesting that I didn't want to go home! But the two brothers encouraged we apprentices to go crewing, because they rightly thought that if apprentices saw the stresses and strains that a boat experienced, we would be more conscientious in our work. So we would come back to the yard in the evenings and prepare boats for racing, and meet the brothers again. They were fine people, real human beings."

—NC



Owner James Smith bought GALENE "on impulse" in 2000, having never owned a yacht before, and has maintained her unwaveringly ever since.

fickle; at one point she led the fleet (which included such iconic craft as the Laurent Giles–designed MAID OF MALHAM and Nathanael Herreshoff–designed 59′ NEITH) before sailing into a wind hole and falling back.

The last leg of the race was a windy romp back down The Solent, with CONTENT reaching her theoretical maximum speed of just under 7 knots after Nab Tower. Uffa was in his element. "As we rounded the Fort a heavy squall struck us and hove CONTENT down till her cockpit coaming was in the water," he wrote. "Though the wind was off shore and the tide was slack, we soon had quite a popple of sea for such a small vessel. The wind threw the stinging spray over us, and though it was strenuous sailing, the eight miles from the Forts to Cowes in the twilight and darkness, were the best miles of the day."

CONTENT finished 14th out of 23 yachts, half an hour behind TEAL and less than two hours behind NEITH—which is not bad for a boat that's just 20′ long on the waterline.

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***Above, left and right*—GALENE was designed for speed, not for volume, and even with the extra doghouse space below is limited to "camping under wood," as Richard puts it. Note the extra chainplates and hanging knees, which were designed by Ed Burnett.**

GALENE was built for Capt. (later Maj.) Bertrand L. Ainsworth and was originally called THORA (Old Norse for thunder). She was No. 6 in the class and, judging by the number of race pennants flying from her topping lift in a 1938 Beken of Cowes portrait, she must have achieved some racing success. In 1949 she was renamed GALENE by her third owner, after an ancient Greek goddess personifying calm weather.

She was based on the Hamble River until 1959, when she was bought by John W. Clark (her seventh owner) and moved to Ipswich, on the East Coast, and it was during this time that she underwent some major changes. The original design had a very low coach roof that provided barely any headroom forward. Someone had the ingenious idea of not just adding a small doghouse but also moving the old coach roof forward, to give more headroom down below, and joining the two







The teak deck was added during the 2003–10 restoration and gives the boat a more classic feel. It also feels good underfoot.

parts together. The result is one of the best doghouse conversions I've ever seen, half of it built using the boat's original structure.

This work probably took place around 1962, when the boat was fitted with its first engine: a 4-hp Stuart Turner. GALENE then went through a series of owners in Ipswich before returning to the South Coast, first to Colchester in 1973 and then to the Hamble in 1983. By the late 1990s, she had migrated to Poole, which is when James appeared on the scene. He was to be at least her 13th owner, and probably her luckiest—or at least her longest-serving. James was living in the Thames Valley at that time and his mother lived in Dorset, so for several years Poole was a convenient place to keep the boat.

That all changed in 2003, when James discovered a soft spot on GALENE's keelson. It so happened that the London Boat Show moved from Earls Court in central London to Excel in London Docklands in January 2004, and as part of that move the show featured a large section devoted to traditional boats. One of the exhibitors in the show's classic boat "village" was Gweek Boatyard, whose then-manager, Clive Emerson, quickly took James under his wing. In no time at all, GALENE was being shipped overland to Cornwall for the repairwork to begin.

GALENE was by then 65 years old, so when Clive and his team started working on her, they were not surprised to discover more problems that needed fixing. The keelson repair soon turned into a six-year restoration, including an entire new keelson and a new teak-on-plywood deck to replace the old canvas-covered pine deck. Ever the committed owner, James bought a Dutch barge, which he moored at the yard and used as an occasional houseboat while he kept an eye on GALENE's progress.

One of the less-successful aspects of her 1960s rebuild was to shorten the mast and step it on the coach roof without adding enough internal support, which had stressed the cabin structure. The coach roof therefore needed strengthening in way of the mast. The mast itself was also condemned, and James approached the yacht designer Ed Burnett to draw up a new one—this time keel-stepped, as per the original design. In characteristically uncompromising language, Ed, who died in 2015 at age 43, described the old mast as a "silly stick" and set about taking measurements for a new rig. When he plugged them into his computer, he came to a surprising conclusion.

"He laid it out and said, 'I've got an existing rig here, which pretty much sits straight on top of it. It's for a West Solent One Design,'" James said. "'If you're happy with that, it will do the job. I happen to have all drawings. All I've got to do is press one button and it will send the drawings for the wooden bits to Collars, and if I press another button it will send the drawings for the metal bits to Hercules CSMD in Dartmouth.' So that's what we did."

The West Solent One Design is a highly respected (and extremely fast) class dating from the same era as GALENE; it has enjoyed a huge resurgence in recent years, so being associated with it could only be a good thing. As it turned out, the two rigs were so close in dimensions and details that GALENE was able to use her existing sails unaltered. Even though the new mast was keel-stepped, some hefty hanging knees were fitted on each side and substantial new internal stainless-steel chainplates added a "belt and braces" approach, which James said allows him to push the boat hard without worrying about straining her.

GALENE was relaunched in 2010, with gleaming varnish and all-new running and standing rigging. James



GALENE sails of off St. Anthony Head near Falmouth, Cornwall, where she has been based since 2016.

wouldn't tell me how much the restoration cost, saying that he "deliberately refuse[s] to add it up; it would be way too frightening," though he did say the keelbolts alone cost £4,500 (about $6,000), giving some idea of the uncompromising standards applied to the work.

James had by then moved to Bristol, so for the next few years he kept the boat on the Helford River, in Cornwall, and joined the Helford River Sailing Club. When he moved to Falmouth in 2016, however, he managed to find a mooring close to the Greenbank Hotel, which he could access easily from his house. He then joined the Flushing Sailing Club and started competing in their twice-weekly races and was pleasantly surprised to find that the old Teal design had not lost her winning ways; she finished fourth in her class at the 2017 Falmouth Classics.

And, of course, once he got the racing bug, he couldn't resist trying to squeeze that extra half knot out of the boat by ordering a new jib from North Sails. "The original jib was higher cut; the new one is a deck-sweeper. Even though it's only 3–4 sq ft bigger, sealing the sail off at the deck seems to make all the difference. It's a good way of adding on power because it keeps the center of effort low. It seemed like the right thing to do, and it did make her quicker."

When I sailed on GALENE, she had just been through another mini-refurbishment, this time with the Gweek-based boatbuilder Ben Harris. Fourteen years after her previous restoration, the hull seams needed recaulking and in some areas resplining; the coach roof and cabin sides needed some repairs; and she needed a new forehatch. The deck was recaulked, the varnish renewed, and the topsides immaculately painted.

The weather gods were not playing ball on Falmouth Bay that day. Perhaps GALENE herself was on holiday. A lumpy swell was rolling in from the east, creating quite a "popple" of water, as Uffa might have put it. But, with her 5′ draft and 10′ of overhangs, GALENE was unperturbed. The wind was not enough to heel her over until her cockpit coaming was in the water or, as Uffa described, to create "stinging spray." Instead, GALENE was steady and true on the helm. As we surfed back into Falmouth, with the swell on our starboard quarter, I reflected on what James had said. I had to agree that GALENE felt just right.

Nic Compton is a regular contributor to WoodenBoat.

Oxygen Deficit Strategy for Boats

Several months ago, a boatbuilder friend asked me why sapwood is prone to rot in boats but in the living tree we generally observe sound sapwood surrounding sometimes decayed heartwood. At the time, I offered the quick answer that sapwood in the tree is a "living" substance, while heartwood, consisting of non-living cells, is, like all dead organisms, prone to decay—except, of course, in tree species that deposit decay-resistant chemicals when sapwood is converted to heartwood.

I felt that this was an unsatisfactory answer and said I would ponder the question further and perhaps develop a column from my thoughts. I forgot about the conversation until it recently shifted from my long-term brain repository to active-currency mode. After a bit more thinking and research, here is a deeper dive into the question.

Multiple Defenses

The primary defense that trees have to thwart invasive insect and pathogenic organisms is the production of an outer covering of bark. Tree barks can be quite variable in structure and thickness. Often, the longest-lived trees develop the thickest barks. Coastal redwoods, for example, can have bark up to a foot thick in the oldest trees. Another strategy used by some trees is the production of a thin but exfoliating bark in which the outer layers are continually shed, ridding the tree of potential pathogens.

Mechanical injury to the bark from external sources is rare in undisturbed forests but can be a serious issue during poorly managed logging operations. The principal way that pathogens can enter a tree is through naturally occurring broken branch stubs, as shown in the accompanying photograph. But, as the photo demonstrates, the bark cambium develops a collar to seal the sapwood so that potential decay fungi are shunted directly into the heartwood.

Of course, bark closure at branch stubs or other wounds takes some time. Forest pathologists have documented ways in which the living sapwood mounts its own defense during that lag. When sensing fungal invaders, scattered living parenchyma cells develop chemical responses and begin a process of compartmentalization to contain the infection and thwart further spread. These elaborate mechanisms are most well-developed in broad-leaved hardwood trees

Oxygen Deprivation

Millions of years ago, before hardwood tree species appeared on Earth, many conifers had adapted a much simpler and more effective means of preventing sapwood decay in the living tree. As many readers of this column know, wood-decay fungi require three prerequisites: a food source, moisture, and oxygen. The food source, of course, is wood—either cellulose (brown-rot fungi) or lignin (white-rot fungi). Since the sapwood is the conduit that transports water from the roots to the branches and leaves, moisture is a given. This means that the most effective way of thwarting fungal attack is by reducing oxygen to levels below which decay fungi cannot continue to operate.

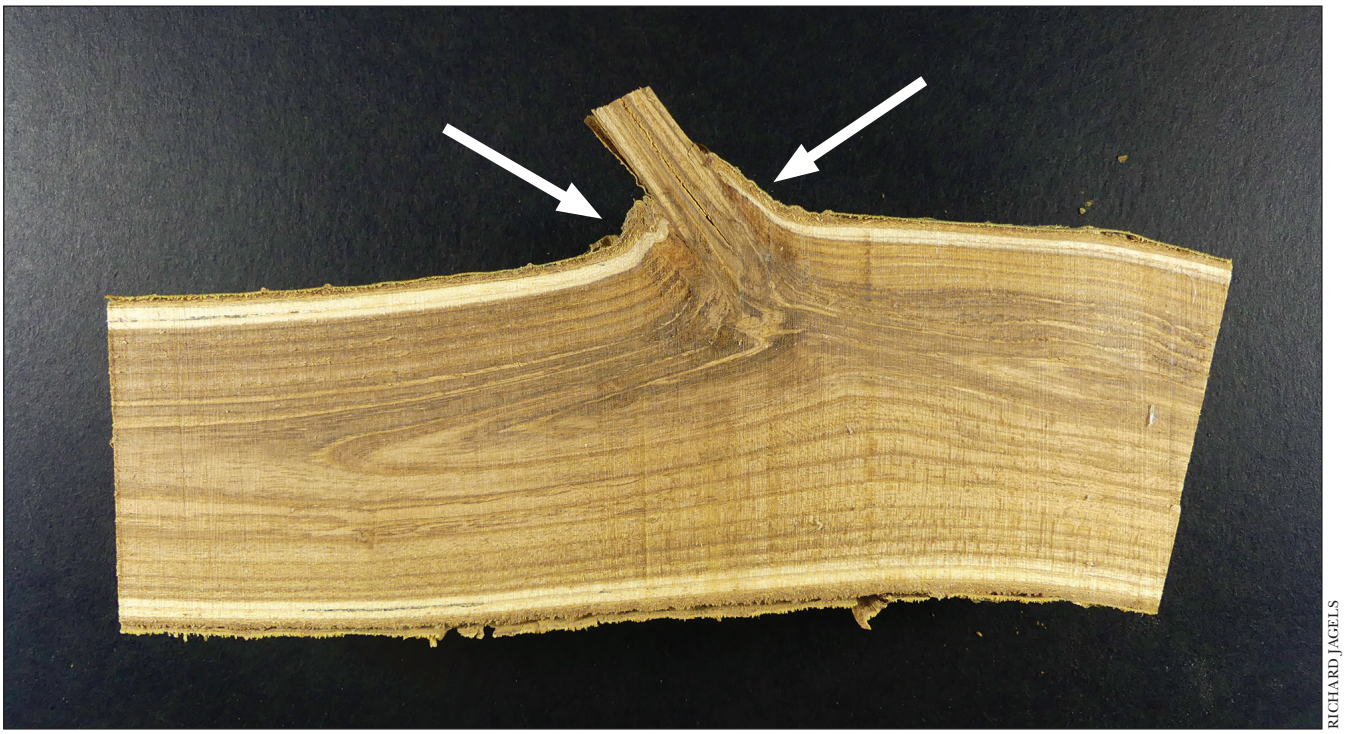
The critical moisture content (MC) needed to reduce oxygen levels below what is required for decay fungi to survive and grow is a bit of a mystery. Any level above about 30 percent will mean the cell walls are saturated. As MC increases above that level, free-oxygen levels will be reduced accordingly. At some point, decay fungi will lack sufficient oxygen for continued growth.

Many tall, long-lived conifers maintain sapwood moisture contents above 80 percent of complete saturation of cell walls and air spaces. Interestingly, in North America our tallest, longest-lived conifer—coastal redwood—often maintains MC at or near the maximum possible MC, a feature that also helps to prevent water-column collapse in trees that can reach heights that exceed 115 meters (about 380′). Maximum possible moisture content, when all the cell walls and air spaces are completely filled with water, is called MC_{max}, and is calculated by this formula:

$$MC_{max} = \frac{100\ (1.54 - G_b)}{1.54\ G_b}$$

where G_b is the basic wood specific gravity. Because trees of different species vary in specific gravity (a measure of density), MC_{max} differs among species. Several years ago, as part of a research project using data from *The Wood Handbook*, I compared average sapwood moisture contents of 25 important commercial North American conifers to the MC_{max} I had calculated for each species. On average, the sapwood of conifers reached levels of about 75 percent of MC_{max} with the lowest at 52 percent and the highest, the previously mentioned redwood, at 100 percent. That all these conifers had MCs above 50 percent of MC_{max} seems to fit with a large number of studies that have found that wood-decay fungi flourish best in timber at moisture content percentages of between 35 and 50, the exact figure depending on fungal species and kind of wood.

Conifers contain one cell type, the tracheid, that provides both mechanical support and water conduction. Thus, water is evenly distributed throughout the sapwood. In hardwoods, cellular specialization separates the functions of conduction and support to vessels and fibers, respectively. Consequently, water may be unevenly partitioned in the sapwood, reducing moisture content



RICHARD JAGELS

This sectional view of a junction between a stem and branch shows how bark develops to protect the light-colored sapwood from invasion by decay fungi.

in some regions and, therefore, requiring more sophisticated methods of defense against decay fungi.

Application to Boats

How can we use this information to minimize decay in wooden boats? Can we apply an oxygen-deficit strategy to thwart wood decay? We already see this working in deep-draft vessels with water-saturated keels and planking, where MC can exceed 50 percent of MC_{max}. Unfortunately, strategies that raise moisture contents to very high levels are impractical for most wooden boats and have the unwanted effect of adding additional weight.

But there are ways of limiting oxygen while maintaining low moisture levels in wood components. Before the 1970s, catalyzed polyesters were employed in boat construction. While these resins prevent water intrusion, they provide only limited control of gas exchange. When Meade and Jan Gougeon introduced their epoxy system in the 1970s, a new chapter in boatbuilding was initiated. The strategy of applying epoxy resins, usually reinforced with glass or Dynel fibers, on the exterior and interior of hulls not only limits water penetration but also creates a barrier that is highly effective in limiting gas exchange. Critical to the long-term maintenance of this barrier is the incorporation of ultraviolet (UV) light stabilizers or aliphatic polyurethane coatings, or both. Otherwise, porosity will increase with time.

But what happens if this water and gas barrier is accidentally breached? Water can then penetrate the wood and migrate through the wood by capillary action, setting up a potential decay situation. In the past, I viewed this as a weakness in wood-epoxy construction; but now I am of the opinion that even if decay fungi get a start at the breach, oxygen deficit created by the epoxy barriers would soon halt further growth. At the same time, respiratory carbon dioxide produced by any decay fungi would be trapped in the encased wood and further inhibit fungal activity.

I would be interested to hear from readers of any situations with their boats that would support or refute my thoughts about epoxy barriers and gas exchange as a deterrent to wood rot.

Among other boat finishes, polyurethane-based varnishes and paints provide only limited control of gas exchange, being considerably more permeable than epoxy. Traditional varnishes are even more permeable; and oil-based sealers (linseed and tung oils) provide a very minimal barrier to gas exchange. Their advantage lies in allowing wood to more rapidly dry if it becomes wet.

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.*

Launchings

Edited by Christopher Cunningham

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) your boat's name; (2) its length and beam; (3) the name of its design, class, or type; (4) the names of the designer, builder, and owner; (5) your email address, mailing address, and phone number; (6) the port or place of intended use; (7) the approximate date work began; (8) the date of launching; and (9) a brief description of your experience of the construction or restoration. Send no more than five high-resolution photographs, each with a file size between 700kb and 16mb, and the name of the photographer for each photo.

COLLETTE ROBERTSON



BILL FLEMING



"Yeah, just wanted a schooner." Sometimes the reason for building a boat is as simple as Andrew Rhodenizer put it. The Lunenburg, Nova Scotia, boatbuilder works in the Big Boat Shed, where the legendary schooner BLUENOSE was built in 1921. Andrew took the inspiration for his schooner from other boatbuilders in his family, among them a cousin, Jim Rhodenizer, and his step-grandfather, Steve Slaunwhite, who designed and built Tancook schooners. Andrew's schooner measures 26′6″ on deck with a sparred length of 31′ and beam of 8′. Her hull is carvel-planked with pine over frames of locust and hackmatack. The project started with harvesting materials in the woods and moved forward in between other projects with the help of a few Big Boat Shed hands. Finished with linseed-oil paint, GRATITUDE was launched in summer 2025 in time for the annual Nova Scotia Schooner Association races.

CASSIOPEIA JOHNSON



Mark Condon of Humarock, Massachusetts, has spent a lot of time underwater. As a scuba diver, he has more than 4,000 dives to his credit. Retired now after his career as a diving instructor and charter-boat captain, he wanted a boat that he could use for family outings and diving adventures with his friends. He built the 23′× 8′4″ plywood hull to plans for the Pacific Power Dory from Spira International (now closed). To provide the space required for four divers, eight tanks, and the rest of their gear, Mark left out the center console often built into the Power Dory and chose a tiller-controlled 90-hp outboard. This is the sixth boat he has built and, with the help of his wife, Margaret, and a friend, Neil Fratus, the build went well. NEW HERON motors on the coastal waters of Massachusetts Bay southeast of Boston.

MIKE BROOKS



When Mike Brooks of Kinston, North Carolina, decided to build his sixth boat, he wanted to get away from the plywood construction he had been using. For this Harry Bryan–designed Trout, a 23′ V-bottomed garvey, he resawed and milled Atlantic white cedar for everything in the boat except for the white-oak frames and locust floor timbers. He made one concession to plywood: the cockpit sole; however, he said he found working with rough-cut lumber much more satisfying. Mike spent three and a half years working part-time on the project and launched the boat in May 2025. Set up for shallow-water sport fishing around Cape Lookout, the garvey, christened Q.E.D., is powered by a 50-hp outboard and can reach 19 knots.





KRISTOFFER ALBRECHT

Kristoffer Albrecht, who lives near the village of Ingå on the south coast of Finland, wanted a small boat that he could easily launch in the spring and haul out before ice formed in winter. In the winter of 2023–24 he began drawing the skiff he had in mind, taking inspiration from the traditional Bohusjulle boat of Sweden's west coast and incorporating features of English and Breton workboats. He began building in early 2024. Although this was his first boat, he had most of the tools he needed and plenty of relevant woodworking experience in making guitars, mandolins, and violins. The hull, lapstrake-planked in pine and framed with steam-bent oak and ash, came together in a shed at his home. During the winter of 2024–25, when the shed was too cold for work, he sewed the sails indoors. KJERSTIN was launched in September 2025.



MATT MORRIS

Matt Morris of Waterloo, Ontario, lives between two lakes: Silver Lake, a mile to the north, and Victoria Park Lake, two miles to the south. An avid cyclist, he often rides a path that connects the two lakes. In 2020, he designed and built a nesting, sectional, skin-on-frame rowboat and a custom-fitted wooden trailer that he could tow behind his bike. A year later, he built PHEATHER, a 12′, 25-lb canoe that he could tow without a trailer, upside down, by attaching skateboard wheels to its sternpost. His latest creation is PHEATHER 2, a 12′5″ canoe with reverse-rake stems that weighs just 11.6 lbs. It, too, has skateboard wheels for towing. Supported by cedar stringers on nine ash steam-bent ribs, the canoe's skin is transparent 20-gauge vinyl. PHEATHER 2 was launched on Victoria Park Lake in July 2025.



JANICE JIM



GEORGE WALDMANN

Thirty-five years ago, George Waldmann of Bethesda, Maryland, built a plywood cradle boat for his newborn daughter, Jenny, using *The Expectant Father's Cradle Book* as his guide. In 1991, *WoodenBoat* published a photo of the 3′ single-chine pram (WB No. 101). Four years later, the boat carried the Waldmanns' second-born daughter, Kate. In 2025, while grown-up daughter Jenny was expecting her first child, George prepared for the grandchild by building another cradle boat, this one a 4′ lapstrake plywood pram, with rockers, from a kit by Chesapeake Light Craft. Aunt Kate took care of the paint and varnish. The boat and grandson Henry were both "launched" in May 2025.





ED ROGALA

Adam Rogala, 42, clearly still enjoys spending time with his dad, Ed. The two drove more than 12 hours from the northwest corner of Indiana to Annapolis, Maryland, to spend a week building a Chester Yawl at the Chesapeake Light Craft shop. Ed had wanted to build a boat for years, and building a kit boat in a class in a well-appointed shop was as direct a path as he could want to fulfill that dream, even with both 700-mile drives. By the end of the week, the 15′ stitch-and-glue lapstrake plywood skiff was complete and ready to be strapped onto the roof racks for the drive home. All that remained to do at home was to seal the wood with epoxy and then apply paint and varnish. Father and son now row CHRISTI J on a lake that borders Ed's back yard. They haven't tired of spending time together and already plan on another class and another boat.





CYRUS DWORSKY

Born and raised on the islands of Penobscot Bay, Maine, Cyrus Dworsky went lobstering with his father from an early age and may well have followed in his father's wake if not for a longing to design and build wooden boats. He moved across the country to study at the Northwest School of Wooden Boatbuilding in Port Hadlock, Washington, and several years later moved back to Midcoast Maine to set up shop as C. Dworsky Wooden Boats. In 2018, while still in Washington, he sketched out a rowboat that would have good carrying capacity and perform well under oars. He got the first few planks on the cedar-on-oak carvel hull and then put the project on hold. He brought it back to Maine and finished the build in November 2024. Even after such a long time getting the boat afloat, he's well pleased with its performance.





JIM BRACKEN

Having grown up on the banks of the St. Lawrence River, David Tolton of Mallorytown, Ontario, has admired St. Lawrence River skiffs all his life. In March 2021, he began building one for himself, following plans for ANNIE, a 17′9″ × 3′3″version built in 1885 and now in the Mystic Seaport Museum collections. He bought or built some of the tools required as he went along and acquired new skills by taking several WoodenBoat School courses as well as a bronze-casting class at the Antique Boat Museum in Clayton, New York. The project, from lofting to varnishing, took four and a half years and included shaping a pair of oars and casting all of the bronze fittings. David launched FAIR HEATHER in September 2025 and will row her among the Thousand Islands at the head of the St. Lawrence River.



DAVID TOLTON





KEN INGLIS

For years, Ken Inglis's grandchildren had enjoyed the 8′ electric runabout he had built for them to use at the family's summer cottage on Four Mile Lake, 100 miles north of Toronto, Ontario. After the grandkids grew out of the boat, the neighbor's 9- and 7-year-old children started using it occasionally. Water from wet bathing suits often pooled in the bottom and rot set in along the keel. Ken scrapped the boat in fall 2023. The following summer, the neighbor kids asked where the boat was, and when Ken informed them he had taken it to the dump, their looks of disappointment hit him hard. He promised he'd make a new boat over the winter. He kept his word, and in July 2025 launched a new 8′ runabout, christened FYPPER after the first names of his two young friends, Fynn and Piper.





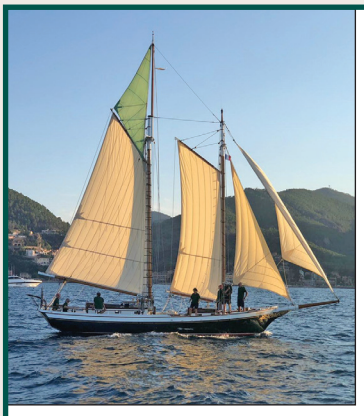
CHRISTOPHER CUNNINGHAM

Built in Seattle, Washington, by an amateur builder in 1997, this Phil Bolger–designed pirogue languished for years on an asphalt boat-storage lot surrounded by cyclone fencing. When the boat faced eviction for not being used as required, at least a few times every year, it was offered to Christopher Cunningham, *WoodenBoat*'s Launchings editor. The pirogue badly needed sanding, painting, and varnishing. The plywood brackets on the rubrail and chine that hold the leeboard had delaminated; rather than replace them, Chris installed a daggerboard trunk to free the hull of the obstruction that had been created by the brackets. He added the thwart and outriggers that Bolger had included in the plans for rowing the pirogue and modified the fixed-blade rudder to kick up for beach launchings and landings. The pirogue was afloat and underway again in February 2025.



CHRIS SLY

SARAH ANN is an 18′ strip-planked Herreshoff-inspired daysailer built by John Philp in the 1960s and launched at Gravelly Beach, a rural community on Tasmania's north coast. Chris Sly remembers the boat from the years of his youth spent in the Australian island state. Chris later moved to Queensland on the mainland's east coast. SARAH ANN spent a half century in a shed, ever drying out with the passing years. She was hauled to Queensland and ended up not far from Chris's home. He recognized the sloop immediately and soon acquired her to tow her back to Tasmania and restore her where she belonged. The restoration took one and a half years, and included closing seams, replacing her canvas deck, and replacing the missing ballast and engine. He relaunched SARAH ANN at Gravelly Beach and sails her once more on her native Tasmanian waters.



ROYCE COLLECTION

COASTER III is a 41′ schooner, the third and smallest of three COASTER schooners designed and built by Murray Peterson. He built COASTER III at the F.F. Pendleton yard in Wiscasset, Maine, launched her in 1935, and sold her in 1945 to Dr. Stephen W. Royce of Newport, California. She has remained in that family since then, having been passed first to Dr. Royce's brother and finally to his son, Stephen M. The younger Stephen has lived aboard since the 1960s when he was 18 and attending university in Santa Cruz. After school he set out with friends to sail around the world. They sailed south to the Panama Canal and crossed the Atlantic, but upon reaching the Mediterranean, Stephen decided that the boat was in no shape to continue. He settled on the French coast and began a complete restoration that would occupy the next 37 years. COASTER III was relaunched in November 2024 and rerigged in 2025, making her ready to complete her circumnavigation at last.

Hints for taking good photos of your boat

1. Set your camera for high-resolution images. We prefer jpg format, with a file size between 700kb and 16mb.
2. Stow fenders and extraneous gear out of the camera's view. Ensure the deck is clean and uncluttered.
3. Take your photographs in mid-angle sunlight for best results. Mid-morning or mid-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. Horizontal framing is preferred, but 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. Additional launchings can be seen at www.woodenboat.com/boat-launchings.



Particulars	
LOA	16′6″
LWL	16′0″
Beam	5′5″
Draft	1′6″
Displacement	1680 lbs
Engine	8–15 hp

Workboat

A good launch

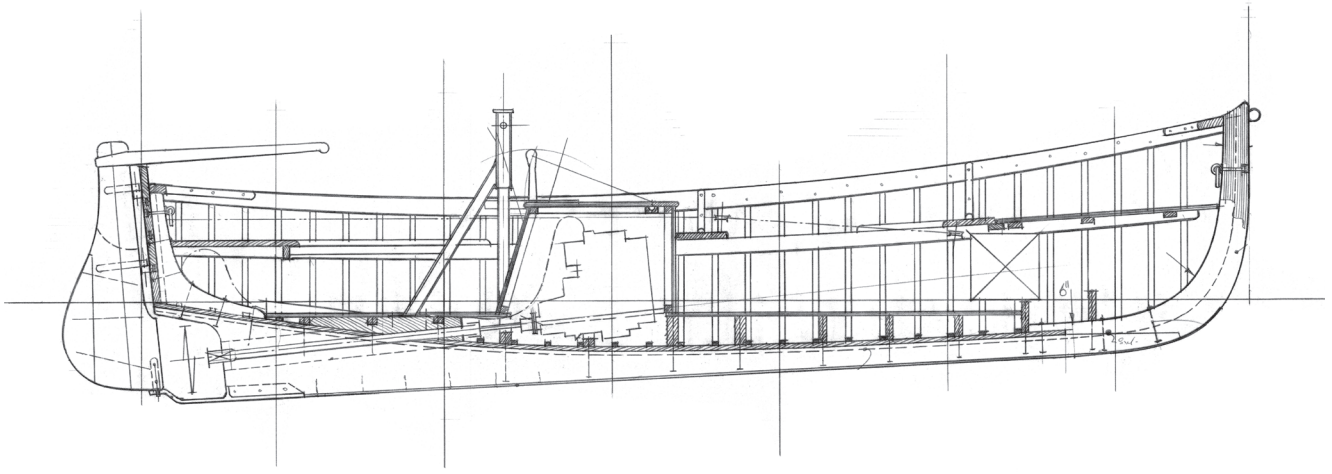
Design by Paul Gartside
Review by Mike O'Brien

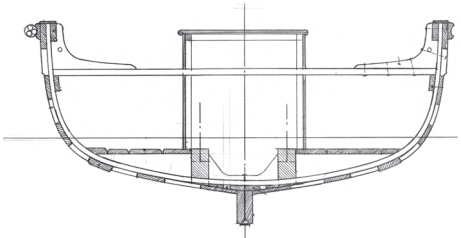
The idea for this launch followed designer Paul Gartside from his 1960s youth in a Cornwall boatyard, through his eventual move to the West Coast of Canada and then to the United States. Painted dark blue with a gray interior, the boat in his memory is of lapstrake construction. An air-cooled Lister diesel furnishes slow-turning, reliable power.

Gartside holds fond thoughts for the old launch: "Of all the boats built in that yard, she was the most successful in terms of fitness for purpose and value for cost. She was in constant motion for 20 years on the 10 miles of river between Truro and Falmouth. A string of oily fenders adorned her, and every surface showed the wear of heavy usage. That's how she looked many years ago when I last saw her, but she was sound as a bell. The faithful Lister was still bonking away. I'd not be surprised if she's plugging about the upper reaches of the Fal today. Regular use is the key to making a wooden boat last."

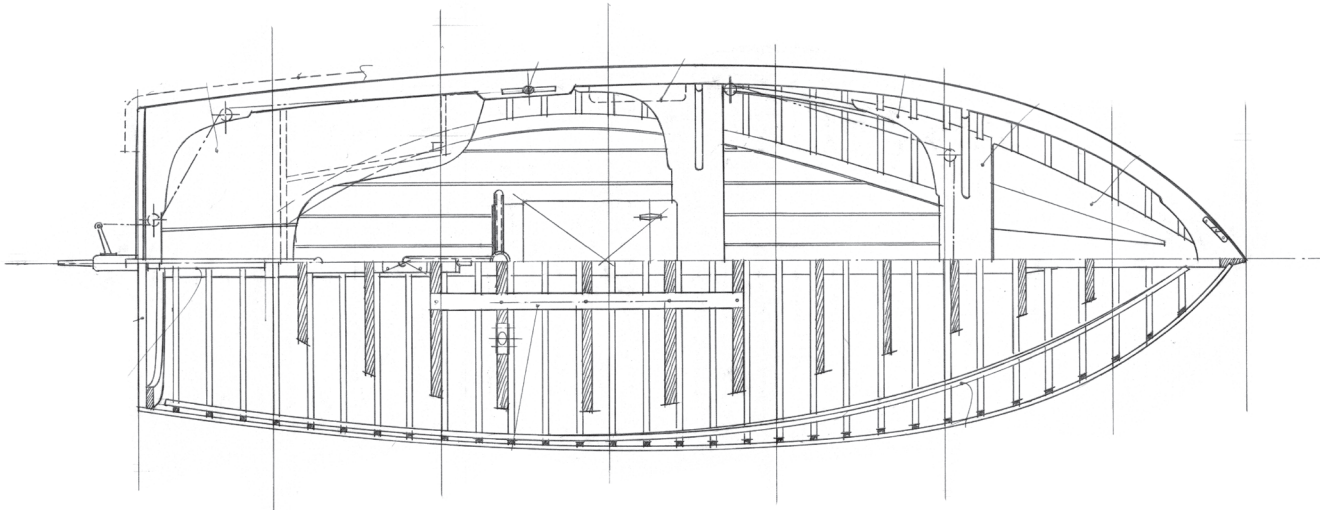
One spring, when the launch had been hauled for a refit, Gartside measured her hull and drew the lines on paper. He suspects that the

***Above*—For his Workboat design (above), Paul Gartside began with lines he'd taken from an inboard lapstrake utility boat he'd known in his 1960s youth in Cornwall, England.**





The smooth-skinned hull is planked mostly in ⅝" cedar, with ⅞" in the bilge and for the sheerstrakes. The steam-bent frames measure ¾" x 1⅛" and land on 6" centers. Plank fastenings are copper rivets.



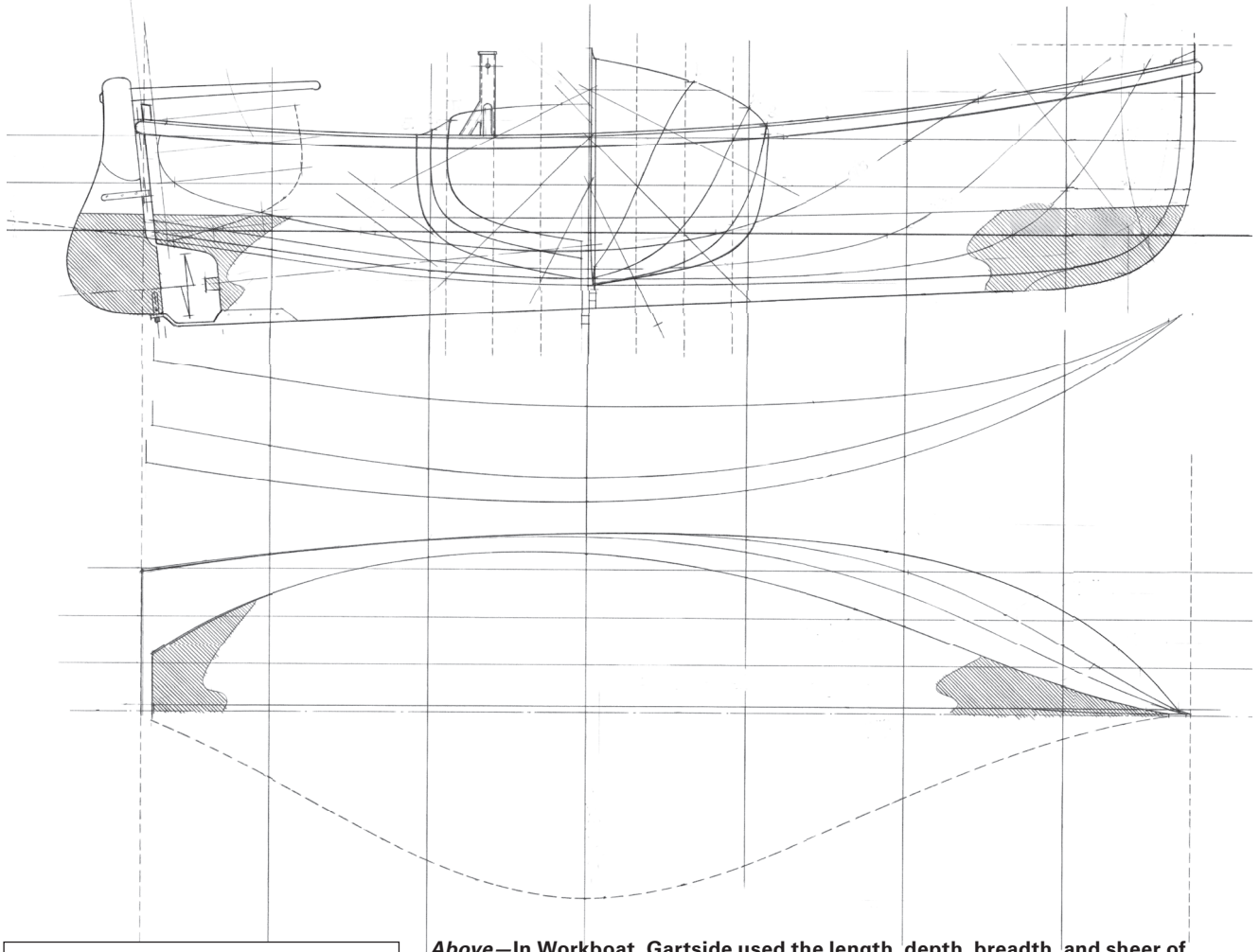
shape had been modified from a design found in *Motor Boating Manual* or a "similar fount of wisdom." Years later, when the request for a small workboat came the designer's way, the old drawings served as a starting point.

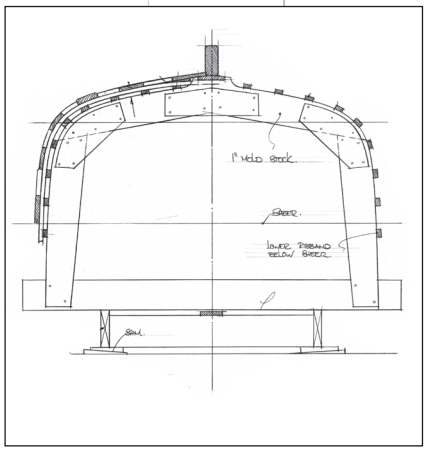
Gartside took the sheerline from the original boat and added some flare to the hull's forward sections. "She will have a different look than the original," he explains, "but the important stuff—the proportion of length, breadth, and depth; the deadrise to the bottom; and the immersion of the transom are straight from the old boat.

"Regular use is the key to making a wooden boat last"

Those were good genes, and I'm happy that we might be able to propagate them." He predicts that an 8-hp Yanmar diesel will push this launch at an easy 5 knots with ample power for light towing. If we prefer to go with electric propulsion, the designer allows that 10kW would be "about right."

Gartside specifies a smooth, carvel-planked hull. Construction will be on the heavy side: ⅝" cedar planking (⅞" in the bilge and for the sheerstrakes), ¾" × 1⅛" bent frames on 6" centers, all held together with copper fastenings. We'll want to set her up close to the steam box. Much of the planking





***Above*—In Workboat, Gartside used the length, depth, breadth, and sheer of the boat from his youth, but added flare to the forward sections. *Left*—Gartside specifies upside-down construction, though acknowledges that "[t]here is something pleasant about watching a boat grow that is lost when it all happens upside down." Right-side up is an option.**

at the forefoot and in the flare of the bow shows twists and tight turns. Of course, we'll shove the frame stock into the box. Rails and seat risers also might require steam. The designer advises: "If in doubt, cook it!"

Some of us will choose to build this hull upside down. Other builders will work the project right-side up. Our method (upside down) allows for easier alignment for the jig and backbone, easier framing, and easier planking. Working "down" on the job also reduces physical stress. On the other hand, the upright approach lets us better evaluate the sweep of sheer and the run of the planking. Gartside specifies that we build this launch inverted on its molds. Yet he has reservations: "There is something pleasant about watching a boat grow that is lost when it all happens upside down."

In any case, the designer believes that this project will be good fun: "There is some glued work in the stem and centerline (and the gunwale cap should be glued to keep fresh water out of the frame heads). But, for the most part, this is boatbuilding as it used to be…that is, without latex gloves."

The designer expects that the new boat will measure up to the old. Both have the right shape for the given power and speed. Along the banks of the Fal estuary, consensus suggests that these lines make for good boats.

Mike O'Brien is boat design editor for WoodenBoat.

Paul Gartside teaches boat design at WoodenBoat School each summer. Plans for this launch, and completed boats, are available from him at 29 Malone St., East Hampton, NY 11937; 631–276–7275; info@gartsideboats.com; www.gartsideboats.com.



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WoodenBoat REVIEW

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Pettit Tuff Coat Nonskid Deck Coating

Review and photographs by Jasmine Thomas

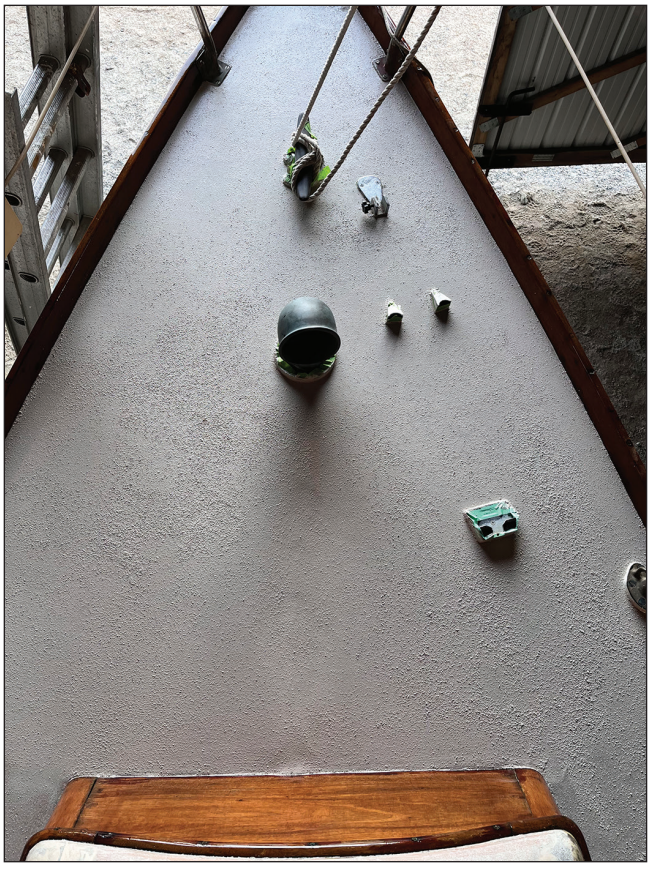


The deck of this Sparkman & Stephens–designed Gulfstream 30 was recently refinished with Tuff Coat, a premixed nonskid paint formulated specifically for this purpose.

With the bottom of my Sparkman & Stephens–designed Gulfstream 30 caulked tight and primed (see page 48), my attention turned upward—to the decks. The old peach-colored paint was peeling and slick, and I wanted something more durable, safer underfoot, and comfortable for bare feet on summer days. I had spent all spring getting ADVENTURESS water- and sailing-ready. Mere weeks before her daunting first launching after 20 years out of the water, it was time to paint her deck.

She had not yet had a nonskid deck or coach roof, so I had to think about how to make this very necessary upgrade. I needed a deck and coach roof that had decent grip, but I didn't want to compromise her look. I was looking for a product that would be good under bare feet and would still do such a beautiful 1959 mahogany-planked Sparkman & Stephens design justice.

I considered traditional enamel with sand mixed in, but this can cause skinned knees and feet. I also considered using what my dad uses on his Reliance 44 cruising cutter decks: the truck-bed liner Durabak. Though he's been pretty happy with its longevity, feel, and appearance, he had horror stories of its application. It requires Xylene as the thinner, which is very toxic and needs to be continually added during application to keep the paint thin enough. He was painting on a moderate summer day in Maine, which caused the paint to dry faster than he could keep up. When I came across Pettit's Tuff Coat, a water-based rubberized nonskid that relies on a two-part epoxy primer, I was curious: Could a modern, flexible coating made for workboats and docks, and originally formulated for waterparks, also suit the deck of a 1959 wooden sloop? I was eager to find out.



The deck required two coats—and a third in some areas—to cover the intense salmon pink color of the previous finish.

Before painting the deck, I needed to prep. The first step was to sand the entire deck and coach roof with 80- and 120-grit sandpaper. The preparation uncovered some surprises: There were several places where the fiberglass sheathing had cracked and let water in. Fortunately, she was so dry that it was a perfect time to address this with epoxy fillers to both re-adhere the sheathing to the deck and prohibit further cracking. I sanded down these spots with 60- and 80-grit paper, and moved up to 120-grit. The final step before applying the Tuff Coat nonskid paint was to prime. In order to adhere correctly, this water-based paint requires a special two-part primer. Part A is a resin that is a green-hued translucent liquid with the consistency of maple syrup and the odor of ammonia. Part B is a hardener that looks like thin, white almond milk. I hadn't used a two-part primer before, and it was a true "trust the process" moment.

The instructions on the primer can were not quite dummy-proof. On my first attempt, I tried mixing the contents of the cans together in a separate container. As I progressed, the stuff didn't seem to be working as it should; it dried in bubbled spider-web shapes when I tested it. I spoke with a sales rep for Pettit, who corrected my process by telling me that one whole can of either part A or B should be mixed with its counterpart *directly in the other can*. This is because there can be significant settling of solids, and the only way to ensure the contents are properly and thoroughly mixed is to combine them in their original cans. Further compounding my confusion was the fact that the directions referred to "4001" and "4002," rather than Parts A and B.

Once I had the primer properly mixed, it was quite a fun experience to paint with the milky-white substance and see it dry clear; it brought back memories of using Mod-Podge glue in elementary school collages. Once the primer parts were mixed together—and especially once they were applied—there wasn't much of a smell. I found that a brush worked best for applying the primer. It was also refreshing to use water for cleanup of wet primer drips, and to rinse out the brush with water at the end of the workday.

I applied two coats of the rubberized Tuff Coat nonskid in sandtone—although, because I was painting over an intense salmon, a third coat was required in places. I like having a smooth surface about an inch or two around the edges of handrails, and this presented a quandary because Tuff Coat is premixed with nonskid. Pettit has a smooth sandtone paint color in its EZPoxy line, but this is an oil-modified polyurethane rather than the water-based chemistry of Tuffcoat. The two colors are almost identical, but when they're applied on top of one another, as I learned in a test patch, the difference is apparent. I found the following workaround: I first taped the edges of the area around the handrails that I wanted to be smooth. (I did not use Tuff Coat primer in this area.) After rolling on the first coat of



To adhere correctly, Tuff Coat, which is water-based, requires a proprietary two-part primer.



The Tuff Coat kit: premixed nonskid paint, two cans of primer (and the box in which they were packed), and proprietary roller covers.

nonskid, I peeled the tape while the paint was still wet, having found that if I left the tape on until the nonskid dried, the rubber bits made it difficult to peel a clean tape line. A few hours later, when the nonskid was dry to the touch, I taped off the handrail itself, and cut in, by hand, the smooth EZPoxy against the textured Tuff Coat line. This took only one coat for good coverage. For the next two coats of nonskid, I carefully rolled up to the crisp line, but didn't cross it. I found that the colors were so close in shade that as long as the smooth sandtone had a clear defined line against the rough stippled nonskid sandtone, my eye could not tell the difference in color because of the texture difference.

A special textured foam roller is required to lay the pattern of the nonskid, and this tool is just as critical as the primer. The paint itself was quite fun to apply, a bit like painting with half-frozen vanilla ice cream. It didn't require much thinning, but painting on a warm day would require thinning with only clean water. Cleanup is also with water, and must be done while the paint is wet; cleaning the paint from tools and surfaces, once it had dried, was not an easy task. It is important to pour small amounts into the roller tray, because it can be difficult to mix in the rubberized bits evenly once they are in the tray. It is much easier to mix it thoroughly while it is still in the can. Each stroke of the roller leaves a stippled surface that builds into a soft, grippy rubber finish. Once dry, it felt almost like cork: yielding underfoot, quiet, and comfortable.

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A proprietary textured foam roller cover is required to lay a proper pattern of nonskid. Author Jasmine Thomas says the product was "fun to apply, a bit like painting with half-frozen vanilla ice cream."

I sailed on ADVENTURESS quite consistently throughout the summer and got praise at every dock for her paint job. The sandtone color was warm and professional-looking. The decks were easy to clean with a soft bristle brush and salt water. Dirt, mud, and anchor grime brushed right off. The deck never became scorchingly hot, as have some other nonskid surfaces I've stood on, and even when the decks were very wet the surface had good grip.

By the end of the season, the decks had very little visible wear from the sun, scrubbing, or walking. When it is time to repaint, there will be no need to sand it down again. ADVENTURESS's decks are no longer slippery or tired; they're soft, secure, and ready for the bare feet of new sailors.

Jasmine Thomas is WoodenBoat*'s editorial assistant.*

For more information, visit www.pettitpaint.com/tuffcoat.

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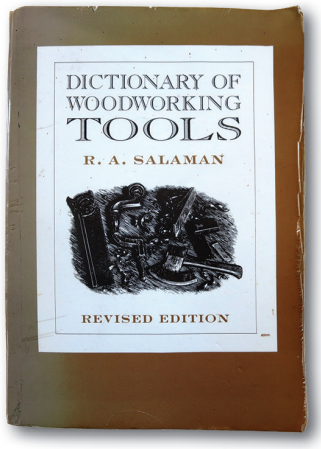
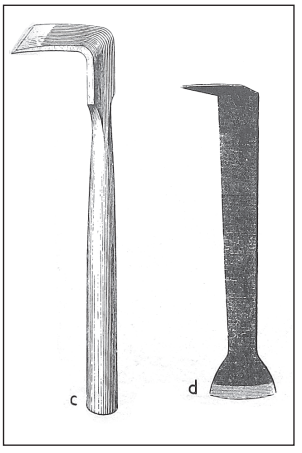
Dictionary of Woodworking Tools

Dictionary of Woodworking Tools, by R.A. Salaman. Astragal Press, 1997; distributed by Simon & Schuster, www.simonandschuster.com. 546 pp., $39.95.





Reviewed by Harry Bryan

There are certain choices that we have designed into our lives that reveal a great deal about our personalities. One is the books that we read—not the current novel that entertains us briefly and then is put aside, but those books that have been on the shelf for years and, no matter how many times they are read, still hold the promise of a new discovery. Perhaps their appeal is in knowing that they always put us in a positive state of mind.

If I am not currently caught up in a novel, my routine before sleep often finds me sitting on the edge of the bed running my eyes back and forth along my shelves of books, waiting for one of them to say, "Pick me up, I am the one for tonight." One night it might be L.F. Herreshoff's *The Compleat Cruiser*, or Henry Plummer's *The Boy Me and the Cat*. Another time I may choose Clifford Ashley's *The Yankee Whaler* or, in a more philosophical turn of mind, I might pick up John Stilgoe's *Alongshore*.

Many times, however, my wife comes into the bedroom to find me propped up on the pillow with my copy of R.A. Salaman's *Dictionary of Woodworking Tools*. It is an odd thing to her that I should want to read such a dry, technical-sounding tome before sleep. However, there is no violence within its pages, no lurid sex scenes, just 500 pages and more than 740 illustrations on the subject that has brought much fulfillment to my life.

Without the drawings and reproductions of plates from tool catalogs, this would be a dry read. But as it is, the book draws me into the history of disappearing trades, and I have several times been inspired to construct a long-discontinued tool because I felt it may have relevance to the resurgence of wooden boat building. There are nearly 40 entries devoted to shipbuilding, which will certainly be of interest to many readers of this magazine.

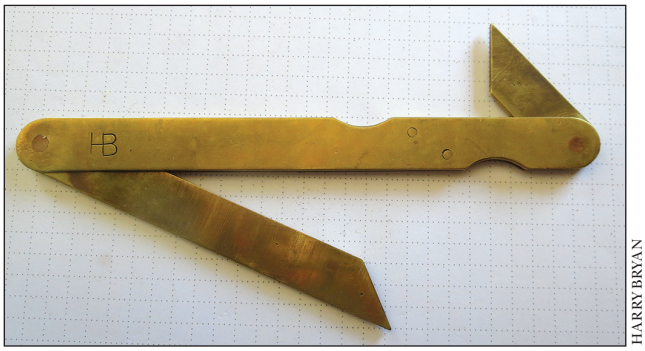
The thoroughness with which the more common tools are covered may help to give an idea of the scope of this book. Take axes, for instance. There are more than 20 pages and 94 illustrations on the subject, including a cricket-bat maker's axe. Planes receive 79 pages and more than 400 illustrations.

In the introduction, Salaman writes, "My aim when compiling material for this Dictionary has been to describe every tool used in the woodworking trades from about 1700 to the present time, and to explain its purpose; to give the reader some idea of the graceful shapes imparted to the tools by the men who designed and made them; and to record some of the methods and sayings of the tradesmen who used them."

I have a great reverence for the past and believe that small local businesses using tools and technologies that are appropriate to a human scale will promote a more satisfying life than a rush to embrace every new technology just because it is new. Salaman's introduction echoes this sentiment when he writes, "Anyone whose boyhood began before the First World War will remember that at that time, whether one lived in town or country, one could watch men working at a dozen different trades within a mile of one's doorstep. Their disappearance is one of the harsher changes of recent years: it has removed a source of social intercourse without which life, particularly for young people, is less interesting and certainly more lonely."

Dictionary of Woodworking Tools, published by the Astragal Press, shines light on this lonely place. The book is still in print, and used copies may be purchased from online booksellers.

Harry Bryan designs and builds boat in New Brunswick, and is a contributing editor for WoodenBoat.



HARRY BRYAN

Author Harry Bryan has been inspired on numerous occasions, by tools he encountered in *Dictionary of Woodworking Tools*, to build reproductions such as this brass bevel gauge.

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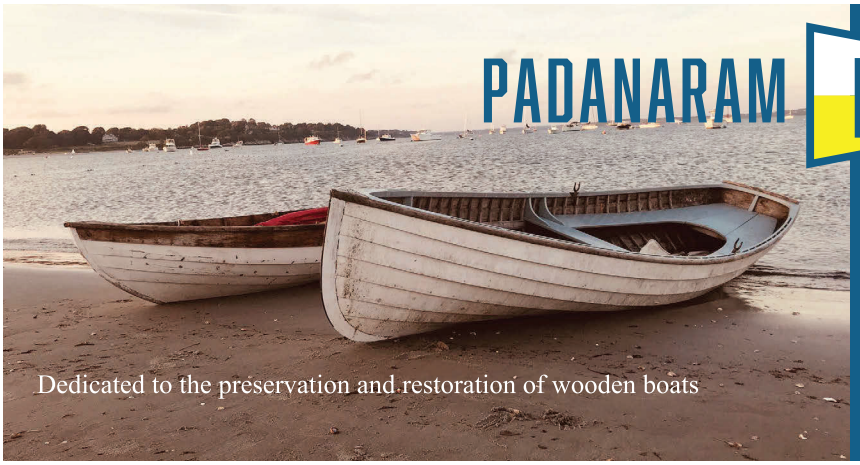

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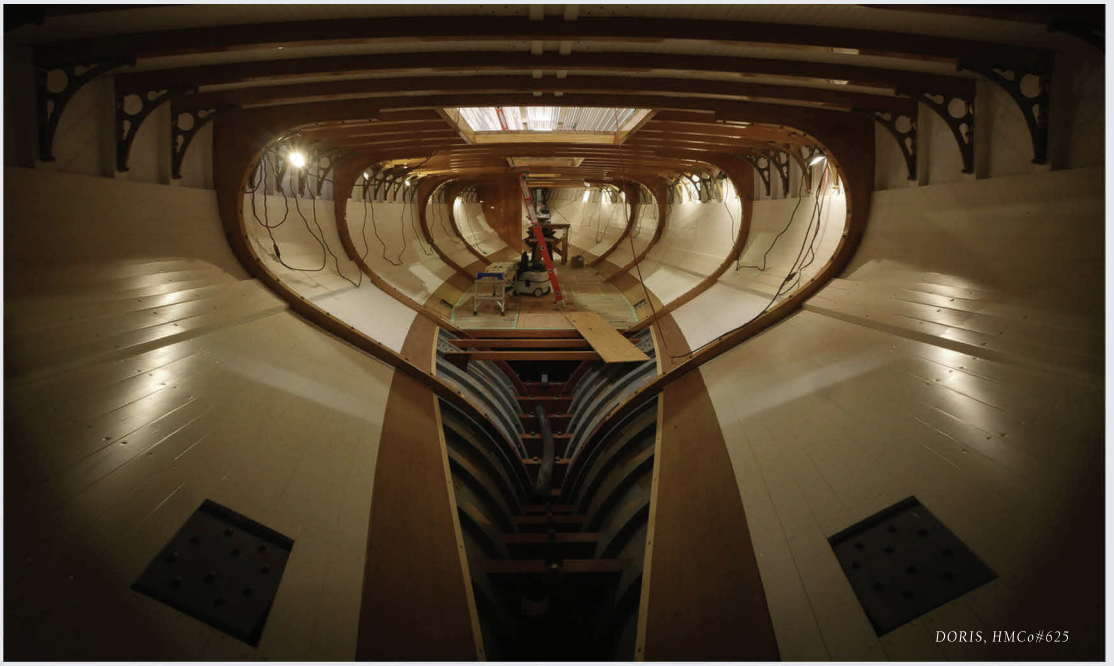

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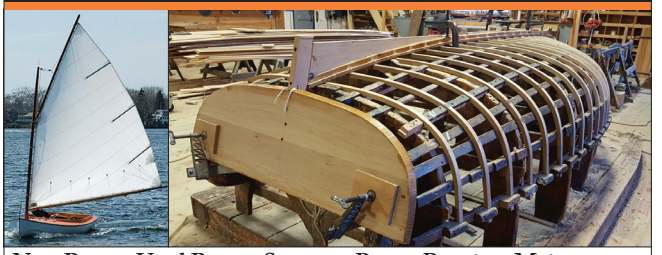

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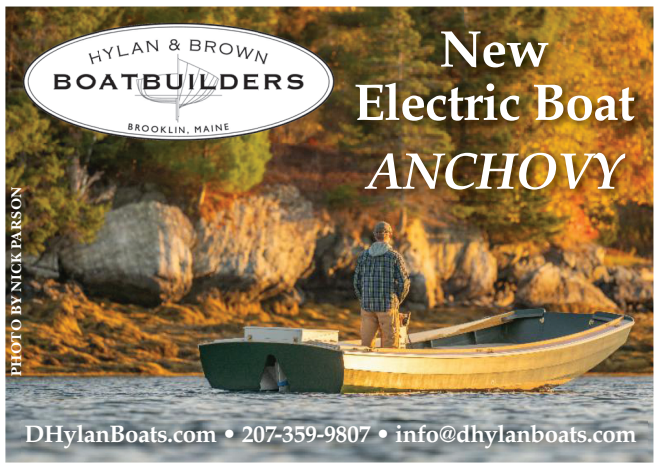

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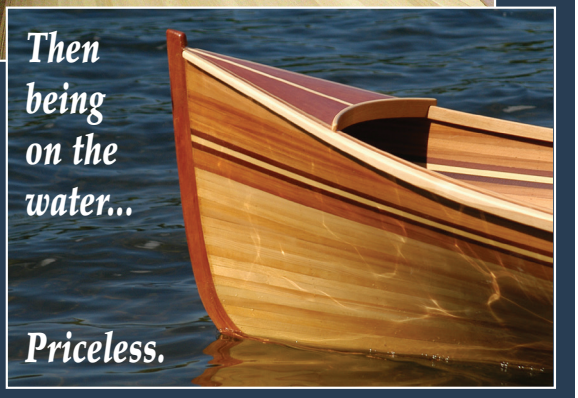

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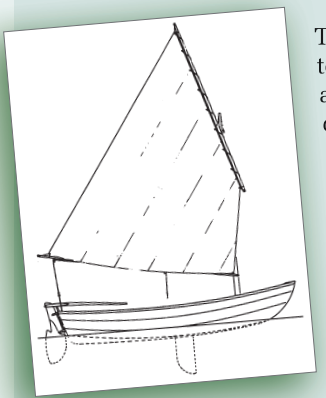

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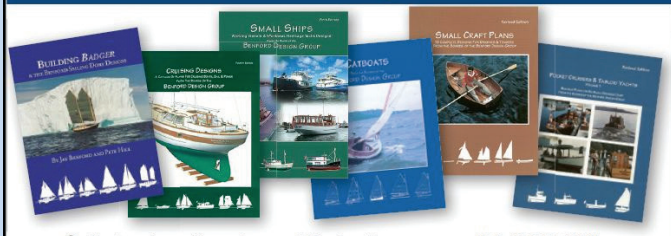

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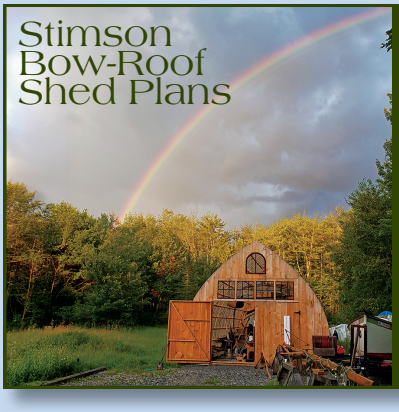

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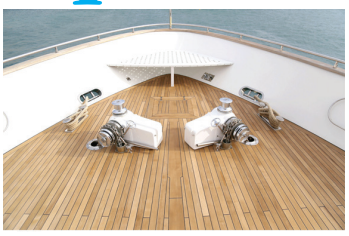

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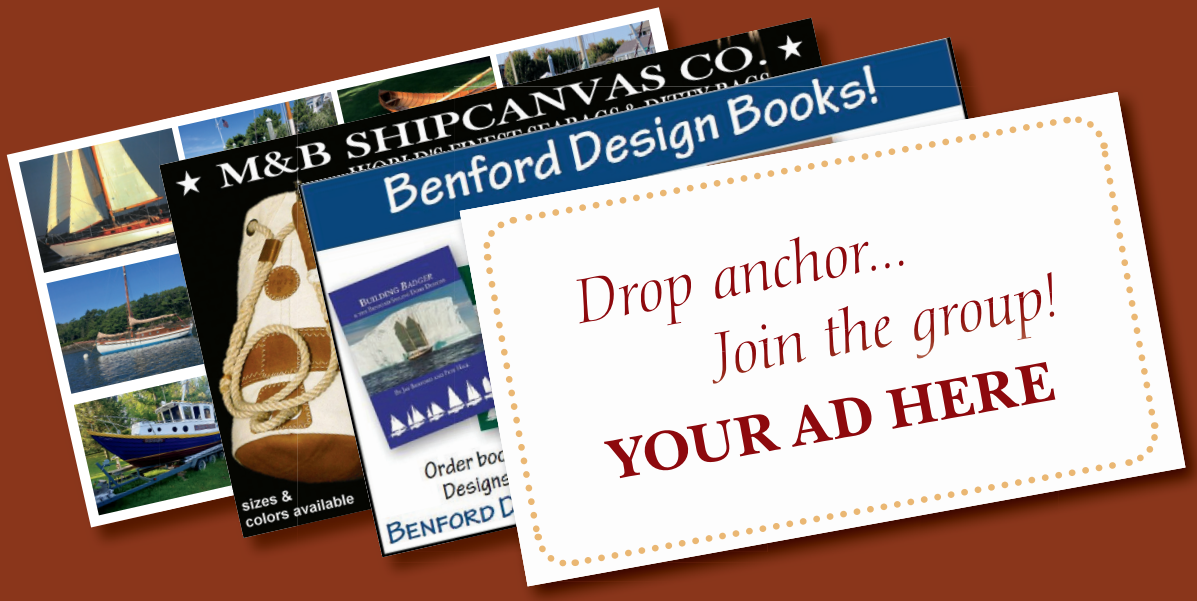

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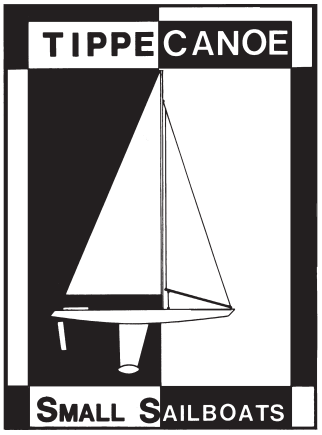

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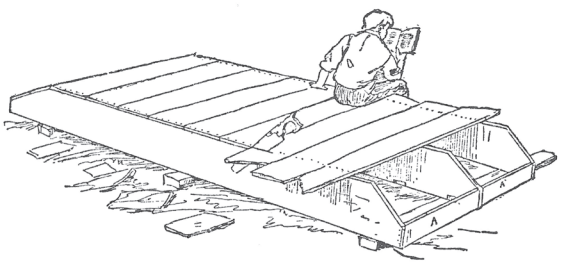

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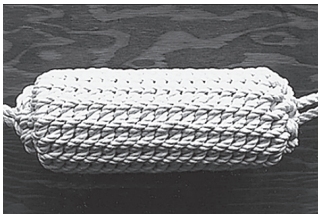

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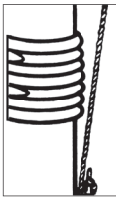

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ARCH DAVIS JIFFY V22 SKIFF 2011. 8′6″ beam, meranti plywood, douglas fir framing, MAS expoxy. 90-hp, 2 axle trailer. Stored Olde Towne Marina, Fernandina, Florida. Asking $25,000. email: mnaturalist@icloud.com.

BRYAN 30′ MOTORSAILER 1994. Converted to schooner and repowered 2007. Stevens tanbark sails. 38 hp Yanmar. Cedar on oak. Bronze fastened. New Brunswick. Asking $15,000 Canadian. Contact dave.nutter@hotmail.com. Photos and details available online: www.woodenboat.com/boats-for-sale/30-1994-bryan-motorsailer.



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39′ SLOOP CURRENTLY undergoing full cosmetic refit at Cutts and Case in Oxford, MD. Spirit was built by Harold Follett and his son then finished by Cutts and Case and launched in 1979. She is in excellent condition and is currently awaitng her new owner. Asking $95,000, more information and images at www.thecuttsandcaseshipyard.com, meghan@cuttsandcase.com.



1962 HISTORIC CUSTOM CAROLINA. Rare chance to own a historic boat built by the pioneer in custom Carolina boat building Warren Oneal in 1962. Juniper plank on frame construction. This boat was completely inspected and resorted in 2019 by Blackwell boat works in Wanchese, NC. It turns heads no matter where it goes. 38′, 19 knot cruise, 670-hp Cummings diesel, 5 kilowatts generator, A/C, 2 fridges, tv, Garmin electronics. Contact Joe, joedion36@gmail.com, 617–224–2384.

Boats For Sale
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18′ RUNABOUT. BUILT IN 1960. Plywood runabout over sawn frames with 88-hp Evinrude engine on a two axle trailer of the same vintage. Trailer has had some restoration. Boat length 18′, beam 7′5″. Boat has been sotred inside but will need some work to return to the water. $1,500. Additional pictures or inquires: Dennis Cronin, 804–350–2866. cronindj2@gmail.com.



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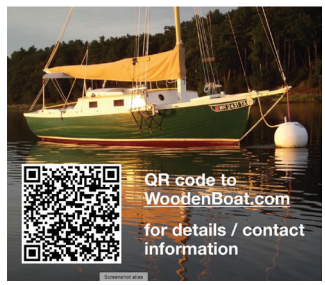

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YEAR: 2007. MFG: SCHLEIFF BOATWORKS. Model: Rescue Minor. Hull material: Wood. Engine Drive: Inboard. Engine: YM 3YM20. Length: 19′ 8″. Venture Trailer. Contact Johnna, jknapp@weamco.com. View more photos online: www.woodenboat.com/boats-for-sale/rescue-minor-2007.



“SHADOWFOX” - 1965 31′ Ocean Crossing Cruiser. Well-maintained. 20-hp universal diesel. New mainsail. Roller-furling jib and spinnakers. $47,000. kwasiemoto@cox.net.

BUILT 1951, OVERALL LENGTH 32′, Length on deck 30′, Beam 11′, Draft 3′ centerboard up, 7′6″ down. Hull: Cape Cod Catboat with trunk cabin (design #870). Cedar planks on oak frames. Lead ballast. Bronze fastenings and bolts, also galvanized bolts. Rudder oak with bottom pintle on keel. Engine: Gray Marine mod. 4112 4 cyl. 31-hp. Spars: built up rectangular spruce. Stainless-steel shrouds. Sails, mast, rudder, other parts in storage. Fair condition, needs work. Must be taken off premises. Not for parts. Located in Lincolnville, Maine. Contact Mark, 207–522–0944. To see photos, view the listing on *WoodenBoat*’s Boats for Sale Online, www.woodenboat.com/boats-for-sale/john-alden-designed-catboat.

VINTAGE SNIPE RACING BOAT 15′ 7″ with rigging and sail. Hull is marine plywood and needs some attention. Deck needs replacement for sure. Mast in good shape, boom is newly made of Sitka spruce. Centerboard is new as well, as is rudder (made from Bruynzeel plywood) and tiller. Sail is tired but I suppose it could be used. cmooreny@earthlink.net, 917–734–3659.

TEGOLIN IS A 26′ MAURICE GRIFFITHS Athene design with triple keels and 3′ draft. Hull is larch on oak with epoxy sheathing. Engine is 16hp Vetus. Raymarine navigation, Taylor paraffin stove, full set of sails. 2-3 berths. Needs new mast. Currently in North Wales, UK. Contact L.Hands +44 (0) 7801 222 731. See photo online: www.woodenboat.com/boats-for-sale/26ft-maurice-griffiths-athene-design-sailing-boat.

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THE WOODEN BALLAST KEEL SLOOP “RASCAL” was donated to us in 2021. The donor purchased it in California, where it had been stored covered and dry for 30 years. LOA 22′ 6″, LWL 17′ 5″, beam 6′ 11″, draft 3′ 11″. Western red cedar planks on steam-bent oak frames with no rot. Designer and builder are unknown, and the boat has no markings or numbers. Possibly built in the late ’40s, she was actively raced in San Francisco Bay. Other maritime museums point out similarities to a “BJK”design and suggest origins in Seattle or Southern California. Video and more photos, a list of what has been done, and a restoration to-do list are available. In short: replace 2-3 planks; bung, caulk, fair, and paint hull and transom; make fiberglass patch near the keel; make a tiller; reinforce rudder; recaulk deck; mast repairs; build boom; reinforce the sails; plan and make running and standing rigging. Galvanized screws were used in a previous owner's misguided refastening. Volunteers here have nearly finished refastening with copper rivets. The beautiful project is too much for our limited staff. Contact dnelson@hrmm.org. Photos online: www.woodenboat.com/boats-for-sale/wooden-ballast-keel-sloop-rascal.

WOODEN BOAT DONATION. 14' Marblehead skiff for rowing and sailing. John Gardner design: complete plans for this lapstrake boat and sail rigging included. Building initiated in 1982 at Mystic Seaport. Construction completed in 2019. Gambell & Hunter mainsail and jib. Covered and stored on trailer (included.) Ideal project for educational shop and/or as a template for a new start. Photos upon request. Call Peter Hobart, 301–712–6851, Essex, Maryland.

EX-RNLI SILVER JUBILEE LIFEBOAT from UK. 1977 Silver Jubilee Lifeboat, 37 ft x 13 ft x 4 ft., 14 tons. Rother class, self-righting lifeboat built for the Royal National Lifeboat Institute (RNLI), the United Kingdom lifeboat service. Named in honour of the Queen's Silver Jubilee in 1977, and christened by HRH Princess Margaret, and stationed at Margate, Kent, UK. The only RNLI Lifeboat in the US. The Vessel is wood framed hull construction, with 1″ thick, double diagonal mahogany planks on oak frames, with further 1″ thick double skin underwater for beaching. Full watertight alloy superstructure. Layout, aft self-draining wheelhouse accessed by Perspex sliding doors, watertight engine room and fore cabin with Roof Hatch. The Engine room houses twin set, Ford based Mermaid, 4-cylinder marine diesels in very good running condition. All systems in engine room are duplicated and interchangeable. Machinery is in working order with no known issues. The Lifeboat is in almost original service condition and colors of the period and was shipped to the U.S. in 2007 with US Coast Guard documentation. Needs cosmetic re-commissioning. Pickup from Ossining, NY 10562. contact mbankuda@gmail.com. See photos online: www.woodenboat.com/boats-for-sale/ex-rnli-silver-jubilee-lifeboat-uk.

24′ SKIPJACK NEEDS Completion. Mike died before he could complete the boat. Cold-molded, 90% complete. Needs rudder, centerboard, mast. 9.9 Honda outboard, no trailer. Extremely well built. staylor@cstone.net. Photo online: www.woodenboat.com/boats-for-sale/24-skipjack-needs-completion.

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by Maynard Bray



CLARK MILLS

A recreational tugboat of 1972

Particulars	
LOA	42′
Beam	15′
Draft	5′
Power	180-hp 6-71N Detroit diesel
Designed by	Clark Mills
Built by	Mills Boat Works, Clearwater, Florida, 1972
Official No.	545103





COURTESY OF BOB RESS (ALL)

***Top*—CLARK MILLS is a 42′ tugboat-inspired cruising boat built in 1972. *Above right*—The large and well-lit engineroom houses a 180-hp Detroit 6-71N diesel. *Above left*—A spacious and covered afterdeck has encouraged sociability and protection from the elements.**

Bob Ress has owned and meticulously cared for this boat for most of her 54 years, but now he's aged out and wants to give her away. "I'm looking to donate [the boat] to someone who will keep it, use it, maintain it, and not sell it," he writes. "The main timbers are fabricated of [salvaged] first-growth longleaf pine...and the hull is planked with mahogany.... The deck, wheelhouse, engine house, and bulwarks are 'glassed...." She has a 36″ × 28″ propeller and a very large rudder, making her what Bob considers exceptionally maneuverable. Her cruising speed is noted as 7.25 knots at 1,075 rpm, and she has 600 gallons of fuel capacity. "The boat has been kept in a covered shed most of her life and is in very good shape relative to its age," Bob reports.

The boat's builder and namesake was Clark Mills (1915–2001), who was a well-known Florida boatbuilder; he also designed the Optimist pram. Mills was a lifelong friend of Bob's, and he built about 15 boats for him. This one, although not built for Bob, has been an often-used and much-loved family boat that's hosted many kinds of gatherings under the big awning on her spacious afterdeck, where the fish box and the low engine house have been called into service as buffet tables. She's also done occasional duty as a genuine working tug.



Clark Mills—the Florida designer best known for the wildly successful Optimist pram—designed and built the tugboat-inspired craft that carries his name.

For cruising, she sleeps four. Two are in athwartships berths in the wheelhouse. Two more sleep in starboard-side single berths in the forecastle, and in that same space, bounded by watertight bulkheads, there's a full galley, a dinette opposite, and a built-in head. These accommodations can be entered either by ladders from the wheelhouse or the foredeck-mounted booby hatch, or through a door in the engineroom bulkhead.

The walkaround engineroom is spotless, with the main engine and diesel generator both painted white. The generator powers air conditioning, and natural light comes from portlights on both sides. There's even a workbench with a vise and lockers for tools and spare parts, of which there are many.

The wheelhouse sits high for good all-around visibility. You'll have to step up to it, in true tug fashion, and there, besides the wooden wheel and engine controls, you'll find she has air horns, fathometer, VHF, hydraulic steering, and an autopilot. An outdated Loran unit lives there as well.

Who could not love that high bow, graceful sheer, and round stern? But to get her as a gift, you'll first have to convince owner Bob Ress that you'll be a good steward.

Maynard Bray is WoodenBoat*'s technical editor.*

To reach Bob Ress, try his phone at 727–804–2777. For more information, a video tour, and more photos, search the Internet for "tugboat CLARK MILLS."

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